

Human Dimensions Research Unit

Department of Natural Resources
College of Agriculture and Life Sciences
Cornell University

ANNUAL REPORT

2009

PURPOSE

This 2009 annual report provides an overview of recent research, teaching, and outreach activities of the Human Dimensions Research Unit (HDRU). The report is designed to reflect the work, interests, and capabilities of the HDRU. Publications listed in the report may be requested from the HDRU at the address shown on the cover. A list of HDRU publications is available by request or can be found on the internet at this address: <http://www.dnr.cornell.edu/hdru>



MISSION

The HDRU strives to expand the understanding of academicians, students, natural resources agency staff, and policy makers about the human dimensions of natural resource management and policy by studying human attitudes, values and behaviors associated with natural resource management and applying theory and empirical findings to real-world, contemporary problems. Our research outcomes, which include empirical data, conceptual frameworks, and theoretical insights, are reported in conferences, journals, books, policy briefs, and reports of various types. HDRU research is used by a wide array of decision makers and natural resource practitioners, especially those in state and federal agencies, to develop, implement, and evaluate natural resource policies and management approaches.

HDRU faculty and staff contribute to the teaching and outreach functions of the College of Agriculture and Life Sciences and the Department of Natural Resources. We advise both undergraduate and graduate students, and teach courses concerning natural resources policy and management. Some of our fac-

ulty also have Extension appointments, from which we serve citizens of New York State and beyond.

DESCRIPTION

During 2009, the HDRU and cooperators consisted of dozens of faculty, staff, graduate assistants, and undergraduate student technicians. Research and outreach programs are supported by grants and contracts from federal and state agencies, nongovernmental organizations, foundations, Cornell Cooperative Extension, and the Cornell University Agricultural Experiment Station.

HDRU graduate faculty have membership in the fields of Natural Resources, Development Sociology, Public Affairs, and Water Resources. In 2009, graduate faculty committee members came from a variety of departments: Communication, Education, Development Sociology, City and Regional Planning, Government, Organizational Behavior, and Natural Resources. Our program's primary geographic focus is domestic, but includes some international work.

The HDRU has earned an international reputation in the development of the human dimensions specialization of natural resource management. The oldest university unit of its kind, its history dates from the early 1970s. The success of the HDRU has been greatly enhanced by a partnership of approximately 35 years with the NYS Department of Environmental Conservation's Division of Fish, Wildlife, and Marine Resources.

**Human
Dimensions
Research
Unit**

FACULTY AND STAFF

UNIT FACULTY:

Shorna Broussard Allred, Associate Professor and Unit Associate Director

Specializations: Human dimensions of natural resource management; natural resource policy; environmental attitudes and behavior; with emphasis on forest and water resources.

Paul D. Curtis, Associate Professor and Extension Wildlife Specialist, Department of Natural Resources

Specializations: Resolving conflicts between people and wildlife; citizen participation in decision making; outreach and policy education.

Daniel J. Decker, Professor and Unit Director

Specializations: Integration of human dimensions insights into wildlife management decision making, policy, planning, and practice; stakeholder involvement in wildlife management; community-based natural resources management; risk perception and communication related to wildlife management.

Barbara A. Knuth, Professor and Unit Associate Director; Senior Associate Dean, College of Agriculture and Life Sciences

Specializations: Integrating human dimensions into natural resources decision making; community-based natural resource management; risk management and communication related to fishery and wildlife management; program evaluation.

T. Bruce Lauber, Senior Research Associate

Specializations: Collaborative and community-based natural resource management; wildlife damage management; communication and education in fishery and wildlife management.

Katherine A. McComas, Associate Professor, Department of Communication

Specializations: Risk, science, and environmental communication; community involvement and public participation; trust and credibility related to science communication.

Richard C. Stedman, Associate Professor and Unit Associate Director

Specializations: Sense of place; community resilience; impacts of social and environmental change on wildlife recreation and community; risk and policy; environmental attitudes and behaviors; community-based resource management; land owner attitudes and behaviors; coupled human/ecological systems.

UNIT STAFF:

Nancy A. Connelly, Research Specialist

Specializations: Incorporating human dimensions perspectives and communication related to fisheries management; survey research methods.

Jody W. Enck, Research Associate

Specializations: Sociocultural and motivational aspects of wildlife recreation; stakeholders' attitudes about management of overabundant wildlife species, potential social feasibility for restoring rare/ extirpated species.

Marjorie A. Peech, Administrative Assistant

Specializations: Unit office management; website maintenance; word processing; administrative assistance.

William F. Siemer, Research Associate

Specializations: Motivational aspects of recreational participation; wildlife-related attitudes and values; educational program evaluation.

Karlene K. Smith, Research Aide

Specializations: Survey implementation; interviewing; database management; content analysis.

GRADUATE STUDENTS:

Andrea Armstrong, Graduate Assistant

Specializations: Conservation practice adoption and policy; urbanization; water quality.

Ingrid Biedron, Graduate Assistant

Specializations: Human dimensions of marine ecosystem-based management.

Christopher Clarke, Graduate Assistant

Specializations: Health and environmental communication; risk perception; wildlife disease.

Ashley Dayer, Graduate Assistant

Specializations: Human dimensions of bird conservation and forestry, persuasion, wildlife values.

Stephen Decker, Graduate Assistant

Specializations: Human dimensions of large herbivore restoration and management, integrated approaches to wildlife management in Newfoundland and Labrador, Canada.

Darrick Evensen, Graduate Assistant

Specializations: Perceptions of environmental risks, particularly wildlife diseases.

Heather Wiczorek Hudenko, Graduate Assistant

Specializations: Wildlife management and policy; human-wildlife interactions; wildlife conservation.

Micah Ingalls, Graduate Assistant

Specializations: Community-based natural resource management and social-ecological resilience.

Jeffrey Jacquet, Graduate Assistant

Specializations: Energy development and economic and social impact analysis.

Christine Moskell, Graduate Assistant

Specializations: Community engagement in urban forestry.

Rachel Neugarten, Graduate Assistant

Specializations: Environmental and socioeconomic evaluation of forest management.

Laura Rickard, Graduate Assistant

Specializations: Science, risk, and health communication; public understanding of science and risk; examining formal and informal processes of risk management and communication in national parks.

Andrew Roe, Graduate Assistant

Specializations: Parcelization and forest resource management.

Timothy Shaffer, Graduate Assistant

Specializations: Community engagement on natural resource and community development issues; public deliberation program development.

Carrie Simon, Graduate Assistant

Specializations: Human dimensions of Great Lakes ecosystem-based management; communications; social network analysis.

Heather Triezenberg, Graduate Assistant

Specializations: Community-based natural resources management in New York State.

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SUMMARY OF 2009 RESEARCH ACTIVITIES

Wildlife Resources Management and Policy

Public Involvement in Wildlife Management

Communities across the country have increasingly called for wildlife management solutions tailored to their particular situations, especially with respect to human-wildlife conflicts. In addition to seeking involvement in defining problems, goals, objectives, and methods, some communities have expressed willingness to share responsibility for implementing management. For community-based management to be effective, community capacity often needs to be increased. Recent studies have made substantial progress in defining the relevant elements of community capacity and exploring social learning that occurs as communities work with state agencies on local wildlife problems. Other research is examining stakeholder interests and how various groups attempt to use the political process to achieve these wildlife management goals.

Sustaining and Improving Hunting and Trapping in New York: Public Attitudes, Conflict Resolution, and Political Activism

Funded by: N.Y.S. Dept. Environ. Conservation and Cornell Univ. Agric. Exper. Sta.

Collaborators: Y. Connie Yuan (Dept. of Communication); Janis L. Dickinson (Dept. of Natural Resources); John F. Forester (Dept. of City and Regional Planning); Gordon Batcheller and Bryan Swift (DEC Bureau of Wildlife)

Investigators: Barbara Knuth, T. Bruce Lauber, and Heather Triezenberg (hav5@cornell.edu)

Social conflicts involving waterfowl hunting or furbearer trapping create potentially contentious environments for wildlife management agencies and stakeholders. Some residents along developed waterways increasingly object to hunters discharging firearms in proximity to homes. Similarly, some residents object to furbearer trapping in their communities after a dog is caught in a trap and the media publicizes the event. Social conflicts among wildlife stakeholders can evolve from limited, in-field interactions to collective actions with broader political intentions as stakeholders seek to change local town laws, wildlife harvest regulations, or state conservation laws. Although the number of incidents each year may be small, the political activism resulting from the incidents has been pronounced. These social conflicts are important for wildlife

agencies and communities affected because the outcomes have the potential to restrict access or opportunities for wildlife management.

To better understand the factors contributing to political activism about wildlife harvest activities, our objectives are to: (1) compare network characteristics of wildlife stakeholders engaged in collective actions in the two contexts (waterfowl hunting and furbearer trapping); (2) expand collective action theory by including stakeholders' framing of the conflict; (3) determine key organizations from which wildlife stakeholders seek information; and (4) determine policy alternatives for waterfowl hunting and furbearer trapping that may minimize social conflicts. We conducted in-depth, semi-structured interviews with key stakeholders in four case study communities, and implemented a mail-back questionnaire and a non-respondent telephone survey in "potentially-affected" areas of New York where these social conflicts may emerge in the future. Results suggest there are few activists on each side of the issue and opposition to hunting or trapping is not great. Instead, stakeholders are interested in when, where, and how trappers and hunters interact with residents when engaging in waterfowl hunting or furbearer trapping.

Presentations:

Van Den Berg Triezenberg, H.A., B.A. Knuth, and Y.C. Yuan. 2009. Conflicts and political activism over waterfowl hunting or wildlife trapping in New York: Insights for engagement with stakeholder social networks. The Wildlife Society Conference, Monterey, CA, September.

Van Den Berg Triezenberg, H.A., G. Batcheller, and B.A. Knuth. 2009. Sustaining and improving hunting and trapping in New York: Public attitudes, conflict resolution, and political activism. Poster at the New York State Trapper's Association Convention, Herkimer, NY, September.

Van Den Berg, H.A., and B.A. Knuth. 2009. Social networks of wildlife stakeholders: Insights from waterfowl hunting and furbearer trapping conflicts in New York. Northeast Fish & Wildlife Association Conference, Lancaster, PA, April. (Best Student Paper Award)

Van Den Berg, H.A., and B.A. Knuth. 2009. Sustaining and improving hunting and trapping in New York: Public attitudes, conflict resolution, and political activism. New York State Trapper's Association Board of Directors Meeting, Herkimer, NY, March.

Van Den Berg, H.A. 2009. Social networks of wildlife activists seeking to influence wildlife management. Cornell University Natural Resources Graduate Student Association Symposium, Ithaca, NY, January.

The Social Framework for Community-based Deer Management

Funded by: N.Y.S. Dept. Environ. Conserv.

Collaborators: Dave Riehlman and Kevin Clarke (DEC Bureau of Wildlife)

Investigator: Bruce Lauber
(tbl3@cornell.edu)

We are exploring how community characteristics and activities contribute to successful community-based wildlife management. In particular, this study is focused on: (1) assessing the capability of communities to work in co-management situations with state wildlife agencies; (2) identifying difficulties that communities encounter in this process and the causes of these difficulties; (3) suggesting methods that would enable decision making over a shorter time frame and with the expenditure of fewer resources.

We are preparing a final report on the work we have conducted to date. We followed the evolution of community-based deer management in three New York State communities. We collected baseline data in 2006 about community characteristics and activities related to deer management in each of these communities when deer management was in its early stages (i.e., no management actions selected or implemented). We have monitored deer management efforts in each community since that time, and the report based on this work will assess how community characteristics and activities influenced the ways in which these efforts evolved.

In a closely related effort, we explored how media coverage can contribute to the development of capacity for community-based deer management. We analyzed newspaper coverage in regional New York State newspapers over six years and assessed the potential contributions this coverage could make to learning. The coverage is more relevant to identification of deer management objectives and of methods that could help to achieve those objectives. Despite the fact that relationships and dialogue between stake-

holders (through public meetings, task forces, surveys, and other forums) have been shown to have an important influence on the success of community-based deer management, these topics receive relatively little coverage.

