

## Inside this issue:

Cooperator Relationships	1
Projects	2-7
Publications	8
Presentations	9
Technical Assistance, Training and Meetings	10
Staff & Students	11
Happenings	11

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/](http://www.coopunits.org/New_York/)

# NY Coop News

## NEWSLETTER OF THE NEW YORK COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

Volume 3, Issue 3

December 2012

### Cooperator Relationships: They're What Matter

The success of the Cooperative Research Units (CRU) program hinges on collaborations with our state, university and federal partners. Staff and students at the New York Cooperative Fish and Wildlife Research Unit have been working diligently over the past four years to establish and strengthen relations with our state and university cooperators, the New York State Department of Environmental Conservation, the Cornell University Department of Natural Resources, and our federal partners in USGS and USFWS. Through conversations with our cooperators and other Unit scientists, I identified three keys that are important to successful relationships with cooperators.

**Personal relationships.**—The importance of developing personal relationships is key to developing trust our agency partners. These relationships are often built from the bottom up between CRU scientists and students and university researchers and the fish and wildlife managers. For example, we regularly meet and have coffee and meals with biologists and managers, sometimes help them in the field, share personal stories

and occasionally go hunting and fishing together. In contrast, some of our relationships are built from the top down. We visit state agency headquarter regularly to talk about critical management issues. This helps us develop a close working relationships and creates a sense of familiarity and understanding of their priorities and challenges.

**Regular communication.**—Active inquiry and regular communication are keys to maintaining relations. We regularly seek input from and listen to managers and biologists about their management needs to help us understand impending natural resource issues. Teams of biologists (e.g., trout, black bass, big game, T&E species) are typically formed to address these management issues, and they provide a forum for communicating ideas and solutions, as does our annual Coordinating Committee meeting with cooperators. Unit staff and students provide periodic updates on the progress of our research through reports, including this newsletter, our annual report, and presentations.

**Face-to-face involvement.**—Both university and agency people are involved in the research and education process. Our periodically volunteer to help agency staff in the field and participate in meetings and seminars where they present their research. Agency personnel occasionally serve on student advisory committees and coauthor papers, particularly when they are actively involved in the research. Unit scientists provide technical assistance through short courses and workshops on topics such as of study design and research planning.

What matter's most is that our Unit staff and students reach out to communicate with our cooperators on a regular basis and in person when possible. We are interested in our cooperator's needs and look for ways to assist them to help meet these needs. This requires regular personal meetings and communications and a genuine interest in working and being together. Developing trusting relationships with our cooperators takes time, but it is something we truly need and value.—WLF

## Projects

### Improving Trout Stocking in New York State Streams — Alex Alexiades, Ph.D. Student

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/ emigration and fishing mortality, as well as angling effort and catch rates on stocked trout. This information will be used to update NYSDEC's model for estimating the number of trout

to stock.

In spring-summer 2011 and 2012, fish population estimates and angler surveys were conducted on eight streams around New York State. Alex has already begun preliminary data analysis for 2012. Findings thus far have revealed that angler effort and harvest rates have decreased dramatically for many streams since previous estimates were made. Angler catch per unit of effort, however, has remained relatively consistent with historic estimates. Mortality rates for stocked trout in 2011 were found to be an order of magnitude higher than historic estimates in some cases, indicating

a decline in stocked trout survival.

Alex also spent several weeks last fall collecting and mapping habitat data in the field and continued with his analysis and modeling of DEC collected data. Initial 2012 estimates indicate similar patterns to 2011 although with high variation. Alex presented at the NYCFWRU Coordinating Committee Meeting in September at NYSDEC headquarters in Albany. In November he presented at the NYSDEC Trout Team Meeting in Cortland, NY.

This project is funded by NYSDEC.



Alex Alexiades, Ph.D. student

### Ecological Relationships of Black Bass Populations in New York Lakes — Christian Perry, Ph.D. Student

Smallmouth bass and largemouth bass, collectively known as black bass, occur in lakes and rivers throughout New York State. The last comprehensive investigation of the status of these black bass populations was conducted in the early 1980s.

Christian has been characterizing black bass populations in lakes across the state using data from the NYSDEC statewide fisheries database. He has summarized relative abundance, size structure, relative weights, and lengths-at-age of largemouth bass and smallmouth bass in hundreds of inland lakes. In a parallel effort,

he is consolidating statewide water chemistry and lake morphometric data, and data related to lake watershed characteristics from numerous sources to quantify the influence of chemical, physical and biological factors on bass populations. To establish the influences of these variables, he is using a hierarchical linear modeling framework.

