

HUMAN DIMENSIONS RESEARCH UNIT

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

ANNUAL REPORT

2007

PURPOSE

This 2007 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. Our research seeks to develop fundamental understandings of human attitudes, values and behaviors associated with natural resource management and to apply 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, 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 partial Extension appointments, from which we serve the citizenry of New York State and beyond.

DESCRIPTION

During 2007, the HDRU and Cooperators consisted of 38 faculty, staff, graduate assistants, and undergraduate students. The research program is supported by research grants and contracts from federal and state agencies, nongovernmental organizations, foundations, and the Cornell University Agricultural Experiment Station.

HDRU graduate faculty have membership in the fields of Natural Resources (Resource Policy and Management concentration), Public Affairs, and Water Resources. In 2007, graduate faculty committee members came from the Departments of Communication, Education, Development Sociology, City and Regional Planning, Government, Organizational Behavior, and Natural Resources (Resource Ecology and Management concentration). Our program's primary geographic focus is domestic, but in recent years includes some international work, currently in Madagascar.

The HDRU has earned an international reputation in the development of the human dimensions specialization of natural resource management. The oldest unit of its kind located in a university setting, its history dates from the early 1970s. The success of the HDRU has been greatly enhanced by a partnership of over 30 years with the NYS Department of Environmental Conservation's Division of Fish, Wildlife, and Marine Resources.

**Human
Dimensions
Research
Unit**

FACULTY AND STAFF

UNIT LEADERS:

Tommy L. Brown, Senior Research Associate and Unit Leader, Natural Resources

Specializations: Economic and social benefits of resource use; incorporating human dimensions perspectives in natural resources management; outdoor recreation trends; survey research methods.

Daniel J. Decker, Professor and Unit Co-leader; Senior Advisor to the Dean and Director, Office of Land Grant Affairs, College of Agriculture & Life Sciences

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.

Barbara A. Knuth, Professor and Unit Co-leader; 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.

HDRU FACULTY AND SENIOR STAFF:

Shorna Broussard, Associate Professor

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

T. Bruce Lauber, Senior Research Associate

Specializations: Citizen participation and education in natural resource management; human dimensions of wildlife damage management; gender and natural resource management.

Richard C. Stedman, Assistant Professor

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.

FACULTY COLLABORATORS:

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.

Janis L. Dickinson, Associate Professor, Department of Natural Resources and Laboratory of Ornithology

Specializations: Citizen science as a vehicle for environmental stewardship; evolutionary approaches to understanding environmental behavior; urban birds as links to nature.

John F. Forester, Professor, Department of City and Regional Planning

Specializations: Community and environmental dispute resolution, micro-politics and ethics of planning processes.

Joe D. Francis, Associate Professor, Department of Development Sociology.

Specializations: Social measurement, survey research, linear statistical models, geographic information systems and spatial statistics.

Gary R. Goff, Senior Extension Associate, Department of Natural Resources

Specializations: Extension programming in forestry and wildlife management for non-industrial, private forest owners; sportsmen education; wetlands.

Margaret Kroma, Assistant Professor, International Extension, Department of Education

Specializations: Participatory rural extension, partnerships in agricultural research and extension; gender and agricultural development.

Katherine A. McComas, Assistant Professor, Department of Communication

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

Rolf Pendall, Associate Professor and Director of Graduate Studies, Department of City and Regional Planning

Specializations: Land-use planning and regulation, urban and suburban sprawl.

Scott J. Peters, Assistant Professor, Department of Education

Specializations: Action research; community development; history, philosophy, and democratic theory and practice in Extension and Land-Grant education.

Max F. Pfeffer, Professor and Chair, Department of Development Sociology

Specializations: Protected area and watershed management, conflicts of environmental values and interests.

Clifford W. Scherer, Associate Professor, Department of Communication

Specializations: Risk communication and risk perception; public participation.

James E. Shanahan, Chair, Department of Communication, Fairfield University

Specializations: Mass media and the environment; effects of media on environmental attitudes; role of communication institutions in citizen participation and environmental issues.

Peter J. Smallidge, Senior Extension Associate, Department of Natural Resources

Specializations: Extension programming in forest management and stewardship for private landowners, county extension agents, youth, and professional foresters.

Pamela S. Tolbert, Professor and Chair, Department of Organizational Behavior

Specializations: Formal organizations, social stratification and organizations, occupations and professions

Arthur L. Wilson, Professor and Chair, Department of Education

Specializations: The role of power in history and philosophy, program planning, and adult learning in adult education; research expertise in discourse analysis, hermeneutics, and cultural studies.

Nicholas Winter, Assistant Professor, Department of Government. Currently Assistant Professor, Department of Politics, University of Virginia.

Specializations: Public opinion and political behavior, race and politics, gender and politics, political methodology, public policy, social theory and politics.

Y. Connie Yuan, Assistant Professor, Department of Communication

Specializations: Organizational communication; the role of social capital and information technology in knowledge management; social network analysis; research methods.

CORNELL VISITING FACULTY COLLABORATOR:

Peter Otto, Assistant Professor, Dowling College School of Business; Professor MIS/IT, Graduate School of Business Administration, Zurich, Switzerland; Visiting Fellow, Department of Nat. Resources, Cornell University

Specializations: System dynamics modeling, group decision making, IT systems implementation and alignment.

RESEARCH ASSOCIATES & SPECIALISTS:

Nancy A. Connelly, Research Specialist

Specializations: Recreation satisfactions and user preferences; participation trend analysis; survey research methodology.

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.

William F. Siemer, Research Specialist

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

RESEARCH SUPPORT STAFF:

Marjorie A. Peech, Administrative Assistant

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

Karlene K. Smith, Research Aide

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

GRADUATE RESEARCH STAFF:

Darrick Evensen, Graduate Assistant

Specializations: Wildlife disease management and policy, risk perception.

Meredith Gore, Assistant Professor, Department of Fisheries and Wildlife and School of Criminal Justice, Michigan State University.

Specializations: Black bear-related risk perception, human-wildlife conflict, environmental policy, risk communication.

Heather Wiczorek Hudenko, Graduate Assistant

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

Cynthia A. Jacobson, Assistant Director, Alaska Dept. of Fish and Game; Ph.D. candidate

Specializations: Wildlife policy, governmental affairs, and collaboration.

Tania M. Schusler, Environmental Issues Educator, Cornell Cooperative Extension of Tompkins County.

Specializations: Community-based conservation, co-management of wildlife, youth leadership in local environmental action.

Heather Van Den Berg, Graduate Assistant

Specializations: Community-based natural resources management, wildlife policy, adult conservation education, volunteerism

Heidi E. Kretser, Affiliate Scientist, Wildlife Conservation Society, Adirondack Communities and Conservation Program; Ph.D. candidate

Specializations: Natural resource stewardship behaviors in exurban settings, human influences on wildlife near protected lands.

Kirsten M. Leong, Human Dimensions Program Manager, National Park Service

Specializations: Wildlife management in national parks, human-wildlife interactions, conservation biology.

Daniela B. Raik, Natural Resources Management Advisor, Conservation International; Ph.D. candidate

Specializations: Co-management of wildlife; capacity building in community-based natural resources management.

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SUMMARY OF 2007 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, communities have expressed willingness to share responsibility for implementing management. This trend has given rise to community-based 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. HDRU has completed and published some work in this area, and additional follow-up research has been initiated.

The Social Framework for Community-based Deer Management

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

HDRU Contact Person:

Bruce Lauber, tbl3@cornell.edu

Past research has shown how certain characteristics of urban and suburban communities can influence their ability to manage deer successfully. Local leadership, relationships, partnerships, knowledge, a sense of common purpose, and other community characteristics (the “social framework” of the community) may facilitate deer management in some communities and inhibit it in others. Research also recognizes that the characteristics of the social framework that are most important may change as the community progresses through different stages of deer management. Our current study has two components.

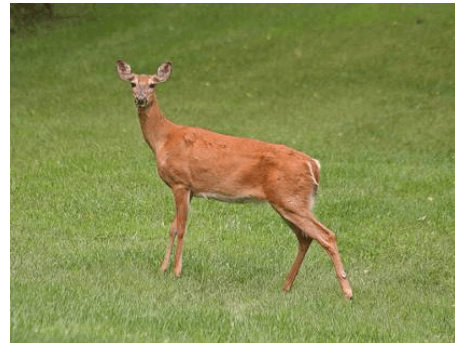
First, we are following the evolution of deer management issues in three New York State communities (Greenburgh, Rye, and Manlius), documenting how the “social framework” in each community influences deer management, and how that influence changes throughout the management process. We are devoting special attention to the roles that relationships and partnerships play in helping to formulate and disseminate ideas, share knowledge, and influence others’ opinions. During 2007, we completed a telephone survey of key stakeholders involved in deliberations over deer management in each

community and began to map out the interconnections between these stakeholders as they exchange information, develop shared ideas, and exert influence on each other.

In the second component of this study, 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 most 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 stakeholders (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. A description of this component of the work has been submitted to the journal *Human Dimensions of Wildlife*.

Presentation:

Van Den Berg, H., and T.B. Lauber. 2007. The role of print media coverage in informing public understanding of deer management issues in New York State. Northeast Fish and Wildlife Conference, Groton, CT. April.



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

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

Burgeoning white-tailed deer populations in New York and many other states have created new 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 state-wide black bear management plan.

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 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 an adaptive impact approach to management.

Addressing the Human Dimensions of Deer Management in Eastern Parks

Funded by: National Park Service (NPS)

Collaborators:

Margaret Wild (NPS Biological Resource Management Division); John Forester (Dept. of City and Regional Planning); Katherine McComas (Dept. of Communication); Paul Curtis (Dept. of Natural Resources)

Project Website:

<http://www.dnr.cornell.edu/deerpeopleparks>

HDRU Contact Person:

Dan Decker, djd6@cornell.edu; Kirsten Leong, kirsten_leong@nps.gov

This four-year project examined human dimensions of white-tailed deer in National Park Service units of the northeastern U.S. Deer management was used as a model to examine the ways in which human values and attitudes can affect wildlife management planning in park units.

In 2007, reporting for Phase IIIA was completed, as well as data collection and reporting for the final phase of the project, Phase IIIB: Mail-back survey to residents of communities near parks. The affected communities were those located near Fire Island National Seashore, Valley Forge National Historical Park, Prince William Forest Park, Morristown National Historical Park and the Potomac Gorge area of Chesapeake & Ohio Canal National Historical Park. The survey assessed (1) the degree to which stakeholder experience, individual capacity and perceptions of institutional capacity affect their likelihood of participation in deer management planning and (2) the degree of co-orientation between managers and local stakeholders. A mail survey was administered between April and May, 2007. Follow-up telephone interviews with non-respondents were conducted between June 18 and July 8, 2007. In addition to better understanding deer management issues, insights from this project will improve NPS ability to respond to other natural resource management issues that involve local communities with varying attitudes towards parks and management activities.

