22nd Annual
Northeastern Recreation Research Symposium

April 11, 12 and 13, 2010
The Sagamore
Bolton Landing, New York

Symposium Schedule
Welcome!

Welcome to the 22nd Annual Northeastern Recreation Research (NERR) Symposium. The 2010 session demonstrates NERR’s expanding reach as papers feature authors from 29 U.S. states, the District of Columbia, two Canadian provinces, and four countries outside of North America. NERR has emerged as one of the premier outlets for scholarship and applied research in recreation and human dimensions of natural resources. NERR’s growth and success can be traced to the format of this annual meeting, which is marked by the supportive discourse that occurs among agency professionals, graduate students and academicians who work, teach and utilize research to guide policy and practice. The topics are wide-ranging and represent the latest thinking and applications related to issues of conservation, sustainability, resource management, planning, and economic and community development through recreation and tourism. We thank you for coming, and hope you enjoy the 2010 NERR Symposium!

2010 NERR Steering Committee

- Arne Arnberger – University of BOKU, Vienna, Austria
- Erik Backlund, St. Lawrence University
- Kelly Bricker – University of Utah
- Robert Bristow – Westfield State College
- Robert Burns – West Virginia University
- Fred Clark – US Forest Service
- John Confer – California University of Pennsylvania
- Chad Dawson – SUNY College of Environmental Science & Forestry
- Edwin Gόmez – Old Dominion University
- Alan Graefe – Penn State University
- Laurie Harmon – George Mason University
- Andrew Holdnak – University of West Florida
- Deborah Kerstetter – Penn State University
- David Klenosky – Purdue University
- Diane Kuehn - SUNY College of Environmental Science & Forestry (Website Coordinator)
- Walter Kuentzel – University of Vermont
- Gerard Kyle – Texas A&M University
- Bob Lee – Bowling Green State University
- James Murdy – NY Institute of Technology
- Chad Pierskalla – West Virginia University
- Roy Ramthun – Concord University
- Robert Robertson – University of New Hampshire
- Ellen Drogin Rodgers – George Mason University
- Rudy Schuster – US Geological Survey (Fort Collins, Colorado)
- David Solan – Mansfield University
- Sharon Todd – SUNY-Cortland
- Gail Vander Stoep – Michigan State University
- Hans Vogelsong – East Carolina University
- Christine Vogt – Michigan State University
- Clifton Watts – East Carolina University (2010 Conference Chair)
- Rodney Warnick – University of Massachusetts at Amherst
- Thomas Wickham – California University of Pennsylvania (2010 Proceedings Chair)
- Maureen Wakefield – SUNY College of Environmental Science & Forestry (Conference Logistics)
- Alvin Yu, St. Cloud State University
- Harry Zinn – Penn State University
# NERR AT A GLANCE

## Sunday, April 11

| Time            | Event                                                                 | Room     |
|-----------------|                                                                     |          |
| 1:00 – 1:20 pm  | **Welcome and Opening Remarks** – Clifton Watts, Conference Chair | Wapanak  |
| 1:30 – 3:10 pm  | **Session I**<br>Fish and Wildlife Management I<br>Place Meanings, Attachment and Identity<br>Leisure Research<br>Engaging Diverse Populations | Wapanak  |
| 3:30 – 4:45 pm  | **Session II: Management Roundtables**<br>Tourism in the 21st Century<br>Back Country and Trail Management<br>Outdoor Recreation Trends | Triuna   |
| 5:30 – 6:30 pm  | **Poster Session**                                                 |          |
| 6:30 pm         | **Buffet Dinner**                                                  | Bellvue  |
| 7:15 pm         | **Founder’s Forum** – Dr. Sharon Todd, SUNY-Cortland               | Bellvue  |
| 8:30 pm         | **Dinner Concludes**                                               |          |

## Monday, April 12

| Time            | Event                                                                 | Room     |
|-----------------|                                                                     |          |
| 8:00 – 9:40 am  | **Session III**<br>Tourism<br>Qualities of Leisure Experiences<br>Fish and Wildlife Management<br>Management Applications | Wapanak  |
| 10 – 11:45 am   | **Session IV: Management Roundtables**<br>Outdoor Recreation Trends<br>International Learning | Evelley  |
| 12:00 – 1:45 pm | **Luncheon & Keynote Address**<br>Dr. James Gramann, Visiting Chief Social Scientist National Park Service | Bellvue  |
| 2:00 – 3:45 pm  | **Session V**<br>Recreation Resource Management I<br>Rural Recreation and Tourism<br>Norms, Crowding and Conflict<br>Measurement and Application | Wapanak  |
| 4:00 – 5:30 pm  | **Session VI**<br>Planning and Partnerships<br>Urban Green Space and Environments<br>Carrying Capacity<br>Conservation and Nature-based Tourism & Recreation | Triuna   |
| 5:30 pm         | **NERR Steering Committee Meeting**                                | Triuna   |

## Tuesday, April 13

| Time            | Event                                                                 | Room     |
|-----------------|                                                                     |          |
| 8:00 – 9:40 am  | **Session VII**<br>Outdoor Recreation II<br>Climate Change & Resource Planning | Evelley  |
| 10:00 – 11:00 am| **Session VII**<br>Tourism Marketing and Management<br>Youth          | Triuna   |
12:00 p.m. and throughout the conference Registration (Conference Center)

1:00 – 1:20 pm Welcome and Opening Remarks (Wapanak)

Clifton Watts, 2010 NERR Chair (East Carolina University)

Sessions

1:30-3:10pm – Session I

Fish and Wildlife Management I (Wapanak) Moderator: Ellen Drogin Rodgers

- Predicting Big Game Hunting Intentions and Behavior: A Survey of Oregon Hunters Suresh Shrestha (West Virginia University), Robert C. Burns (West Virginia University)

- Differences in Reported Satisfaction Ratings by Consumptive and Nonconsumptive Recreationists: A Comparative-Analysis of Three Decades of Research Jennifer M. Roemer (Colorado State University), Jerry J. Vaske (Colorado State University)

- Differences in Perceptions of Conservation in Consumptive and Non-consumptive Wildlife Related Activities Elizabeth A. Covelli (The Pennsylvania State University), Alan R. Graefe (The Pennsylvania State University), Andrew Mowen (The Pennsylvania State University), Nate Trauntvein (The Pennsylvania State University)

- Evaluating the Economic Feasibility of a Trout Stocking Project at Pipestem State Park Chad D. Pierskalla (West Virginia University), Roy Ramthun (Concord University), Kenneth J. Semmens (West Virginia University)

- Use of Multinomial Models to Determine Contributions to Attitude Development: The Case of CWD and Illinois Deer Hunters Craig Miller (University of Georgia)
Place Meanings, Attachment and Identity  (Evelley)  Moderator: SarahJane Marshall

- Impact of Place Identity and Geographic Proximity on Intentions to Visit a New Urban Recreation Facility on a Former Brownfield Site David B. Klenosky (Purdue University), SaraJane Marshall (Purdue University), Cherie L. Fisher (U.S. Forest Service), Herbert W. Schroeder (U.S. Forest Service), Christine A. Vogt (Michigan State University)

- Exploring the Antecedents of Place Attachment: The Role of Motivation and Involvement for Texas Anglers Juaying Lu (Texas A&M University), Michael A. Schuett (Texas A&M University)

- Place Attachment and Recreation Demand on the West Branch of the Farmington River Jordan W. Smith (North Carolina State University), Roger L. Moore (North Carolina State University)

- Willingness to Pay for an Ecological Park Experience: The Influence of Place Attachment, Satisfaction, and Experience Won Seok Lee (Pennsylvania State University), Alan R. Graefe (Pennsylvania State University)

- What Does it Mean to be a Nation’s Front Yard? Place Meanings and Perceptions of the National Mall Laurlyn K. Harmon (George Mason University), Margaret J. Daniels (George Mason University), Minkyung Park (George Mason University), Russell E. Brayley (George Mason University)

Leisure Research (Triuna)  Moderator: Carla Barbieri

- Motivations and Sensation Seeking Characteristics of Recreational Storm Chasers Shuangyu Xu (University of Missouri), Carla Barbieri (University of Missouri), Sonja Wilhelm Stanis (University of Missouri)

- Korean American Males’ Interracial Contact Experiences during Serious Leisure Activity KangJae "Jerry" Lee (Texas A&M University), David Scott (Texas A&M University)

- The 4 Fs Associated with Tailgating: Food, Friends, Family, and Football Deborah Kerstetter (Pennsylvania State University), So Young Bae (Pennsylvania State University), Christopher Balough (Pennsylvania State University), Philesia Dombroski (Pennsylvania State University), Matthew McKinney (Pennsylvania State University), Daniel Neff, Mary Stansfield (Pennsylvania State University), Lindsay Usher (Pennsylvania State University)

- Analyzing Norm Power between Two Marine-based Recreation Groups: SCUBA Divers and Snorkelers Lauren M. Heesemann (NOAA), Jerry J. Vaske (Colorado State University), Stuart Cottrell (Colorado State University), David K. Loomis (University of Massachusetts Amherst)