Wildlife Funding/Policy Linkages: Using State Wildlife Action Plan Priorities to Shape Policies and Direct Expenditures at Multiple Levels of Government

Funded by: Wildlife Habitat Policy Research Program of the National Council for Science and the Environment

Collaborators: Peter Stein (Lyme Timber Company); Dana Dolsen (Utah Division of Wildlife Resources); Dennis Figg (Missouri Department of Conservation); Lisa Holst (NYSDEC Bureau of Fisheries); Darren Long (Wildlife Conservation Society); John Organ (U.S. Fish and Wildlife Service); Doug Parsons (Florida Fish and Wildlife Conservation Commission); Marie Stringer (The Nature Conservancy); Katie Theoharides (Defenders of Wildlife)

Investigators: Richard Stedman, Daniel Decker, Barbara Knuth, and Bruce Lauber (tbl3@cornell.edu)

All 50 states completed federally mandated State Wildlife Action Plans (SWAPs) in an effort to protect wildlife species before they become endangered. Because these plans consider the needs of all wildlife, they are massive and beyond the capacity of state wildlife agencies to implement on their own. Through this project, we explored how collaborative partnerships contributed to the implementation of SWAPs.

Data collection took place in three phases. (1) We conducted telephone interviews of 60 people throughout the United States who were knowledgeable about SWAP implementation to catalog and characterize the collaborative SWAP implementation efforts that are currently underway. (2) We conducted case studies of six diverse examples of collaborative efforts to implement SWAPs. (3) We identified and interviewed "catalysts" (individuals who play key roles in initiating or sustaining collaborative action) to determine what makes catalysts effective. A workshop with conservation practitioners was held after data were collected to refine our interpretation of results.

Based on this work, we developed a model depicting the elements that are necessary for collaborative conservation efforts to be successful and the relationships between those elements. We also assessed how the structures of collaborative partnerships varied depending on the amount of progress that had been

made in a conservation effort. Two project reports were completed, one aimed primarily at practitioners, and results will continue to be disseminated through peer-reviewed publications.

Publications:

- Lauber, T.B., R.C. Stedman, D.J. Decker, and B.A. Knuth. 2009. Wildlife funding/policy linkages: Using state wildlife action plan priorities to shape policies and direct expenditures at multiple levels of government. HDRU Publ. 09-4. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 129pp.
- Lauber, T.B., R.C. Stedman, D.J. Decker, and B.A. Knuth. 2009. Using state wildlife action plans to achieve your conservation goals through collaboration.. HDRU Publ. 09-5. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 22pp.

Presentation:

- Lauber, T.B. 2009. Wildlife funding/policy linkages: Using state wildlife action plan priorities to shape policies and direct expenditures at multiple levels of government. Wildlife Habitat Policy Research Program Committee meeting, Seattle, WA. April.

Other Publication on Wildlife Resources Management and Policy:

- Enck, J.W., and W. Gordon. 2009. Wilson Hill Wildlife Management Area hunter survey: Opinions about possible management options. HDRU Publ. 09-8. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 27 p.

Human Dimensions of White-tailed Deer and Black Bear Management – New Needs, New Approaches

Human interactions with white-tailed deer (*Odocoileus virginianus*) and black bears (*Ursus americanus*) increased as wildlife ranges and populations expanded, and human populations spread across the landscape. While many human-wildlife interactions are positive, some are negative. The HDRU continues to focus much work on management issues related to positive and negative impacts of white-tailed deer and black bears.

We have examined many facets of white-tailed deer management. Impacts of deer on farmers, other rural landowners, suburban homeowners, and other stakeholders have been subjects of our efforts to understand the multifaceted importance of deer management. Our research has revealed factors affecting social acceptability of various deer management approaches, especially in suburban areas. Preferences and satisfactions of deer hunters, challenges they face in gaining access to private lands, and land access policies of rural landowners also have been topics of study for purposes of understanding factors affecting implementation of effective deer management programs. We also have designed, tested and evaluated processes for public input to deer and black bear management.

Burgeoning white-tailed deer populations in New York and many other states have created many challenges for deer managers and society in general as people have been trying to learn how to coexist with deer. Similarly, black bear populations and their ranges have expanded in New York and some neighboring states. The need for effective population management and site-specific problem alleviation has

led managers and researchers into new territory. The HDRU has had opportunities to collaborate with several public and private cooperators to engage in a more thorough analysis of deer population management at the landscape level, and we have also worked with NYSDEC as they have developed a statewide black bear management plan. This research has been used by other states to inform their approaches to bear management.

Historically, we have worked primarily on the human dimensions of deer and bear management. In recent years we have also worked with biologists and population modeling specialists to integrate the biological and human dimensions of deer and bear management in a way that allows us to examine more meaningfully scales and impacts of deer population management. In addition, we have worked with NYSDEC on a passive adaptive impact approach to management.

Assessing and Mitigating Deer Impacts at a Landscape Scale with an Integrated Research and Extension Program

Funded by: Cornell Univ. Agric. Exper. Sta. and Cornell Cooperative Extension

Investigators: Paul Curtis, Gary Goff, Tom Brown, Dan Decker, Peter Smallidge, and Nancy Connelly (nac4@cornell.edu)

In the final year of this project we shifted focus from the first two years, and examined the impact of deer compared with other potential impacts on forest regeneration in New York State. Research involved a mail survey

of foresters actively working in the State to gather their input on the relative importance of various impacts, including deer on forest regeneration. Results of the survey are currently being analyzed and should be available in an HDRU report in early 2010.

Adaptive Impact Management for White-tailed Deer—Integration of HD and Ecology

Funded by: N.Y.S. Dept. Environ. Conserv.

Collaborators: Jeremy Hurst, Kevin Clark, Dave Riehlman (New York State Dept. of Environmental Conservation)

Investigators: Daniel Decker and Jody Enck (jwe4@cornell.edu)

Like wildlife agencies in many other states, DEC has been exploring antler restrictions (aka, “quality deer management”) as a regulatory tool for protecting most yearling bucks from harvest, with the intention of improving hunters’ satisfaction, and for shifting harvest pressure to antlerless deer in areas where additional harvest is needed. Over the last eight years, HDRU has assisted DEC by conducting qualitative (i.e., nominal groups and group modeling building) and quantitative research (i.e., mail and telephone surveys) to evaluate the human dimensions aspects of antler restrictions. In 2009, HDRU completed a long-term longitudinal evaluation of a voluntary antler restriction cooperative begun in 2001 near King Ferry in central New York. Also in 2009, HDRU began planning for a fourth survey of a panel of hunters in four management units in southeastern New York operating under mandatory antler restrictions since 2005-06. The basis for this research has been the concept of deer-related impacts of importance to hunters (both geographic areas) and landowners (central New York only). Initially, we identified positive and negative impacts from the perspectives of these stakeholders, and determined desirable/tolerable levels of those impacts as well as levels experienced by the stakeholders. Using a longitudinal approach of surveying the same individuals over time, we monitored levels of experienced impacts compared to desirable/tolerable levels and related those comparisons to the stakeholders’ hunting/access behaviors and their attitudes toward antler restrictions. In general, stakeholders have been supportive of antler restrictions despite the intolerable or undesirable levels of impacts they have experienced to date. Specifically, landowners’ and hunters’ beliefs that antler restrictions will eventually result in desired outcomes seems to be a stronger motivation to continue participating than the lack of management success they have experienced is a cause to quit.

Publication:

Enck, J.W., and T.L. Brown. 2009. Longitudinal evaluation of a quality deer management cooperative, King Ferry, NY: Final report. HDRU Publ. 09-9. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 23 pp.

Misuse and Under-reporting Associated with Deer Management Permits

Funded by: N.Y.S. Dept. Environ. Conserv.

Collaborators: Jeremy Hurst, Ed Kautz, Art Kirsch, Jim Farquhar, and Gordon Batcheller, New York State Dept. of Environmental Conservation

Investigators: Richard Stedman, Daniel Decker, and Jody Enck (jwe4@cornell.edu)

The two goals of this study are: (1) assess prevalence of and understand reasons why hunters apparently fill their antlerless deer management permits (DMPs) in management units for which they are not intended, and (2) understand reasons why hunters fail to report harvested deer as required. Understanding why these phenomena occur and estimating the prevalence of DMP misuse would give DEC baseline information for evaluating possible corrective actions. Obtaining such information is difficult, however, because hunters who intentionally disregard the regulations are unlikely to admit it, and hunters who are unaware they have violated regulations cannot self-report such behavior or respond to questions about their motivations. Thus, an initial task was to review literature on methods for investigating prevalence and understanding illegal activities, whether they be intentional or not. Based on HDRU-DEC discussions of the literature review, we plan to incorporate into 2010 statewide mail survey of deer hunters an item-count method for assessing possible DMP misuse by hunters who are aware they have misused a DMP during the most recent hunting season. Our sampling framework will allow us to focus special attention on management units where the opportunity to intentionally misuse a DMP seems highest based on the probabilities of hunters receiving permits in particular management units. Subsequent to the mail survey, a qualitative approach using focus groups and interviews likely will be used to gain additional insights about both non-reporting of harvest and DMP misuse.

Input for Black Bear Management

Funded by: N.Y.S. Dept. Environ. Conserv.

Cooperators: Matt Merchant (NYS Department of Environmental Conservation); Jennifer Fimbrel (Cornell Cooperative Extension)

Investigators: Daniel Decker and Bill Siemer (wfs1@cornell.edu)

Between 2001 and 2008, HDRU staff worked with members of the New York State Department of Environmental Conservation (NYSDEC) to develop and implement an adaptive impact management (AIM) approach to black bear management. This year, HDRU staff completed a comprehensive case study of that first full implementation of impact management. The case study is being integrated into a forthcoming practitioner's guide on using AIM.

Previously, HDRU staff worked with NYSDEC staff to design and implement a new stakeholder engagement process for black bear management. Managers use the stakeholder input group (SIG) process to ensure that the goals (fundamental objectives) of the bear management program are focused on stakeholder-defined impacts. SIG processes are implemented on an as-needed basis determined by DEC managers.

In 2009, HDRU assisted managers with a sixth SIG process implementation, this time in NYSDEC Region 3. This two-meeting process (March 14 and 26) involved 13 participants representing diverse stakes in black bear management. NYSDEC staff led the process and opened with a presentation of black bear natural history, bear management, DEC's framework for bear

management, and how the program focuses on stakeholder-defined impacts. HDRU staff provided participants with a presentation to clarify the impacts concept. Participants were asked to talk with community members to learn about effects of bears on people in their region, then return to the process to list those effects and identify the most important of those to discuss at length. DEC, HDRU, and Cornell Cooperative Extension staff led participants through a small-group process to clarify stakeholder perceptions about the connections between the ends they desire from the bear management program and the means that might be used to achieve those ends.

Publications:

Siemer, W.F. 2009. Toward a practice of impacts management: Insights from an exploratory case study. Ph. D. Dissertation, Cornell Univ., Ithaca, NY.

Siemer, W.F., S. Hart, D.J. Decker, and J. Shanahan. 2009. Factors that influence risk perceptions and predisposition to report a human-black bear interaction. *Human Dimensions of Wildlife* 14(3):185-197.

Otto, P., and W.F. Siemer. 2009. Learning from cognitive feedback mapping and simulation: A group modeling intervention. *Systèmes d'Information et Management* 14(4):9-30.

Program Assessments and Evaluations

Resource management agencies increasingly seek formal assessments before establishing new programs or modifying existing programs. They also periodically evaluate ongoing programs. HDRU research staff bring diverse disciplines to bear on program assessments and utilize a comprehensive evaluation strategy that examines program theoretical foundation, design, implementation, and impacts. We continually refine this approach as needed and identify elements that facilitate or impede program success or failure. Such evaluation allows resource managers and program directors to make better decisions about program modification and continuation.

Recruiting and Retaining Hunters and Trappers

Funded by: N.Y.S. Dept. Environ. Conserv.

Collaborators: John Major, Gordon Batcheller, Kelly Roper, Andy McDuff, Bill Gordon, Mike Matthews, Bob Sanford, Mike Schiavone, Melissa Neely, and Mike Wasilco (NYS Dept. of Environmental Conservation)

Investigators: Daniel Decker, Bill Siemer, Richard Stedman, and Jody Enck (jwe4@cornell.edu)

DEC and HDRU convened the first of a series of workshops to describe the hunter recruitment and retention (HRR) situation in New York. HRR has been a topic of research interest to DEC and HDRU for several decades. These partners were leaders nationally in research on the topic during the 1980s and 90s. This workshop represents the starting point for a new round of inquiry on HRR sponsored by DEC. Products from this and planned workshops in 2010 will provide the foundation for developing a research agenda on HRR.