Publications:

- Leong, K.M., D.J. Decker, J.F. Forester, P.D. Curtis, and M.A. Wild. 2007. Expanding problem frames to understand human-wildlife conflicts in urban-proximate parks. *Journal of Park and Recreation Administration* 25(4):62-78.
- Leong, K.M., K.A. McComas, and D.J. Decker. 2007. Matching the forum to the fuss: using coorientation contexts to address the paradox of public participation in natural resource management. *Environmental Practice* 9(3):1-12.
- Leong, K.M., and D.J. Decker. 2007. Identifying capacity for local community participation in wildlife management planning. Case 1: white-tailed deer issues at Fire Island National Seashore. HDRU Publ. 07-1. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 32 pp.
- Leong, K.M., and D.J. Decker. 2007. Identifying capacity for local community participation in wildlife management planning. Case 2: White-tailed deer issues at Valley Forge National Historical Park. HDRU Publ. 07-3. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 30 pp.
- Leong, K.M., and D.J. Decker. 2007. Identifying capacity for local community participation in wildlife management planning. Case 3: white-tailed deer issues at Prince William Forest Park. HDRU Publ. 07-4. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 28 pp.
- Siemer, W.F., K. Leong, D.J. Decker, and K.K. Smith. 2007. Deer, people, and parks: Perspectives of residents in communities near Fire Island National Seashore. HDRU Publ. 07-8. Dept. Nat. Resour., Cornell Univ., Ithaca., NY. 70 pp.
- Siemer, W.F., K. Leong, D.J. Decker, and K.K. Smith. 2007. Deer, people, and parks: Perspectives of residents in communities near Valley Forge National Historical Park. HDRU Publ. 07-9. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 67 pp.
- Siemer, W.F., K. Leong, D.J. Decker, and K.K. Smith. 2007. Deer, people, and parks: Perspectives of residents in communities near Morristown National Historical Park. HDRU Publ. 07-10. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 65 pp.
- Siemer, W.F., K. Leong, D.J. Decker, and K.K. Smith. 2007. Deer, people, and parks: Perspectives of residents in communities near Prince William Forest Park. HDRU Publ. 07-11. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 66 pp.

Siemer, W.F., K. Leong, D.J. Decker, and K.K. Smith. 2007. Deer, people, and parks: Perspectives of residents in communities near the Great Falls Area of the Chesapeake and Ohio Canal National Historic Park. HDRU Publ. 07-12. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 66 pp.

**Deer, Cornell Lands, and East Hill Communities:
A Survey of Residents Living near
Cornell University**

Funded by: Cornell University

Collaborators: Cornell Cooperative Extension of Tompkins County; Paul Curtis (Dept. Nat. Resour.); Office of the Executive Vice President, Cornell Univ.; College of Agriculture and Life Sciences; Cornell Plantations

HDRU Contact Person:

Bill Siemer, wfs1@cornell.edu

Cornell University administers many parcels of land of differing types and purposes, including open lands such as: natural areas, botanical gardens, plantations, and agricultural fields. Cornell decision makers are concerned that Cornell Plantations and agricultural research facilities are sustaining constant, significant plant damage from the local deer population. They also are concerned about deer-related safety issues. Although Cornell lands are privately owned and the public is not required to be involved in management decisions, Cornell officials recognize that many of their decisions affect adjacent communities. In addition, community members often desire the opportunity to provide input on Cornell decisions. To assist Cornell decision-makers in choosing among and implementing participatory processes, a mail-back survey of residents living in communities surrounding Cornell was designed and implemented in October and November, 2006.

The survey results indicated that neighboring residents use Cornell lands frequently for walks and other outdoor activities, they encounter deer frequently, and they realize that deer share Cornell parcels and their own properties for habitat. Most respondents believe deer are having negative impacts on their properties as well as Cornell lands, and most respondents believe Cornell should be taking actions to manage the deer population. Respondents were less certain about how they would be affected by any management response Cornell might take.

Results of the survey were published and made available to the public through the HDRU website. Concerns about deer damage and the need for management led the Cornell administration to approve the development of a multi-year deer research and management plan

under the leadership of Dr. Paul Curtis, which began in the fall of 2007.

Publication:

Siemer, W.F., K.M. Leong, D.J. Decker, and T.L. Brown. 2007. Cornell lands, deer, and East Hill communities: Results from a 2006 survey of community residents. HDRU Publ. 07-5. Dept. Nat. Resour., Cornell Univ., Ithaca, NY.

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

Collaborators: Paul Curtis and Gary Goff (Dept. Nat. Resour.); Marie Kautz and Dave Riehlman (DEC Region 7 office, Cortland); Renee Jensen and Tania Schusler (Cornell Coop. Ext., Cayuga and Tompkins Counties, respectively)

HDRU Contact Person:

Nancy Connelly, nac4@cornell.edu

The goal of this study is to evaluate whether the management of deer populations and associated impacts can be improved by working with landowners to assess and enhance access for deer hunting. If sufficient numbers of properties are closed to hunting, or experience inadequate doe harvests, sufficient refugia may exist that deer hunting may not have sufficient effects on negative deer impacts. The first phase of this study assessed landowner perceptions of deer impacts and determined access policies toward hunting as well as estimated annual deer harvest from their properties. By overlaying impacts and harvest in a spatial analysis, we hope to obtain some insight on the extent of deer refugia and their impacts on management. The results of landowner surveys and spatial analyses will be used to design extension education programs aimed at helping landowners, hunters, and wildlife and forestry professionals work together to reduce deer impacts.

Two towns in Central New York were selected as sites for this study: Caroline in Tompkins County, for its rural character and mostly wooded landscape, and Venice in Cayuga County, because agriculture is the primary land use. A mail questionnaire was developed and sent to all landowners with parcels of ten or more acres in late March, 2007. We attempted to call or visit all nonrespondents to obtain information on key questions such as deer impacts and hunting access. For landowners whom we could not contact or who refused to be interviewed, we attempted to determine by visual inspection if the land was posted. Thus, we have at least one piece of data for 84% of the landowners in Caroline and 69% of

landowners in Venice, covering 80% of the land area in Caroline and 78% of that in Venice.

From the maps showing landowner estimates of deer density, it is clear that there are a large number of deer throughout each town. Most respondents had some deer damage and many had been involved in deer-car collisions in their town. Yet, most respondents said they enjoyed having deer in the town and seeing them on their property. Very few respondents thought deer were a nuisance. The best indicator we have to guide deer management in the area is respondents' desires for the future deer population. In these towns, at least one-third of landowners would like to see a decrease in the deer population.

Most of the land in both towns was open to hunting to some degree. However, most landowners whom we contacted, particularly in Venice, posted their land to either prohibit or restrict deer hunting. Responses to the list of reasons for posting suggest that most survey respondents wanted to control access rather than prohibit hunting. Over half of the respondents said that the land was posted "to allow hunting by certain people only" and they wanted "to control whether and when my land is used by hunters." The amount of hunting effort in areas with these access policies may be insufficient to reduce the deer population. Our maps show that much of the land is open to only friends or family for hunting, especially in the Town of Venice.

Landowner and Hunter Response to Implementation of a Quality Deer Management (QDM) Cooperative

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

HDRU Contact Person:

Jody Enck, jwe4@cornell.edu

This study was a longitudinal evaluation of the creation and implementation activities of a quality deer management (QDM) cooperative on private lands in central New York. The cooperative began in 2001 when NYSDEC staff approached landowners with ≥ 50 ac of property in the vicinity of King Ferry, NY with the idea of establishing a QDM cooperative. The purpose of forming the cooperative was to determine if a QDM approach to deer management, including antler restrictions on bucks and emphasis on harvesting more antlerless deer, could address the management interests of landowners and deer hunters using those properties. Ultimately, about three dozen private landowners and scores of hunters (~80-100) who typically hunted on those properties established a non-contiguous, 12,000ac cooperative within a footprint of about 16,000ac.

HDRU staff surveyed participants several times during 2001-05 to evaluate outcomes of the cooperative. We

based the evaluation on the concept of adaptive impact management (AIM). We identified reasons why landowners and deer hunters wanted to participate in the cooperative, and through group interviews and model-building exercises, we translated these reasons into measurable deer-related impacts of importance to those stakeholder groups.

The positive *deer-related impacts* to be managed through QDM were: (1) friendships with landowners, (2) healthy individual deer, (3) fairness among hunters, and (4) naturalness in the deer population. The majority of hunters also were very concerned about being injured by other hunters indiscriminately shooting at deer. Landowners tended to be very concerned about these negative impacts: (1) frustration about the persistent risk of crop damage, (2) risk of injury from a deer-vehicle accident, and (3) risk of excessive cost from a deer-vehicle accident.

Using mail and telephone surveys, we measured experienced/perceived levels of those impacts over the years of the study and compared those to desirable/tolerable levels. Both landowners and hunters were split about whether QDM was resulting in the kinds of outcomes they desired, particularly related to changes in deer population characteristics. Some hunters believed that QDM resulted in a deer population less skewed toward antlerless deer and with a better age structure among antlered bucks, but others did not perceive these changes. Some landowners perceived that the overall deer population had decreased, but others thought it had not changed.

Two major operational challenges identified through the evaluation were that landowners had very little knowledge of how many hunters used their properties and how many deer were harvested, and hunters generally distrusted each other to abide by the “rules” of the cooperative. Interviews with participants throughout the evaluation process revealed that they desired more direct involvement by NYSDEC in the operation of the cooperative; landowners did not want to take on the responsibility of “having to deal with the hunters,” and hunters did not want to take on the responsibility of “policing their own ranks” to ensure compliance.

Landscape Ecology of White-tailed Deer in Agro-forest Ecosystems

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

HDRU Contact Person:
Jody Enck, jwe4@cornell.edu

This study complements our evaluation of the other QDM-related study just described. HDRU staff and collaborating researchers in several mid-western states are

examining how ecological and social dimensions affect human-deer-vegetation interactions in agro-forested landscapes. A basic premise is that wildlife stakeholder acceptance capacity (WSAC) will vary across a continuum of landscapes depending on various deer population characteristics and the kinds of deer-related impacts those stakeholders either desire or are willing to tolerate. One goal of this collaborative effort is to develop and test methodology for integrating data from multiple stakeholders into a single measure of WSAC. Determining WSAC for any stakeholder group requires identifying the combination of positive and negative impacts that group associates with a particular species— in this case deer.

Through this study we attempted to quantify minimum desirable and maximum tolerable limits of WSAC in terms of impacts of importance to a majority of landowners and to deer hunters. We assessed experienced/perceived and desirable/tolerable levels of impacts on scales from 0-10, and determined means for each impact. Comparing both mean values as well as percentages of individuals indicating that experienced/perceived levels differed substantially from desirable/tolerable levels, we determined that WSAC for deer in central New York and south-central Michigan is outside desirable/tolerable limits for both landowners and hunters. However, different impacts contributed to this situation in each state, largely because different social characteristics among the stakeholder groups affected how they interpreted their interactions with deer.