- An Application of Importance-Performance Analysis in Recreational Storm Chasing Jiawen Chen (University of Missouri), Sonja A. Wilhelm Stanis (University of Missouri), Carla Barbieri (University of Missouri)
Engaging Diverse Populations (Albenia)  Moderator: Lincoln Larson

- Park-Based Physical Activity in Ethnically-Diverse Populations: A Case Study in Georgia State Parks Lincoln R. Larson (Univ. of Georgia), Jason W. Whiting (University of Georgia), Gary T. Green (University of Georgia)

- Willingness To Pay For State Parks: Differences in Participation Patterns Across Cultural Diversity Jason W. Whiting (University of Georgia), Lincoln R. Larson (University of Georgia), Dr. Gary T. Green (University of Georgia)

- Behaviors, Attitudes and Management Priorities for People of Difference in Pennsylvania Nate Trauntvein (Pennsylvania State University), Andrew J. Mowen (Pennsylvania State University), Alan R. Graefe (Pennsylvania State University), Elizabeth A. Covelli (Pennsylvania State University)

- Engaging Communities of Color in the National Parks: Identifying Promising Practices to Developing and Running Programs to Engage Diverse Youth Rebecca Stanfield McCown (University of Vermont), Robert Manning (University of Vermont), Daniel Laven (NPS Conservation Study Institute), Nora Mitchell (NPS Conservation Study Institute)

3:10- 3:30 pm  PM Break (Beverages)

3:30-4:45 pm  Session II -- Roundtable Discussions

Tourism in the 21st Century (Wapanak)  Session Chair: Geoffrey Godbey

- The Future of Tourism Geoffrey Godbey (Pennsylvania State University), Deborah Kerstetter (Pennsylvania State University), Paul Eagles (University of Waterloo)

Back Country and Trail Management (Triuna)  Session Chair: Charles M. Nelson


Outdoor Recreation Trends (Albenia)  Session Chair: Michael A. Schuett

- “Getting a Handle” on Existing Data to Assess the Use of Parks/Recreation/Protected Areas in the U.S. Michael A. Schuett (Texas A & M University), Rodney B. Warnick, (University of Massachusetts), Tom Stevens (University of Massachusetts), Thomas A. More (U.S. Forest Service), Walter F. Kuentzel (University of Vermont), Susan I. Stewart, (U.S. Forest Service), Brandon Flint (National Park Service)
5:30 – 6:30 pm  **Poster Session**  (Conference Center Foyer)

- **Art as a Teaching and Learning Component in Environmental Education and Interpretation**  
  Ami A. Flowers (University of Georgia), Gary T. Green (University of Georgia)

- **The Effects of Phosphorous Loading from Campfire Ash on Algal Growth within a Small Adirondack Lake: An Exploratory Microcosmic Experiment**  
  April L. McEwen (SUNY-ESF), Julia S. Palmer (SUNY-ESF)

- **Agri-leisure: Exploring the “Fun” of Local Food**  
  Ben Amsden, (Plymouth State University), Jesse McEntee (Cardiff University)

- **An Analysis of White-water Rafters’ Perceptions of Social Carrying Capacity Variables**  
  Candace Weaver (West Virginia University), Robert C. Burns (West Virginia University), Alan R. Graefe (Pennsylvania State University)

- **Relationships among Kenting National Park, Visitors, and Volunteers: Resource Investment Examination of Relationship Development and Failure**  
  Chen-Wei Cheng (Pennsylvania State University), Alan Graefe (Pennsylvania State University), Duarte Morais (Pennsylvania State University)

- **Land Managers’ Perceptions of Nature-Based Parks As Places to Engage in Physical Activity: A Proposed Study**  
  Daniel W. Walden (University of Missouri), Sonja A. Wilhelm Stanis (University of Missouri)

- **Going Green: Trends and Actions among Michigan Park and Recreation Departments**  
  Eric L. Longsdorf (University of Toledo), Cary Hojnicki (University of Toledo)

- **Assessing the Amenity Preferences of OHV Users at West Virginia’s Hatfield-McCoy Trail System**  
  Heather Hall (Concord University), Roy Ramthun (Concord University)

- **Environmental Education through Student Exchange**  
  James L. Pasley (University of Georgia), Lawrence A. Morris (University of Georgia), Gary T. Green (University of Georgia)

- **Recreation and Setting Preferences: A Survey of Visitors in the Chattahoochee National Forest**  
  John A. Saye (University of Georgia), Gary T. Green (University of Georgia)

- **A Naturalistic Inquiry Into the Social World of Whitewater Kayakers**  
  Katharine A. Pawelko (Western Illinois University), Jason W. Whiting (University of Georgia)

- **American Karoshi**  
  Alyshia Zurlick (The College at Brockport, State University of New York), Lynda Sperazza (The College at Brockport, State University of New York), Joel Frater (The College at Brockport, State University of New York), Jim Fatula (The College at Brockport, State University of New York)

- **Constraints to Participation in an Outdoor Orientation Program**  
  Madelein S. Hoden (West Virginia University), Dave Smaldone (West Virginia University), Greg Corio (West Virginia University)

- **Visitor Experience on the White Salmon River: An Examination of Encounters, Norms, and Crowding**  
  Robert J. Cooper (Pennsylvania State University), Alan R. Graefe (Pennsylvania State University), Robert C. Burns (West Virginia University)

- **Assessment of the Perceived Benefits and Preferences for Agritourism Among Missouri Residents: A Proposed Study**  
  Sandra Sotomayor (University of Missouri), Carla Barbieri (University of Missouri), Francisco X. Aguilar (University of Missouri), Sonja Wilhelm Stanis (University of Missouri)
An Integrated Model Of Measures Examined In Previous Studies Of Social Displacement In Outdoor Recreation Sandy A. Strickland (West Virginia University)

Off-Highway Vehicle Use in Eastern Oregon Sarah D’Agostin (West Virginia University), Robert C. Burns (West Virginia University) Alan R. Graefe (Pennsylvania State University)

Local Market Brand Strength: Examining Sport Tourist Behavior for the NFL’s Pittsburgh Steelers Joshua A. Shuart (Sacred Heart University)

Ethnic and Minority Groups Visitation to the Chattahoochee-Oconee National Forest Susan E. Parker (University of Georgia), Cassandra Johnson (USDA Forest Service), Gary T. Green (University of Georgia)

A Collective Informed Observation on Public Land Visitor Use Regulation Methods in Austria and USA Jessie Meybin (West Virginia University), Robert C. Burns (West Virginia University), Alan R. Graefe (Pennsylvania State University), Arne Arneberger (University of BOKU, Vienna)

Reducing the By-Catch Impact of Lost Fishing Gear through the Use of Biodegradable Materials Hans Vogelsong (East Carolina University), Jimmy Nobles (Commercial Fisherman, Greenville, NC)

The Effect of Question Formatting on Responses to Mail and Internet Surveys Benjamin D. Poole (University of Massachusetts-Amherst) David K. Loomis (University of Massachusetts-Amherst)

An Application of Importance-Performance Analysis in Recreational Storm Chasing Jiawen Chen, Sonja A. Wilhelm Stanis, Carla Barbieri (University of Missouri)


Crowding, Conflict, Motivations, and Trip Experience: A Look at Users in the Pasayten and Lake Chelan-Sawtooth Wilderness Areas Teri L. Chuprinko (West Virginia University), Robert C. Burns, West Virginia University, Alan Graefe, Pennsylvania State

6:30 pm-8:30pm Buffet Dinner (Bellvue)

7:15pm Founder’s Forum Speaker

Dr. Sharon Todd (Associate Professor, SUNY-Cortland)
8:00-9:40 am  Session III

Tourism (Wapanak)  Moderator: Alvin Yu

- Wild and Wonderful West Virginia: An Assessment of Tourism Resource Appeal of Different Visitor Groups  David M. Dyre (West Virginia University), Jinyang Deng (West Virginia University)
- An Exploratory Study of the Application of Sense of Community in a Local Festival  Alvin H. Yu (St. Cloud State University), Fengfeng Ke (University of New Mexico)
- Volunteer Tourism: Insights for Future Research from Participant Observation  Yasuharu Katsube, (University of Missouri), Carla Barbieri (University of Missouri)
- Tourism Certification in the USA: An Exploratory Analysis of Program Components and Management Issues  Jeremy R. Schultz (University of Utah), Phil Sarnoff (University of Utah), Kelly S. Bricker (University of Utah)
- Day-Trippers and Weekend Travelers: An Exploration of Travel Behavior Differences  Yawei Wang (Montclair State University), Susan Weston (Montclair State University)

