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The aim of this newsletter is to provide a regular report on the activities of the New York Cooperative Fish and Wildlife Research Unit. The mission of the Unit is to conduct applied research on natural resource issues, participate in graduate education, and provide technical assistance and training for natural resource professionals. The Unit is a cooperative effort of the U. S. Geological Survey, New York State Department of Environmental Conservation, Cornell University, U. S. Fish and Wildlife Service, and the Wildlife Management Institute. For more information about the Unit call us at 607-255-2839 or visit our website: http://www.coopunits.org/New_York/

NY Coop News

NEWSLETTER OF THE NEW YORK COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

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Structured Decision Making Workshop & Training: Mute Swan Management in NYS

Angela Fuller and Bill Fisher presented a 2-hour *Introduction to Structured Decision Making (SDM)* session on March 21, 2011 that was offered to all Division Staff of the New York State Department of Environmental Conservation (NYSDEC). Staff from the Albany office, regional offices, and sub-offices participated via video conference, with a live presentation from the Cortland office. This instruction provided managers and biologists an introduction to SDM, providing a mind-set for how to approach decision making for day to day management as well as larger-scale management problems.

Bill Fisher and Angela Fuller organized a 2.5 day workshop on Structured Deci-



sion Making that was held March 22-24, 2001 at the White Eagle Conference Cen-

ter in Hamilton, New York. Dr. Michael Conroy, retired from the Georgia Coop Unit, led the workshop and Bill and Angela facilitated the workshop. We had eleven participants engaged in the workshop, focused on the management of non-native, free-ranging ("feral") mute swan (*Cygnus olor*) populations in New York. We used SDM as an approach for framing the problem, eliciting objectives, identifying decision alternatives, addressing key uncertainties, and evaluating the expected effects and trade-offs associated with different management strategies that incorporate multiple objectives and values of stakeholders.

The first day of the workshop included an introduction to Decision Making Under Uncertainty by Mike Conroy, including applications of Adaptive Management. Jim Eckler of the NYSDEC ended the day with an introduction to the mute swan problem by providing the necessary histor-

ical information and data that have been collected.

Day two of the workshop was focused on identifying objectives, identifying decision



alternatives, and developing a quantitative objective function. In the evening, we rested our brains and engaged our bodies in some aerobic ping pong matches and some less than aerobic pool, darts, and shuffleboard.

The last day of the workshop was spent structuring the decision model and identifying follow-up activities.

We made great progress at the workshop and have a solid plan for moving forward with the management of mute swans in New York. We will meet with a smaller group from the workshop and continue to refine the model before reconvening with the larger group. Ultimately, the outcome of the workshop will be a mute swan management plan and policy implementation.—AKF

Projects

Trout Population Response to Water Diversion in Esopus Creek – T. J. Ross, M.S. Student

During fall 2010, T.J. Ross analyzed data collected during summer 2010 and re-analyzed data from summer 2009. Data analysis included: physical habitat, trout telemetry locations, and trout physiological condition.

T.J. also developed a research proposal for a cooperative study with Dr. Bill Fisher (USGS, NY Coop Unit), Dr. Cliff Kraft (Cornell, DNR), Dan Josephson (Cornell, Adirondack Field Station) and Dale Honeyfield (USGS, Wellsboro Lab). The study, which is scheduled to begin in January 2011, will develop bioelectrical

impedance analysis models for field application, as well as assess the effect of fasting on rainbow, brown and brook trout fatty acid content.

Bill and T.J. worked with Cornell undergraduate and summer technician, Jackie Chen, who is completing an independent study project to analyze telemetry data from 2009 and 2010.

T.J. presented preliminary results from his research at the New York Watershed and Technical Conference held at Westpoint, NY, in September 2010, and at the Catskill Environmental Monitoring and

Research Conference in Highmount, NY in November 2010.

T.J. is currently analyzing 2010 data and preparing for the summer 2011 field season.