Central New York Deer Hunters' Opinions about Possible Changes in the Buck Bag Limit and Definition of a Legal Buck

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

HDRU Contact Person:
Jody Enck, jwe4@cornell.edu

The general goal of deer management in New York State is to ensure that benefits of deer to people (e.g., viewing, hunting) can be achieved while controlling concerns or problems that deer may cause. NYSDEC addresses this goal in a variety of ways including promulgation of deer-hunting regulations aimed at providing safe and satisfying experiences for deer hunters. Two regulations that might affect hunter satisfaction and that have received attention recently, especially in central New York State, are (1) the buck harvest standard defining which bucks are legal to harvest, and (2) the antlered buck bag limit. The purpose of this study was to assess the interests and opinions of deer hunters about possible changes to buck harvest limits and antler criteria in WMUs 7F, 7H, and 7J in central New York.

We conducted a telephone survey with 405 deer hunters residing in these WMUs (135 per WMU). Among the topics addressed were: satisfaction with cur-

rent buck-hunting opportunities, importance of seeing antlered bucks of any age while hunting, importance of seeing older-aged bucks while hunting, attitude toward an experimental regulation that would reduce the buck bag limit to one antlered buck for all hunters, attitude toward an experimental regulation that would protect most yearling bucks from harvest, and evaluative beliefs regarding how either experimental regulation would affect their buck-hunting interactions and satisfaction level. Prior to conducting the telephone survey, all license holders in the sample received a mailing about likely changes in deer population characteristics that would occur if the experimental regulations were enacted.

Deer hunters' satisfaction in these three WMUs, specifically with buck-hunting opportunities, was quite high. Most hunters did not support an experimental one-buck bag limit, and only slight majorities supported an experimental regulation to protect most yearling bucks. Further, many hunters who said that additional buck-related interactions would be "good" still did not support either of the experimental regulations because having more of those interactions simply was not of great importance to most deer hunters in the three WMUs.

Another factor affecting support or opposition was whether hunters were satisfied with their buck-hunting opportunities. In general, supporters of either possible experimental regulation were dissatisfied with their current buck-hunting opportunities, and believed that the experimental regulations would improve their satisfaction. Most opposers already were satisfied, and many believed their satisfaction would decrease under either experimental regulation. Opposition to an experimental regulation by hunters who placed less importance on otherwise "good" buck-related interactions suggests the existence of impact trade-offs that we do not understand.

Publication:

Enck, J.W., and T.L. Brown. 2007. Opinions of deer hunters in wildlife management units 7F, 7H, and 7J about possible changes in buck-hunting regulations. HDRU Publ. 07-2. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 42 pp.



Hunters' Evaluations of QDM Antler Restrictions in Southeastern New York (NYSDEC Region 3)

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

HDRU Contact Person:

Jody Enck, jwe4@cornell.edu

NYSDEC established a pilot QDM program in Wildlife Management Units (WMUs) 3C and 3J prior to the 2005 hunting season. This entailed changing the legal buck harvest standard from an antler ≥ 3 inches long to an antler with three or more points, each at least an inch long. A survey conducted by HDRU after the 2005 season in those WMUs found divergent attitudes toward the change and some concerns about hunter compliance with the new regulation. In 2006, NYSDEC expanded the pilot QDM area to include WMUs 3H and 3K. In early 2007, HDRU conducted a mail survey with hunters in all four WMUs to assess their hunting experiences under QDM and determine their beliefs about whether QDM was changing the deer population in desirable ways.

Specifically, we re-surveyed 498 hunters from WMUs 3C and 3J who had responded to the first mail survey in 2006. We also surveyed a new sample of 500 deer hunters from WMUs 3H and 3K to assess their opinions after the program was expanded to those units. We wanted to determine whether hunters' deer-related experiences had changed under QDM relative to conventional deer management regulations. Data analysis is in progress and a report will be prepared in 2008.

Statewide Deer Hunter Survey: Trends and Management Preferences

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

HDRU Contact Person:

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NYSDEC has sponsored periodic statewide surveys of deer hunters (e.g., 1987, 1990, 1994, 1999) to monitor changes in participation levels and other characteristics, and to assess levels of support for possible changes in hunting regulations. HDRU worked with NYSDEC's deer management team to develop a new survey, which was implemented in spring, 2007.

In addition to monitoring trends in participation, harvest, and hunting satisfaction, NYSDEC was especially interested in assessing hunters' interest in an alternative deer harvest strategy commonly referred to as Quality Deer Management (QDM). Some of the main components of QDM are to reduce the overall deer population while improving the age structure among antlered bucks. These changes in deer population characteristics require hunters to apply for and use deer management permits and to pass up younger bucks with smaller antlers.

The 2007 survey was conducted by mail to 4,000 of the 550,000 New York State residents who had purchased a license to hunt big game. We stratified the sam-

ple into four geographic areas: (1) Metro New York City, including Long Island (Regions 1 and 2, n = 1,200), (2) Southeastern NY (Regions 3 and 4, n = 1,200), (3) Northern NY (Regions 5 and 6, n = 800), and (4) Central-western NY (Regions 7-9, n = 800). Data are currently being analyzed and a final report is being prepared.

Other Publication on Deer Management:

Ward, K., R.C. Stedman, A.E. Luloff, J.S. Shortle, J.C. Finley. 2008. Categorizing hunters by typologies useful to game managers: A latent-class model. *Society and Natural Resources* 21:215-219.

Input for a Statewide Black Bear Management

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

Collaborator: Peter Otto

Cooperator: Tania Schusler, Cornell Cooperative Extension

HDRU Contact Person:
Bill Siemer, wfs1@cornell.edu

In response to an increase in negative human-bear interactions, the NYSDEC worked with HDRU staff to design a black bear management planning framework in 2003. This research activity was established to collect

information and develop processes to support the 2003 planning framework. Since that time, HDRU staff have continued to collaborate with NYSDEC on human dimensions of bear management in New York. Activity this year included consultation to the NYSDEC Bear Team as they prepared for additional stakeholder engagement activities in 2007. HDRU staff reviewed an update/revision of the bear management planning framework, participated in Bear Team meetings, and contributed to efforts to develop GIS maps for discussion of negative impacts expected to occur if bear population expansion continues.

Publication:

Siemer, W.F., D.J. Decker, and J. Shanahan. 2007. Media frames for black bear management stories during issue emergence in New York. *Human Dimensions of Wildlife* 12(2):89-100.

Other Publications on Bear Management:

Gore, M.L., B.A. Knuth, P.D. Curtis and J.E. Shanahan. 2007. Factors influencing risk perception associated with human-black bear conflict. *Human Dimensions of Wildlife* 12:89-100.

Gore, M.L., B. A. Knuth, P.D. Curtis and J.E. Shanahan. 2007. Campground manager and user perceptions of risk associated with negative human-black bear interactions. *Human Dimensions of Wildlife* 12:31-43.

Public Access to Private Lands

Public Access to Private Lands for Recreation and Tourism in the Northern Forest

Funded by: NE States Research Cooperative

Collaborators: Lisa Chase (Univ. of Vermont); John Daigle, (Univ. of Maine); Walt Kuentzel (Univ. of Vermont); Rob Robertson (Univ. of New Hampshire)

HDRU Contact Person:
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This study examines the rate and nature of changing land tenure involving the sale of both individual private parcels and large industrial forest holdings, and the effects of these changes on access. It also assesses the attitudes and behaviors of landowners related to recreational access, and the incidence of posting of private lands. Finally, it evaluates the coverage of limited liability recreation statutes of Northern Forest states and the impacts of liability-related concerns on landowner decisions. The study area includes the four

Northern Forest states—Northern New York, Vermont, New Hampshire, and Maine.

A mail survey was designed and implemented in fall of 2007 to random samples of 100 landowners each in six randomly chosen towns in each of the four states. Those data are being analyzed and a report will be prepared in 2008.

Last year's HDRU annual report summarized research on the limited liability recreation statutes in the Northeast and an HDRU publication on that topic, which was the primary New York contribution to this multi-state study. In 2007, the liability research was expanded to a national scope. A presentation based on this work was accepted for the 2008 North American Wildlife and Natural Resources Conference.

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 conceptual 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.

Securing the Future of State Wildlife Management

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

HDRU Contact Person:

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Societal interests and demands regarding wildlife are changing, and the state wildlife management institution (i.e., the enduring formal and informal rules, values, norms, cultural beliefs and related behavioral patterns that sustain and constrain the human activities surrounding wildlife conservation and management) recognizes the need to evolve as well. The approach to addressing change has been focused in large part on securing and developing effective and consistent alternative funding mechanisms (i.e., not derived from hunting or trapping license sales or Pittman-Robertson money). These new funding sources present challenges to the state wildlife management institution. In addition to the creation or expansion of programs, agencies using new and general funding sources will likely need to be more accountable to a larger and more diverse constituency. A challenge for the institution will be to overcome an historical dependency on funds derived from hunting and trapping without alienating traditional constituencies.

The extent to which historical dependencies impact the state wildlife management institution's ability to maintain legitimacy in contemporary society has not been examined. Our research seeks to improve understanding of whether and how state wildlife agencies (SWA) may be influenced by changes in their dominant funding paradigms. Specifically, we seek insight about whether SWAs that have established (e.g., constitutionally earmarked) nontraditional funding sources are more likely to demonstrate responsiveness—and therefore improve their ability to maintain legitimacy—to a diverse constituency than SWAs that rely on more traditional funding mechanisms. The primary assumption of this research is that SWAs' responsiveness to a diversity of stakeholders is key to their continued legitimacy with society.

The research project has two phases. Phase I consisted of qualitative interviews with leaders in 24 states with the purpose of understanding how their agencies were addressing change generally. Phase I results provided the foundation for Phase II research, an effort to understand whether SWAs that have established nontraditional funding sources are more likely to demonstrate responsiveness—and therefore improve their ability to maintain legitimacy—to a diverse constituency than SWAs that rely on more traditional funding mechanisms. The primary assumption of this phase of research is that SWAs' responsiveness to a diversity of stakeholders is key to their continued legitimacy with society. Our hope is that the results of our research will contribute to a better understanding of how the state wildlife management institution can maintain legitimacy in the face of changing societal interests and demands.

Publications:

Jacobson, C.A., Decker, D.J., and L. Carpenter. 2007. Securing alternative funding for wildlife management: Insights from agency leaders. *Journal of Wildlife Management* 71(6):2106-2113.

Jacobson, C.A., D.J. Decker. 2006. Ensuring the future of state wildlife management: Understanding challenges for institutional change. *Wildlife Society Bulletin* 34(2):531-536.