Qualites of Leisure Experiences (Evelley)  Moderator: Clifton Watts

- Identity and Leisure Behavior  Jinhee Jun (Texas A&M University), Gerard T. Kyle (Texas A&M University)
- Validity of a Self-Classification Measure of Recreation Specialization among Snorkelers and Scuba Divers  Mark D. Needham (Oregon State University), Brian W. Szuster (University of Hawaii)
- An Exploration of Centrality in Distance Hikers and its Application to Involvement  Corey Williams, (SUNY ESF), Dr. Chad Dawson (SUNY ESF)
- Social Worlds of Rock Climbers at Seneca Rocks, West Virginia: Implications for Recreation Planning and Management  Katherine A. Thompson (West Virginia University), Chad D. Pierskalla (West Virginia University), Steve W. Selin (West Virginia University), David A. Smaldone, (West Virginia University)
- Optimal Experience and Ability in Rock Climbing and Bouldering  Andrew James McDonald (SUNY ESF), Diane Kuehn (SUNY ESF)
Fish and Wildlife Management II (Triuna) Moderator: Hans Vogelsong

- Constraints and Motivations Related to Bass Fishing along the Lake Ontario Coast Matthew P. Brincka (SUNY-ESF), Diane M. Kuehn (SUNY-ESF), Valerie A. Luzadis (SUNY-ESF)


- Normative Beliefs of Galapagos Fishermen Arren Mendezona Allegretti (Colorado State University), Jerry J. Vaske (Colorado State University), Ryan Finchum (Colorado State University)

- Angler Segmentation Using Perceptions of Experiential Quality in the Great Barrier Reef Marine Park William E. Smith (Texas A&M University), Gerard Kyle (Texas A&M University), Stephen G. Sutton (James Cook University)

Management Applications (Albenia) Moderator: David Klenosky

- Who Cares about National Parks? Social Change and Declining Visitation Walter F. Kuentzel, (University of Vermont), Thomas A. More (U. S. Forest Service), Michael A. Schuett, (Texas A&M University), Tom Stevens (University of Massachusetts Amherst), Susan I. Stewart (U. S. Forest Service), Rod B.. Warnick (University of Massachusetts Amherst)

- Investigating the Impact of Weather Variability on Attendance for Indoor and Outdoor Nature-Based Visitor Attractions Steven M. Howell (Purdue University), David B. Klenosky, (Purdue University), Alejandro Grajal (Chicago Zoological Society), Linda Wilson, (John G. Shedd Aquarium)

- Managerial Fraud in Visitor Monitoring Paul F. Eagles (University of Waterloo)

- An Inventory and Analysis System for Lake Recreation and Management Danielle Williams (West Virginia University), Michael Strager (West Virginia University), Andy Datsko (Allegheny Energy), Paul Villela (Allegheny Energy), and Chad Pierskalla (West Virginia University)

- Perceptions of Relative Attractiveness of Outdoor Recreation Assets: A comparison between CVB Directors and Visitors Jinyang Deng (West Virginia University), David M. Dyre (West Virginia University)

9:40-10:00 am AM Break (Coffee and Tea)

10:00-11:45 am Session IV -- Roundtables and Management Presentations

Outdoor Recreation Trends (Evelley) Session Chair: Heather Zahar Bennett

- Using the SCORP Process to Leverage State-Level Partnership for Outdoor Recreation Heather Zahar Bennett (PA Dept. of Conservation and Natural Resources (PA DCNR)), Matthew Beaver, (PA DCNR), Sara Nicholas (PA DCNR), Laurel Anders, (PA Fish and Boat Commission), Alan Graefe, (Pennsylvania State University)

International Learning (Triuna) Session Chair: Robert C. Burns

- International Research and Learning: Exposing Students to International Resource Management Policy and Practice Robert C. Burns (West Virginia University), Arne Arnbørger (BOKU), Jessie Meybin, (West Virginia University)
12:00-1:45pm  Lunch & Keynote Address (Sagamore Dining Room)

Dr. James Gramann (Visiting Chief Social Scientist, National Park Service)

2:00-3:40 pm  Session V

Recreation Resource Management I (Wapanak)  Moderator: Tom Wickham

- Assessing Grand Canyon’s Backcountry Management Objectives  Erik A. Backlund (St. Lawrence University)

- Indicators and Standards of Quality for Paddling on Lake Champlain  Laura E. Anderson (University of Vermont), Robert E. Manning (University of Vermont), William A. Valliere (University of Vermont), Christopher A. Monz (Utah State University), Kelly A. Goonan (Utah State University)

- Simulation Modeling for Monitoring and Adaptive Management of Visitor Use and Experiential Quality in Muir Woods National Monument  Nathan P. Reigner (University of Vermont), Steven R. Lawson (RSG Inc.), Robert E. Manning (University of Vermont)

- Indicators and Standards of Quality in Acadia National Park: Exploring a Multi-Modal Transportation Experience  Peter R. Pettengill (University of Vermont), Robert E. Manning (University of Vermont)


Rural Recreation and Tourism (Evelley)  Moderator: Edwin Gómez

- Perceptions of Amenity Resources and Rural Tourism Activities: A Comparison of Urban Dwellers and Rural Village Residents  Hwasung Song (The Pennsylvania State University), Alan Graefe (The Pennsylvania State University), Sukhee Park (Kyonggi University)

- A Visitation-Based Profile of Agritourism Farms in Missouri  Christine E. Tew (University of Missouri), Carla Barbieri (University of Missouri)

- Tourism Potential of Rural Communities: Visitors’ Perspective of Tourism Development in Gauley Bridge, West Virginia  Rogelio Andrada II (West Virginia University), Ishwar Dhani (West Virginia University), Jinyang Deng (West Virginia University), David Dyre (West Virginia University), Pamela Erb (Midland Trail Scenic Highway Association)

- The Leisure Styles of Canadian Rural Recreation Participants: An Analysis Based on Three Different Rural Leisure Settings  Paul Heintzman (University of Ottawa), Don Dawson (University of Ottawa)
Norms, Crowding and Conflict (Albenia)  

- **Normative Tolerances and Standards for Off Leash Dogs**, Jerry J. Vaske, (Colorado State University, Maureen P. Donnelly (Colorado State University)

- **Does Size or Number of Boats Matter? Dimensionality of Encounter Norms at Molokini, Hawaii**, Caitlin M. Bell (Oregon State University), Mark D. Needham (Oregon State University), Brian W. Szuster (University of Hawaii)

- **Potential for Conflict Among Swimmers and Surfers Along the New Hampshire Coast**, Joshua Carroll (University of New Hampshire), Rochelle Pernak (University of New Hampshire)

- **Managing Outdoor Recreation Conflict on the trail network in Squamish, British Columbia**, Ana Elia Ramon Hidalgo (University of British Columbia)

- **How Place Attachment Influence Recreation Conflict and Coping Behavior**, Cheng-Ping Wang (Shih Shin University), Yin-Hsin Chang (Shih Shin University)

Measurement and Application (Triuna)  

- **Perceived Community Benefits from Recreation Resources: From Scale Development to Validation**, Jordan W. Smith (North Carolina State University), Dorothy H. Anderson (North Carolina State University), Mae A. Davenport (University of Minnesota), Jessica E. Leahy (University of Maine)

- **A Planning Context for the Potential for Conflict Index: An Examination of the Norwottuck Rail Trail**, Benjamin D. Poole (University of Massachusetts-Amherst), David K. Loomis (University of Massachusetts-Amherst)

- **A Review and Extension of Importance-Performance Analysis in Outdoor Recreation Visitor Research**, James D. Absher (US Forest Service), Robert C. Burns (West Virginia University), Donald B.K. English (US Forest Service)

- **Measuring the Educational Impact of the Promoting Environmental Awareness in Kids (PEAK) Kit: The Development and Implementation of a New Scale**, Jennifer Miller (SUNY-Cortland), Eddie Hill (SUNY-Cortland), Amy Shellman (SUNY-Cortland), Ron Ramsing (Western Kentucky University), Lindsey Brown, (SUNY-Cortland)

- **Social Class Differences in Leisure Constraints and Health in Urban Korea: A Preliminary Study in Seoul**, Erwei Dong (University of South Alabama) Jouyeon Yi-Kook (Ajou University)

3:40- 4:00 pm  

**PM Break (Beverages)**
4:00-5:30 pm  Session VI

Planning and Partnerships  (Wapanak)  

- Parks and Recreation Master Planning in Ontario: Determining Factors that Lead to Success  
  Amber Gebhardt (University of Waterloo), Paul Eagles (University of Waterloo), Mark Seasons (University of Waterloo)

- A Comparison of Stakeholders’ Perceptions of Governance under Ontario Provincial Parks’ Parastatal Management Model  
  Windekind C. Buteau-Duitschaever (Wilfrid Laurier University), Paul F. J. Eagles (University of Waterloo)

- Recreation Partnerships on National Forests: The Influences of Institutional Commitment and Urban Proximity on Agency Capacity  
  Allie E. McCreary (Southern Illinois University), Carbondale, Erin Seekamp (Southern Illinois University), Lee Cerveny (USDA Forest Service, Pacific Northwest Research Station)

- Contributing and Constraining Factors to Collaborative Land Use Planning: Consequences of Proposed Housing Developments “In and Around” the New River Gorge National River  
  Candice J. Riley (West Virginia University), Steve W. Selin (West Virginia University)

Urban Green Space and Environments  (Evelley)  

- Backyard Gardening and Environmental Justice: Inclusive or limited to people with access to land?  
  Rob Porter (Western Illinois University), Emily Schoenfelder (Western Illinois University)