Presentations:

Enck, J.W., A. Raedeke, D. Fulton, and K. Hunt. 2009. Re-conceptualizing recruitment and retention: Using science to inform policy. Department of Natural Resources Graduate Student Association Symposium, Ithaca, NY. January.

Raedeke, A., D. Humburg, J. Enck, D. Fulton, K. Hunt, M. Vrtiska, and D. Luukkonen. 2009. Waterfowl, wetlands, and people: Integrating human

dimensions into waterfowl management. North American Duck Symposium, Long Point, Ontario, Canada. August.

Managing Natural Resource Recreation for Resilient People, Communities, and Ecosystems

Funded by: Cornell Univ. Agric. Exper. Sta. (HATCH multi-state)

Collaborators: Marianne Krasny and Keith Tidball, Dept. of Natur. Resources

Investigators: Dan Decker, Richard Stedman and Jody Enck (jwe4@cornell.edu)

This new project will examine the beneficial ecological, social, and human outcomes of nature-based recreational activities that integrate civic and environmental values. "Civic ecology recreation" refers to volunteer recreational practices (e.g., efforts to restore wetland, aquatic, and terrestrial habitats; hunters participating in the Deer Management Assistance Program to reduce negative deer impacts; community forestry) that foster environmental and community well-being. We anticipate using nominal group processes, surveys, and environmental measures to investigate the following elements among a diverse set of civic ecology recreation practices: (1) participation patterns, motivations for participation, and the connection between these factors and environmental and civic attitudes, (2) individual-level outcomes related to human well-being, sense of place, and environmental knowledge, (3) community-level outcomes related to social capital and adaptive learning, (4) natural resources indicators, such as wildlife habitat and water quality, and (5) variation in practices across community types.



An Evaluation of Distance Learning in Forestry Education

Collaborator: Peter Smallidge

Investigators: Shorna Broussard Allred (srb237@cornell.edu) and Richard Stedman

Online forestry education has the potential to serve a large population of woodland owners and managers. Cornell University's Department of Natural Resources' Forestry Extension Program developed the ForestConnect website (<http://www.dnr.cornell.edu/ext/forestconnect/>) as a resource for private woodland owners and forestry professionals in search of sustainable forest practices, research, and other forestry information. Monthly forestry education webinars are provided through the ForestConnect program. An evaluation was designed to assess this online resource for woodland owners and forestry professionals. A web-survey was developed to determine: (1) the educational value and impact of the ForestConnect Webinar series, (2) the demographic composition of ForestConnect Webinar registrants (to determine if reaching new audiences), (3) the advantages and disadvantages of distance learning in natural resources education, and (4) the kinds of online resources and digital technology registrants use. The survey was administered to ForestConnect registrants (n=1,060) in the Spring of 2009 with a response rate of 45% (n=476). Those participating in webinars are likely to be working full time, living in a rural or suburban area, have a four-year college degree or higher, be a member of a conservation organization, and male (~28% female). Many participants in webinars indicated that they sought out additional information as a result of viewing the webinar. For one out of ten viewers, this was their first forestry education program.

Presentation:

Smallidge, P., and S. Broussard Allred. 2009. Practical strategies for educational applications of Adobe Connect. N.Y.S. Agricultural Experiment Station Seminar Series, Geneva, NY. November.

Understanding Attitudes and Values of Wildlife Stakeholders

Developing Knowledge to Manage Economic, Health, and Safety Risks of Wildlife for Individuals and Communities in New York

Funded by: Cornell Univ. Agric. Exp. Sta., and N.Y.S. Dept. Environ. Conserv.

Collaborator: Cornell Community and Rural Development Institute (CaRDI)

Investigators: Daniel Decker and Bill Siemer, wfs1@cornell.edu

This activity focuses on developing knowledge and understanding to manage a variety of wildlife-related risks for individuals and communities in New York. This

year HDRU staff conducted a qualitative case study of human-black bear interactions that occurred over a three-week period in the previous summer (2008) near New Paltz, New York. Results of the case study were synthesized in a forthcoming project report and results will inform the quantitative phase of this activity.

HDRU staff collaborated with Cornell and NYSDEC colleagues to produce two outreach publications for the Community and Rural Development Institute (CaRDI), Department of Development Sociology, Cornell University. These research briefs offer a vehicle to communicate about wildlife management issues with local government officials and state policy makers. We also collaborated with university colleagues to produce the introductory article for a special issue of *Human Dimensions of Wildlife* focused on wildlife-related risk perceptions.

Publications:

Decker, D.J., H. Wiczorek Hudenko, B. Siemer, P. Curtis, J. Major, and L. Berchielli. 2009. Living with wildlife on the rural-urban interface. Research & Policy Brief Series Issue 31/September. Human Dimensions Research Unit (HDRU) and Community and Rural Development Institute (CaRDI), Cornell Univ., Ithaca, NY.

Evensen, D., D. Decker, and B. Siemer. 2009. Community awareness of wildlife disease. Research & Policy Brief Series Issue 34/October. Community and Rural Development Institute (CaRDI), Department of Development Sociology, Cornell Univ., Ithaca, NY.

Gore, M.L., R.S. Wilson, L.A. Maguire, W.F. Siemer, H. Wiczorek Hudenko, C.E. Clarke, P.S. Hart, and B.A. Muter. 2009. Risk assessment and perceptions in wildlife management. *Human Dimensions of Wildlife* 14(5):301-313.

Survey of Landowners between the Greater Yellowstone Ecosystem and the Selway-Bitterroot Wilderness

Funded by: The Wildlife Conservation Society

Collaborator: Heidi Kretser, The Wildlife Conservation Society

Investigators: Daniel Decker and Nancy Connelly (nac4@cornell.edu)

In 2009, the HDRU partnered with the Wildlife Conservation Society to conduct a survey of landowners in three communities within the Greater Yellowstone Ecosystem (Western US). The purpose of the survey was to assess the communities' values surrounding wildlife, the relationships between these values and

rural livelihoods, and the subsequent definitions of "acceptable" levels of development and wildlife populations. These communities are biologically important to the High Divide, and also fall along a continuum of development and income and as such, work in these areas will provide a broad foundation for identifying the social context of rural development and ecosystem conservation. The mail survey was implemented in the fall of 2009, with results anticipated in early 2010.

Landowner Attitudes toward Early Successional Habitat in New York

Funded by: N.Y.S. Dept. Environ. Conserv.

Collaborators: Mike Wasilco, Mark Kandel, Tom Bell, Paul Novak, and Matt Swayze (NYSDEC)

Investigators: Shorna Broussard Allred, Richard Stedman, Daniel Decker, Jody Enck, Ashley Dayer (aad86@cornell.edu)

With changing land-use practices and suppression of natural disturbance, early successional forest habitat (ESH) and related species are in decline in New York State. This type of habitat supports Golden-winged Warbler, American Woodcock, and other important game and non-game species. Historically, this habitat was prevalent in the state, but now, its quality and maintenance for wildlife depends upon management. Given that 77% of New York's forest lands are privately owned, the existence of adequate ESH hinges on private forest landowners undertaking management activities.

This study, initiated in 2008, will address the management need for ESH of restoring and retaining ESH, particularly upland forest (shrubland and forestland), rather than wetlands or grasslands. The study will focus on private forest landowners (individual, family, club) of the Southern Tier of New York State.

The project objectives include: (1) determine the context for private forest landowner management decisions; (2) explore the state of knowledge and outreach amongst experts working with private forest landowners on ESH; (3) determine private forest landowner attitudes, awareness, motivating factors, actual decisions, and constraints toward types of management practices on their lands; and (4) develop a forestry engagement typology of private forest landowners to better understand target audience and inform outreach efforts.

In 2009 we completed a literature review related to the context of early successional habitat management and private landowner decision-making and a document review of wildlife conservation plans for early successional habitats and species. We conducted interviews with forest and wildlife professionals with

experience in ESH research, management, and outreach. In 2010 we will conduct interviews with private landowners with experience in ESH management on their land and focus groups with private landowners. In fall 2010 we will conduct a survey of private landowners in the southern tier of New York State.

This project will highlight outreach strategies or incentive programs that will effectively encourage private landowners in New York State to manage for ESH. We expect that these findings will aid the NYSDEC as well as other partners interested in encouraging landowners to increase ESH, including NRCS, USFWS Partners, Cornell Cooperative Extension, and conservation NGOs. The results and conclusions will also further our understanding of the human dimensions of forestry and wildlife.

Understanding the Human Dimensions of Human-wildlife Habituation: Developing Knowledge for Interventions to Foster Positive Interactions Between People and Wildlife

Funded by: National Park Service

Collaborator: Kirsten Leong, National Park Service

Investigators: Daniel Decker and Heather Wieczorek Hudenko (hah29@cornell.edu)

While many human-wildlife interactions benefit both wildlife and humans, interactions that lead to conflict are a pressing issue for wildlife managers. A key factor believed to lead to human-wildlife conflict is habituation. The presence of humans or human activity are the primary causes of habituation in wildlife, yet little is known about the way in which human beliefs, attitudes, and behaviors may influence this phenomenon. A collaboration between the Biological Resources Management Division (BRMD) of the National Park Service (NPS) and Cornell University was established to explore the human dimensions component of human-wildlife habituation in and around protected areas.

The HDRU team (D. Decker and H. Wieczorek Hudenko) and BRMD representative Dr. K. Leong organized a workshop at the George Wright Society Conference. The workshop integrated the perspectives of various NPS divisions and explored the management approaches used to address habituation. The workshop included: background presentations on the NPS context and habituation issues; a panel discussion with NPS staff; and audience participation. We also conducted a literature review to examine the human psychological factors relevant to human-wildlife habituation issues.

From May-November, the HDRU team and NPS steering committee worked with parks across the system

to gather a collection of habituation-related NPS management documents. Dr. T. Schusler (Antioch University) and her graduate student, L. Barish, joined the team and participated with the document collection. HDRU staff developed a coding scheme for a content analysis of the documents. The goal of the content analysis is to examine the scope and approach of habituation-related management activities currently employed in National Parks. In 2010 we plan to integrate the results from the content analysis and exploratory work conducted in 2008 and 2009 to create a system to classify parks based on their experience with human-wildlife habituation. This will contribute to the examination of habituation-related issues across the NPS system.

Workshop:

Wieczorek Hudenko, H., K.M. Leong, and D.J. Decker (Co-organizers). 2009. Integrating biological and human dimensions to manage human-wildlife habituation: The opportunity for interdisciplinary collaboration. Conducted at the George Wright Society Conference, Portland, OR. March.

Presentation:

Wieczorek Hudenko, H. 2009. A review of human-wildlife habituation in research and practice. Presentation at the George Wright Society Conference, Portland, OR. March.

Human Dimensions of Wildlife Disease: Understanding Perceptions of Risk and Identifying Implications for Developing Effective Communication Messages

Funded by: National Park Service and Cornell Univ. Agric. Exper. Sta.

Collaborators: Margaret Wild, Kevin Castle, and Kirsten Leong (National Park Service)

Investigators: Daniel Decker, Richard Stedman, Katherine McComas, Bill Siemer, and Darrick T.N. Evensen (dte6@cornell.edu)

The purpose of this research is to increase understanding of how and why National Park Service (NPS) employees and community members living near national park units perceive risks with respect to wildlife-associated diseases (including vector-borne diseases). In contrast to the majority of research on risk perceptions about wildlife-associated diseases, which has examined the level of people's risk perceptions, this research investigated the factors that contribute to the types and magnitudes of risks individuals perceive. We conceived this research with the goal of helping wildlife managers and communications specialists, particularly in the NPS,

understand better how to respond to risk perceptions that individuals have regarding wildlife-associated diseases. Understanding how and why people perceive risks related to a disease would allow the NPS to identify clear objectives for risk communications and to target certain content matter to diverse groups that may harbor different concerns.

In 2009, we completed eight weeks of fieldwork during which we conducted 106 intensive interviews with key informants at four study sites. Approximately half of the interviews were with NPS employees and the other half were with community members living near national park units. Our four study sites were Sleeping Bear Dunes National Lakeshore (MI), Fire Island National Seashore (NY), Golden Gate National Recreation Area (CA), and Wrangell-St. Elias National Park and Preserve (AK). After completing our fieldwork, we transcribed the interviews and conducted data analysis, which informed a draft report to the NPS on the findings and implications of this research. In 2010, we will conclude this study by finalizing the report to the NPS and conducting a workshop on communicating about wildlife-associated disease risks for NPS managers.