Modeling Duck Hunter's Experiences to Help Task Forces Understand Reasons Underlying Preferences for Season Dates

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

HDRU Contact Person:

Jody Enck, jwe4@cornell.edu

NYSDEC's Bureau of Wildlife started using Task Forces comprised of hunter representatives in 1997 to recommend duck hunting season dates in New York's Western, Northeastern, and Southeastern waterfowl management zones. In 2005, NYSDEC's waterfowl management team asked HDRU to conduct a statewide mail survey of duck hunters to obtain information to be used by the Task Forces about season date preferences and reasons underlying those preferences. The survey revealed four main reasons for season date preferences, regardless of zone: (1) when the most ducks are around, (2) when hunters have the best chance to take their favorite kinds of ducks, (3) when the weather is best for duck hunting, and (4) when hunters have time to hunt.

In spring, 2007, NYSDEC sponsored a workshop for 14 Task Force members and other avid duck hunters at which results of the survey were presented. Two additional purposes of the workshop were to: (1) engage Hunter Task Force members in discussions about how they interpreted the study findings, and (2) begin building a conceptual model that linked together (a) the reasons underlying season date preferences, (b) hunter-duck and hunter-hunter “events” or interactions associated with various interpretations of those reasons, and (c) experience satisfaction perceived by duck hunters. Our intent was to build a conceptual model to help Task Force members make the best possible recommendations about season dates.

Workshop participants identified many possible interpretations for each of the main reasons underlying season date preferences, based on their own experiences as “more-avid duck hunters.” They also believed—despite survey results to the contrary—that (1) most duck hunters were “less-avid,” with little knowledge of “when the most ducks are around” and (2) most “less-avid” hunters do not actually have a favorite kind of duck. In general, participants’ beliefs about factors that might affect hunting experiences, and the lack of understandings about feedback on hunters’ intentions to hunt indicate a linear conception of how hunters’ experiences occur. That is, participants did not consider duck hunting as a *system of factors* influencing each other through feedback, but rather conceived of duck hunting as more of an *equation* in which some combination of largely uncontrollable factors equals either a satisfying or dissatisfying experience.

Subsequent to the workshop, HDRU developed a conceptual model of how duck hunters’ experiences might be affected by changing season dates. The model-building process was used to articulate and evaluate assumptions uncovered in the workshop and to provide insights about the types of model structure and relation-

ships among variables. One benefit of the modeling approach was to clarify the distinction among process, outcome, and experience satisfaction in the context of duck hunting and to help separate the roles and responsibilities of NYSDEC staff and the Task Forces. Another benefit was to improve understanding of various hunting-related “events” that might be affected by changes in season dates, and how those changes might influence experience satisfaction. Finally, by first modeling assumptions that arose through the workshop discussion and then revising the model in light of validated/refuted assumptions, we identified kinds of information that would be of great use to Task Force members in deliberations about when the duck season should be open.

Publication:

Enck, J. W., and H. Van Den Berg. 2007. Developing conceptual models of duck hunters’ experiences to help Task Forces understand reasons underlying preferences for season dates. HDRU Publ. 07-13. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 73 pp.

Abstract/Presentation:

Enck, J.W., B.L. Swift, W.N. Sharrick, and T.L. Brown. 2007. Reasons underlying duck season preferences: Managing positive effects of hunter-duck interactions and negative effects of hunter-hunter interactions. Poster and Abstract, 14th Annual Meeting of The Wildlife Society, Tucson, AZ. September. (Abstract available on CD).



Understanding Attitudes and Values of Wildlife Stakeholders

New York Suburban Coyote Study

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

Co-Investigator: Paul Curtis

HDRU Contact Person:
Heather Wiczorek Hudenko, hah29@cornell.edu

Wildlife managers in New York State are interested in managing coyote populations to limit conflict between people and coyotes and to maximize the benefits of coyote presence. To assist this effort, the human dimensions component of the New York Suburban Coyote Study evaluates people’s coyote-related cognitions and behaviors.

In fall 2006, we conducted research focused on Westchester County, New York, where the NYSDEC had received a many reports about coyote-human interactions. Through a combination of interviews and a telephone survey of county residents in four towns, we established baseline data on people’s experiences with, and attitudes about, coyotes for a subset of the population in this region. Many characteristics of the Westchester study area are unique (e.g., socio-demographic characteristics of residents, the relatively brief period of time that coyotes have inhabited the County, widespread media coverage of coyote issues before our survey, and the visibility of the behavioral ecology component of the study) and findings from that county may not be representative across New York State. Thus, the research team and study partners determined

that an additional inquiry in another part of the state would be valuable in 2007.

The objective of our 2007 telephone survey, implemented by Cornell's Survey Research Institute, was to characterize how demographic characteristics, area of residence, and history of coyote presence in a community might influence residents' beliefs, attitudes, and behaviors toward coyotes. We selected a suburban residential area in northern New York State (several townships within Saratoga County) where coyotes have been present longer than in Westchester. We adapted the Westchester County survey instrument to accommodate new research objectives and in this study we focused on longtime residents and recent arrivals/newcomers, to gain insight into how attitudes and behaviors may change over time in response to prolonged exposure to coyotes.

Preliminary data analysis suggests that the subset of residents in Saratoga County tended to express less concern about coyotes on a variety of measures than residents in Westchester County. These preliminary findings are consistent with the idea that as the duration of human-coyote coexistence increases, people may adjust to living with coyotes and express less concern or interest. Respondents in both counties were presented with a series of questions about hypothetical coyote proximity and frequency to human areas. Interestingly, responses were similar across the groups. Residents in both areas indicated concern about coyote presence anywhere other than in natural areas. This suggests that the acceptability of coyote presence in human-dominated landscapes (e.g., towns, yards) may not necessarily increase over time, even if relatively few problems occur.

As this inquiry continues, we anticipate that it will shed more light on human beliefs, attitudes, and behaviors as coyotes increase their tenure across New York. Continuing research on this topic will provide a more comprehensive understanding of human-coyote issues on a statewide basis and will inform management interventions designed to promote human-carnivore co-existence in suburban areas.

Presentations:

Wieczorek Hudenko, H., D.A. Bogan, D.J. Decker, W. F. Siemer, & P.D. Curtis. 2007. New York suburban coyote study: Summary of results from 2005-2007. Invited presentation, N.Y. State. Dept. of Environ. Cons., Bureau of Wildlife Annual Meeting, Hamilton, NY. March.

Siemer, W.F., D.J. Decker, and H. Wieczorek Hudenko. 2007. Coyote management in residential areas: Human dimensions research needs. Invited presentation, 12th Wildlife Damage Manage. Conference, Corpus Christi, TX. April.

Wieczorek Hudenko, H, D.J Decker, and W.F. Siemer. 2007. Coyotes in suburbia: The gap between public concern and likely risk. 63rd Annual Northeast Fish and Wildlife Conference, Groton, CT. April.

Wieczorek Hudenko, H., and D.J. Decker. 2007. New York suburban coyote study: Implications for theory and practice." Invited presentation to staff at the Nat. Park Service's Biological Resources Management Division, Fort Collins, CO. May.

Wieczorek Hudenko, H, D.J Decker, and W.F. Siemer. 2007. Coyotes in suburbia: The gap between public concern and likely risk. Invited presentation, Urban Wildlife Management Conference, Portland, OR. June.

Wieczorek Hudenko, H, D.J Decker, and W.F. Siemer. 2007. Coyotes in suburbia: The gap between public concern and likely risk. International Union of Game Biologists Congress, Uppsala, Sweden. August.

Wieczorek Hudenko, H, D.J Decker, and W.F. Siemer. 2007. Coyotes in suburbia: The challenge of assessing community perspectives. Invited presentation, Furbearer Management Symposium, 14th Annual Meeting of The Wildlife Society, Tucson, AZ. September.

The Exurban Frontier: Anticipating Human-wildlife Interactions Where We Live, Work, and Play Using Landscape and Social-psychological Variables

Funded by: Amer. Assoc. Univ. Women, Wildlife Conservation Society; Cornell Univ. Agric. Exper. Sta.; Nat. Science Found., Doctoral Dissertation Awards; Adirondack Kieckhefer Grants

Collaborators: Rolf Pendall (Dept. of City and Regional Planning); Joe Francis (Dept. of Development Sociology); Paul Curtis (Dept. of Natural Resources)

HDRU Contact Person:
Heidi Kretser, hek1@cornell.edu

The goal of this research is to explore the relationships among exurban development, human-wildlife interactions, and conservation attitudes using a spatially predictive model incorporating landscape and social-psychological variables. Conflicts between humans and wildlife are increasing. Reasons for this increase include landscape changes leading to habitat loss, habitat recovery, and movements of wildlife populations into or out of areas near human communities; loss of top predators resulting in explosions of some species populations; and most importantly, a continuously increasing human population. Exurban growth,

defined as densities of one house per 5 to 40 acres, acts as a catalyst for other physical and social landscape changes. Little research has specifically connected exurban development to increases in human-wildlife interactions. This study addresses two objectives: (1) to assess which demographic characteristics, knowledge, and attitudes of residents are associated with whether a human-wildlife interaction is perceived as positive or negative and subsequently reported to authorities; and (2) to develop and test the applicability of models combining landscape and social variables to predict locations of human-wildlife conflict. The research uses an interdisciplinary approach to address how the exurban landscape, demographic characteristics, and attitudes combine to influence patterns of human-wildlife interactions.

In 2007, we focused on analyzing and interpreting the data from respondents (n=1,616) to a survey in four communities of northern New York. We also developed several presentations, two manuscripts and a book chapter. In the publication listed below, we used a spatial statistical approach to show that reported human-wildlife interactions in Northern New York from 2001-2003 tended to cluster most in exurban areas (with housing densities equivalent to one house per 5 to 40 acres) and secondly in suburban areas. In our other work, we demonstrated the challenges of governance facing communities adjacent to or residing within internationally renowned protected areas with regard to protection of wildlife. We found that seasonal or permanent status, longtimer or newcomer status, and being from urban or rural backgrounds result in fewer significant differences on knowledge of wildlife, attitudes and behaviors towards wildlife, and experiences with wildlife than expected. These variables, which are often critical in defining the social context of exurban landscape, explain very little of the variation in responses to questions regarding interactions with wildlife.

In 2008, we will include a special focus on anticipating human-bear conflict using social data from the survey and landscape data from GIS layers. We will also continue developing manuscripts related to the survey and analyses.



Publication:

Kretzer, H.E., P.J. Sullivan, and B.A. Knuth. 2008. Housing density as an indicator of spatial patterns of reported human-wildlife interactions in Northern New York. *Landscape and Urban Planning* 84:282-292.

Presentation:

Kretzer, H.E. 2007. Perceptions of human-wildlife interactions: Does a social exurbia exist? *Emerging Issues along Urban/Rural Interfaces*, Atlanta, GA, April; 2007 Adirondack Research Consortium, Tupper Lake, NY, May.