- Enjoying green cities: Assessing visitors’ attitude and preferences of urban forests in Washington D.C.  
  Rogelio Andrada II (West Virginia University), Jinyang Deng (West Virginia University)

- Mapping Urban Tourist Experience Zones in Downtown Raleigh, North Carolina  
  Holly E. Bosley (The College at Brockport, State University of New York)

  Arne Arneberger (University of Natural Resources and Applied Life Sciences Vienna), Renate Eder (University of Natural Resources and Applied Life Sciences Vienna)

- Park Use Characteristics, Constraints, and Desired Strategies to Reduce Constraints: A Comparison of Single Parent and Dual Parent Leisure Behavior  
  Joel A. Blanco (Pennsylvania State University), Andrew J. Mowen (Pennsylvania State University)
**Carrying Capacity (Albenia)**  
**Moderator: Tom Wickham**

- Extending the Encounter – Norm – Crowding Generalization to Facility Carrying Capacity
  Indicators for Coastal Recreation in Hawaii
  Robyn L. Ceurvorst (Oregon State University), Mark D. Needham (Oregon State University)

- Modeling Relationships among Visitor Use, Safety, and Crowding on the Half Dome Cables Route in Yosemite National Park
  Steven R. Lawson (RSG Inc.), Nathan P. Reigner (University of Vermont)

- Research to Support Analysis and Management of Carrying Capacity on Cadillac Mountain, Acadia National Park, Maine
  William Valliere (University of Vermont), Robert Manning (University of Vermont)

- Analyzing Inequalities: Applications of the Gini Coefficient in Recreation Resource Management
  Geoffrey Lacher (Clemson University), Matthew TJ Brownley (Clemson University)

**Conservation and Nature-based Tourism and Recreation (Triuna)**  
**Moderator: Diane Kuehn**

- Campsite Impacts Along the Lake Champlain Paddlers’ Trail, Lake Champlain, USA
  Kelly A. Goonan (Utah State University), Christopher Monz (Utah State University), Robert Manning (University of Vermont), Laura Anderson (University of Vermont)

- Exploring the Relationship between Outdoor Recreation Activities, Community Participation and Environmental Attitudes
  Lindsey A. Barker (SUNY College of Environmental Science and Forestry), Chad P. Dawson (SUNY College of Environmental Science and Forestry)

- Travel Green: The Development of a Sustainable Traveler Care Code for the United States
  Whitney G. Knollenberg (East Carolina University), Pat Long (East Carolina University), Chris Adams (Miles Media), Joe Fridgen (East Carolina University)

- The Perceived Impact of Park Creation on the Lives of Local Inhabitants within Gros Morne National Park, Canada
  Margot Herd (University of Ottawa), Paul Heintzman (University of Ottawa)

**5:30 – 7:00 pm – NERR Steering Committee Meeting (Triuna)**

**Dinner on your own at the Sagamore or in town**
Tuesday, April 13, 2010

8:00-9:40am Session VII

Outdoor Recreation II (Evelley)

Moderator: Christopher Wynveen

- Recreational Visitors' Place Meaning and Place Attachment in a Marine Setting Christopher J. Wynveen (Clemson University), Gerard T. Kyle (Texas A&M University), Stephen G. Sutton (James Cook University)

- Roadside Camping in the Adirondack Park: A Qualitative Examination of Place Attachment and Resource Substitutability David A. Graefe (SUNY ESF), Chad P. Dawson (SUNY ESF), Rudolph M. Schuster (U.S. Geological Survey)

- Bird-Watching, Motivations and Preferred Resource Use: Implications for Sustainable Development Sheri L. Glowinski (The University of Southern Mississippi), Robert P. Porter Jr., (Western Illinois University), Frank R. Moore (University of Southern Mississippi)

- Pacific Crest Trail Hikers: An Examination of Outcomes Marni Goldenberg (California Polytechnic State University), Stephanie Fellows (California Polytechnic State University), Eddie Hill (SUNY-Cortland), Edwin Gómez (Old Dominion University)

- Understanding Motivations for Participation in Winter Visitors to Acadia National Park Joshua Carroll, (University of New Hampshire)

Climate Change & Resource Planning (Triuna)

Moderator: John Confer

- Classification of Forest based Ecotourism Areas in Pocahontas County of West Virginia using GIS and Pairwise Comparison Method. Ishwar Dhami (West Virginia University), Jinyang Deng, (West Virginia University)

- Parks and the Urban Heat Island: A Longitudinal Study Robert S. Bristow (Westfield State College), Robert Blackie (Westfield State College), Nicole Brown (Westfield State College)

- Climate Change and Environmentally Responsible Behavior in Great Barrier Reef, Australia Jee In Yoon (Texas A&M University), Gerard Kyle (Texas A&M University), Carena J. van Riper (Texas A&M University), Stephen G. Sutton (James Cook University)

- Attitudes toward Climate Change Impacts at the Great Barrier Reef: Using Cluster Analysis to Identify Homogenous Groups of Australian Community Members Carena J. van Riper (Texas A&M University), Gerard T. Kyle (Texas A&M University), Jee In Yoon (Texas A&M University), Stephen G. Sutton, (James Cook University)

- A Comparison of Landscape Preferences and Pro-Environmental Orientation Between Protected Area Visitors in Austria and USA Franziska Rom (University of Natural Resources and Applied Life Sciences Vienna), Arne Arnbæger (University of Natural Resources and Applied Life Sciences Vienna), Robert Burns (West Virginia University)
9:40-10:00 am AM Break (Coffee & Tea)

10:00-11:50am Session VIII

Tourism Marketing and Management (Triuna) Moderator: Rod Warnick

- Purchase Decision Involvement: Event Management Segments and Related Event Behavior” Rodney B. Warnick (University of Massachusetts at Amherst), David C. Bojanic (University of Texas at San Antonio)

- Understanding the Financial Performance & Excess Returns of Hospitality Firms Using Industry Specific Proxies – An Empirical Analysis Genti Lagji (University of Massachusetts Amherst), Atul Sheel (University of Massachusetts Amherst)

- Economic Impacts, Support for, and Interest in a Local Excursion Train Sharon L. Todd (SUNY-Cortland)

- An Examination of the Relationship between Constraints and Young Adults’ Desire and Ability to use an Excursion Train as a Leisure Activity Ellie C. Barvinchak (SUNY-Cortland), Sharon L. Todd, (SUNY-Cortland)

- Reinventing “Retrotels”: Using Engaged Scholarship to Market Nostalgia Tourism in Rural New Hampshire Ben Amsden (Plymouth State University), Mark Okrant (Plymouth State University), Thad Guldbrandsen (Plymouth State University)

Youth (Evelley) Moderator: Clifton Watts

- Volunteer Motivations and Constraints Among Undergraduate College Students Richard L. Gage III (Pennsylvania State University), Brijesh Thapa (University of Florida)

- Gender Issues at a Youth Camp Ann Gillard (Springfield College), Clifton Watts (East Carolina University)

- Comparing the Leisure Experiences of Rural and Urban Youth Clifton Watts (East Carolina University), Ann Gillard (Springfield College)

Safe travels home…
We hope to see you next year!
### Introduction:

NERR has a long tradition of publishing conference proceedings. This will continue, but no longer as a hard copy publication. Proceedings are now posted on the web at [www.esf.edu/nerr/past_proc.htm](http://www.esf.edu/nerr/past_proc.htm) AND [www.treesearch.fs.fed.us](http://www.treesearch.fs.fed.us). Proceedings are available around the time of the next year’s conference. Only papers that were presented by paid conference registrants are eligible to be included in the proceedings. All submitted papers MUST be pre-reviewed before submission. This change is being made in accordance with Forest Service policy. Details on this process are given in the “Instructions for Pre-Review of NERR Proceedings Paper Submissions”.

### Date Due:

All papers intended for the proceedings must be pre-reviewed AND submitted by **June 14, 2010**. Please make every effort to comply with this date. Early submission of papers is appreciated and encouraged.

### General Information:

Authors are encouraged to minimize background/lit review portions of papers -- and concentrate using their 'space and words' on findings, results and conclusion. Use figures and charts to enhance explanation of findings, and consider omitting tables or figures that are superfluous.

Tables and citations must be formatted according to APA style (6th edition). Levels of headings must be indicated using a number system (e.g., 1.0, 1.1, 1.2, 2.0, 2.1, 2.2). See the following page for an example of the proper format for headings and citations AND the two example papers posted on the NERR website. Please submit your manuscript typed in 9-point Times New Roman font with single-spacing and one inch margins.

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The total length of your paper, including graphs, charts, tables, references, or other graphics, is restricted to seven (7) pages (again, single-spaced in 9-point Times New Roman font) OR 3,000 words, whichever is less. The paper must adhere to this length restriction or it will not be included in the proceedings.

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Please submit your paper as a Microsoft Word document. If necessary, anything that can be opened in a MS Word-IBM platform is acceptable. Identify your file using the last name of the primary author, for example: “graefe.doc” or “vaske.doc.” Papers must follow the required format as given in the “Instructions and sample of proper formatting for the NERR 2010 Proceedings.”