Publications:

Evensen, D.T.N., D.J. Decker, and R.C. Stedman. 2009. Capturing concern: understanding perceptions of wildlife-associated disease risk. HDRU Publ. 09-1. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 21 pp.

Heberlein, T.A., and R.C. Stedman. 2009. Socially amplified risk: Attitude and behavior change in response to CWD in Wisconsin deer. *Human Dimensions of Wildlife* 14(5):326-340.

Presentation:

Evensen, D.T.N. 2009. Natural threats in the Lymelight: Understanding how people perceive risks associated with Lyme disease. Department of Natural Resources Graduate Student Association Symposium, Ithaca, NY. January.

Other Publications on Wildlife Resources Management and Policy:

Decker, D.J., W.F. Siemer, K.M. Leong, S.J. Riley, B.A. Rudolph, and L.H. Carpenter. 2009. Conclusion: What is wildlife management? Pgs. 315-327 in M.J. Manfredo, J.J. Vaske, P.J. Brown, D.J. Decker, and E.A. Duke, eds. *Wildlife and Society: The Science of Human Dimensions*. Island Press: Washington, DC.

Decker, D.J., W.F. Siemer, S.J. Riley, and K.M. Leong. 2009. *A Guide to Developing a Manager's Model*

from Scratch (2nd ed.). Human Dimensions Research Unit, Dept. of Natural Resources, Cornell Univ., Ithaca, NY. 59 p.

Gore, M.E., and B.A. Knuth. 2009. Mass media effect on the operating environment of a wildlife-related risk-communication campaign. *Journal of Wildlife Management* 73(8):1407-1413.

Jonker, S.A., J.F. Organ, R.M. Muth, R.R. Zwick, and W.F. Siemer. 2009. Stakeholder norms toward beaver management in Massachusetts. *Journal of Wildlife Management* 73(7):1158-1165.

Kretser, H.E., P.D. Curtis, and B.A. Knuth. 2009. Landscape, social, and spatial influences on perceptions of human-black bear interactions in the Adirondack Park, NY. *Human Dimensions of Wildlife* 14(6):393-406.

Kretser, H.E., P.D. Curtis, J.D. Francis, R.J. Pendall, and B.A. Knuth. 2009. Factors affecting perceptions of human-wildlife interactions in residential areas of Northern New York and implications for conservation. *Human Dimensions of Wildlife* 14:102-118.

Kretser, H.E., J.A. Hilty, M.J. Glennon, J.F. Burrell, Z.P. Smith, and B.A. Knuth. 2009. Challenges of governance and land management on the exurban/wilderness frontier in the USA. Pgs. 277-304 in K. Andersson, E. Eklund, M. Lehtola, and P. Salmi, eds. *Beyond the Rural-Urban Divide: Cross-continental Perspectives on the Differentiated Countryside and its Regulation*. Research in Rural Sociology and Development. Vol. 14. Emerald Group Publishing Ltd., Bingley, UK.

Lauber, T.B., E.J. Taylor, and D.J. Decker. 2009. Factors influencing membership of federal wildlife biologists in The Wildlife Society. *Journal of Wildlife Management* 73(6):980-988.

Leong, K.M., D.J. Decker, T.B. Lauber, D.B. Raik, and W.F. Siemer. 2009. Overcoming jurisdictional boundaries through stakeholder engagement and collaborative governance: Lessons learned from white-tailed deer management in the U.S. Pgs. 221-247 in K. Andersson, E. Eklund, M. Lehtola, and P. Salmi, eds. *Beyond the Rural-Urban Divide: Cross-continental Perspectives on the Differentiated Countryside and its Regulation*. Research in Rural Sociology and Development. Vol. 14. Emerald Group Publishing Ltd., Bingley, UK.

Fisheries Resources Management and Policy

Understanding Participation, Attitudes, and Values Associated with Fisheries Management

Many stakeholders with diverse interests are affected by fisheries management decisions and activities. Understanding the attitudes and values of these stakeholders toward management is a base for predicting not only the acceptability of various management strategies, but also the likely impacts that will be produced through management programs. This information is useful to fisheries agencies, and also to communities and marine trades groups who wish to improve marketing of the fisheries resources of their localities and regions.

We are currently completing New York's fifth statewide angler survey since these surveys began in 1973. These and other surveys have provided a wealth of information on Lake Ontario fishing, which we are currently synthesizing through a grant from the New York Sea Grant Institute. In addition, we are currently conducting a membership survey for the American Fisheries Society.

Great Lakes Sportfishing Participation and Economic Impacts: Synthesis and Outlook

Funded by: New York Sea Grant Institute

Collaborator: Dave White, New York Sea Grant

Investigators: Tom Brown and Nancy Connelly
(nac4@cornell.edu)

The research component of this project was essentially completed last year (and discussed in detail in the 2008 Annual Report). This year the final report was published along with the submission of several journal articles. The report publication and subsequent outreach efforts by Sea Grant Extension staff resulted in a flurry of local media coverage by newspapers and television. Sea Grant hopes this will lead to further action by community leaders to address forecasted declining trends in fishing participation on Lake Ontario.

Publication:

Brown, T.L., and N.A. Connelly. 2009. Lake Ontario sportfishing: Trends, analysis, and outlook. HDRU Publ. 09-3. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 21pp.

New York Statewide Angler Survey

Funded by: N.Y.S. Dept. Environ. Conserv.

Collaborators: Shaun Keeler and Steve Hurst (DEC, Bureau of Fisheries)

Investigators: Tom Brown, Daniel Decker, Nancy Connelly (nac4@cornell.edu)

The 2007 statewide angler survey was completed with the publication of four reports in early 2009. Report 1 contains statewide estimates of angler effort and expenditures, as well as breakouts by region and major waterbody. It also provides estimates of specific use of New York's fisheries broken out by species fished for, region fished, and water body. Report 2 assesses angler characteristics, preferences, satisfaction, and opinions on management topics. Report 3 provides estimates of angler effort and expenditures in New York State Counties. Report 4 compares two different survey methodologies used in this study and provides an analysis of trends in fishing effort. Work has continued on this project through 2009 with additional analysis and interpretation of the data being provided in the NYSDEC Bureau of Fisheries.

Fisheries effort in New York has changed little since 1996, with angler effort estimated at 18.7 million days in 2007. Lake Ontario continues to be the most frequently fished water (1.3 million days). Black bass remains the favorite species to fish for in New York. Most anglers would like to fish inland lakes for warm-water species; about half are interested in fishing inland trout streams. Approximately half of the anglers were satisfied with the number and size of fish they caught on their fishing trips.

Publications:

Connelly, N.A., and T.L. Brown. 2009. New York angler survey 2007, Report 1: Angler effort and expenditures. NYS Dept. of Environmental Conservation, Bureau of Fisheries. 104pp.

Connelly, N.A., and T.L. Brown. 2009. New York angler survey 2007, Report 2: Angler characteristics, preferences, satisfaction, and opinion on management topics. NYS Dept. of Environmental Conservation, Bureau of Fisheries. 79pp.

Connelly, N.A., and T.L. Brown. 2009. New York angler survey 2007, Report 3: Estimated angler effort and expenditures in New York State counties. NYS Dept. of Environmental Conservation, Bureau of Fisheries. 64pp.

Connelly, N.A., and T.L. Brown. 2009. New York angler survey 2007, Report 4: Survey method comparison and analysis of trends in fishing effort. NYS Dept. of Environmental Conservation, Bureau of Fisheries. 25pp.

Presentation:

Connelly, N.A., S. Keeler, T.L. Brown, and S. Hurst. 2009. Comparing short-term versus annual survey methods for the 2007 New York statewide angler survey. Paper presented at the 139th Annual Meeting of the American Fisheries Society, Nashville, TN, September.

2010 Vermont Angler Survey

Funded by: Vermont Dept. of Fish and Wildlife

Collaborator: Rich Kirm, VT Dept. of Fish and Wildlife

Investigators: Barbara Knuth and Nancy Connelly (nac4@cornell.edu)

HDRU staff began working with the Vermont Dept. of Fish and Wildlife to develop a mail questionnaire to be sent to Vermont anglers in early 2010. The last survey of Vermont anglers was conducted 10 years ago. The new questionnaire will be sent to 5,400 Vermont resident and nonresident fishing license holders, asking them about their fishing experiences in Vermont, their interest in different types of fishing opportunities, and their opinions about fisheries management issues. The Vermont Department of Fish and Wildlife anticipates using the information collected in the survey to help direct future fisheries management programs.

Human Responses to Viral Hemorrhagic Septicemia Virus in the Great Lakes: Implications for Agency Communication

Funded by: U.S. Dept. Agric. Animal and Plant Health Inspection Service (APHIS)

Collaborators: Gary Egrie and Madelaine Fletcher (USDA-APHIS)

Investigators: Barbara Knuth, Nancy Connelly, and Bruce Lauber (tbl3@cornell.edu)

Viral Hemorrhagic Septicemia Virus (VHSV) was first detected in Lake Ontario in 2005, and it has spread rapidly there. VHSV affects fish, causing mortality in some cases, although it does not pose a risk to humans. Considerable concerns exist about the potential impacts of VHSV and its management on recreational fishing, aquaculture, and the bait fish industry. Management responses to VHSV, focusing on regulation and education, have occurred at both the state and federal levels. These efforts have focused on reducing the movement of infected fish and water between water bodies.

This study will provide insights about key stakeholder groups to help inform the design and implementation of regularions and educational efforts intended to slow the spread of VHSV. We characterized agency staff members, anglers, aquaculturists, and commercial fishers in the Great Lakes region. We identified the range of knowledge, awareness, and concern regarding VHSV among key stakeholder groups; identified sources of information used by these groups; characterized their willingness to respond to VHSV and their actual behavioral responses; assessed the degree to which their behavior was consistent with agency recommendations and regulations; and assessed attitudes toward VHSV regulations and the reasons for these attitudes.

During the first half of 2009, we completed the series of 43 telephone interviews of agency staff members and representatives of stakeholder groups that served as the foundation for this study. We found that while many stakeholders were concerned about VHSV, those concerns had decreased over time with few dramatic impacts from the virus. A high level of concern existed about the impacts on aquaculturists and bait dealers of regulations intended to control the spread of VHSV.

Publications:

Lauber, T.B., N.A. Connelly, and B.A. Knuth. 2009. Human responses to Viral Hemorrhagic Septicemia virus in the Great Lakes: Stakeholder characterization. HDRU Publ. 09-2. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 53pp.

Lauber, T.B., N.A. Connelly, and B.A. Knuth. 2009. Human responses to Viral Hemorrhagic Septicemia virus in the Great Lakes. HDRU Publ. 09-10. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 60pp.



Other Publication on Fisheries Resources Management and Policy:

- Lepak, J., H. Shayler, C. Kraft, and B. Knuth. 2009. Mercury contamination in sport fish in the Northeastern United States: Considerations for future data collection. *BioScience* 59:174-181.
- Connelly, N.A., and T.L. Brown. 2009. AFS membership survey results. *Fisheries* 34(8):397-400.

Other Presentations on Fisheries Resources Management and Policy

- Hunt, K., B.A. Knuth, and C. Hutt. 2009. Fish consumption advisories: Issues and associated research needs. American Fisheries Society Annual Meeting, Nashville, TN, September.
- Knuth, B.A., Panelist 2009. Ecosystem-based management. Natural Resources Seminar Series, Cornell University, February.
- Lauber, T.B., E.J. Taylor, and B.A. Knuth. 2009. Factors influencing membership of USFWS and USGS biologists in the American Fisheries Society. *Fisheries* 34(1):9-19.

Forest Lands Management

Over the last decade, HDRU has developed a continuous research thrust in the human dimensions of forest management. In 1999-2001, we evaluated the impacts of several programs designed to assist Northern New York landowners following the severe ice storm of 1998. During 2003-2005, we worked with NYSDEC's Division of Lands and Forests to assess use and visitor satisfaction with hiking experiences in the Adirondacks. Two additional projects funded through the Northeastern States Research Cooperative have provided opportunities to examine community collaboration in forest management and public awareness of and attitudes toward a range of forest management practices that enhance ecosystem management.