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*

HDRU Contact Person:

Heather Van Den Berg, hav5@cornell.edu

Social conflicts among wildlife stakeholders are increasingly prevalent across New York State (NYS), creating a contentious management climate for the NYSDEC. This study focuses on social conflicts involving waterfowl hunting and furbearer trapping. In the case of waterfowl hunting, social conflicts emerge mainly as shoreline residents object to waterfowl hunters discharging firearms, over water, in close proximity to residences. Similarly, social conflicts over furbearer trapping erupt when residents are alerted to the presence of wildlife trapping in their communities when publicity surrounds the capture of a non-target animal. In response, stakeholders opposing trapping or hunting increasingly seek to change local town codes or state environmental conservation laws through political activism. Similarly, stakeholders supporting trapping or hunting seek to influence decision makers to avoid loss of access to these resources. The outcomes of such political activism have the potential to greatly influence the availability of opportunities for wildlife harvest activities.

To better understand the factors contributing to political activism over wildlife harvest activities, our objectives are to: (1) identify motivations for wildlife political activism; (2) analyze individuals' perceived benefits and costs from participating in wildlife political activism; (3) map the social networks among wildlife stakeholders; and (4) describe and predict the influence of social networks on conflict resolution. To examine these research questions, we will rely on models of collective action and social networks. The outcomes of this work will identify factors contributing to

wildlife political activism and suggest opportunities for NYSDEC to engage with stakeholders in response to the social conflicts and to seek joint gains in problem resolution.

We began this research during 2007 and completed exploratory interviews with several NYSDEC regional biologists and key stakeholders across New York State. We also attended waterfowl hunting and trapping meetings related to current conflicts, and conducted document analysis of historical conflicts to inform the selection of four case study sites representing different levels and types of conflict, for waterfowl and furbearer issues. In 2008, we will finalize the selection of case study sites, as well as develop and implement survey instruments in the four communities.

Other Publication on Wildlife Resources Management and Policy:

Lauber, T.B., J.A. Tantillo, B.A. Knuth, and P.D. Curtis. 2007. The role of ethical judgments related to wildlife fertility control. *Society and Natural Resources* 20(2):119-133.



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 lays 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 better market the fisheries resources of their localities and regions.

We are currently in the midst of conducting 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

HDRU Contact Person:

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New York's Great Lakes sport fisheries have gone through several stages since major stockings of salmonids began around 1970. Multiple studies have been conducted examining fishing participation at specific times and places, but no careful comparative analysis has ever examined trends related to fishing and potential underlying causes. This study is examining trends and likely causal factors related to changes in sportfishing demand in New York's Great Lakes waters over the past 30 years, by type of fishery and by major geographic subregions of these waters. We will develop quantitative models to explain the relative contribution of various biological and socioeconomic factors to changes in fishing participation on Lake Ontario and attempt to forecast changes in fishing participation over the next three to five years.

The first year of this two-year study (2007) was devoted to data gathering and document analysis. A chronology of New York's Great Lakes fisheries' events has been created. Data have also been gathered on New York State and Great Lakes region-wide fish

ing effort so that we can examine the extent to which trends related to New York's Great Lakes fisheries are specific to these water bodies and their anglers versus broader trends. Data analysis and quantitative modeling will be done in 2008.

New York Statewide Angler Survey

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

HDRU Contact Person:

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To manage New York's fisheries in ways that maximize human benefits, comprehensive information is needed periodically on the fishing patterns, preferences, and attitudes of anglers as well as the economic benefits of New York's fisheries. New York has not conducted a study to gather such information since 1996. In 2006, the NYSDEC Bureau of Fisheries began discussions with the HDRU to conduct another statewide angler survey. Unlike previous surveys, which were conducted using a single mailing and 12-month recall, the 2007 survey was implemented at three different times during the calendar year. We expect that dividing the 2007 calendar year into three parts will reduce the amount of recall bias associated with angler trip recollection. Questionnaires were sent to 17,000 licensed anglers in June and October of 2007 and January of 2008. Follow-up telephone calls with 200 nonrespondents were conducted after each phase to check for non-response bias.

The survey asked about fishing experiences in New York State by water body during the time period of the survey, and about fishing preferences and satisfaction. Results from the three phases will be combined and analyzed in 2008.

An assessment of the benefits gained from the three-phase survey versus the annual survey is in progress at the beginning of 2008 with a brief survey of 6,000 licensed anglers to assess their fishing experiences in 2007. These results will help us arrive at an accuracy versus cost estimate for the three-phase survey. In addition, the comparative 12-month survey will allow a more valid trend comparison.



Angler Attitudes, Motivations, Use of Information, and Policy Preferences

Funded by: Indiana Dept. of Natural Resources, Division of Fish and Wildlife

Collaborators: Matt Burlingame (Indiana Division of Fish and Wildlife); Stu Shipman (Indiana Division of Fish and Wildlife); Alicia Haley (Purdue University)

HDRU Contact Person: Shorna Broussard, srb237@cornell.edu

The purpose of this project was to learn more about the fishing experiences and preferences of Indiana anglers to inform fisheries management and policy decisions. The 2005 Licensed Angler Survey was based on a survey conducted by the Indiana Division of Fish and Wildlife (DFW) in 1994. The survey included content on angling attitudes and motivations, fishing preferences, fishing behavior, lapsed anglers, angling skill level, and tournament fishing. Questions were also included to determine respondents' rating and use of DFW information sources such as their website, fish consumption advisories, fishing reports, and open-houses.

In the spring of 2005, a random sample of 7,000 licensed anglers was created from resident, one-day resident, and combined hunting/fishing license holders in the eight DFW fisheries management districts in Indiana. The sample was weighted by the number of licenses sold in each management district. Using the Tailored Design survey methodology, licensed anglers received five mailings: a postcard pre-notification, a survey and cover letter, a reminder postcard, and two subsequent surveys with cover letters. Of the 7,000 licensed anglers, 96 of the anglers were not eligible (bought more than one angling license and were duplicates in the sample) or the surveys were returned undeliverable. There were 1,888 licensed anglers that responded to the survey for a response rate of 27.34%.

Respondents perceived both the overall performance of the DFW and the quality of fishing in Indiana as fair to good. For activities related to the DFW mission, habitat enhancement, management of lakes and reservoirs, and providing public access were ranked highest. Within human dimensions of fisheries research, anglers would most like to see an emphasis on angler opinions and attitudes toward current and proposed fishing management. Anglers also stated that water quality and protection of habitat from residential and commercial development were the most important aspects of habitat management and protection. Anglers also stated that it is important to have public access to both large reservoirs and natural lakes. They would also like to see active management of invasive/exotic species. In terms of law enforcement, anglers felt the

most important areas were in regards to water quality and threatened and endangered species.

Anglers fished mainly for the thrill of catching fish, for rest and relaxation, and to experience nature. The least salient angling motivations were fishing for trophies and for sustenance. Hoosiers prefer to fish in locations that are undiscovered and without fees. Fishing in locations with developed facilities and in areas that are close to home or work were much less important.

This survey provided key input that can shape outreach, education, and programmatic strategies. Specific recommendations were made for reaching lapsed anglers; female, African-American, Hispanic, and younger anglers. Web-based technology was also recommended as a useful means to reach lapsed, active, and potential anglers.

Publications:

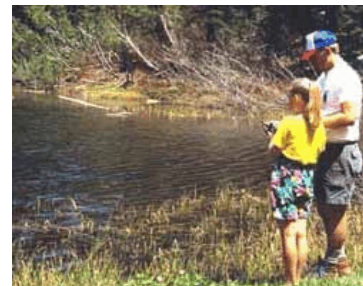
Broussard, S.R., Haley, A., Burlingame, M., and S. Shipman. 2007. Fishing in Indiana: Attitudes of Indiana anglers towards policies and regulations. Publ. FNR-IDNR-103-W. Purdue University, West Lafayette, IN. 5 pp.

Broussard, S.R., Haley, A., Burlingame, M., and S. Shipman. 2007. Fishing in Indiana: Use of information, preferences, and specialization of Indiana anglers. Publ. FNR-IDNR-102-W. Purdue Univ., West Lafayette, IN. 4 pp.

Broussard, S.R., Haley, A., Burlingame, M., and S. Shipman. 2007. Fishing in Indiana: Motivations of Indiana anglers. Publ. FNR-IDNR-101-W. Purdue Univ. West Lafayette, IN. 6 pp.

Presentation:

Knuth, B.A., C.A. McOliver, E.K. Silbergeld, N.A. Connelly, and A. Faulds. 2007. Contaminants and pathogen considerations: Balancing the fishing experience with the need to protect human health. 137th Annual Meeting of the American Fisheries Society, San Francisco, CA. September.



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, who came to us in August from Penn State University, and Dr. Shorna Broussard, who also joined us in August from Purdue University, have several projects related to community forestry and the economic dependence of such communities. Descriptions of those projects are included in this section.

Linking Underserved Forest Owners to Assistance for Enhanced Environmental Sustainability

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

Collaborator: Peter Smallidge (Dept. of Natural Resources)

HDRU Contact Person:
Nancy Connelly, nac4@cornell.edu

The purpose of this research-Extension project is to better understand the motivations, educational needs, and management activities of forest owners in New York so that new strategies and educational materials can be developed to reach these forest owners.

A mail questionnaire was developed and sent to a sample of 2,200 landowners in February 2007. The sample was equally divided into two strata to allow a comparison of characteristics and educational needs of owners at two ends of a rural/urban spectrum. Of the 2,200 questionnaires mailed, 62 were undeliverable and 1,152 completed questionnaires were returned, for an adjusted response rate of 54%.

Respondents owned on average 164 acres of which 59% were wooded. Most respondents identified aesthetic values such as “to enjoy beauty or scenery” or “to protect nature and biological diversity” as being very important reasons why they own wooded land. Traditional uses such as being able to hunt on the land and passing the land onto their heirs were very important to about half of the respondents. Utilitarian reasons such as production of firewood or timber were more important on average to rural than urban stratum respondents, but only 5% to 31% of respondents found these reasons “very important.”

Approximately two-thirds of family forest owners in New York State think their woodlands should be and are being managed (i.e., taking deliberate actions to influence the value of the land). At least half of all family forest owners have or intend to use information sources when making decisions about their wooded property. Given this, we would expect many landowners to be open to outreach efforts focused on woodland management.

General woodlot management, timber stand improvement, and wildlife habitat improvement were the topics for which over half of respondents wanted information in the future. Additional topics of strong interest include landowner liability, forest health, natural forest reproduction, tree planting, and finding additional source of woodland income.

Most respondents (70-81%) used their wooded land for hunting. A high percentage (63%) also posted their land against hunting (presumably to retain control of who hunts on the land) and a large number (55-63%) indicated an interest in learning more about improving habitat for wildlife. Educational efforts that begin with a focus on wildlife and then expand to topics such as watershed or invasive species management might be a way of attracting the interest of owners and expanding their knowledge.

The Internet has been used by a minority of rural and urban owners in the past (20 to 25%), but is likely to increase in use. Some rural owners identified websites (28%) and podcasts (7%) as potential future sources, whereas more urban owners identified them (websites [42%] and podcasts [11%]) as potential future sources. Thus, almost one-third of rural and one-half of urban owners may seek educational information via the Internet. Especially for urban owners, educators should commit to developing and marketing internet resources.