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All graphics including tables and charts should be submitted both clean and camera ready, and digitally. The camera-ready copy will be used to scan the image, if necessary, to create higher resolution image.

Place tables and figures, created in the word processing program, at the end of the document. Use corresponding notations in the text indicating approximate placement. **DO NOT IMBED TABLES AND FIGURES IN THE TEXT.** Use the table-making utility in your word processing software instead of creating tables with tabs and spaces.

Images should be included as separate files, created in the native program, with an identification corresponding to the primary author’s name (e.g. todd.jpeg or todd.bmp). Use corresponding notations in the text indicating approximate placement. **DO NOT**
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# Instructions for Pre-Review of NERR Proceedings Paper Submissions

**Introduction**

NERR proceedings papers require ONE pre-review in order to qualify for publication. Pre-reviews help us comply with Forest Service policy governing Forest Service publications and are required in order for the NERR proceedings to continue to be published by the Forest Service.

**When should the pre-review be completed?**

After all authors have completed writing the paper (which includes all analysis, editing and proofing).

**Who should be a reviewer?**

For university faculty and students: reviewers can be other faculty, other NERR attendees, more senior graduate students, agency clients

For government researchers and managers: reviewers can be university contacts, other NERR attendees, colleagues

**Who should not be a reviewer?**

Authors on the paper as well as students that have equal or fewer years of school experience

**Are the reviews blind and do they constitute a refereed publication?**

No. The pre-reviews are not blind and they do not make the paper a refereed publication. The NERR proceedings are not refereed.

**What should reviewer’s comment on?**

The quality of the research and writing. For example, reviewers should comment on whether the literature review and problem statement/research objectives are adequate, the methods are clearly explained, the data are properly analyzed and/or presented, and the discussion of conclusions drawn from the research are appropriate and sufficient. The quality of the writing is also very important – this includes correct grammar, appropriate development of ideas and arguments, coherent and well-supported data analysis, and readability.

**How should reviewers provide their comments?**

Author(s) could receive an e-mail or other form of written comments from reviewers.

**After receiving comments, what should the author(s) do?**

Modify the paper and share an updated draft of the paper with co-author(s). On the "NERR Pre-review Form" (below) summarize each reviewer’s comments/suggestions and explain the changes made in the paper to address the issues raised by that reviewer.

**Final step**

Submit the final paper and Pre-review Form to the NERR coordinator by **June 14, 2010**. Also make sure the paper follows the required format as given in the "Instructions for and sample of proper formatting for the NERR 2010 Proceedings."

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Submitted papers will be reviewed by the NERR Proceedings Editorial Board for quality checks. This will include separate scientific and copy-edit reviews. Papers may be sent back to authors if issues identified by the Editorial Board present significant problems in publishing the NERR Proceedings paper.

**NOTE**--Often times, a good pre-review will prevent revise and resubmit notices.
**NERR Pre-Review Form**

Fill out completely and submit electronically WITH final paper to NERR.proceedings@gmail.com

Author(s): ____________________________________________

Paper title: ____________________________________________

Completed by author(s) after pre-review is completed.

<table>
<thead>
<tr>
<th>Reviewer comments (Summarize or cut and past comments below)</th>
<th>Author(s) actions toward reviewer’s comments</th>
</tr>
</thead>
</table>

Reviewer Name: ___________________________ Reviewer’s e-mail: ________________

Affiliation of Reviewer (e.g., SUNY-Cortland, or National Park Service):

__________________________________________________________________________
Instructions for and sample of proper formatting for the NERR 2010 Proceedings

Also examine the two sample papers that have been posted at http://www.esf.edu/nerr/past_proc.htm. Authors should NOT worry about 2-column format, lines, bold-face headings, etc. Those formatting changes will be applied to the digital version as the paper is prepared for publishing.

TITLE SHOULD BE IN ALL CAPS, TIMES NEW ROMAN, 9-POINT FONT

<3 spaces>

Primary Author
Provide full contact information
For primary author only

<1 space>
Secondary author
Only provide affiliation
of secondary author

<1 space>
Additional authors
Only provide affiliation
of additional authors

<1 space>
Abstract
Abstract should be in 9-point Times New Roman font. The abstract should be no longer than 150 words in length. The title for the abstract should be flush left and in 9-point font as shown.

<1 space>
1.0 Introduction: Headings
Section headings should be in 9-point Times New Roman font using upper and lower case lettering. The body of the paper should be written in 9-point Times New Roman font and single-spaced.

1.1 Sub Headings
Sub-sections within larger sections should be designated using a consecutive numbering system such as 1.0, 1.1, 1.2. The editor will be reformatting the documents for consistency. If you use a heading system other than this it is easy for the editor to misinterpret the heading level.

2.0 Tables, Graphs, Figures, and Images
Use the simple notation below to indicate the approximate location of the graphics in the text. Do not imbed the graphics directly in the text. Remember, that the exact location of the graphics might be different from your desired location due to space restrictions. Please include tables and figures created in the word processing program at the end of the document with appropriate titles. Do not fear! The editor will do everything possible to place your graphics in the preferred locations.

<insert table 1 here>

3.0 Paragraph Breaks
Do not indent paragraphs. Indicate paragraph breaks using a single space.

4.0 Citations


Abstract.—Understanding the experiences sought by visitors to wilderness areas and how satisfied they are with their experiences is an important type of information for wilderness managers. Understanding how these dimensions are measures of the concept of “place” can help wilderness managers develop better visitor education and management programs. This paper briefly summarizes seven studies of wilderness visitors conducted during 1997 through 2000 in state and federal managed wilderness areas in the northeastern United States. These studies attempted to identify and measure the important variables and dimensions (i.e., factors) of the human experience in wilderness areas. The overall goal of these seven studies was to develop a multi-dimensional scale to better understand the relationship between people and wilderness as a place.

1.0 INTRODUCTION

A substantial body of anecdotal, personal, and popular literature exists about wilderness and the experiences people have had on those designated and managed lands. However, wilderness and the corresponding “sense of place” it invokes has not often been investigated through empirical research studies. Managers need to more systematically measure and understand the relationships that visitors are developing or have developed with the lands they manage as wilderness. “Place” is defined as both a physical location and the visitor’s subjective experience or relationship with that place; the concept has been subdivided into a variety of factors, such as place meanings, attachment, identity, e.g., and dependence (Cheng et al. 2003).

Wilderness areas in the United States are public land areas designated as wilderness by federal and state governments (Hendee & Dawson 2002). Wilderness areas were chosen as the study areas because the emphasis is on protecting them for their ecological, cultural, and scientific values for present and future generations. Visitors entering these wilderness areas are seeking to be immersed in an ecological setting that is different from human development and mechanical and motorized use. Some visitors come for short or long hikes that last only one day or less, while other visitors carry their camping equipment and stay several days within the area using only primitive means of travel and living.

The primary objective of these studies was to develop a multi-dimensional scale to better understand the relationship between people and wilderness as a place, including the importance of and satisfaction with multiple dimensions of that place.

2.0 METHODS

This paper is a brief summary based on seven studies of visitors conducted during 1997 through 2000 in state and federal wilderness areas in the states of New York, New Hampshire, and Maine. These studies attempted to identify and measure the important variables and dimensions (i.e., factors) of the human experience in wilderness areas.

The study areas were different size wilderness areas with varying densities of visitor use and proportions of user types (such as day hikers and backpackers). Also, the study areas were geographically distributed so that visitors would be arriving from different residential and rural areas to ensure that a variety of visitors’ interests, needs, and attitudes were included in the survey results.

There were multiple areas to select from during different phases of the four-year study: 16 wilderness areas in the state-owned lands of the Adirondack Park in northern New York State, and seven wilderness areas in the White Mountain National Forest in New Hampshire and Maine. The studies were conducted in three phases or stages with each developing the research information needed to conduct the next phase.

Phase One of the wilderness visitor studies was based on four focus group discussions with visitors to several wilderness areas and a literature review that helped to
generate a list of visitor experience variables used in the first visitor surveys. Visitors in three Adirondack wilderness areas were surveyed to measure the importance of and satisfaction with wilderness experience attributes related to social, resource, and managerial conditions. Forty-eight variables on wilderness experience opportunities were developed and presented in a random list followed by 15 variables on conditions in the wilderness area; other variables about visitor use and characteristics were also developed for the questionnaire. The data collection involved two parts: (1) a brief interview at the access points to the wilderness areas to ask for their participation in a mail survey; and (2) a mail questionnaire that was sent to them by U.S. mail carrier with up to two reminder notices to visitors who did not complete their questionnaires within several weeks of their trip.