During the fall, Christian began a literature review related to the influence of invasive round gobies on smallmouth bass, populations in inland lakes. As a result of that review, Christian plans to conduct field studies during the

spring smallmouth bass breeding season to collect and analyze data in order to answer research questions related to how male smallmouth bass nest-guarding energy expenditures differ under the presence vs. absence of round gobies. Christian is also modeling smallmouth bass – round goby interactions using matrix projection models.

Christian will be compiling black bass population data from the Great Lakes and Hudson River datasets.

This project is funded by the NYSDEC.



Christian Perry, Ph.D. student

## Projects

### New York Sustainable Flows Project — Jason Taylor, Ph.D., Postdoctoral Research Associate

Working in conjunction with The Nature Conservancy (TNC), this project is focused on developing information to inform flow recommendations for Great Lake tributary streams within NY and PA.

The project is coming to a close. Jason and TNC conservation and freshwater ecology staff facilitated the final flow recommendations workshop in December 2012. Jason presented a synthesis of a systematic literature review (causal-criteria analysis) designed to build support for flow ecology hypotheses generated by the technical working group in the June 2012 workshop. Overall, the results were positive for a large number of hypotheses

and support the need for protection of seasonal variation in low, average, and high flow components. This information, in addition to hydrologic analysis across different stream classes, was used by the technical working group to develop draft flow recommendations. Jason is now working with the notes from the workshop and additional quantitative values pulled from the literature to finalize a draft set of recommendations that will be reviewed by the working group in mid-February 2013.

We have also initiated a second environmental flow project focused on the four-state Marcellus Shale Region. This project is funded by the

USFWS Appalachian Landscape Conservation Cooperative and will integrate existing flow modeling techniques with biological data to develop flow-ecology relationships in the region, and assess potential hydrologic and ecological impacts of increased water withdrawals for natural gas drilling. We are currently assessing available flow modeling techniques and building hydrological and biological datasets.

This project is funded by a grant from the Northeast Regional Conservation Needs Program to TNC and Cornell. The Cornell Lab of Ornithology is helping to administer this project.



Jason Taylor, Postdoctoral Research Associate

### Implications of Natural Gas Extraction on the Eastern Brook Trout—Maya Weltman-Fahs, Ph.D. Student

Natural gas extraction from the Marcellus Shale formation is underway in PA and WV and is expected to commence in NY in the future. Maya is investigating the environmental ramifications of drilling activities on stream ecosystems using eastern brook trout, a declining native salmonid in the northeastern US, as an indicator species. Maya and Coop Unit postdoc Jason Taylor co-authored a literature review article in the January 2013 issue of *Fisheries* examining the pathways of potential impact between hydraulic fracturing ac-

tivities, including infrastructure development, the fracturing and wastewater disposal process, and brook trout juvenile and adult life stages.

During the fall of 2012, Maya replicated her summer collections of chemical, physical, biological, and hydrological data at her PA pilot study sites, which were highly forested watersheds with cold, headwater streams. The PA pilot study compares streams in a watershed across a range of gas shale drilling activities. Maya is currently analyzing these data to examine potential correlations

between instream conditions, trout populations and the density of gas drilling. Water and macroinvertebrate samples are being processed through the assistance of individuals in the Cornell Biological and Environmental Engineering and Entomology departments, respectively. Maya is also developing a NY field study plan for the 2013 field season.

Maya's research is being funded by the NYS Water Resources Institute and the USFWS Appalachian Landscape Conservation Cooperative.



Maya Weltman-Fahs, Ph.D. Student

## Projects

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

Black bear populations in New York have been expanding in range over the past twenty years, with much of this growth occurring in the southern portion of the state. The northern extent of this recent expansion in central-western New York contains areas with higher proportions of development, higher human densities, and open agricultural areas than the traditional core range to its south.

We are evaluating black bear movements in relation to landscape characteristics (e.g., agri-

culture, human density, roads, topography, patch size), and evaluating habitat selection and temporal variation in space usage between bears in human-modified landscapes and those in forested landscapes.

Matt continued managing the large amounts of data being collected by the GPS collars and began analyzing the collar locations to examine bear habitat selection patterns and movements.

Three of the study bears were harvested during the fall 2012 hunting season. There are

currently 14 bears with active GPS collars (11 adult females and 3 adult males).