Publication:

Connelly, N.A., T.L. Brown, and P.J. Smallidge. 2007. An assessment of family forest owners in New York State, 2007. HDRU Publ. No. 07-6. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 28 pp.

Public Awareness of Invasive Plants and Insects in the Catskills and Lower Hudson Region

Funded by: Watershed Agricultural Council

HDRU Contact Person:

Nancy Connelly, nac4@cornell.edu

The forests in the Catskill and lower Hudson region are being threatened by the spread of exotic insect pests and invasive plants. To minimize this spread, the Watershed Agricultural Council (WAC) would like to support a forestry education and early detection program. Little is known about people's current level of awareness and knowledge of invasive plants and insects. HDRU staff conducted three surveys to provide the baseline information that would inform WAC's development of education programs.

The first survey, of landowners in the region, found that awareness of invasive species was low. Over half of the respondents had never heard of 12 of the 14 invasive plants and insects we asked about in the survey. Most respondents were concerned to some degree about the presence of invasive plants and insects in North America, and on their property in particular. Most people believed that invasive species can easily spread to other areas, and that insects can move from one area to another in firewood. They also believed that invasive plants and insects can have a negative impact on native species. Thus, landowners indicated a level of concern about invasive species that could lead to action if they had some awareness and knowledge of specific invasive species. Among other things, we recommended assessing existing identification guides to determine the utility of developing a field guide to invasives that included management recommendations.

The second survey went to tree and forestry professionals that WAC believed were working in the Catskill and Lower Hudson region. These professionals had at least heard of the invasive trees, shrubs, and insects that we asked about. They were less likely to be familiar with the herbs and vines on the list. The most commonly seen invasive species included Norway maple, bush honeysuckles, and the hemlock woolly adelgid. Also common, according to more than 35% of respondents, were Japanese knotweed, Japanese barberry, and tree of heaven. Professionals most frequently listed four information sources that they would

most likely use as sources of invasive species information in the future—brochures or fact sheets, NYSDEC foresters, Cooperative Extension personnel, and web sites. Therefore, we recommended using these sources for future communication efforts. However, since no single source was preferred by everyone, multiple sources should be used.

The third survey was sent to local officials in the study area who might be involved with invasive species management (e.g., town highway supervisors, town supervisors). Less than half of the respondents had ever heard of 7 of the 14 invasive plants and insects we asked about in the questionnaire. The species most likely to be known was Norway maple. About one-quarter of respondents thought it was common in their area along with Japanese barberry, Japanese knotweed, garlic mustard, and bush honeysuckles. They would like to learn more about how to identify invasive plants and insects, how to control them, how to prevent their spread, and whom to contact for more information. Since educational programs would be related to their job function, almost half of the respondents wanted the programs to be held during the workday.

Publication:

Connelly, N.A., T.L. Brown, and P.J. Smallidge. 2007. Public awareness of invasive plants and insects in the Catskills and Lower Hudson Region. HDRU Publ. No. 07-7. Dept. Nat. Resour., Cornell Univ., Ithaca, NY. 46 pp.

The Well-Being of Forest Dependent Communities

Funded by: Canadian Forest Service

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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 forest industry. Defining this relationship is somewhat difficult, based on the myriad indicators of well-being, and multiple definitions of dependence. We are involved in an on-going study with colleagues in the Canadian Forest Service, and the New Rural Economy Project at Concordia University (Quebec) which examines this relationship in Canada, and also compares these outcomes with those obtained in the United States. 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 indicator used to represent well being.

Publications:

Patriquin, M., J. Parkins, and R. Stedman. 2007. Socioeconomic status of boreal communities in Canada. *Forestry* 80(3):279-291.

Stedman, R.C., W. White, M. Patriquin, D. Watson. 2007. Measuring community forest sector dependence: Does method matter? *Society and Natural Resources* 20:629-646.

Private Forest Owners of Pennsylvania

Funded by: Pennsylvania Bureau of Forestry

HDRU Contact Person:

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=6600) 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.

Presentations:

Stedman, R.C., A.L. Metcalf, J.C. Finley, A.E. Luloff. 2007. Working together? Neighboring behavior among Pennsylvania's private forest landowners. 13th International Symposium for Society and Resource Management, Park City, UT. June.

Metcalf, A.L., J.C. Finley, A.E. Luloff, and R.C. Stedman. 2007. Exploring Pennsylvania forestlands: Recreational perspectives of private forest landowners. Northeast Recreational Research Symposium, Bolton Landing, NY. April.

Finley, J.C., A.L. Metcalf, A.E. Luloff, R.C. Stedman. 2007. Private forest landowner: Revisiting our "myth-perceptions." 13th International Symposium for Society and Resource Management, Park City, UT. June.

Metcalf, A.L., J.C. Finley, A.E. Luloff, R.C. Stedman. 2007. Methods matter: Exploring Pennsylvania's private forest landowners. Society of American

Foresters National Convention, Pittsburgh, PA. August.

An Information Use Segmentation Analysis of Forest Owners in New York and Indiana

Funded by: Cornell Univ. Agric. Exper. Sta., Cornell Cooperative Extension, USDA Initiative for Future Agriculture & Food Systems

Collaborators: Peter Smallidge (Dept. of Nat. Resour.); Amy Ross-Davis (USDA Forest Service)

HDRU Contact Persons: Nancy Connelly, nac4@cornell.edu, and Shorna Broussard, srb237@cornell.edu

The goals of this research are (1) to develop a typology of forest owners in New York and Indiana based on sources of information utilized in forestland decision-making, (2) determine how demographic characteristics, forestland characteristics, and ownership motivations vary by segments of owners, and (3) outline and pilot-test a communication and evaluation strategy for reaching distinct segments of forest owners. Audience segmentation (or typologies) can be an effective means of identifying various types of forest owners and thus develop directed communication strategies. Few studies have examined the extent to which such directed communication efforts have been successful in reaching different types of forest owners. In this study we will use landowner typology information to tailor outreach programs to the needs, motivations, and lifestyles of landowners and evaluate the effectiveness of this approach. Mail surveys of forest owners in New York and Indiana have been conducted. Results of the analysis and outreach strategy will be available in 2008.

Community-Based Forestry on Private Lands

Funded by: Ford Foundation

Collaborators: Heidi Ballard (University of California-Davis); Ceclia Danks (University of Vermont); Steven Daniels (Utah State University); Melanie McDermott, (Rutgers University), Andrew Seidl (Colorado State University); Victoria Sturtevant (Southern Oregon University); Tony Cheng (Project Coordinator-Colorado State University); Maria Fernandez-Gimenez (Project Coordinator-Colorado State University)

HDRU Contact Person: Shorna Broussard, srb237@cornell.edu

Community-based forestry (CBF) groups often act as intermediaries and engage in boundary spanning activities. While CBF groups can be conceptualized in

many ways, this paper applies an institutional lens to the work of these unique organizations. Intermediary organizations build capacity among and enhance impact within a community, negotiate expertise within a socio-political context, and serve as trusted organizations that can mediate the public sector. Data were collected through semi-structured interviews held with intermediary organization staff, clientele, and partners. In addition to the interviews, a content analysis was conducted of organization planning and reporting documents.

Results revealed four major themes with regard to the intermediary and boundary spanning roles of community-based forestry groups: challenges, trust, wider impacts, and capacity. Challenges identified were associated with reaching and working effectively with landowners of smaller acreages, difficulties in effectively quantifying and communicating the outcomes of their activities, government resistance to change, and funding stability. Building trust and capacity were essential intermediary roles of the community-based forestry groups. Wider policy impacts were achieved by the community based forestry groups but institutionalization of those policy changes was dependent upon CBF organization and political leadership and external factors.

Despite the essential roles of intermediaries, CBFs often lack legitimacy and policymakers are often uninformed as to the value added of these organizations. Intermediaries are a complement to government and act to fill gaps and build the capacity of low-asset groups or individuals. Thus, a more equitable distribution of resources can be achieved than would be possible without the community-based forestry group acting as an intermediary. Findings from this study are currently being prepared for publication.

Project Website:

<http://welcome.warnercnr.colostate.edu/frws/cbf/>

Publication:

Cheng, T, M. Fernandez-Gimenez, H., Ballard, S. Broussard, C. Danks,, S. Daniels, M. McDermott, A. Seidl, and V. Sturvevant. 2006. Ford Foundation community-based forestry demonstration program research component. Final Report, 74 pp.

Community Perceptions of Forest Fire Risk in the Northeast US

Funded by: U.S. Forest Service

HDRU Contact Person:

Rich Stedman, rcs6@cornell.edu

In the north central and northeast United States, typically fire may “fly under the radar screen” as a

local issue. Periodic outbreaks of catastrophic fires highlight the potential increased community vulnerability that accompanies this relative neglect of fire risk. With support from the USDA-USFS National Fire Plan, we conducted a two-tiered analysis: first, we created a comprehensive matrix that integrated land data (i.e., land use, land cover, forest inventory assessment data), socio-economic indicator data such as that from the U.S. Census and Bureau of Labor statistics, and fire event data from the U.S. Forest Service. We used this to create a typology of communities vis-à-vis their vulnerability to fire. We conducted in-depth interviews of key informants in five locations that represented different cells of our vulnerability matrix, including West Virginia, Pennsylvania, Maine, Wisconsin, and Minnesota. Analysis of these interview data is ongoing in 2008.

Presentations:

Gordon, J.S., R.C. Stedman, and A.E. Luloff. 2007. Sparks of action? A comparative analysis of wild-fire risk perception and response. 13th International Symposium on Society and Resource Management, Park City, UT. June.

Gordon, J.S., R.C. Stedman, and A.E. Luloff. 2007. Wildland fire as a latent symbol of social discontent: a community analysis in southern West Virginia. Annual Meetings, Rural Sociological Society, Santa Clara, CA. August.



Communities in Transition

Funded by: Northeast States Research Cooperative

HDRU Contact Person:

Rich Stedman, rcs6@cornell.edu

Second homes are becoming increasingly prevalent in natural resource-rich areas in the Northern Forest Region. The retirement of the baby boom generation and widespread economic prosperity are 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. This project, initiated in 2007, uses qualitative (interview) and quantitative (survey-based research) methods to examine the well-being of forest-based communities in New York, Vermont, New Hampshire, and Maine that are undergoing transition to tourism and/or second home-based economies. Data collection will initiate in 2008.

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 program evaluations.

Practitioners' Guide to Black Bear Management Issue Education

Funded by: *Northeast Wildlife Damage Management Research and Outreach Cooperative*

Collaborator: Peter Otto

HDRU Contact Person:
Bill Siemer, wfs1@cornell.edu

This two-year project builds upon work accomplished through a NYSDEC-HDRU research activity (i.e., Input for Statewide Black Bear Management) and communicates the insights from that work to a regional audience of wildlife professionals, extension educators, and community leaders. The practitioner's guide and associated simulation software were published and distributed in April, 2007.