Much of our applied research related to forest management has implications for Extension programs. We are continuing our close working relationship with Cornell Cooperative Extension with a new project aimed at better identifying the interests and needs of underserved forest owners in New York. Dr. Rich Stedman and Dr. Shorna Broussard Allred have several projects related to community forestry and the economic dependence of such communities on forest resources. Descriptions of those projects are included in this section.

Forest Stewardship Principles: Building Awareness and Capacity through Webcasting

Funded by: Sustainable Forests Partnership with funding from the U.S. For. Serv.

Collaborators: Laurie Schoonhoven and Jim Finley (Penn State Univ.)

Investigators: Richard Stedman, Peter Smallidge, Ashley Dayer, and Shorna Broussard Allred (srb237@cornell.edu)

Online, emergent technologies have great potential for reaching forest landowners with effective educational programming but it is necessary to conduct evaluations to determine their educational impact. Cornell University's 2009 Sustainable Woodlands Webinar series was developed to assist forest landowners and forestry professionals in gaining an enhanced understanding of sustainable forestry concepts and practices and how they might be applied in forest management planning and decision making. The webinar series was comprised by six one-hour sessions based upon the National Association of State Foresters' handbook's seven forest stewardship principles. We explored how forest landowners implement these principles and assessed awareness and knowledge of material and resulting behavioral impacts of participation in the Sustainable Woodlands webinar series. The objectives of the educational evaluation were to: (1) determine baseline levels of knowledge, attitudes, and behavior in relation to webinar topics, (2) determine post-webinar levels of knowledge, attitudes, and behavior in relation to webinar topics, and (3) determine levels of information gain, information retention, and attitudinal and behavioral impacts following webinar participation. Each webinar session was attended by 51-99 participants, primarily from the eastern United States. Participants were asked to complete a pre-online survey before each webinar, resulting in an 85% response rate (n=428 responses across sessions; 269 unique participants). A post-online survey was administered seven weeks following the last session with a 62% response rate (n=167). HDRU staff are currently compiling an evaluation report that summarizes the attitudinal, knowledge, and behavioral impacts of participation in the webinar

series as well as recommendations for optimizing the educational benefits of on-line informal forestry education programs.

Publications:

Six interactive webinars were presented and are available in a digital archive at the project website (www.sustainablewoodlands.org):

Egan, A. 2009. (June 15). Conservation and maintenance of soil and water resources. Webinar presented to Cornell University's Sustainable Woodlands Webinar Series, archived at <http://www.sustainablewoodlands.org>.

Janowiak, M. 2009. (July 13). Forest carbon cycles and management. Webinar presented to Cornell University's Sustainable Woodlands Webinar Series, archived at <http://www.sustainablewoodlands.org>.

Jenkins, D. 2009. (June 29). Sustaining healthy and productive forests. Webinar presented to Cornell University's Sustainable Woodlands Webinar Series, archived at <http://www.sustainablewoodlands.org>.

McEvoy, T. 2009. (May 18). Intergenerational transfers and long-range forest planning. Webinar presented to Cornell University's Sustainable Woodlands Webinar Series, archived at <http://www.sustainablewoodlands.org>.

McWilliams, R. 2009. (July 29). Landowner perspectives on forest stewardship and sustainability. Webinar presented to Cornell University's Sustainable Woodlands Webinar Series, archived at <http://www.sustainablewoodlands.org>.

Sullivan, K. 2009. (June 1). Enhancing biological diversity on forestlands. Webinar presented to Cornell University's Sustainable Woodlands Webinar Series, archived at <http://www.sustainablewoodlands.org>.

Participatory Development of an Urban Forestry Community Engagement Model

Funded by: The Ittleeson Foundation

Collaborators: Shorna Broussard Allred, Christine Moskell (Dept. of Nat. Resources), Gretchen Ferenz, Veronique Lambert, Caroline Tse (Cornell Cooperative Extension-NYC, Urban Environment Program), Ruth Rae, Kristy King, Minona Heaviland, Jennifer Greenfield, Jackie Lu (NYC Dept. of Parks and Recreation), Morgan Monaco, Ellen Arnstein (Million Trees

NYC/NYC Parks), Faisal Al-Juburi (Million Trees NYC/New York Restoration Project), Susan Gooberman, Nelson Villarrubia (Trees NY), Erika Svendsen, Lindsey Campbell (U.S. Forest Service), Gerard Lordahl (Council on the Environment of NYC), Alice Ewan Walker (Alliance for Community Trees)

Investigator: Shorna Broussard Allred (srb237@cornell.edu)

The purpose of this social science research and education project is to work with residents and community organizations to develop, implement, and evaluate an urban forestry community engagement model that will be used by organizations to reach and empower people to be active stewards of their community's trees and natural resources.

The Cornell project team established relationships with representatives strategically chosen to facilitate the planning and implementation of the model in New York City.

After developing a set of criteria to guide the pilot project site selection process and reviewed by project partners, two neighborhoods in New York City (Jamaica in Queens and Canarsie Park in Brooklyn) were selected as sites for a pilot study of the model. A meeting was held with project partners in New York City to gain their insight into what types of stewardship, education and training organizations exist in those neighborhoods.

Partners also shared information about community attitudes and opinions about the extensive planting of urban trees by the "Million Trees NYC" (MTNYC) efforts by NYC Parks and Recreation and the New York Restoration Project. This information assisted the project team in preliminary planning for the pilot study of the model.

At an MTNYC volunteer planting day in the fall, Cornell project staff conducted a survey of volunteer stewards (n=30) to understand their attitudes toward trees and their motivations for volunteering to be stewards of urban trees.

Project staff attended a national conference for urban forestry practitioners and conducted a focus group to gain insight into the long-term engagement strategies, program evaluation, and challenges for engagement of urban forestry programs from around the country.

Cornell project staff worked with the Ittleeson Foundation on the planning of a presentation of the project to potential funders scheduled for early 2010 in addition to planning the pilot study of the model to also be implemented in 2010.

Addressing Private Forestland Parcelization in the Hudson River Watershed: An Integrated Research and Extension Approach

Funded by: Cornell Univ. Agric. Exper. Sta. and
Cornell Cooperative Extension

Investigators: Richard Stedman, Peter Smallidge,
Andrew Roe, Shorna Broussard Allred
(srb237@cornell.edu)

Forestland parcelization is recognized as one of the most serious challenges facing forests today. Parcelization divides large, single-ownership forest tracts into smaller parcels with diverse ownerships, often with development and a reduction in forest area, impacting the sustainability of forestlands.

This study is part of a multiple-step project to integrate forest owner research and extension activities in the Hudson River Basin from the central Adirondacks to New York City. The heavily forested area provides a model system to study because of the variety of ownership and market patterns. The first stage of this project is being conducted through an examination of parcelization patterns, with an analysis of New York State Office of Real Property data. Parcel data obtained for 2004 and 2008 have been analyzed to determine the extent of recent parcelization in each county of the study area. These results will be used to identify a subset of areas with representative parcelization rates. Focus groups and interviews with stakeholders will be conducted in these areas to identify the drivers and consequences of the parcelization process, as well as current strategies being implemented to mitigate these factors.

The results of this study will allow the researchers to understand both the extent and effects of parcelization in the study area and inform an extension approach to focus on the geographic areas where parcelization poses the greatest concern.

The Power of Peer Learning in Natural Resources Education

Investigators: Gary Goff and Shorna Broussard Allred
(srb237@cornell.edu)

Social networks offer potential outcomes related to communication, participant leadership, community building, information exchange, and more. Some outreach strategies targeting family forest owners utilize peer networks in information diffusion, communication, and building connections. While much is known about traditional forest owner behavior change strategies related to financial and technical assistance through an expert approach, little is known about the role and outcomes of peer interactions in the

landowner community. Additionally, the state of knowledge is scant as to the kinds of outcomes that can be expected from various forms of engagement in landowner social networks. This research focuses on the NY Master Forest Owner (MFO) Volunteer training and education program that builds the forest stewardship knowledge of volunteers and empowers them to establish formal and informal networks in their communities. Through a survey of forest landowners in the Master Forest Owner network, we investigated the role of this program in building landowner communication and information networks. We assessed the characteristics of this landowner network, the types of information exchanged, and behavioral outcomes, and the relationship between types of exchange and behavioral outcomes.

Mail surveys were completed in 2008 of MFO volunteers and forest owners who had been visited by volunteers within the past 10 years. The purpose of the surveys was to document satisfaction level and stewardship activities of volunteers and forest owners, consistent with the goals of the program, and to gain insight on how the program could be improved. Of the forest owner respondents, approximately two-thirds strongly agreed the MFO was worthy of recommendation to other forest owners, the MFO was credible, and that the interactions were enjoyable. Some decisions that were positively influenced by the visit with the MFO volunteer are: 55% met or plan to meet with a professional forester, 65% set or plan to set goals and priorities for forest management, 55% sought or plan to seek out more information on forestry and 58% thinned or plan to thin a forest stand. Based on this research, peer learning strategies are being incorporated into the yearly training of MFO Volunteers to help them make the most of on-site visits with other woodland owners.

Publications:

Broussard Allred, S., and G. Goff. 2009. The power of peer learning programs in natural resources. Cornell University, Community and Rural Development Institute (CaRDI) Rural New York Minute, Issue 32 (August).

Broussard Allred, S., G. Goff, L. Wetzel, and M. Luo. 2009. An evaluation of the NY Master Forest Owner Volunteer Program: Survey of woodland owners visited by a NY Master Forest Owner volunteer. HDRU Publ. 09-7. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 39pp.

Broussard Allred, S., G. Goff, L. Wetzel, and M. Luo. 2009. An evaluation of the NY Master Forest Owner Volunteer Program: Master Forest Owner activities and impact. HDRU Publ. 09-6. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 51pp.

Presentations:

- Broussard Allred, S., E. Sagor, and M. McDonough. 2009. Policy instruments for private forests: The impact of peer programs in forestry. Society of American Foresters National Convention, Orlando, FL. October.
- Broussard Allred, S. 2009. The power of peer learning: Best practices for on-site visits with forest owners. Master Forest Owners Training, Van Etten, NY. September.
- Broussard Allred, S. 2009. What makes forest owners tick? Lessons from recent social science research in New York. Eastern Master Forest Owner and Friends Refresher Workshop, Acra, NY. June.
- Broussard Allred, S., and G. Goff. 2009. Peer communication among forest landowners in New York: Exploring information exchange and behavioral outcomes. Post Presentation at Cary Conference XII: Effective Communication of Science in Environmental Controversies, Milbrook, NY. May.
- Broussard Allred, S., and G. Goff. 2009. Woodland owner networks: Evaluating the impacts of landowner peer programs in forestry. University of Connecticut Natural Resources and Environment Department Seminar Series, Storrs, CT. April.

**Woody Biofuel Production in New York:
Building Capacity through
Applied Social Science Research**

Funded by: Cornell Univ. Agric. Exp. Sta.

Investigators: Peter Smallidge, Nancy Connelly, and Shorna Broussard Allred (srb237@cornell.edu)

Although woodlands dominate more than 60% of the NY landscape, the contribution of those woodlands to renewable energy as woody biofuel is potentially limited by access. Specific constraints on access include owner attitudes about biomass harvesting and the willingness and availability of loggers and foresters to redirect their time and equipment from potentially more profitable harvests. Much of the activity surrounding woody biofuels has developed from the perspective of the industrial-scale end users. Less attention has been devoted to the supply side producer or small-scale end users. The lack of attention to this group may obscure their needs as a critical part of the supply system. Knowing these constraints will support the development of educational programs that help guide the decisions of owners and producers in sustainable and renewable energy enterprises. The overarching objective of this research project, which began in the Fall of 2009, is to identify and understand barriers within the woody biofuel supply system. Sub-

objectives are to: (1) assess forest owner awareness and knowledge of woody biofuels as a crop and their potential willingness to participate in production, (2) determine what factors will influence woodland owner willingness to supply woody biomass and determine owner educational needs, and (3) determine what, if any, barriers will limit the ability or willingness of foresters, loggers, and small-scale firewood processors to increase the production and mobilization of woody biofuels.

Private Forest Owners of Pennsylvania

Funded by: Pennsylvania Bureau of Forestry

Collaborators: A.E. Luloff and James Finley (The Penn. State Univ.)