Matt will again visit black bear dens this winter to assess collar fit and function, assess the physical health of the bears, and record the reproductive output of females. He will also continue analyzing data and work on completing his thesis.

Matt is advised by Dr. Angela Fuller. This project is funded by NYSDEC.



Matt Adams, M.S. Student

### Estimating Black Bear Density Using Genetic Approaches — Cat Sun, M.S./Ph.D. Student

Black bears in New York have been expanding their range and encroaching on agricultural lands and more densely human-populated areas. At present, a rigorously-developed density estimate of this growing and expanding population does not exist. To assist the New York State Department of Environmental Conservation with developing a management plan that incorporates both biological data as well as stakeholder input, Cat is conducting a non-invasive, genetic mark-recapture study of black bears in a portion of the southern black bear range in New York.

The methods Cat is using could be implemented in the future for large-scale, state-wide population estimation.

In Fall 2012, Cat continued her work in Dr. Matt Hare's genetics lab extracting and analyzing genetic data from hair samples collected during the Summer 2012 field season. New genetic markers were added to the suite used to create genotypes and identify individual bears from the hair samples. Cat also continued the development of a spatially-explicit capture-recapture model, and she attended and presented her work at confer-

ences and meetings.

In Spring 2013, Cat will be completing the genetic analyses and providing final estimates of population abundance and density of black bears for the study area.

Cat is advised by Dr. Angela Fuller, NY Coop Unit, and Dr. Matthew Hare, Cornell University. This project is funded by NYSDEC and a Doris Duke Fellowship awarded to Cat.



Cat Sun, M.S./Ph.D. Student

## Projects

### Structured Decision Making for Natural Resource Issues in NY—Kelly Robinson, Ph.D., Postdoctoral Research Associate

Structured decision making (SDM) is a framework that is increasingly being used to assess complex natural resource problems. Kelly is incorporating the SDM framework to fish and wildlife issues in NY. She has been helping the NYSDEC use SDM to identify the best management strategy for reducing the yearling buck proportion of the annual white-tailed deer harvest.

Kelly has been working with the Big Game Team of NYSDEC to complete the development of a stochastic population dynamics model that simulates white-tailed deer harvest under different buck harvest management alternatives. The model will provide estimates of age- and sex-

specific availability of deer on the landscape, expected harvest, and population growth under different harvest scenarios relative to status quo. Because some of the proposed harvest alternatives have never been implemented, Kelly has elicited expert opinions from the Big Game Team to predict harvest rates. The output of the population model, including the sources of uncertainty in the system, are being incorporated into the final decision analysis.

Kelly has been working to incorporate the population model output, data from the NYSDEC, and stakeholder values into a decision analysis. The decision analysis is being performed in a Bayesian belief

network (BBN). Stakeholder values are an important consideration in the SDM process, and Kelly has been collaborating with both the NYSDEC and the Cornell Human Dimensions Research Unit (HDRU) to understand how the different stakeholders (the NYSDEC and NY hunters) value different aspects of buck harvest management. Kelly has been providing input to help the HDRU in the creation of a series of hunter surveys that will inform the decision analysis. Kelly is working on this project with Angela Fuller.

This project is funded through the USGS Cooperative Research Units program.



Kelly Robinson, Postdoctoral Research Associate

### Spatial Capture-Recapture Models for Carnivores

To estimate the abundance and density of elusive carnivore species in New York State, we are using non-invasive genetic methods (scat and hair collection) to identify individual animals. We are extending traditional spatial capture-recapture (SCR) models for species known to use river and stream corridors. In our situation, the Euclidian assumption for the

distance from trap to activity center in traditional SCR models may not be appropriate. Therefore, we are developing a non-Euclidian metric based on a shortest path approach using a cost function.

We employed scat detection dogs to locate mammals along stream corridors. A scat detection dog proved highly effective in locating scats during

the summer of 2012. We deployed hair collection devices as an additional source of data. We are using the results of the pilot study and conducting simulations to select an optimal design for the full-scale study during 2013.

This project is being led by Angela Fuller (NYCFWRU) and Andy Royle (USGS, Patuxent Wildlife Research Center).

