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# THE COMMUNICATOR

NEWS FROM THE NEBRASKA COOPERATIVE FISH & WILDLIFE RESEARCH UNIT

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Volume 2, Issue 1

May, 2006

## New Faces

In January 2006, MS student Thad Miller began working with Drs. Craig Allen and Jim Merchant on a project that will conduct spatially-based assessments of the risks that native plant communities face from non-native species in Nebraska.

May 15, 2006, Nate Gosch joined the Unit as an MS student following his graduation from South Dakota State University. Gosch will assist Dr. Pope with documenting potential predators of white perch in Nebraska reservoirs.

Two undergraduate students at the University of Nebraska–Lincoln have been assisting the Coop Unit. During the academic year, Rachel Schulte helped with all manner of research-related and basic operational tasks in the office. Jeff Stittle has been assisting Kevin Pope with the Unit's first year of fish research. Starting in mid-May, Stittle and Gosch will work together conducting fish sampling.

A search is currently underway for an outreach coordinator for a new project. Two research technicians have been hired for summer field work: Chad Brock and Lindsey Reinarz. At least two Master's degree graduate research assistants will be hired in the near future as well. ❖

## News to Celebrate!

The Nebraska Environmental Trust recently funded a three year proposal, *Monitoring, Mapping, and Risk Assessment for Non-Indigenous Invasive Species in Nebraska*, which will enhance two other research projects assessing risks of non-native species in Nebraska. More below in Current Research.

The *Lincoln Journal Star* recently published an [article](http://www.journalstar.com/articles/2006/05/02/outdoors/doc445245f918534191067430.txt) about Kevin Pope and his work researching predators of white perch in Nebraska reservoirs. <http://www.journalstar.com/articles/2006/05/02/outdoors/doc445245f918534191067430.txt> ❖



*Flushing the stomach of a largemouth bass*

## Current Research

Current research is focused on the role that diversity plays in providing ecological functions, invasive species risk assessments and distribution modeling, the Nebraska Landowner Incentives Program, the occurrence of amphibians in Nebraska Rainwater Basin wetlands, documenting predator fish control on white perch populations, and understanding how resilience is generated in ecological systems.

### **Monitoring, Mapping and Risk Assessment for Non-Indigenous Invasive Species in Nebraska**

**GOALS:** This new research project will help build a cohesive non-indigenous species biosecurity and management system in Nebraska that is integrated and relatively seamless across

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institutional boundaries. This project will also map the potential spread of many invasive species in Nebraska.

**CURRENT STATUS:** A search is currently underway to hire a Research/Outreach Associate who will be responsible for developing a centralized clearinghouse on identification, management, impact and potential spread of currently and potentially established non-indigenous species. This position will also conduct outreach activities including contacts with county-level Nebraska governments and individual stakeholders, and plan an invasive species conference.

**GRADUATE RESEARCH ASSISTANT:** Search is underway

**FUNDING:** Nebraska Environmental Trust

### Impact of White Perch on Walleye

**GOALS:** This project will help document potential predators of white perch and possible bottle-necks that exist between white perch and other important fish species in Nebraska's Branched Oak and Pawnee Reservoirs. The inadvertent release of white perch into Nebraska reservoirs has created a nuisance situation. It is hoped the study will result in a predator program that will control the stunted white perch population and benefit management of white perch in all Nebraska reservoirs.

**CURRENT STATUS:** Field collections began in March 2006 and will continue through November. Fish sampling is conducted early in the morning and late in evening. Fish stomachs are pumped and the contents are analyzed to understand which fish species prey on white perch.

**GRADUATE RESEARCH ASSISTANT:** Nate Gosch  
Undergraduate assistant: Jeff Stittle

**FUNDING:** U.S. Geological Survey, the Nebraska Game and Parks Commission

### Spatial Risk Assessment of Invasive Species Impacts on Native Species in Nebraska

**GOALS:** This project conducts spatially-based risk analyses for species and communities identified as at-risk by the Nebraska Legacy Project. Stressors are invasive species on the Nebraska noxious weed watch list. Results may provide guidance for invasive species surveillance and monitoring, and prioritize research and management needs regarding specifics of impacts.

**CURRENT STATUS:** This project was just recently initiated.

**GRADUATE RESEARCH ASSISTANT:** Thad Miller

**FUNDING:** The Nebraska Game and Parks Commission, and the U.S. Geological Survey

### Landowner Incentives Program (LIP)

**GOALS:** This research focuses on assessing one aspect of the Nebraska Game and Park Commission's Landowner Incentives Program: the removal of invasive trees. LIP assists landowners with invasive tree removal. Landowners benefit from increased forage on pasturelands and restoration of prairie plants and wildlife, and management practices that sustain prairie and grassland communities. Our research is focused on the impact that tree removal has on the avian community of grasslands.