Phase Two of the wilderness visitor studies was based on the results and exploratory factor analysis of the visitor surveys in the first phase. Visitors in one Adirondack and one White Mountain wilderness area were surveyed to measure the importance of and satisfaction with wilderness experience attributes related to social, resource, and managerial conditions. The 48 variables on wilderness experience opportunities were used from the first phase and presented in a list organized under eight factor dimensions, followed by 15 variables on conditions in the wilderness area in a list organized under four factor dimensions; other variables about visitor use and characteristics were also developed for the questionnaire. The data collection involved two parts: (1) a brief interview at the access points to the wilderness areas to ask for their participation in a mail survey, and (2) a mail questionnaire that was sent to them by U.S. mail carrier with up to two reminder notices to visitors who did not complete their questionnaires within several weeks of their trip.

Phase Three of the wilderness visitor studies was based on the results and analysis of the visitor surveys in the second phase. Visitors in all 16 Adirondack and seven White Mountain wilderness and backcountry areas were surveyed to measure the importance of and satisfaction with wilderness experience attributes related to social, resource and managerial conditions. Eight variables (dimensions) on wilderness experience opportunities were used from the phase two studies and followed by four variables (dimensions) on conditions in the wilderness area; thus, only 12 variables were measured in this phase. Other variables about visitor use and characteristics were also developed for the questionnaire. The data collection involved only brief structured interviews at the access points to the wilderness areas and along the visitor hiking trails of the wilderness areas.

The response categories for the importance and satisfaction variables and dimensions remained the same throughout the three phases of the project. The importance rating responses categories were: 0 = not important, 1 = slightly important, 2 = somewhat important, 3 = moderately important, 4 = very important, and 5 = extremely important. The satisfaction rating responses categories were: -2 = very dissatisfied, -1 = dissatisfied, 0 = neutral, 1 = satisfied, and 2 = very satisfied. All interviews and mail surveys were conducted during the high-use summer season from late May through mid-September. All data analysis was conducted using the Statistical Package for the Social Sciences (SPSS); statistical techniques ranged from simple descriptive statistics to exploratory factor analysis to determine the experience dimensions for the surveys.

The complexity of the dimensions reported in this summary paper were studied and examined in a variety of publications (Johnson & Dawson 2004, Dawson & Alberga 2004, Dawson et al. 2002, Dawson et al. 2000, Dawson & Watson 2000, Newman & Dawson 1999, Dawson et al. 1998). Only the 12 final dimensions from Phase Three will be described in this paper.

3.0 RESULTS AND DISCUSSION

The visitors were very cooperative in all three phases of the studies and between 95 and 100 percent of those visitors asked to participate in a brief interview agreed to participate. High response rates of 60 to 75 percent were obtained from visitors who were sent a mail questionnaire and who completed and returned it for analysis (Table 1). A high percentage of visitors (95 to 98%) willingly participated in the Phase Three interview studies (Table 1). These high response rates (and low non-respondent
bias based on a comparative analysis of interview data from respondents and non-respondents to the mail survey) allowed us to conduct the statistical analyses with little concern for non-respondent biases (i.e., these are representative samples).

A reliable 12-dimension survey was developed and successfully tested in field conditions for use with visitors to wilderness areas to understand their relationship to wilderness as a place. The importance of the 12 dimensions and the visitor satisfaction with those dimensions is presented for wilderness experiences and management conditions.

The eight dimensions of wilderness experiences (and examples) that were developed based on the Phase One and Two studies were:

1. **Personal and Social Experiences**: Get away from daily routines; Develop a sense of self confidence; Chance to think and solve problems; Simplify daily priorities and needs.

2. **Solitude**: A small, intimate group experience, isolated from all other groups.

3. **Connections with Nature**: Get in touch with my true self; Opportunity for self discovery; Develop a sense of oneness with nature.

4. **Exploration and Remoteness**: An environment free of man-made noises; Develop a sense of remoteness from cities and people; Having an adventure and sense of discovery; Feel like I was one of the first people to experience this place.

5. **Connection with Other Wilderness Users and Inspiration**: Feel connected to a place that is important to me; Celebrate wilderness as a symbol of naturalness; Feel a sense of an earlier and rugged time.

6. **Physical Activity**: Physical exercise and health; Physical challenge.

7. **Remote Travel Skills**: Improve travel skills; Learn to travel to a remote destination and return successfully; Develop a sense of self-sufficiency; Recreation in a primitive environment.

8. **Natural Environment**: Enjoy the view from a mountain top; Experience the scenic quality of nature; Observe and hear wildlife in a natural setting; The tranquility & peacefulness of the remote environment.

The four dimensions of area management conditions that affected wilderness experiences (and examples) that were developed based on the Phase One and Two studies were:

1. **Information on Wilderness Area**: Finding safe drinking water; Information on where other users are likely to be; Find an unoccupied campsite.

2. **Management Conditions**: Condition of the trail system; Publicized rules and regulations at
entry point; The number of visible places where others have hiked and camped.

3. Litter and Waste: Amount of litter along the trails and at campsites; Campfire rings; Human waste.

4. Numbers of Users: The number of hikers you saw on trails; The number of large groups you saw on trails; The number of groups that camped within sight or sound of your campsite.

The survey results of the eight dimensions of wilderness experiences documented that these were all moderately to highly important and that visitors were satisfied to very satisfied with their experiences. The visitor interviews in the wilderness areas of the Adirondack Park and wilderness and backcountry areas of the White Mountains reported very high average scores for the importance of these eight dimensions (Table 2). These data demonstrate that the visitors have higher expectations for management performance than are being achieved (i.e., visitor satisfaction is not high). Also, the visitor response patterns regarding these eight dimensions for the Adirondack areas were similar as shown in Figure 1; the exception was the higher importance of the natural environment over other dimensions. Overall, the experience sought by visitors is complex and multi-dimensional. They have sought out these experiences and come to the wilderness area with many types of attitudes and needs that they expect to be fulfilled.

The survey results of the four dimensions of wilderness area management conditions reported that these were moderately to highly important and that visitors were neutral to satisfied with their experiences. The visitor interviews in the 16 areas of the Adirondack Park and wilderness and backcountry areas of the White Mountains reported high average scores for the importance of and low satisfaction with these four dimensions (Table 3). These data demonstrate that the visitors have higher expectations for management performance than are being achieved (i.e., visitor satisfaction is not high). Also, the visitor response

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Importance</th>
<th>Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural environment</td>
<td>4.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Personal/social experiences</td>
<td>4.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Physical activity</td>
<td>4.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Exploration &amp; remoteness</td>
<td>3.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Solitude</td>
<td>3.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Connections with nature</td>
<td>3.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Remote travel skills</td>
<td>3.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Connections with others</td>
<td>3.1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Figure 1.—Distribution of visitor responses to the importance of eight dimensions of the wilderness experience in 16 areas in the Adirondacks in 2000.
patterns regarding these four dimensions for the Adirondack areas were similar as shown in Figure 2; the exception was the higher importance of no evidence of litter and human waste over other dimensions.

4.0 CONCLUSIONS AND IMPLICATIONS

Managers can use the 12-dimension survey instrument developed to more systematically measure and understand the relationships that visitors have developed with the lands they manage as wilderness. More clearly understanding the importance of those dimensions and visitor ratings of their satisfactions provides more input to management activities. The survey instrument could be used in a variety of ways:

- Monitor visitor responses over time to see if high levels of importance and satisfaction continue to be reported across all eight dimensions of the wilderness experiences.
- Monitor visitor responses over time to see if high importance for management conditions and lower satisfaction with the actual conditions continue to be reported for the four management condition dimensions.
- Conduct an importance-satisfaction analysis to check the relationship between visitor satisfactions and their relative importance from the perspective of the visitor (e.g., are managers focused on what is important to visitors and are visitors satisfied).
- Conduct comparisons between management areas and comparisons before and after management actions have been taken or conditions have changed.

These study results have many implications for wilderness management from visitor marketing to information programs to management of the conditions in the wilderness area. For example, marketing and information programs need to provide accurate and realistic information about the wilderness area and expected visitor experiences to prepare visitors for their experiences and help to set realistic expectations about the natural and social conditions present in the area.

### Table 3.—Average visitor importance and satisfaction ratings of four dimensions of the wilderness management conditions in 16 areas in the Adirondack Park and seven White Mountain areas in 2000

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Importance Adirondack</th>
<th>Importance White Mtn.</th>
<th>Satisfaction Adirondack</th>
<th>Satisfaction White Mtn.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No litter and waste</td>
<td>4.3</td>
<td>4.4</td>
<td>0.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Wilderness area information</td>
<td>3.8</td>
<td>3.2</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Management conditions</td>
<td>3.5</td>
<td>3.6</td>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Number of other users</td>
<td>3.4</td>
<td>3.2</td>
<td>0.7</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Figure 2.—Distribution of visitor responses to the importance of four dimensions of the wilderness area management conditions in 16 areas in the Adirondacks in 2000.
Visitor satisfactions are related to maintaining a high quality of resource and social conditions. These types of study results may suggest to managers that information programs are an important indirect management tool. Also, managers can use the importance and satisfaction data to help them understand the situations and conditions that most support or detract from satisfying visitor experiences. The general application of this research is for managers to be able to understand when they need to: (1) inform and educate visitors about the existing opportunities and conditions, appropriate behaviors, and rules and regulations; (2) know when and how to adjust management to increase visitor satisfactions that are legal and appropriate within the legislative mandate for management; and (3) know when to redirect users to other areas for a more appropriate type of experience that is better provided elsewhere or to help them meet their expectations.