The practitioners' guide is divided into two parts. In Part I, we describe human-bear conflicts as public policy issues. We suggest that public issues education is a necessary part of working through bear management issues. Part I of the guide discusses partnering to deliver an issue education project and provides an overview of general tools and techniques for issue education in the context of black bear management.

In Part II, we present a software application called "*Responding to Problems with Bears: A Management Simulator*"—an interactive, simulation-based tool that creates opportunities for wildlife managers and stakeholders to have directed discussions about managing problem interactions between humans and bears in residential areas. Part II of the guide provides detailed instructions, support materials, and links to information resources—all the elements necessary for readers to use the interface as the focus of an issue education event with bear management stakeholders.

Publication:

Siemer, W.F., D.J. Decker, P. Otto, and M.L. Gore. 2007. Working through black bear management issues: A practitioners' guide. Northeast Wildlife Damage Management Research and Outreach Cooperative, Ithaca, NY. 48 pp.

The U.S. Fish and Wildlife Service, The U.S. Geological Survey, and Professional Societies

Funded by: *The Wildlife Society*

HDRU Contact Person:
Bruce Lauber, tbl3@cornell.edu

The Wildlife Society (TWS), the U.S. Fish and Wildlife Service (USFWS), and the U.S. Geological Survey (USGS) developed a partnership in part to explore how the involvement of USFWS and USGS biologists in scientific and professional societies could contribute to the scientific capabilities of federal biologists. In a contribution towards that effort, we are concluding a study to determine whether and how USFWS and USGS biologists are involved in TWS, the American Fisheries Society (AFS) and other scientific and professional societies and to identify the factors that influence their involvement.

Two bodies of theory serve as the theoretical foundation for this work. The Theory of Planned Behavior identifies those factors that can influence whether people engage in particular behaviors (such as becoming involved in scientific and professional societies). As such, it can help identify the types of factors that might influence involvement in scientific and professional societies. Research on organizational and professional commitment can help identify the specific factors within these types that are likely to influence behaviors of professional employees relative to their employing organizations and their professions.

During the past year, we analyzed data from a worldwide web survey of 3,755 USFWS and 932 USGS Biological Resource Division biologists and other scientists working throughout the states and have begun reporting the results of this work in publications and presentations. Our results show that while membership in societies is influenced by the motivation of individual employees, it is also influenced by factors such as external constraints (e.g., family responsibilities and costs), supervisor support for membership, and the membership of friends, peers, and supervisors in scientific societies. In addition to our work on publications and presentations, we have met with officials

from USFWS, USGS, TWS, and AFS to consider the policy implications of our findings.

Publication:

Taylor, E.J., and T.B. Lauber. 2007. Values and functions of scientific societies: Membership, participation, and perceptions of USFWS and USGS-BRD wildlife biologists. *The Wildlife Professional* (Summer):28-31.

Presentations:

Taylor, E.J., and T.B. Lauber. 2007. (Invited) Are professional scientific societies relevant to today's resource agencies? Evidence from a recent survey of employees of the U.S. Fish and Wildlife Service and the U.S. Geological Survey-Biological Resources Discipline. Invited presentation, 14th Annual Meeting of The Wildlife Society, Tucson, AZ. September.

Taylor, E.J., and T.B. Lauber. 2007. Values and functions of scientific societies: Membership, participation, and perceptions of USFWS and USGS-BRD employees. U.S. Fish and Wildlife Service, Arlington, VA. May.

**Institutional Commitment to Sustainability:
An Evaluation of Natural Resource
Extension Programs**

Funded by: *USDA National Research Initiative*

HDRU Contact Person: Shorna Broussard, srb237@cornell.edu

Collaborator: John Bliss, Oregon State University

Charged with addressing societal concerns through education, Cooperative Extension is uniquely capable of meeting educational needs related to natural resource sustainability. The purpose of this research was to determine institutional commitment to sustainability by examining Natural Resource Extension program inputs (staff, budgets), activities (programs), and participation (equity in program delivery).

A document analysis of Natural Resource Extension planning and reporting documents was conducted to provide contextual and historical data for the study. In addition, 58 in-depth interviews were conducted with Natural Resource Extension personnel in the Alabama Cooperative Extension System and the Oregon State University Extension Service.

This research moves beyond the familiar teaching and research functions of higher education institutions and focuses on Cooperative Extension, which is the outreach arm of universities. The results discuss challenges and opportunities associated with implementing

sustainability through these outreach education programs. In both Alabama and Oregon, the Agriculture, Home Economics, and 4-H programs dominate human and economic resource investment in Cooperative Extension. Natural Resource Extension programs in Alabama and Oregon represents 6% and 14%, respectively, of all program expenditures in Cooperative Extension. Both states have educational programs that address sustainability of natural resources and those programs were interdisciplinary in nature. We found little evidence of extensive participation in Natural Resource Extension programs by minorities and other non-traditional clientele. Lastly, Oregon's political context was more conducive to broadening Natural Resource Extension program work in sustainability.

Natural resource Extension programs at universities play a significant role in educating private landowners, the public, and professionals about various aspects of forestry and natural resources. Based on this study of Natural Resource Extension programs in Alabama and Oregon, the following are needed for Extension to address natural resource sustainability through its educational programs: sufficient intellectual and financial commitment to sustainability, diverse and inclusive participation in programs, and collaborative interdisciplinary programming. The analysis presented here can aid other educators as they explore sustainability through educational programming.

Since natural resource Extension programs address societal concerns through problem solving, grassroots education, and research and technology dissemination, they are poised to do work in the sustainability arena. No study to date has examined sustainability from the aspect of natural resource Extension educators in Oregon and Alabama. An understanding of current investment in sustainability through education is fundamental to building a strong Extension program in this area.

Publication:

Broussard, S.R., and J.C. Bliss. 2007. Institutional commitment to sustainability: an evaluation of natural resource Extension programs in universities in Alabama and Oregon. *International Journal of Sustainability in Higher Education* 8(3):272-284.

Aquatic Stewardship Symposium Proceedings

Funded by: *Recreational Boating and Fishing Foundation; Sport Fishing and Boating Partnership Council (U.S. Fish and Wildlife Service)*

HDRU Contact Person: Barbara Knuth

In 2007, the American Fisheries Society published *Aquatic Stewardship Education in Theory and Practice*, a peer-reviewed publication edited by HDRU members Barbara Knuth and Bill Siemer. This publi-

cation represents the final product from a special symposium at the 2005 American Fisheries Society (AFS) Annual meeting. Organized with leadership from Knuth, the symposium brought together 18 speakers to discuss the most current thinking about how to define, foster, and evaluate desirable aquatic stewardship behaviors, as well as how to develop the educational programs and other motivating forces underlying such behavior. The symposium and book project were made possible by a partnership among academics, aquatic resource educators, fishery management professionals, and the fishing and boating industries to develop a shared understanding of desired characteristics of aquatic resource stewardship.

Publications:

Knuth, B.A., and W.F. Siemer, eds. 2007. Aquatic stewardship education in theory and practice. American Fisheries Society, Symposium 55, Bethesda, MD.

Knuth, B. A. 2007. Improving our understanding of the theory and practice of aquatic stewardship. Pp. 8-10 *in* B.A. Knuth and W.F. Siemer, eds. Aquatic stewardship education in theory and practice. American Fisheries Society, Symposium 55, Bethesda, MD.

Knuth, B.A. and W.F. Siemer. 2007. Advancing the theory and practice of aquatic stewardship education. Pp. 179-187 *in* B.A. Knuth and W.F. Siemer, eds. Aquatic stewardship education in theory and practice. American Fisheries Society, Symposium 55, Bethesda, MD.

Siemer, W.F. and G. Hitzhusen. 2007. Revisiting the stewardship concept: Faith-based opportunities to bridge from principles to practice. Pgs. 103-116 *in* B.A. Knuth and W.F. Siemer, eds. Aquatic stewardship education in theory and practice. American Fisheries Society, Symposium 55, Bethesda, MD.

Teaching: Natural Resource Planning and Management

Bruce Lauber continued to teach Natural Resource Planning and Management (NTRES 330), a core course in the Department of Natural Resources curriculum required of all natural resource majors. The course focuses on the principles of planning as applied to natural resource issues. The 37 students enrolled in the course in 2007 worked together in case study groups throughout the semester to develop management plans for current controversial natural resource issues. Each student played the role of a stakeholder involved in an issue, researched the interests of the stakeholder, and advocated that those interests be reflected in the final plan developed. The case study groups focused on the management of large mammals

in the Greater Yellowstone Ecosystem, balancing salmon restoration with hydroelectric power in the Columbia River basin, protecting elephant populations while minimizing problems caused by elephants in Kenya, and meeting both environmental and economic needs in the Adirondacks.

Other Teaching Contributions by HDRU Staff

Jody Enck supervised the successful completion of Caitlin Bell's undergraduate research honors thesis project: "Formative evaluation of Massachusetts Audubon's Coastal Waterbird Program."

Jody Enck is currently supervising Meredith Odato, Presidential Research Scholar and Udall Scholar, on her research honor's thesis: "Assessing trends in Cornell University undergraduates' attitudes about the environment and sustainability."

Lauber, T.B. 2007. (Invited) Community involvement and community-based management. COMM 456 (Community Involvement in Environmental Issues), Department of Communication, Cornell Univ., Ithaca, NY. April.

Lauber, T.B. and J.A. Tantillo. 2007. (Invited) The ethics of wildlife fertility control. Department of Natural Resources, Cornell Univ., Ithaca, NY. March.

Lauber, T.B. 2007. Directions of natural resources: Honoring our past, envisioning our future. Panel moderator. Department of Natural Resources Graduate Student Association Symposium, Cornell Univ., Ithaca, NY. January.

Other Presentation on Natural Resources Communication and Education:

Lauber, T.B. 2007. (Invited) Capacity building and learning in natural resource and environmental management. Institute of Ecosystem Studies, Millbrook, NY. February.



Water Resources Management and Policy

In 2005, HDRU staff completed a four-year study of the effects of Lake Ontario and St. Lawrence River water levels on recreational boating and boating-related tourism. In 2006, we completed studies examining the economic impacts of zebra mussels in New York, the needs of boaters and commercial fishermen for harbors in Alaska, and the value of various increments of time to commercial fishermen in Alaska. Water resources efforts in 2007 were limited to fisheries-related studies (see that section of this report). One publication from the earlier study on water levels occurred in 2007.

Publication:

Connelly, N.A., T.L. Brown, and J.W. Brown. 2007. Measuring the net economic value of recreational boating as water levels fluctuate. *Journal of the American Water Resources Association* 43(4): 1016-1023.