Investigator: Rich Stedman
(rcs6@cornell.edu)

The decisions of private forest landowners are of paramount importance to the sustainable management of forest resources. Many private forest landowners are difficult to identify, especially in the context of landscapes undergoing rapid change. This five-year project sought to identify the full spectrum of forest landowners in Pennsylvania (ranging down to one acre), conduct large-scale (n=6,600) mail surveys of these landowners, and calibrate their beliefs about the sustainability of their forest management practices through site visits by State Bureau of Forestry Service Foresters. Moving beyond a snapshot view, the five-year longitudinal nature of the project allows us to track changes in ownership over time (i.e., address parcelization) and management practices. 2009 represented the 4th year of the project: we now have assembled four rounds of data collection (2006 and 2008 statewide survey of 6,000 landowners and 2007 and 2009 property visits of approximately 100 landowners). Two manuscripts are in preparation from this data. In 2010, we will collect the final round of mail survey-based data.

**Assessing the Capacity to Expand
Maple Syrup Production in New York State**

Funded by: Northeast States Research Cooperative

Investigators: Mike Farrell, Brian Chabot, and Richard Stedman (rcs6@cornell.edu)

Maple syrup production may represent a viable and sustainable economic development strategy. Potential exists for expansion of the industry in New York State, which taps a very small proportion of its tappable maple stock compared to neighboring states and provinces. The potential for expansion is especially strong given recent trends in Canadian/US Dollar exchange rates. This project explores current producer

willingness to expand production (and barriers to doing so). In 2009, we implemented a mail survey with a stratified random sample of NYS landowners to gauge their interest in and perceived barriers to entry. We

also received funding from the NSRC to extend our New York State analysis to Vermont, New Hampshire, and Maine, providing us a rich opportunity to engage this question in a comparative way.

Natural Resources Communication and Education

Communication and education (C&E) programs and courses are fundamental to natural resource management. State and federal agencies, universities, state cooperative extension services, and nongovernment organizations conduct a wide variety of programs and courses. C&E programs perform an important role in bringing informed public involvement to decision making and influencing public perception of and behavior toward natural resources and their management. The traditional focus of C&E efforts has been to raise informational levels of the public. The HDRU fulfills this role both through its teaching and through a variety of Extension and outreach programs. It is also frequently involved in conducting C&E program evaluations.

Environmental Education and the Development of an Urban Land Ethic

Funded by: Cornell Univ. Agric. Exp. Sta.

Collaborators: Brigitte Griswold (The Nature Conservancy); Nia Rhodes Jackson (Friends of the High School for Environmental Studies, NYC)

Investigators: Keith Tidball and Bruce Lauber (tb13@cornell.edu)

Urban ecosystems have often been approached from deficit-based thinking, with a focus on what is lacking rather than what is there. Through this study, we are exploring how urban residents come to understand, appreciate, and contribute to the integrity, stability, and beauty of *urban* ecosystems and how they see the relationship between the natural and the human in these systems. Given the influence that urban areas have on the environment of our state and our world, this work is of critical importance.

During the last year, we have explored the question of what characteristics contribute to the health, or resilience, of urban socio-ecological systems from the perspective of urban environmental educators, which we view as a set of people with particular expertise in the prerequisites for a healthy urban environment. We have conducted thirteen in-depth telephone interviews with urban environmental educators and educators with the Leopold Education Project. We followed these interviews by observing the activities of an environmental education program in

New York City, which engages youth in monitoring and restoration of a local river.

We have also been developing a collaboration with educators with The Nature Conservancy and the High School for Environmental Studies in New York City, which will allow us to assess how environmental education programs impact urban youth. This collaboration is laying the groundwork for an internet-based survey of alumni of environmental education programs, which will take place during 2010.

Publication:

Tidball, K.G., Krasny, M.E., and Faurest, K.. 2009. The case for a community greening research agenda. *Community Greening Review*. Vol. 13. American Community Gardening Association.

Presentations:

Tidball, K.G., and M.E. Krasny. 2009. Towards an ecology of environmental education: Feedback loops, EE, and resilience. World Environmental Education Conference. Montreal, Quebec. May.

Tidball, K.G., and M.E. Krasny. 2009. Ecology of environmental education: Feedbacks, education, and resilience. Ecological Society of America. Albuquerque, NM. August.

Other Presentations on Natural Resources Education and Communication:

Knuth, B.A. 2009. Strategic Planning Leadership Workshop. American Fisheries Annual Meeting. Nashville, TN, August.

Knuth, B.A. 2009. Experiential-based learning: Student immersion in policy-making processes for fisheries resources. American Fisheries Society Annual Meeting. Nashville, TN, September.

Knuth, B.A., Panelist. 2009. Relationship of Science and Policy. Natural Resources Graduate Student Symposium, Cornell University. Ithaca, NY, January.

Other Publication on Natural Resources Communication and Education:

Lauber, T.B., D.J. Decker, and B.A. Knuth. 2008. Social networks and community-based natural resource management. *Environmental Management* 42:677-687.



Water Resources Management and Policy

Community Capacity for Ecosystem-based Management in New York's Great Lakes and Marine Coastal Areas

Funded by: Cornell Univ. Agric. Exper. Sta.

Investigators: Barbara Knuth, bak3@cornell.edu, Ingrid Biedron, Carrie Simon

New York State recently embarked on an institutional commitment to govern and manage its Great Lakes and marine coastal ecosystems using the principles of ecosystem-based management, codifying this commitment in the 2006 New York Ocean and Great Lakes Ecosystem Conservation Act. This project contributes to the scientific information base called for in the Act, and to the research priorities identified by the Science Advisory Group, particularly to determine how to design governance systems at the scale(s) appropriate to the complexity of the ecosystem as well as to the diversity and complexities of the social systems involved. Begun in October 2009, this project will address the concept of human and institutional capacity to implement the Act and achieve its associated goals, particularly related to capacity-building. Project personnel are conducting a literature and document review, and will begin conducting semi-structured interviews with members (or designates) of the NY Ocean and Great Lakes Ecosystem Conservation Council and agency and other stakeholder contacts. We anticipate identifying several NY Great Lakes and marine coastal communities for study in later stages of this project. The findings from this study should help advance governance and institutional aspects of ecosystem-based management in the NY Great Lakes and marine regions.

Using Social Indicators to Evaluate Non-point Source Water Pollution Projects

Funded by: USDA-CSREES National Integrated Water Quality Program

Collaborators: Linda Stalker Prokopy (Purdue University), Ken Genskow (Univ. of Wisconsin-Madison), Joe Bonnell (The Ohio State University), Asligul Gocmen (Univ. of Wisconsin-Madison), Rebecca Power (Univ. of Wisconsin-Extension)

Investigator:
Shorna Broussard Allred
(srb237@cornell.edu)

This integrated research, education and extension project examines factors that lead to measurable behavior change. Specifically, we look at the most effective ways to bring about water quality benefits through appropriate behavior change. Throughout the study project team members work with local partners and stakeholders to build capacity and knowledge of social factors that lead to behavior change. In the first year of the study, we used a recently developed social indicator framework to determine what factors correlate with measurable behavior change of farmers and land managers in three Midwestern watersheds. Based on this knowledge, in year 2, we worked with local watershed planning and implementation groups to develop interventions that promote behavior change in environmentally critical areas. These tools were selected based upon our understanding of what motivates land managers to adopt practices. Using a paired subwatershed approach in each of the three subwatersheds, we applied the refined interventions in one subwatershed with the other subwatershed serving as the control. In year 3, we analyzed the effectiveness of the tools and build this knowledge into extension publications directed at stakeholders in the watersheds, an Extension Community of Practice, an educational curriculum for undergraduate and graduate courses on watershed management, trainings for practitioners at national water conferences, and peer-reviewed journal articles. Results of this project will enhance our understanding of the complex social dynamics that lead to adoption and rejection of conservation practices by farmers and farm managers. It will also provide new knowledge of how education and incentive programs can be made more effective by an in-depth understanding of the target audience and the context in which farm management decisions are made.

Publications:

Flores, K., L. Prokopy, and S. Broussard Allred. (In Press). It's who you know: Social capital, social networks, and watershed group processes. *Society and Natural Resources*.

Prokopy, L.S., K. Genskow, J. Asher, A. Baumgart-Getz, J.E. Bonnell, S.R. Broussard, C. Curtis, K. Floress, K. McDermaid, R. Power, and D. Wood. 2009. Designing a regional system of social indicators to evaluate nonpoint source water projects. *Journal of Extension* 47(2) . Article Number 2FEA1. Available at: <http://www.joe.org/joe/2009april/a1.php>.

Riparian Area Management

The behavior of riparian landowners is key to protecting water quality. Many watershed systems are increasingly dominated by non-agricultural interests, yet policy initiatives (both incentive programs and regulatory regimes) are still designed primarily around agriculture. This leaves significant gaps in understanding and effectiveness. Our two projects are proceeding under this domain.

Assessing Riparian Landowner Williness to Implement Best Management Practices (BMPs)

Funded by: USDA Conservation Enhancement Assessment Program

Collaborators: James Shortle, Robert Brooks, Robert Carline (The Pennsylvania State University)

Investigators: Richard Stedman and Ann Armstrong (ala23@cornell.edu)

The first study examines agricultural and nonagricultural riparian landowners' willingness to implement and maintain a suite of BMPs tied to the provision of local and extra-local water quality benefits. This study examines two primary questions: (1) the maintenance of BMPs (most work has focused on adoption as a dichotomous process and fails to address the different sets of factors that may be related to the adequacy of BMP maintenance; and (2) the implications of agricultural versus non-agricultural land use. In particular, policies, incentives and disincentives have been tied to agricultural land uses. As such, they may not well represent many watersheds undergoing urbanization. Factors tied to attitudinal dispositions of landowners are addressed, as are landscape-level characteristics (e.g., parcel size, land use and land tenure), social norms, and regulatory structure. In 2009, Ann Armstrong, the graduate student supported by this project, completed an alysis of qualitative interviews with policy makers, agricultural and non-agricultural landowners in the Spring Creek (PA) watershed, and developed and implemented a mail survey of riparian owners, and began to synthesize these data in the context of landscape changes. Two

manuscripts are in preparation under this heading, with one additional under review.

Evaluating the Effectiveness of the Hudson River Estuary "Trees for Tribs" Program

Funded by: Doris Duke Foundation

Collaborators: Karen Strong, Scott Cuppet, DEC HREP

Investigators: Richard Stedman and Ann Armstrong (ala23@cornell.edu)

A second project, also involving Ann Armstrong, was conducted with the assistance of the Doris Duke Foundation and the DEC Hudson River Estuary Program (HREP). This project assessed the effectiveness of the HREP's "Trees for Tribs" program: an initiative that distributes trees to riparian landowners to meet a variety of ecological and social objectives. Qualitative interviews were conducted with program participants and administrators in an effort to assess the optimum mix of outcomes and the barriers to achieving them. We submitted a final report to the HREP and an additional manuscript is under preparation.

Publications:

Stedman, R.C., B. Lee, K. Brasier, and J. Weigle. 2009. Cleaning up water? Or building rural community? Community watershed organizations in Pennsylvania. *Rural Sociology* 74(2):178-200.

Armstrong, A., and R.C. Stedman. 2009. An assessment of the Trees for Tribs initiative and buffers in the Hudson River Estuary Program. Final report to the Hudson River Estuary Program. 23 p.

Brasier, K., B. Lee, R.C. Stedman, and J. Weigle. Champions speak out: Pennsylvania's community watershed organizations. Forthcoming in L.W. Morton & S. Brown (eds.) *The Citizen Effect: Multiple Pathways to Solving Watershed Problems*.

Lenihan, M., K. Brasier, and R. Stedman. 2009. Perceptions of agricultural's multifunctional role

among rural Pennsylvanians. Pgs. 127-150 in K. Andersson, E. Eklund, M. Lehtola, and P. Salmi, eds. *Beyond the Rural-Urban Divide: Cross-Continental Perspectives on the Differentiated Countryside and its Regulation*. Research in Rural Sociology and Development, Vol. 14. Emerald Group Publishing Ltd., Bingley, UK.

Armstrong, A.L., E.E. James, R.C. Stedman, and P.J. Kleinman. Influence of local resentment toward downstream influences on Conservation Reserve Enhancement Program adoption in the New York City Watershed. Manuscript under review at *Journal of Soil and Water Conservation*.