5.0 REFERENCES

Cheng, A.S.; Kruger, L.E.; Daniels, S.E. 2003 “Place” as an integrating concept in natural resources politics: propositions for a social science research agenda. Society and Natural Resources. 16: 87-104.


HIKING SHARED-USE SINGLE-TRACK TRAILS: 
A LOOK AT HIKERS AND HUNTERS ALONG THE FALLS LAKE TRAIL

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Roger L. Moore  
North Carolina State University

Abstract.—The Falls Lake Trail, a 26.8-mile, single-track pedestrian trail located near the Research Triangle Region of North Carolina, traverses lands managed by the United States Army Corps of Engineers; North Carolina Division of Parks and Recreation; North Carolina Division of Wildlife Resources; and Wake County Parks, Recreation and Open Space. The non-profit trail advocacy group, Friends of the Mountains to Sea Trail, is responsible for the trail’s upkeep and maintenance. For this study, use and user characteristics were examined along with trail appeal factors, users’ motivations for utilizing the trail, and their satisfaction while there. Another important objective was to examine potential problems relative to hiker interactions with hunters. Hunting is permitted along approximately 20 miles of the trail. Although few trail users reported encountering hunters during their visit, approximately one third reported being “not at all comfortable” sharing the trail with hunters. There was a modest degree of discomfort overall.

1.0 INTRODUCTION

The Falls Lake Trail is a 26.8-mile, natural surface, single-track, pedestrian trail located along the south shore of Falls Lake in northern Wake County, North Carolina. It is located in the Falls Lake Project, which encompasses the 12,410-acre Falls Lake, a U.S. Army Corps of Engineers reservoir, and 25,580 acres of public land surrounding it. In the early 1980s, a local grassroots organization known as the Triangle Greenways Council proposed to the Corps of Engineers that their volunteers design and construct a hiking trail on the south shore of the lake that would become a segment of North Carolina’s proposed Mountains to Sea Trail, a 900+ mile trail consisting of footpaths, roads, and state bike routes stretching across the state from Clingmans Dome in Great Smoky Mountains National Park to Jockey’s Ridge State Park on the Atlantic coast. The Falls Lake Trail was installed in segments over the next 20 years, traversing land managed by four agencies: the Corps of Engineers; North Carolina Division of Parks and Recreation; North Carolina Division of Wildlife Resources; and Wake County Parks, Recreation and Open Space. The Friends of the Mountains to Sea Trail, a nonprofit trail advocacy group, is responsible for maintenance and upkeep of the Falls Lake Trail. In 2003, Wake County Parks, Recreation and Open Space led a collaborative planning process focused on communication and shared management responsibility of the trail among the four land managing agencies. Currently, these agencies operate under a Memorandum of Agreement regarding the collaborative management of the trail. Due to differing management objectives—the most obvious of which being that the largest portion of the Trail is on land managed by the Wildlife Resources Commission, an agency which does not typically build, manage or maintain trails—almost no data existed on the use or users of the trail nor their experiences. The purpose of this study was, therefore, to fill this information gap by investigating the use and users of the Falls Lake Trail. Of particular interest were users’ motivations for using this particular outdoor recreation resource, and their experiences while there.

1.1 Background

Land managers along the trail had little data to assist in management decision even though some sections of the trail had been in existence for more than 20 years. In an effort to better manage the resource, investigators and managers attempted to answer the following questions: Who are the users of the Falls Lake Trail? How is the Trail being used and for what activities? What motivated the users to select the Falls Lake Trail? Are users satisfied with their experience on the Trail? Are user experiences or satisfaction levels related to sharing the Trail with hunters?

2.0 METHODS

Data were collected from trail users on site from November 6, 2004 through November 20, 2005. The Falls Lake Trail has a narrow, natural tread and allows
access to the more remote parts of the Falls Lake Project, making it a good example of a “traditional backcountry trail” (Moore & Ross 1998). For the purposes of this research, the trail was divided into four segments. These segments were chosen to represent land managed by the four primary land managing agencies and were distributed equally over hunting and non-hunting areas. Self-administered questionnaires were supplied in trailside distribution boxes and drop-boxes at four different trailhead locations. A fifth survey location was added during the research period when vandals destroyed one survey box. This box was replaced, but relocated to a different section of trail on gamelands. The survey instrument was developed with input from the Army Corps of Engineers; Division of Parks and Recreation; Division of Wildlife Resources; Wake County Parks, Recreation and Open Space; the Friends of the Mountains to Sea Trail, and faculty at North Carolina State University.

A total of 474 surveys were collected from November 6, 2004 through November 20, 2005, but 53 were not included in the analyses or results due to respondent’s indicating having completed two surveys over the course of the study; only one (the first) from each of these users was included in the final data set of 421. There is no practical way to calculate an accurate response rate for a trailside self-administered survey. Actual response rates for compliance with voluntary trailside registration have been found to vary greatly. Lucas (1975) found a low-end compliance rate of 28 percent, while James and Schreuder (1972) found a high-end of 89 percent.

Variables examined included two related to trail user demographics (gender and age). Postal ZIP Code was asked to allow users’ place of residence to be approximated. Respondents were also asked to indicate their primary activity from: dog walking, fishing/canoeing, geocaching, hiking, hunting, nature study/wildlife viewing, photography, picnicking, running, and walking. Respondents answering “dog walking” in combination with hiking, running, or walking were placed in the dog-walking category. Frequency of use was determined by having respondents provide their approximate number of visits to the trail during the last 12 months. Respondents were asked to indicate with whom they typically used the trail: alone, with one other person, with two-three people, or with four or more. Information on duration of visit was gathered by having respondents choose from four mutually exclusive choices ranging from less than 1 hour, to 4 hours or more. Eighteen variables were included in three other major topic areas: motivations for using the Falls Lake Trail (five variables), why the trail is appealing (six variables), and the respondent’s satisfaction level with various aspects of the visit (seven variables). These 18 variables were each measured on 5-point Likert-type scales. All questions utilized in this survey focused on the respondents’ trail visit on the day they completed the study questionnaire.

3.0 RESULTS
This section presents the results of the study and is organized into the following sections: user characteristics, trail use and activities, user motivations, trail appeal, hunting and respondent’s comfort level sharing the trail with hunters, and user satisfaction.

3.1 User Characteristics
Results showed that of the 339 respondents completing the question on gender, 64.2 percent were male. Respondents also reported their age by selecting the appropriate age category, the 31-40 age category being the most common across both genders. Based on postal ZIP Codes provided, trail users tended to be local, with 37.0 percent of respondents living in the three postal ZIP Codes immediately adjacent to Falls Lake. Of the 409 respondents providing their ZIP Code on the survey, 82.0 percent lived within Wake County, and 94.67 percent within North Carolina. Twelve additional states were also represented including Washington and New Hampshire.

3.2 Trail Use and Activities
Respondents were asked to provide the date and time of their trail use for this visit. One assumption at the beginning of this survey was that the Falls Lake Trail was most heavily utilized on the weekends. The results of the survey supported this assumption, with 64.9 percent of the 393 respondents indicating that they had visited on either a Saturday or Sunday. Time of visit was examined in two-hour blocks from early morning (7:00 am and before) until after 9:00 pm. Two considerations
in choosing the time coverage were the fact that several facilities along the trail, including Blue Jay Point County Park and Falls Lake State Recreation Area, have year-round operational hours from 8:00 am to sunset, and that there are many trail access points that are not controlled, giving visitors almost unlimited access to some trail sections. Afternoons were the most popular time of day to use the trail, with the period between 1:01 pm and 5:00 pm accounting for 57.1 percent of all use. Actual trail distance covered is difficult for the average user to calculate. For this survey, distance was approximated as the use of one or multiple sections of trail during a visit. After a brief description of how the Falls Lake Trail is divided into sections, respondents were asked if they utilized one section or multiple sections during their visit that day. Over two-thirds of trail users utilized only a single section during their visit. A follow-up question asked whether respondents had hiked all of the Falls Lake Trail. Approximately 15 percent had hiked the entire trail at some point. With most respondents utilizing just one section of the Trail for their visit, it was not surprising that the duration for their activity was relatively short on average. Of the 416 respondents answering the question, “What is the expected duration of your activity today?” 55.0 percent chose 1 - 2 hours; this was the case regardless of the user’s activity. When respondents were asked with whom they used the trail that day, “With one other person” was the most common response, at 41.9 percent, followed closely by “Alone,” at 39.5 percent. Of the 419 respondents who indicated a primary activity that brought them to the trail, 43.0 percent chose hiking, followed by dog walking, walking, running, and geocaching. Although many may not consider the trail for long-distance hiking, 55.5 percent of 416 respondents knew the Falls Lake Trail was a part of the North Carolina Mountains to Sea Trail.