## Projects

### Spatial Climate Change Vulnerability Assessment— Chris Nadeau, M.S. Student

Climate change is expected to cause large-scale ecological change that could dramatically affect wildlife. Hence, wildlife management agencies must develop rapid assessment tools to determine which species and areas of the landscape will be most vulnerable to climate change. Chris is working with the New York State Department of Environmental Conservation (NYSDEC) to develop a rapid assessment tool to: (1) prioritize the management of Species of Greatest Conservation Need in New York, and (2) identify highly vulnerable and resilient areas of New York State. Specifically, Chris

has developed a spatial climate-change vulnerability assessment tool that incorporates both spatial and non-spatial aspects of vulnerability, including projected climate stress, potential for the landscape to buffer the effects of climate stress, and local-scale landscape connectivity.

Chris worked throughout the fall to develop a method to group the 459 non-marine species of greatest conservation need in New York State. Grouping the species will allow Chris to adapt the vulnerability assessment tool to the unique characteristics of each species group. This grouping method

addresses criticisms that an early version of the tool was too general to be applied across a large variety of taxa.

Chris also took a class in Dynamic Models in Ecology, attended two educational workshops, and coached a team of professional biologists through the structured decision making process as part of an 8-week online course hosted by the National Conservation Training Center.

Chris is advised by Dr. Angela Fuller. This project is funded by NYSDEC



Chris Nadeau, M.S. Student

### Relisting Species of Greatest Conservation Need in NY—Kimberley Corwin, Research Support Specialist

Species assessments are being written for each of the 537 Species of Greatest Conservation Need (SGCN) as the first step in the project to prepare a revised State Wildlife Action Plan, which is due in 2015. These assessments summarize current information on seven critical criteria: federal status, regulatory mechanisms, trends in abundance and distribution, current abundance in New York, threats to the species, New York's contribution to the North American range, and knowledge of management actions. These seven criteria

will be used in a dichotomous key that is being developed by Angela Fuller, Mitch Eaton, and the project team to place the current SGCN into one of five categories.

The draft species assessments for all 118 bird species in NY have been completed and most have been commented on by experts. Assessments have also been drafted for all 28 mayflies and stoneflies, all 10 beetles, all 48 odonates, all 14 amphibians, about a third of the Lepidoptera, and half of the fishes.

Work is underway on the mollusks and marine mammals. More than 50% of the 537 assessments have been written and are scheduled to be completed by June 2013. The species assessments will also be used in the revision of the New York State endangered species list.

This project is funded by the NYSDEC.



Kimberley Corwin,  
Research Support Specialist

## Activities

## Publications

Alexiades, A. V., M. M. Peacock, and R. Al-Chokhachy. 2012. Movement patterns, habitat use, and survival of Lahontan cutthroat trout in the Truckee River. *North American Journal of Fisheries Management* 32(5):974-983.



**Alex Alexiades and others demonstrating electrofishing in a local stream for a group of young students.**



**Angela Fuller and Mitch Eaton fishing on the Salmon River, NY**



## Activities

### Presentations

- Alexiades, A. V. 2012. The Fate of Stocked Trout in New York Streams. NYSDEC Trout Team Meeting, Cortland, NY. 14 November 2012.
- Eaton, M. J. 2012. Testing metapopulation concepts: effects of patch characteristics and neighborhood status on occupancy dynamics. Annual meeting of the Wildlife Society. Portland, OR. 13-17 October 2012.
- Fuller, A. K. 2012. Core competencies and wildlife professionals in a changing world: Summary of symposium. The Wildlife Society Annual Conference, Portland, Oregon. 14 October 2012.
- Fuller, A. K., and M. J. Eaton. 2012. Decision Model for Listing New York's List of Species of Greatest Conservation Need. New York State Department of Environmental Conservation, Division Management Team. Albany, NY. 30 November 2012.
- McDonald, J. E., and A. K. Fuller. 2012. The role of professional societies in helping to fulfill core competencies needed by wildlife professionals. Invited presentation, The Wildlife Society Annual Conference. Portland, OR. 14 October 2012.
- Sun, C. S., A. K. Fuller, J. A. Royle, and M. P. Hare. 2012. Use of a spatially-explicit capture-recapture model for estimating population size of black bears in south-western New York. Invited presentation, The Wildlife Society Annual Conference, Portland, OR. 14 October 2012.
- Svedarsky, D., and A. K. Fuller. 2012. Core Competencies and Wildlife Professionals in a Changing World. Symposium Organizer. The Wildlife Society Annual Conference, Portland, Oregon. 14 October 2012.