Presentations:

Buda, T., P.J. Kleinman, and R.C. Stedman. 2009. Physical and social barriers to watershed management: Lessons from the mid-Atlantic and Northeast US. Paper presented at the 64th Annual Meeting of Soil and Water Conservation Society, Kansas City, MO.

Armstrong, A., R.C. Stedman, J. Shortle, and R. Brooks. 2009. Linking landowners to wetlands: Attitudes and perceptions of riparian buffers. Poster presented at the Annual Meeting of the Society for Wetland Scientists, Madison, WI. June.

Armstrong, A., R.C. Stedman, and J. Shortle. 2009. Landowner adoption of riparian best management practices along the urban-rural gradient. Paper presented at the 2009 Annual Meetings of the Rural Sociological Society, Madison, WI. July.

Linking Watershed and Community Development Groups to Build Socio-ecological Resilience in the Hudson River Watershed

Funded by: Federal Formula Funds (Hatch)

Investigators: Keith Tidball, Richard Stedman, Micah Ingalls (mli6@cornell.edu)

This project addresses socio-ecological resilience in the Hudson River Watershed (HRW) by studying partnerships between citizen groups that address community/economic vitality and those emphasizing ecological quality. Watersheds bring together the well-being of ecosystems and the people living in them; management works when diverse interests come together. In complex ecosystems work, relatively little is known about citizen group capacity to partner across issues and places, nor the outcomes of such partnerships in ecosystem management. This project examines citizen group partnerships across sites and issues, and identifies outcomes of these partnerships and key barriers to building and using them. Work on this project in 2009 emphasized site selection and identification of key contacts, but we also developed the conceptual framework underpinning the study (especially in the context of declining urban communities), submitting an invited chapter articulating this framework to Tidball and Krasny's *Greening in the Red Zone* edited volume.



Natural Resources Policy, Planning, and Evaluation

Natural resources planning involves public input, particularly at the beginning of the planning cycle and at the end, through assessment or evaluation, as input to plan revision. The HDRU has undertaken research and outreach in a number of situations involving planning. In 2005, we had the opportunity to work with the St. Regis Mohawk Tribe in Northern New York in their efforts to develop a natural resources plan for tribal lands. In 2006, we worked with the Wildlife Conservation Society as it assessed its efforts at building capacity for conservation in the Adirondacks. In 2007 we began work on a new round of strategic planning by the American Fisheries Society.

Empowering Land Managers to Increase Resilience of New York's Natural Resources in the Face of Regional Climate Change

Funded by: Cornell Cooperative Extension (Smith Lever)

Collaborators: David Wolfe, Jonathan Comstock (Dept. of Horticulture), Allison Chatrchyan (Cornell Cooperative Extension--Dutchess Co.)

Investigators: Rebecca Schneider, Kristi Sullivan, Peter Smallidge, Gary Goff, Paul Curtis, and Shorna Broussard Allred (srb237@cornell.edu)

New Yorkers are already observing effects of global climate change in their surroundings, including documented increases in precipitation, warmer springs and earlier river thaws, and changes in plant phenology. Land managers, from private landowners to professional agency staff, need sound guidance on how to respond to predicted changes so that natural resources will be resilient, and New York's communities will be more sustainable. Our overall goal is to work collaboratively with New York land managers, including CCE educators, to develop an extension program focused on natural resource management that addresses regional climate changes anticipated over the next several decades. The specific project objectives are: (1) to conduct a survey of land managers to engage them and assess their needs, (2) to conduct issue-based workshops that team scientists and stakeholders to develop recommendations, and (3) to develop, pilot, and evaluate associated education programs. A survey of natural resource professionals was conducted in fall 2009 and is planned for municipal officials in the winter of 2010. The purpose of the survey is to assess information needs, attitudes toward current climate change related issues, adaptations, opportunities, and challenges for the purposes of informing an outreach program.

Presentation:

Broussard Allred, S. 2009. Climate change impacts on natural resources: Understanding social dimensions of climate change. Cornell University Cooperative Extension In-Service Training. November.

Environmental Policy Capacity

Funded by: Canadian Forest Service

Collaborators: Adam Wellstead (Canadian Forest Service); Michael Howlett (Simon Fraser University, British Columbia)

Investigator: Richard Stedman

The factors driving the ability of governments to make effective policy and respond proactively to broad challenges, such as global climate change, is poorly understood. Our project involves national quantitative assessments of environmental policy capacity within multiple levels (Provincial and Federal) of the Canadian government. In 2009, we conducted two online surveys of government employees—provincial and federal—examining key attitudes, perceived barriers to effectiveness, and professional networks. We submitted multiple manuscripts out of this effort. Our work in 2010 targets policy capacity research specifically around policymaker ability to respond to challenges of climate change: we are in the process of developing a new online survey of policy makers (provincial and federal) involved in climate change work.

Publications:

Wellstead, A.M., R.C. Stedman, and A.E. Lindquist. 2009. The nature of regional policy work in Canada's Federal Government. *Canadian Political Science Review* 3(1):1-23.

Wellstead, A., R. Stedman, and M. Howlett. 2009. Multi-level policy analytical capacity in Canada: A structural equation model (SEM) study of federal, provincial and territorial policy analysts and analysis. Manuscript under review at *Canadian Public Policy*.

**The Well-Being of
Resource-Dependent Communities**

The well-being of communities that depend on the extraction and processing of forest-based resources is crucially important to definitions of the sustainability and resilience of the resource-dependent industries. Defining this relationship is somewhat difficult, based on the myriad indicators of well-being, and multiple definitions of dependence. The conceptual basis of this overall trajectory has broadened in the past year: from "forest dependence" to "resource dependence" (reflecting emerging projects in the area of mineral and agricultural-based dependence). Further, wholesale changes in the structure and governance of the forest industry may pose significant

challenges to community sustainability.

Under this heading, Richard Stedman is involved in several on-going studies in this area (funding and collaborators are listed separately for each).

**Resource Dependence and the Well-Being of
Rural Canadian Communities**

Funded by: Canadian Forest Service, New Rural Economy Project at Concordia University

Collaborators: William White, Michael Patriquin (Canadian Forest Service, Northern Forestry Centre), John Parkins (Univ. of Alberta)

Investigator: Richard Stedman (rsc6@cornell.edu)

This project involves quantitative analysis of cross-sectional and longitudinal secondary data obtained from Statistics Canada that addresses the measurement of forest dependence, well-being, the effect of forest dependence and well-being, and how this relationship varies across place, time, and indicators used to represent well being. This project moved forward in 2009 on several fronts. We have completed the merging of the 2006 Census of Canada with resource dependency data assembled by Bill Reimer's New Rural Economy group at Concordia University (Montreal). Newer thinking in this project has emphasized the conceptual and empirical relationship between economic diversity, dependence, and indicators of community well being. We also have expanded to engage the relationship between the structure of agriculture and well being.

Publication:

Patriquin, M.N., J.R. Parkins, and R.C. Stedman. 2009. Bringing home the bacon: Industry, employment, and income in the Boreal region of Canada. *Forestry Chronicle* 85(1):65-74.

Presentation:

Stedman, R.C.. 2009. Second homes, rural diversification and sense of place. Invited paper at Texas A&M Dept. Seminar Series, College Station, TX. September (invited).

Resilient Communities and Climate Change in the Circum-Boreal Region

Funded by: Norwegian Research Council

Collaborators: Vera Hausner Natural Resources Management, Department of Biology, University of Tromsø

Investigator: Richard Stedman (rsc6@cornell.edu)

The second project under this domain involves funding from the Norwegian Research Council examining the relationship between global ecological change and the well being of resource dependent communities in the circum-boreal-polar region. Along with colleagues from Canada, Russia, Sweden, and Norway, we have created an integrative comparative framework for examining similarities and systematic differences across communities in these four nations in their ability to respond to global

climate change stressors. We are holding a workshop in Tromsø, Norway, in May 2010 to bring the research team together face-to-face for the first time, and will develop a paper for publication out of this meeting.

Evaluating the Outcome of Working Forest Easements

Funded by: Northeast States Research Cooperative

Collaborators: Steven Wolf, Rachel Neugarten

Investigator: Richard Stedman (rsc6@cornell.edu)

This project develops and tests a set of indicators of the impact of large-scale timber divestiture in the Adirondacks on the well being of local rural communities. Our specific focus is on the sale of the Finch Pruyn holdings to The Natural Conservancy (and subsequently, New York State). Through extensive interview data collected in 2009, coupled with analyses of secondary data sources, we explore the capacity for monitoring socio-economic outcomes of the land sale, especially that which focuses on "working forest easements."

Presentations:

Neugarten, R.A., S.A. Wolf, and R.C. Stedman. 2009. Cutting the trees to save the forest: The Finch Pruyn working forest. Adirondack Research Consortium-16th Annual Conference on the Adirondacks "Community Sustainability." Lake Placid, NY. May.

Neugarten, R.A., S.A. Wolf, and R.C. Stedman. 2009. Cutting the trees to save the forest: The Finch Pruyn working forest. Paper presented at the Ecological Society of America 94th Annual Meeting;; "Ecological Knowledge and a Global Sustainable Society, Albuquerque, NM. August.

Regional Impacts of Energy Development on the Social, Economic, and Ecological Well-being of Rural Communities in the Northeast

Funded by: Cornell Center for Sustainable Future and Cornell Univ. Agric. Exper. Sta. (Hatch)

Collaborators: Susan Christopherson, Susan Riha, Rod Howe (Cornell University), Stephan Goetz (Northeast Center for Rural Development), Warren Allmon and Robert Ross (Cornell University and the Palentological Research Institute), Kathy Brasier, Tim Kelsey, Fern Willits, Ted Alter (The Pennsylvania State University)

Investigators: Jeffrey Jacquet and Richard Stedman (rsc6@cornell.edu)

A rapidly emerging project focuses on Regional Impacts of Energy Development on the social, economic and ecological well-being of rural communities in the Northeast. As gas exploration has unfolded in real time during 2009 (with drilling itself simultaneously expanding rapidly in Pennsylvania). This project is explicitly comparative across states, given this opportunity for a natural experiment, and as such has involved the formation of numerous partnerships, including involvement on Penn State-funded projects. This project received funding from CCSF in 2009 to develop an integrative framework for examining the cumulative impacts of gas exploration and other forms of green energy development (wind biofuels and carbon sequestration), and to collect primary data on community well being. We have completed roughly 70 interviews with landowners throughout the southern tier of NY and the northern tier of Pennsylvania, and a mail survey of approximately 6,000 landowners is currently in the field. These forms of data collection focus on resident attitudes toward development, perceptions of risk and benefits, and other dimensions germane to community well being. Multiple papers are in preparation based on these data sources and our conceptual work. We have received numerous requests for information and outreach (see gasleasing.ccc.cornell.edu for a summary), and conducted a "Statewide Shale Summit" in Owego, NY (November) that was attended by 200-300 citizens. An additional emerging thrust of this research program involves the analysis of the formation of collective action (citizens' and landowners' groups) around the issue.

Publication:

Jacquet, J., and R.C. Stedman. 2009. Emerging trends in the Marcellus Shale. *Research & Policy Brief Series*, Community & Rural Development Institute No. 30. CaRDI, Cornell Univ., Ithaca, NY.

Presentation:

Brasier, K.J., R.C. Stedman, D.K. McLaughlin, M. Filteau, and J. Jacquet. 2009. Tracking community change: Setting the state in the Marcellus Shale natural gas. Paper presented at the 2009 Annual Meetings of the Rural Sociological Society, Madison, WI. July.

Rural areas continue the transition from traditional resource dependence to landscapes of consumption, where resource dependence is based on recreational use rather than the extraction of mineral resources and forest products. Second homes are becoming increasingly prevalent in natural resource-rich areas. The retirement of the baby boom generation is likely to result in future second home growth. However, the potential

economic, ecological, and social impacts of second home development remain poorly understood, leaving many rural communities ill-equipped to deal with these changes. Three separate research projects fall into this trajectory.