This project is funded by the U. S. Geological Survey with support from the New York State Department of Environmental Conservation, the New York City Department of Environmental Protection, Cornell Cooperative Extension, and awards to T. J. from the Woodrow Wilson Foundation, Doris Duke Fellowship and the Kieckhefer Adirondack Fellowship.



T. J. Ross collecting GPS locations in Esopus Creek

Improving Trout Stocking Models for New York State Streams

Stocking trout in New York streams provides recreational opportunities that are highly valued by anglers; however, there is recent concern by New York State Department of Environmental Conservation (NYSDEC) professionals that some trout stockings fail and stocked fish are never caught by anglers. We are working cooperatively with NYSDEC to assess the fate of stocked trout, and to estimate stocked trout natural mortality and fishing mortality, as well as angling effort and catch rates on stocked trout. This information is used in NYSDEC's model for estimating the num-

ber of trout to stock in streams.

In spring 2011, we worked with NYSDEC biologists and managers to formulate the design for the pilot study. We selected seven streams located throughout New York State where fish population estimates and surveys of anglers will be conducted during the trout fishing season, which opens on April 1.

NYSDEC regional biologists helped identify and select streams most amenable to this study and provided further historical data. NYCFWRU and Cornell faculty provided advice on the study design and sampling protocol. During

2011, there was a change in project personnel.

This project is funded by NYSDEC.



Brown trout (*Salmo trutta*)

Projects

Spatial Ecology and Movements of Black Bears in New York – Matt Adams, M.S. Student

Black bears in the southern range of New York have been increasing in abundance during the last decade, which has caused an expansion of the range. As bears move north, they are utilizing areas with higher human densities and landscapes with a greater proportion of agriculture. It is unknown how an anthropogenically modified landscape influences the spatial ecology and habitat selection of black bears in New York. We will evaluate black bear movements in relation to landscape characteristics (e.g., agriculture, human

density, roads, topography, patch size) and food availability. Additionally, we will evaluate habitat selection and temporal variation in space use between bears in anthropogenically modified landscapes and those in forested landscapes. In addition to class work during the spring semester, Matt has continued preparations for the summer field season and has taken every opportunity to gain more experience working with black bears (e.g., den visits with NYSDEC, working with PA Game Commission). Matt has

been training to develop practices that will allow his research teams to maintain a high level of safety in the field. Recently, he was certified in the use of firearms for defense against wild animals and certified in the use of bear spray.

Matt is advised by Dr. Angela Fuller. The project is funded by the New York State Department of Environmental Conservation.



Matt Adams, M. S. Student

Estimating Black Bear Density Using Genetic Approaches– Cat Sun, M.S. Student

In recent years, black bears in New York have been expanding their range and encroaching on agricultural areas and more densely human-populated areas. However, a rigorous density estimate of this expanding population does not exist. To estimate black bear density, we will conduct a non-invasive genetic mark-recapture study to collect black bear hair samples from barbed wire snares. Individual bears will be identified using a suite of variable, mitochondrial genetic markers. These data will inform a spatially-explicit model to estimate population density of

black bears. Additionally, this study will analyze landscape genetics, potentially identifying landscape features influencing black bear gene flow. This small-region study will be conducted in south-central New York, and will help direct future larger-scale designs.

This spring, Cat has been in the lab optimizing DNA extraction techniques, conducting trapping array simulations, and preparing for her first field season this summer. In May, she attended the 2011 Northeast Fish and Wildlife Conference in Manchester, New Hampshire and the Eastern

Black Bear Workshop in Asheville, North Carolina.

Cat is working on this project with Dr. Angela Fuller, NY Coop Unit and Dr. Matt Hare, Cornell University, DNR. The project is being funded by the New York State Department of Environmental Conservation.

Cat Sun, Master's student, received a prestigious Doris Duke Conservation Fellowship to support her research on black bear population estimation. Congratulations Cat!