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 heading, as articulated below:

Lake Quality and Sense of Place

Funded by: *National Science Foundation*

HDRU Contact Person:
Rich Stedman, rcs6@cornell.edu

Understanding the relationship between sense of place and perceived environmental quality is crucial if managers are serious about recent enthusiasm for “managing for a sense of place.” A survey was implemented in ten lake districts (total n=2,278 respondents), including five sites in North America and five in Europe. These sites share several commonalities: they all lie at fairly similar latitudes in the Northern Hemisphere, and they are all regions relatively rich

in lake resources. This research explored how these findings are similar or different across sites with very different ecological and social characteristics.

Publication:

Stedman, R.C., R.C. Lathrop, B. Clark, J. Ejsmont-Karabin, P. Kasprzak, K. Nielsen, D. Osgood, M. Powell, A.M. Ventela, K.E. Webster, and A. Zhukova. 2007. Place attachment and perceived environmental quality in North American and European temperate lake districts. *Lake and Reservoir Management* 23:330-344.

Photo-Based Methods for Exploring Sense of Place

Funded by:
Sustainable Forest Management Network Centres of Excellence (Canada)

HDRU Contact Person:
Rich 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 utilized 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).

Publications:

Stedman, R.C., and T.M. Beckley. 2007. If we knew what it was we were doing, it would not be called research, would it? (Rejoinder to Williams and Patterson). *Society and Natural Resources* 20:939-943.

Beckley, T.M., R.C. Stedman, S. Wallace, and M. Ambard. 2007. Snapshots of what matters most: Using resident employed photography to articulate sense of place. *Society and Natural Resources* 20:913-929.

Presentation:

Matarrita-Cascante, D., R. Stedman, and A.E. Luloff. 2007. Permanent and seasonal residents' community attachment in natural amenity-rich areas: Exploring the contribution of community and place-based factors. Annual Meetings, Rural Sociological Society, Santa Clara, CA. August.

**Climate Change: Perception,
Community Resilience and
Policy Response**

Funded by: *Climate Change Action Fund (Canada),
Canadian Forest Service*

HDRU Contact Person:
Rich Stedman, rcs6@cornell.edu

Climate change entails diverse sets of risks, potential outcomes, and policy initiatives. This ongoing project examines public perception of climate change risks, community response to these risks (especially among the communities of the Canadian boreal forest), and policy responses to these risks.

Specific projects under this area include: (1) a large online survey of Canadian policy actors, with a special emphasis on those involved in climate change; (2) survey-based case studies of four Canadian communities facing different climate change-related threats (negotiations are underway with USFS personnel to extend these community case studies to communities in the United States); and (3) development of a framework for integrating the climate-based predictions, ecological change, and socio-economic impacts that comprise community resilience.

Publications:

Wellstead, A.M., and R.C. Stedman. 2007. Coordinating future climate change policies across Canadian natural resources. *Climate Policy* 7:29-45.

Williamson, T., D.T. Price, J.L. Beverly, P.M. Bothwell, J.R. Parkins, M.N. Patriquin, C.V. Pearce, R.C. Stedman, and J.A. Volney. 2007. A framework for assessing vulnerability of forest-based communities to climate change. *Canadian Forest Service Information Report NOR-X-414* (peer reviewed).



Natural Resources 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.

American Fisheries Society (AFS) Membership Survey

Funded by: American Fisheries Society

HDRU Contact Person:

Tom Brown, tlb4@cornell.edu

Every few years, AFS conducts a membership survey for use in its strategic planning. HDRU has worked with AFS on the last two surveys, the most recent of which occurred in 2004. In 2007, we began to work with AFS staff and their membership committee on an updated survey, for which a near-final draft was completed by late 2007. The survey will be conducted via web in 2008, with the assistance of Cornell's Survey Research Institute.

Summary of Consultations, Outreach Activities, 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 2007 are summarized below.

Consultation to the New York Fish and Wildlife Management Board

HDRU Leader Tom Brown continued to serve as the College of Agriculture and Life Sciences representative to the New York Fish and Wildlife Management Board. In 2007 this responsibility entailed preparing semi-annual progress reports to keep Board members aware of HDRU activities. A recommendation of the Access Committee of the Board was that NYSDEC make recommendations for improving New York's limited liability recreation statute (General Obligations Law 9-103) based on Brown's 2006 research. NYSDEC had already begun work on this topic.

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 NYSDEC's annual small game and furbearer harvest surveys. HDRU staff designed survey instruments and assumed responsibility

for implementation of survey mailings (sample sizes of 5,000 and 4,500). NYSDEC assumed responsibility for data entry and analysis.

Long Island Turkey Hunter Survey

HDRU staff provided review comments on a NYSDEC questionnaire to assess hunter opinions about opening a fall turkey hunting season on Long Island.

NYSDEC Lands and Forest Committee Appointments

Rich Stedman and Shorna Broussard were appointed by the NYSDEC Division of Lands and Forests to serve as New York representatives on the Northeastern Area Association of State Foresters Forest Resource Planners Committee. They were selected on their experience and expertise in stakeholder involvement and incorporating social science in resource planning. They were also selected to provide guidance to the NYSDEC Division of Lands and Forests through their advisory committee, the State Forest Stewardship Coordinating Committee.

Integrating Human Dimensions in Natural Resource Management in the National Park Service

HDRU Co-leader Dan Decker worked with the Biological Resource Management Division (BRMD) of the National Park Service to develop approaches for addressing the human dimensions of wildlife management in national parks. One aspect of this project, a Ph.D.-level traineeship established within HDRU, resulted in Kirsten Leong (see Dr. Leong's report in this document) completing a doctoral degree. Dr. Leong was hired by NPS as the human dimensions program lead for BRMD. Dan collaborated with BRMD staff in several efforts during a sabbatical leave in 2007. In addition to collaborating on the project "Deer, People, and Parks" with Dr. Leong, his activities included teaming with NPS staff to organize and then facilitate a panel presentation on wildlife habituation at the George Wright Society conference, advising on a deer management issue in Blue Ridge Parkway, planning a Yellowstone NP Wildlife Health conference as part of strategic planning for a wildlife health program at Yellowstone NP, and input on NPS planning process for developing desired future conditions vis-à-vis biological resources management in National Parks.

Professional Training and Outreach: Integrating Human Dimensions in Wildlife Management

HDRU Co-leader Dan Decker and Bill Siemer developed and instructed in a workshop based on concepts in the book they co-authored, *Thinking Like a Manager*. Colleagues Dr. Shawn Riley (Michigan State University) and Dr. Kirsten Leong (National Park Service) also instructed. The workshop, designed for wildlife managers, was piloted with nine staff of the Florida Fish and Wildlife Conservation Commission. Dan also continued work with the FWC leadership to develop a strategy for incorporating human dimensions insight and inquiry into the agency. This is an ongoing project.

"Pathways to Success"—International Conference on Human Dimensions of Fish and Wildlife Management

HDRU Co-leader Dan Decker is representing Cornell HDRU in planning for an international conference on human dimensions of fish and wildlife management, slated for fall 2008.

Lake Ontario SEARCH Conference

Bruce Lauber and Tommy Brown are helping Great Lakes Regional Research and Information Network (GLRRIN) to design a search conference to identify research and information needs for the Lake Ontario system. Search conferences are methodologies for participatory planning, which rely on diverse representation of stakeholders and democratic procedures to reach conclusions that are widely viewed as legitimate. Two search

conferences will be facilitated by the HDRU for GLRRIN in March and April 2008.

Consultation to the Fish Mercury Project of the California Bay-Delta Authority

HDRU Co-leader Barbara Knuth chairs the Scientific Peer Review Panel for this major project that is examining mercury contamination in fish in the San Francisco Bay-Delta watershed, and working to increase public awareness of fish contamination issues, with the overall goal of reducing mercury exposure in humans and wildlife.

Consultation with St. Regis-Mohawk Tribe

Bruce Lauber consulted with the St. Regis Mohawk Tribe Environmental Division on their process for developing an integrated resource management plan for the St. Regis Mohawk Reservation.

Program Review Activities

HDRU Co-Leader Dan Decker served on an external review panel for the Department of Fisheries and Wildlife, Michigan State University.

Service on Boards

HDRU Co-leader Dan Decker served as chair of the Board of Governors for the New York Sea Grant Institute.

Council of Environmental Deans and Directors

HDRU Co-leader Barbara Knuth has been appointed by the College of Agriculture and Life Sciences Dean to serve as Cornell's representative on the Council of Environmental Deans and Directors, the university affiliate program of the National Council for Science and the Environment.

Leadership in Professional Societies

HDRU Co-leader Barbara Knuth served as Vice-Chair of the World Council of Fisheries Societies, and on the International Steering Committee for the 5th World Fisheries Congress scheduled for October, 2008 in Yokohama, Japan.

Alumni Award

HDRU Co-leader Barbara Knuth received the Gerald H. Cross Alumni Leadership Award from the Department of Fisheries and Wildlife, College of Natural Resources, at Virginia Tech. The award recognizes achievement in leadership professionally and scientifically.

Best Ph.D. Student Paper Award

Kirsten Leong, former HDRU graduate student and now with the National Park Service in Fort Collins, Colorado, won the Best Ph.D. Student Paper Award at the 13th International Symposium on Society and Resource Management (ISSRM) in Park City, Utah, June 17th–21st, 2007. Her paper was titled "The Tragedy of Becoming Common: Landscape Change and Perceptions of Wildlife."

Other Academic and Professional Briefs

HDRU leader Tom Brown continued to serve as an associate editor for the *Journal of Wildlife Management*.

Rich Stedman continues to serve on the editorial boards for the journals *Society and Natural Resources*, *Forestry*, and *Wildlife Biology*. He also continues to serve on the governing council for the International Association for Society and Resources Management.

HDRU graduate student Heidi Kretser participated by invitation in a three-day workshop at the White Oak Conservation Center in Yulee, FL with 20 colleagues

from the Wildlife Conservation Society's Global Program including representatives from the Madagascar, Afghanistan, Tanzania, Ethiopia, Indonesia, Bolivia and Brazil programs. The workshop focused on the impacts of conservation on livelihoods for residents in communities in and around protected lands. The workshop resulted in WCS Working Paper No. 32 entitled, "Protected Areas and Livelihoods: A Conservation Perspective" in which Heidi authored a case study on the Adirondack Park. The publication is available from the WCS website www.wcs.org.

Heather Wiczorek Hudenko was one of 20 people selected to participate in the Emerging Wildlife Conservation Leaders (EWCL) program. The EWCL initiative brings together emerging leaders in the wildlife conservation field for capacity building and intense training in campaign development and cross-organizational collaboration. As part of the training, EWCL participants conduct a two-year innovative international conservation project. Heather's project team is working to promote protection for the endangered North American jaguar. In 2007, the team's campaign increased awareness about jaguar issues and raised funds for the purchase of land to expand a reserve in Sonora, Mexico. The EWCL program is sponsored by the U.S. Fish & Wildlife Service, Defenders of Wildlife, and White Oak Conservation Center/Howard Gilman Foundation.