Maya Weltman-Fahs and Miles Lao electrofishing for brook

## Activities

### Technical Assistance and Training

---

#### Technical Assistance

Fuller, A. K. Developed camera-trap survey design to estimate occupancy of fishers in southern New York. New York State Department of Environmental Conservation. November, 2012.

Fuller, A. K. and M. J. Eaton. Developing a categorization model for species of greatest conservation need in New York, NYSDEC. Fall, 2012.

Fuller, A. K., D. R. Diefenbach, and M. J. Eaton. Structured Decision Making for Setting Fall Hunting Seasons for Wild Turkeys in New York and Pennsylvania. Three-day workshop for the New York State Department of Environmental Conservation and Pennsylvania Game Commission. Ithaca, NY. 10-12 October 2012.

Nadeau, C. P. Led a team of professional biologists through an 8 week online workshop focused on Decision Analysis for Climate Change hosted by the National Conservation Training Center. 1 October – 30 November 2012.

Taylor, J. R. and W. L. Fisher. Assisted in leading NY-PA sustainable flows project workshop. Skaneateles, NY. 6 December 2012.

#### Training

Nadeau, C. P. Structured Decision Making Workshop, National Conservation Training Center, Shepherdstown, WV. 24-28 September, 2012.

Nadeau, C. P. Hierarchical models for abundance, distribution and species richness in spatially structured populations using unmarked/R and WinBUGS. Patuxent Wildlife Research Center. 26-30 November, 2012.

---



Extracting a tooth from an anesthetized black bear

**NY COOP NEWS**

Newsletter of the  
New York  
Cooperative Fish and  
Wildlife Research  
Unit

New York Cooperative  
Fish and Wildlife  
Research Unit  
B02 Bruckner Hall  
Cornell University  
Ithaca NY 14853

Phone: 607-255-2839  
Fax: 607-255-1895  
E-mail:  
dnr-cru@cornell.edu

**Staff and Students****Unit Staff**

**Bill Fisher**  
Unit Leader-Fisheries  
B02 Bruckner Hall  
607-255-2151  
wlf9@cornell.edu

**Mitch Eaton**  
Assistant Leader-Ecology  
B02 Bruckner Hall  
607-255-4665  
mje57@cornell.edu

**Angela Fuller**  
Assistant Leader-Wildlife  
B02 Bruckner Hall  
607-255-2841  
angela.fuller@cornell.edu

**Kelly Robinson**  
Postdoctoral Associate-Wildlife/Fisheries  
B02 Bruckner Hall  
607-255-4648  
kfr26@cornell.edu

**Jason Taylor**  
Postdoctoral Associate-Fisheries  
B02 Bruckner Hall  
607-255-4644  
jmt345@cornell.edu

**Kim Corwin**  
Research Support Specialist-Wildlife/Fisheries  
NYSDEC, Albany, NY  
518-402-8965  
kjcwin@gw.dec.state.ny.us

**Melanie Moss**  
Administrative Assistant  
B02 Bruckner Hall  
607-255-2839  
mdm44@cornell.edu

**Unit Students**

**Matt Adams**  
Master's Student-Wildlife  
111 Rice Hall  
mca59@cornell.edu

**Alex Alexiades**  
Doctoral Student-Fisheries  
111 Rice Hall  
ava29@cornell.edu

**Chris Nadeau**  
Master's Student-Wildlife  
111 Rice Hall  
cnp28@cornell.edu

**Christian Perry**  
Doctoral Student-Fisheries  
111 Rice Hall  
pcp35@cornell.edu

**Cat Sun**  
M.S./Ph.D. Student-Wildlife  
111 Rice Hall  
cs752@cornell.edu

**Maya Weltman-Fahs**  
Doctoral Student-Fisheries  
111 Rice Hall  
mw482@cornell.edu

**Happenings**

**2012 Coordinating Committee meeting and 2011 Annual Report.**—The 2012 Coordinating Committee meeting of the NYCFWRU was held on September 18, 2012 in Albany, NY at the NYSDEC headquarters. This meeting brings together our coopera-

tors from Cornell, NYSDEC, USGS, USFWS, and the WMI to review the accomplishments of the NY Coop Unit during the past year.

Nine Unit students and staff, as well as the Unit Leaders, gave presentations about their research to a large gath-

ering of NYSDEC staff during the afternoon session.

The 2011 Annual Report of the NY Coop Unit is available on the Unit's website at [http://www.coopunits.org/New\\_York/Documents/](http://www.coopunits.org/New_York/Documents/).