Cat Sun, M.S. Student

Projects

Biological Assessment of Environmental Flows for Oklahoma – Titus Seilheimer, former Postdoc

Using a stream classification based on eco-hydrological characteristics, we are identifying how altered flow regimes affect aquatic ecosystems, particularly fish assemblages. We are using publicly available streamflow information from USGS stream gages with existing fish collection records from University, State, and Federal sources to identify how flow alteration is linked to altered biotic communities.

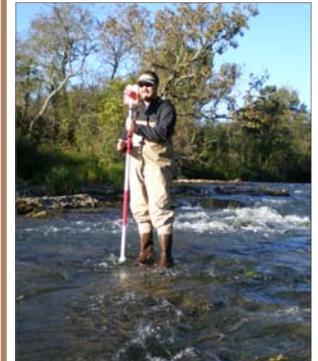
During spring 2011, we completed the analysis of the fish assemblage database for each gauged stream site. Species were characterized based on functional groups (e.g. habitat preferences, feeding strate-

gies) to minimize the regional differences in species occurrences. Data were analyzed in groups of sites based on the degree of hydrologic alteration (e.g. reference, low, moderate, high), reference/alterd, and geographic location (i.e. east, west).

These analyses showed that reference sites had significantly fewer lentic (i.e. lake) species than all levels of altered sites. The fish assemblages at the reference sites could be characterized as containing stream specialists that were intolerant to water quality and habitat alteration, and preferred faster flowing water. The altered sites had species with more

general habitat preferences, were tolerant of water quality and habitat alteration, and preferred slower currents. Ordination of the sites also showed differences in the fish assemblages and functional groups between reference and altered sites, and between geographical areas. Work on the data analysis is ongoing.

This project is funded by the U. S. Geological Survey through the Science Support Partnership program in cooperation with the U. S. Fish and Wildlife Service, Ecological Services in Tulsa, Oklahoma.



Titus Seilheimer surveying aquatic habitat in an Oklahoma stream

Biomonitoring of Lower Trophic Levels in Lake Ontario – Lars Rudstam, Professor, and Kristen Holeck, M.S. student

Lake Ontario is undergoing ecological change that is affecting the food web structure and therefore the ability of the lake to support different fish species, including native species such as lake trout, Atlantic salmon, deep water and shallow water coregonids, slimy sculpin, deepwater sculpin and lake sturgeon. This study will analyze zooplankton, chlorophyll, and phosphorus samples collected as part of the New York State Department of Environmental Conservation, U. S. Geological Survey, U. S.

Fish and Wildlife Service and Cornell University's biomonitoring program for lower trophic levels in Lake Ontario. The study will also provide an in-depth analysis of the status of Lake Ontario in 2010, including an analysis of time trends using data collected through this program since 1995. This collaborative program collects the most comprehensive data on lower trophic levels in Lake Ontario available at this time.

This study involves collaborations on data analysis be-

tween two countries and among numerous agencies. Cornell University and the Cornell Biological Field Station (CBFS) staff at Shackleton Point on Oneida Lake, NY are uniquely positioned to carry out this project.

Investigators on this project include Lars Rudstam and Kristen Holeck, Cornell CBFS; Bill Fisher, NY Coop Unit, and Pat Sullivan, Cornell, DNR. Funding for this project is being provided by the USFWS, Lower Great Lakes Fish and Wildlife Conservation Office.



Undergraduate intern at CBFS holding sturgeon.