### Table 1.—Primary activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>180</td>
<td>43.0%</td>
</tr>
<tr>
<td>Dog Walking</td>
<td>112</td>
<td>26.7%</td>
</tr>
<tr>
<td>Multiple Activities</td>
<td>40</td>
<td>9.5%</td>
</tr>
<tr>
<td>Walking</td>
<td>28</td>
<td>6.7%</td>
</tr>
<tr>
<td>Running</td>
<td>26</td>
<td>6.2%</td>
</tr>
<tr>
<td>Geocaching</td>
<td>12</td>
<td>2.9%</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>2.1%</td>
</tr>
<tr>
<td>Hunting</td>
<td>4</td>
<td>1.0%</td>
</tr>
<tr>
<td>Picnicking</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Fishing/Canoeing (Access)</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>Photography</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>Nature Study/Wildlife Viewing</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Total</td>
<td>419</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

users. One visit during the last 12 months was the most common response with 94 of the 416 respondents, or 22.6 percent, indicating just one visit in that period. The median number of visits during the last twelve months was 6.0, with a mean of 26.1 visits.

### 3.3 User Motivations

Users’ motivations for visiting the Falls Lake Trail were examined by having respondents rate the importance of each of five possible motives on a 5-point scale (1 indicating “not at all important” to 5 indicating “extremely important”). Two items had mean scores of 4.00 or higher, indicating a high degree of importance. Scenery/Natural Experience ranked highest with a mean of 4.62 (Table 2).

Skill development ranked lowest on the motivations scale overall (Mean = 2.42), but one respondent wrote in “Backpacking prep workout” as the primary reason for visiting the trail. Although many may not consider the trail for long-distance hiking, 55.5 percent of 416 respondents knew the Falls Lake Trail was a part of the North Carolina Mountains to Sea Trail.

### Table 2.—User motivations for visiting the Trail

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenery/Natural Experience</td>
<td>4.62</td>
<td>0.624</td>
<td>416</td>
</tr>
<tr>
<td>Health/Fitness</td>
<td>4.36</td>
<td>0.955</td>
<td>412</td>
</tr>
<tr>
<td>Solitude/Escape</td>
<td>3.89</td>
<td>1.292</td>
<td>403</td>
</tr>
<tr>
<td>Social Time with Friends/Family</td>
<td>3.19</td>
<td>1.583</td>
<td>378</td>
</tr>
<tr>
<td>Skill Development</td>
<td>2.42</td>
<td>1.291</td>
<td>365</td>
</tr>
</tbody>
</table>

Scale from 1 (not at all important) to 5 (extremely important)
3.4 Trail Appeal

Respondents were also asked to rate the importance of various factors influencing the appeal of the Falls Lake Trail. This was also accomplished through a 5-point scale, (1 indicating “not at all important” to 5 indicating “extremely important”). Similar to the motivational rankings, scenery was found to be the most important factor for users overall (mean = 4.50). Additional appeal factors in rank order included: natural surfacing, proximity to home, foot traffic only, and solitude (Table 3). “Level of difficulty” ranked last. Hiking guides that include the Falls Lake Trail rate the route as moderately difficult (de Hart 1996, Setzer 2001).

3.5 User Satisfaction

Trail user satisfaction was examined by having respondents rate their satisfaction with six aspects of their visit; a separate question asked respondents to rate the quality of their overall experience on the trail (Table 4). Both the individual items and overall satisfaction were rated on 5-point scales (1 indicating “not at all satisfied” to 5 indicating “extremely satisfied”). Of the six individual items, all had mean scores greater than 3.5, indicating at least some level of satisfaction overall. It is interesting to note that satisfaction with trail safety had a mean of 4.15. It was thought that this factor might score lower due to some respondents’ ratings of discomfort in sharing the trail with hunters. Overall, users were quite satisfied with their experience on the trail, with the overall mean satisfaction score being 4.47 on the 5-point scale.

3.6 Hunting and Respondents’ Comfort Level Sharing the Trail with Hunters

Hunting is permitted along approximately 20 miles of the Falls Lake Trail, where it is located on gamelands managed by the Wildlife Resources Commission. Various hunting seasons typically run from September 1 through May 15 each year in central North Carolina, including the gamelands along Falls Lake. Respondents were asked to rate their comfort level regarding sharing the trail with hunters (Table 5). This question was somewhat hypothetical in nature because hunting is allowed on only a portion of trail, and only during certain times of the year.

A total of 208 respondents or 50.3% were at least somewhat uncomfortable with sharing the trail with hunters, n = 414 (Table 6).

Only 3.1 percent of all respondents reported actually encountering hunters during their visit on that particular day. Twenty-nine respondents (6.1% of all respondents) included additional written comments regarding hunters and hunting. Eighteen were paired with comfort level ratings of 1 or 2, indicating at least some uncomfortable

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Table 3.—Trail appeal items

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenery</td>
<td>4.50</td>
<td>0.741</td>
<td>404</td>
</tr>
<tr>
<td>Natural Surfacing</td>
<td>4.36</td>
<td>0.911</td>
<td>391</td>
</tr>
<tr>
<td>Location/Proximity to Home</td>
<td>4.28</td>
<td>1.048</td>
<td>408</td>
</tr>
<tr>
<td>Foot Traffic Only</td>
<td>4.25</td>
<td>1.158</td>
<td>403</td>
</tr>
<tr>
<td>Solitude</td>
<td>3.97</td>
<td>1.100</td>
<td>285</td>
</tr>
<tr>
<td>Level of Difficulty</td>
<td>3.14</td>
<td>1.219</td>
<td>380</td>
</tr>
</tbody>
</table>

Scale from 1 (not at all important) to 5 (extremely important)

Table 4.—Satisfaction items

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Experience Satisfaction</td>
<td>4.47</td>
<td>0.693</td>
<td>417</td>
</tr>
<tr>
<td>Trail Condition</td>
<td>4.26</td>
<td>0.864</td>
<td>410</td>
</tr>
<tr>
<td>Trail Safety</td>
<td>4.15</td>
<td>0.991</td>
<td>396</td>
</tr>
<tr>
<td>Parking</td>
<td>4.06</td>
<td>1.051</td>
<td>407</td>
</tr>
<tr>
<td>Trail Signage</td>
<td>3.82</td>
<td>1.066</td>
<td>399</td>
</tr>
<tr>
<td>Trail Map/Guide</td>
<td>3.67</td>
<td>1.293</td>
<td>396</td>
</tr>
<tr>
<td>Trail Amenities</td>
<td>3.52</td>
<td>1.260</td>
<td>378</td>
</tr>
</tbody>
</table>

Scale from 1 (not at all satisfied) to 5 (extremely satisfied)

Table 5.—Comfort level sharing the Trail with hunters

<table>
<thead>
<tr>
<th>Comfort level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all comfortable</td>
<td>136</td>
<td>32.90%</td>
</tr>
<tr>
<td>Somewhat uncomfortable</td>
<td>72</td>
<td>17.40%</td>
</tr>
<tr>
<td>Neutral</td>
<td>76</td>
<td>18.40%</td>
</tr>
<tr>
<td>Somewhat comfortable</td>
<td>60</td>
<td>14.50%</td>
</tr>
<tr>
<td>Extremely comfortable</td>
<td>70</td>
<td>16.90%</td>
</tr>
<tr>
<td>Total</td>
<td>414</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Table 6.—Comfort level sharing the Trail with hunters

<table>
<thead>
<tr>
<th>Comfort level</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort level</td>
<td>2.65</td>
<td>1.481</td>
<td>414</td>
</tr>
</tbody>
</table>

Scale from 1 (not at all comfortable) to 5 (extremely comfortable)
feelings with sharing the Trail with hunters; common themes were: Lack of knowledge about hunting areas (where hunting is allowed), and hunting season (when hunting is allowed). Five were paired with comfort level ratings of 3, indicating neutral feelings in sharing the Trail with hunters; common themes were: knowledge that hunting is not allowed on Sunday and the infrequency with which hunters are encountered. Six were paired with comfort level ratings of 4 or 5, indicating at least some comfortable feelings in sharing the Trail with hunters; common themes were: knowledge of wearing blaze orange, knowledge that hunting is not allowed on Sunday and knowledge that most of the gamelands through which the Trail passes are in an archery-only zone.

4.0 DISCUSSION AND CONCLUSIONS

The most useful immediate product of this research for land managing agencies is the baseline use and user data for the trail. One interesting dynamic suggested by this research involves the interaction of hunters with other users of the public lands around Falls Lake. Temporal displacement of non-hunters may be occurring at Falls Lake during the hunting season; this presumption is based on the discomfort level of some users with sharing the trail with hunters and the high percentage of use on Sundays (when hunting is not allowed). If some trail users are uncomfortable with sharing the trail with hunters, as was found in this study, it is possible that other users who are even more uncomfortable, may be being displaced altogether. From the open-ended comments provided, increasing visitor knowledge regarding hunting may be a primary means to increase visitor comfort level in sharing the trail with hunters. Additional research that should be considered includes better exploring the relationship between hunting and other uses of the trail and surrounding public lands. Not only could hunters be encountered along the trail, but the more likely scenario of hunters being unseen in the gamelands surrounding the trail should be investigated.

5.0 REFERENCES