**Impacts of Second Home Development
in the Northern Forest**

Funded by: Northeast States Research Cooperative and Texas A&M University

Collaborators: Brian Eiesenhauer (Plymouth State Univ.-NH); Jim Finley and A.E. Luloff (The Penn State University), Todd Gabe (Univ. of Maine), Walt Kuentzel (Univ. of Vermont)

Investigator: Richard Stedman
(rsc6@cornell.edu)

This NSRC-funded project is examining impacts of second home development in New York, Vermont, Maine, and New Hampshire. This project, initiated in 2007, uses qualitative (interview) and quantitative (survey-based research) methods to examine the well-being of forest-based communities in the regions that are undergoing transition to tourism and/or second home-based economies. In 2009, the primary task was assembling the research team (described above) and agreeing on the construction of a qualitative interview instrument, currently in the field in several of the study sites, and the collection and preliminary analysis of secondary quantitative indicator data.

**Developing a Framework for Assessing the Impacts
of Natural Resource-based Tourism**

Funded by: Texas A&M University

Collaborators: David Matarrita-Cascante and Kyle Woosnam (Texas A&M University)

Investigator: Richard Stedman
(rsc6@cornell.edu)

A project funded through Texas A&M University is examining the sustainability of nature-based tourism. In 2009, we developed a white paper establishing a general framework for evaluating sustainability indicators, including assessments of how the relevance of these indicators may vary according to particular contextual variables, and received support for a field testing the framework in Costa Rica. In 2010, we will seek additional funding to apply the framework in other international contexts.

**Working Forests and Natural Resource-based
Tourism in the Caringorms (UK) and
Adirondacks**

Funded by: Center for Rural Economy, Newcastle University

Collaborators: Jo Vergunst (Univ. of Aberdeen, UK)

Investigators: Charles Geisler and Richard Stedman (rcs6@cornell.edu)

Richard Stedman is participating in a book project examining comparative natural resource policy and landscape change between the United States and the United Kingdom. Rich is contributing (with Jo Vergunst of the University of Aberdeen) a chapter that compares the Adirondack and Caringorm parks in NY and Scotland: the meanings of landscape that each has drawn on and in turn seeks to recreate; and how each one has addressed the well-being of the local rural communities that exist therein.

Publication:

Mataritta, D., R.C. Stedman, and A.E. Luloff. 2009. Permanent and seasonal residents' community attachment in natural amenity-rich areas: Exploring the contribution of community and place-based factors. Manuscript forthcoming at *Environment and Behavior*.

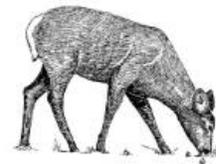
**Rural-Urban Linkages
and Communities in Transition**

Funded by: USDA, National Research Institute

Collaborators: Jill Findeis, Jason Kaye, Kathy Brasier (Penn State Univ.)

Investigators: Richard Stedman and Micah Ingalls (mli6@cornell.edu)

This project, in coordination with colleagues at The Pennsylvania State University, explores the Susquehanna River Watershed as a series of micro, meso, and macro "transition zones" that are associated with landscape change across time and space related to a number of continua: rural to urban, forest to farm, farm to forest, etc. This project has selected a number of sites within the watershed as emblematic of these kinds of changes and their drivers. In 2009, we conducted qualitative interviews in a number of these sites and began development of a basin-wide survey to assess human perceptions of landscape change (and behavioral responses). We are in the process of developing an NSF proposal to be submitted in 2010.



Sense of Place

Sense of place, or the meanings and attachments that individuals and/or groups hold for a spatial setting, has become an important construct in resource management. Sense of place is based on experience with a setting that is based on a certain level of ecological quality of the setting, as well as direct provision of experiential opportunities by resource managers. The goal of this research is to understand the ecological and community-based factors associated with the local meanings of landscape, understand how these meanings are tied to local attachment, how this attachment potentially predicts human behavior, and how these relationships are similar or different across a wide range of socio-ecological settings. A mix of qualitative and quantitative methods have been utilized for discrete studies under this subject.

**Photo-based Methods for
Exploring Sense of Place**

Funded by: Sustainable Forest Management Network Centres of Excellence (Canada) and United States Forest Service, Pacific Northwest Station

Collaborators: Ben Amsden (Plymouth State Univ.); Linda Kruger (US Forest Service); Tom Beckley (Univ. of New Brunswick)

Investigator: Richard Stedman (rcs6@cornell.edu)

High amenity communities, such as those that are gateways to national parks and protected areas, face a unique set of challenges and opportunities around maintaining local sense of place, or the preferred sets of

local meanings that underpin attachment and place protective behavior. We are utilizing a qualitative, “resident-employed photography” approach to elicit respondent community meanings and attachment in high amenity communities in Canada and Alaska (and with a sample of natural resource-based volunteers in the latter). In 2009, the team submitted two manuscripts for publication from this work, and analysis continued on a new data set collected using the photo-based method with Linda Krueger’s work in Washington State on volunteers.

Sense of Place and Environmental Education in Urban Areas

Funded by: Cornell Center for Sustainable Future

Investigators: Alexey Kudryatsev, Marianne Krasny, Richard Stedman (rcs6@cornell.edu)

This project explores the mechanisms by which urban environmental education initiatives may be a function of direct experience with a setting, and/or developing a key set of meanings for the setting. In the New York City metro area, work is underway evaluating the approach and efficacy of six environmental education programs via these causal pathways: does environmental education directly promote a certain set of meanings, or is attachment resulting from these programs more a simple function of increased experience with the setting?

In 2009, we developed a conceptual white paper on the mechanisms by which sense of place may be linked to environmental education, and collected pilot data via a national online survey to develop “proof of concept.”

Presentations:

Kruger, L.E., B. Amsden, and R.C. Stedman. 2009. Volunteering and the role of importance of sense of place. Paper presented at the 2009 International Symposium for Society and Natural Resources, Vienna, Austria. June.

Summary of Consultations, Outreach, Honors, Awards, and other Scholarly Activities

The HDRU has traditionally made consultation and outreach a part of its research partnership with NYSDEC. The HDRU also provides consultation and conducts workshops for other resource management agencies. In addition, Unit faculty and staff are active in a wide variety of professional activities. Examples of activities for 2009 are summarized below.

Cornell Center for Sustainable Future

HDRU Associate Director Barbara Knuth serves as a Faculty Fellow on the Faculty Advisory Committee for the Cornell Center for Sustainable Future (CCSF), 2009-2012. Dan Decker, Richard Stedman and Shorna Broussard Allred are also Faculty Fellows of CCSF.

Council of Environmental Deans and Directors

HDRU Associate Director Barbara Knuth serves at the request of the Provost as Cornell’s representative on the Council of Environmental Deans and Directors (CEDD), the university affiliate program of the National Council for Science and the Environment. She also served on the CEDD Committee on the National Institute of Food and Agriculture.

National Academies Service and Impact

HDRU Associate Director Barbara Knuth serves on the Ocean Studies Board (OSB) of the National Academies. In that capacity, she brings a social science perspective to the deliberations of that body.

Rich Stedman was an invited panelist for the National Science foundation development of the WATERS RFP (development of infrastructure grant leading to funding opportunities to explore multidisciplinary approaches to watershed management.

University of Guelph

HDRU Associate Director Barbara Knuth serves as a member of the Special Graduate Faculty, Department of Family Relations and Applied Nutrition, at the University of Guelph, contributing to oversight and advising for a graduate student focused on ethnic minority understanding of and response to fish consumption health advisories.

Professional Training and Outreach: Integrating Human Dimensions in Wildlife Management

HDRU Director Dan Decker and Bill Siemer developed and instructed two workshops focused on using a “manager’s model” approach to conduct situation analysis of management issues. They delivered a one-day workshop to Florida Fish and Wildlife Conservation Commission (FWC) staff in January, 2009. They delivered a four-day workshop to Arizona Game and Fish Department (AGFD) staff in October, 2009. Agency colleagues Elsa Haubold (FWC) and Chasa O’Brien (AGFD) served as co-instructors.

Small Game and Furbearer Harvest Surveys: A Cooperative Effort with NYSDEC

HDRU staff worked with Bureau of Wildlife staff in a collaborative effort to implement DEC’s annual small game and furbearer harvest surveys. HDRU staff assumed responsibility for implementation of survey mailings (i.e., sample sizes of 5,000 and 4,500). DEC assumed responsibility for data entry and analysis.

Consultation Integrating Human Dimensions Considerations into a Structured Decision-making Approach to Management of Double-crested Cormorants in the Great Lakes

In August 2009, staff from USFWS Division of Migratory Bird Management and USGS Patuxent Wildlife Research Center convened a diverse group of experts at the USFWS National Conservation Training Center for a five-day structured decision-making (SDM) exercise focused on management of double-crested cormorant (DCCO). Participants regarded the workshop as an opportunity to learn how the SDM approach might be utilized by action agencies (state fish and wildlife agencies, federally recognized tribes, and state directors of the wildlife services program of the USDA APHIS Wildlife Services) as a framework to carefully consider the merits of depredation permits and other potential DCCO management actions. HDRU’s Bill Siemer provided expertise on integrating human dimensions considerations into DCCO management plans.

Associate Editors

Bill Siemer served as an Associate Editor for the journal *Ursus*. Shorna Broussard Allred serves as an Associate Editor for *Society and Natural Resources*. Rich Stedman completed (mid-2009) his 6-year term as an Associate Editor for *Society and Natural Resources*. He continues as an Associate Editor for *Wildlife Biology* and for *Forestry*.

Society of American Foresters

HDRU Associate Director Shorna Broussard Allred chaired the 2009 Society of American Foresters Annual Policy Symposium. She also chaired the 2009 Society of American Foresters Private Forestry Working Group.

American Forest Foundation

Shorna Broussard Allred was appointed to the American Forest Foundation’s Board of Trustees for a 3-year term beginning in 2009.

Environmental Education Leadership Roles

HDRU Ph.D. student Ashley Dayer served as Chair of the 38th Annual North American Association for Environmental Education Conference in Portland, Oregon in October 2009. Over 1,200 participants attended the conference, heralded as one of the most successful conferences the association has hosted. Ashley gave opening remarks at the conference and presented on a Graduate Student plenary panel at the Research Symposium. Ashley also completed her term on the Board of Directors for the Environmental Education Association of Oregon in December. She served as Board Co-Chair in 2009.

Service on Boards

HDRU Director Dan Decker continued service on the Board of Governors for New York Sea Grant Institute and CALS representative to the NY State Fish & Wildlife Management Board. He began service on the Great Lakes Fishery Commission Board of Technical Advisors in 2009. Rich Stedman serves on the governing council for the *International Association of Society and Natural Resources*.

Canadian Forest Service

Rich Stedman continued to provide consultation to the Canadian Forest Service in the area of analysis of the well-being of resource-dependent communities.

Other Academic and Professional Briefs

HDRU Director Dan Decker led a panel of National Park Service professionals in a discussion of issues associated with the responses to wildlife habituation in national parks. This panel session was held at the George Wright Society conference in Portland, OR where he also gave an invited presentation on the “Human Dimensions of Wildlife-associated Disease.”

Dan Decker was a speaker at the New York Chapter-TWS meeting in Syracuse, NY and authored a paper presented at the North American Wildlife and Natural Resources Conference in Washington, DC.

Dan Decker began service as co-chair for the 2nd International Pathways to Success: Integrating Human Dimensions in F&W” Conference (2010). A book, “Wildlife and Society: The Science of Human Dimensions,” developed based on the first Pathways conference held in 2008 and co-edited by Dan, received the 2009 TWS edited book award.

Wilfrid Laurier University

HDRU Director Dan Decker has an appointment in the Department of Geography and Environmental Studies at Wilfrid Laurier University to serve as a committee member co-directing the research of a doctoral student.

Social Science Basics Workshop

Dan Decker, Rich Stedman, and Shorna Broussard Allred collaborated to present a 3-day training for 16 Florida Fish and Wildlife Conservation Commission leaders on basics of social science application to fish and wildlife management, held in Live Oak, FL during January 2009.

Teaching in Natural Resources

Bruce Lauber taught Natural Resource Planning and Management (NTRES 3300). HDRU Associate Director Barbara Knuth continued to teach Environmental and Natural Resources Policy Processes (NTRES 4300). Rich Stedman taught Society and Natural Resources (NTRES 2201).

Other Teaching Contributions by HDRU Staff

Currently ('08-'09), Jody Enck and Bruce Lauber co-advise Julie Eitner on her honors thesis project, “Factors affecting behavioral intentions of National Park Service (NPS) staff to facilitate geocaching on NPS units.” Julie’s work is an outgrowth of her internship in the NPS Policy Office during summer 2008 during which she participated in a policy review of geocaching and related activities on NPS units.