Activities

Presentations



Unit Leader, Bill Fisher

- Fuller, A. K. Structured Decision Making in the NY Cooperative Fish and Wildlife Research Unit. Invited presentation at the New York State Department of Environmental Conservation, Bureau of Wildlife Management Team Meeting, Hamilton, NY. January 6, 2011.
- Harrison, D., E. Simons, A. Fuller and W. Krohn. Trends in habitat for forest wildlife in Maine's Great North Woods: The need for landscape planning. Invited presentation at U.S. Fish and Wildlife Service Northeast Region Biologists Conference, Baltimore, Maryland. February 14, 2011.
- Fuller, A. K. Biodiversity conservation in multiple-use landscapes. Invited talk, New York Chapter of the Wildlife Society Annual Meeting, Utica, NY. March 5, 2011.
- Fuller, A. K. Interview Skills. Invited presentation for the Northeast Association of Fish and Wildlife Professionals Student Professional Development Workshop, 67th Annual Northeast Fish and Wildlife Conference, Manchester, New Hampshire. April 18, 2011.
- Ross, T. J., B. Fisher, B. Baldigo, T. Baudanza, and M. Flaherty. 4 February 2011. Behavioral and Physiological Responses of Stream-dwelling Trout to Altered Hydrology, Turbidity and Temperature Regimes. Annual Meeting, New York Chapter of the American Fisheries Society, Canandaigua, NY.

Technical Assistance

- Fisher, W. L., and A. K. Fuller. Structured Decision Making and Adaptive Management for Mute Swans in New York. 2.5-day workshop for the New York State Department of Environmental Conservation. March 22-24, 2011.
- Fuller, A. K. Instructor, Introduction to Structured Decision Making. National Conservation Training Center, Shepherdstown, WV. January 10-14, 2011.
- Fuller, A.K., and W.L. Fisher. Introduction to Structured Decision Making. Web broadcast short-course to the New York State Department of Environmental Conservation. March 21, 2011.



Assistant Unit Leader,
Angela Fuller

Meetings and Training

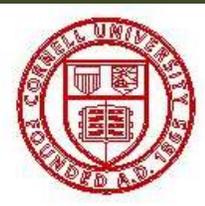
- Fisher, W. L.. Annual Meeting, New York Chapter of the American Fisheries Society, Canandaigua, NY. February 4, 2011.
- Fisher, W. L.. Trout Team Meeting, New York State Department of Environmental Conservation, January 24, 2011.
- Fisher, W. L., and A. K. Fuller. Northeast Fish and Wildlife Conference. Manchester, NH. April 17-19, 2011.
- Fuller, A. K. Bureau of Wildlife Management Team Meeting, New York State Department of Environmental Conservation. Hamilton, New York. January 5-6, 2011.
- Fuller, A. K. Cooperative Research Unit training. Reston, VA. February 15-17, 2011.
- Fuller, A. K. New York Chapter of the Wildlife Society Annual Meeting, Utica, NY. March 5, 2011.

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Upcoming

50th Anniversary Celebration.—The Unit will be celebrating its 50th anniversary on July 28-29, 2011. The two-day event will include a coordinating committee meeting on July 28th with a business meeting in the morning and student presentations in the afternoon. On July 29th, we will have a reunion program in the morning where former Unit Leaders and Unit students will share their stories of their time with the NY Coop Unit. We will have a picnic at upper Buttermilk Falls park in the afternoon to where friends of the Unit can enjoy a relaxing setting with food and drink.

Assistant Leader for Ecology search.—We are continuing our search for a new Assistant Unit Leader, Ecology. The

search conducted in 2010 did not result in a hire, so the position was re-advertised in November, 2010. We will be interviewing candidates in summer 2011, and hiring (hopefully) the new Assistant Leader, which will make our Unit fully staffed.

Staff changes.—Ellen Harris, Administrative Assistant for the NY Coop Unit will be retiring after 30 years from Cornell in June, 2011. We thank Ellen for her second stint with the Unit, adding to her many years of dedicated service not only to the Unit but the Department of Natural Resources. We will miss her and her bright smile and boundless energy. Enjoy your new life in sunny Florida, Ellen.

We've moved.—The Unit has moved out of Fernow Hall (along with everyone else in the Department of Natural Resources) to Bruckner Hall, which is next to Fernow and behind Rice Hall. We are now located in a suite in the basement of Bruckner Hall.