**CURRENT STATUS:** 2006 field work began in mid-May. In 2005, pretreatment, base-line data were collected and followed by the removal of invasive trees such as red cedar. The second, 2006, season of data collection will monitor changes in bird species, herpetofauna and plant communities in response to tree removal.

**GRADUATE RESEARCH ASSISTANT:** Beth Forbus  
Technician: Chad Brock

**FUNDING:** The U.S. Geological Survey, and the Nebraska Game and Parks Commission

### Amphibians in the Rainwater Basin

**GOALS:** Our goal is to establish a program monitoring amphibian populations in Nebraska's Rainwater Basin wetland complex in order to detect changes in this region over time (if monitoring is continued). The acquired data will provide inferential insight into the presence or absence of amphibian species, and changes in individual species presence and community composition.

**CURRENT STATUS:** The second season of monitoring began in mid-May. Data analysis is ongoing.

**GRADUATE RESEARCH ASSISTANT:** Aaron Lotz

**FUNDING:** The Nebraska Game and Parks Commission

### Resilience in Ecosystems

**GOALS:** We are conducting experimental and empirical tests of the model of cross-scale resilience proposed in 1998. One

*Resilience continued on page 3*

Welcome to the Nebraska Coop Unit newsletter! We plan to distribute our newsletter two or three times a year. Please share this newsletter with anyone you think may be interested. If you wish to be added to our distribution list, know of someone who should be included, or wish to be excluded from future mailings, please contact us at [allencr@unl.edu](mailto:allencr@unl.edu) or [vegger1@unl.edu](mailto:vegger1@unl.edu).

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## OUR COOPERATORS:

U.S. Geological Survey, Department of the Interior  
University of Nebraska—Lincoln  
Institute of Agriculture and Natural Resources  
School of Natural Resources  
Nebraska Game and Parks Commission  
The Wildlife Management Institute  
U.S. Fish and Wildlife Service

*Resilience continued from page 2*

prediction following from that model is that birds of different body size respond differently to resources as they “scale up” and aggregate in larger concentrations. An example of this occurs with pest outbreaks—when larger volumes of trees are infested with insects such as spruce budworm, larger bird species begin to exploit the pest, and are drawn from broader areas to do so. This provides a robust check on outbreaks over a broad range of spatial and temporal scales.

**CURRENT STATUS:** We conducted simulations comparing actual distributions of function across animal size classes against simulated distributions, and found that the richness of function across size classes in real ecological systems is more constant than expected. Field research began in May 2006 that will measure the difference in spatial response of birds of different body size to resources aggregated at different levels.

**GRADUATE RESEARCH ASSISTANT:** Aaron Lotz, Don Wardwell

**FUNDING:** The James S. McDonnell Foundation—*Studying Complex Systems*

## Cross-Scale Structure in Ecosystems

**GOALS:** We will conduct a series of empirical analyses to determine the distribution of functional groups within and across scales, the association of measures of biotic variability in vertebrates (e.g., invasions, extinctions, nomadism, migration) with discontinuities in body mass distributions, and cross-scale analyses of patterns in body mass distributions from local to hemispheric scales.

**CURRENT STATUS:** Ongoing investigations

**GRADUATE RESEARCH ASSISTANT:** Aaron Lotz, Don Wardwell

**FUNDING:** The James S. McDonnell Foundation—*Studying Complex Systems*

## Diversity and Ecological Functions

**GOALS:** This project seeks to understand how the diversity of grasslands affects ecological services. The current focus is on herbivory.

**CURRENT STATUS:** The pilot year of data collection focused on pollination and herbivory and is completed. Preliminary analysis indicates that pollinator diversity and visitation rates are greater over time on grassland sites having higher diversity, and that herbivory rates are lower on more diverse sites. 2006 field research will begin in late May and will focus on herbivory and invasion resistance.

**GRADUATE RESEARCH ASSISTANT:** Lindsey Reinartz (both a summer 2006 research technician, and also academic-year graduate student at the University of Nebraska Omaha advised by L. Wolfenbarger)

**FUNDING:** The James S. McDonnell Foundation—*Studying Complex Systems*, the Nebraska Game and Parks Commission. Additional collaborators include the Nature Conservancy, the University of Nebraska Omaha and the Natural Resources Conservation Service. ❖

## Boat Safety Certification

After a week of hands-on training in November 2005, Kevin Pope became a certified instructor for the federally-approved Motorboat Operator Certification Course. As a graduate of the course, Kevin is now certified to instruct others in motorboat safety. In December, he conducted a Motorboat Operator Certification Course at Texas Tech University for several graduate students. Kevin co-instructed an April certification course held in Lincoln, Nebraska, for USGS personnel, and will conduct a course in Brookings, South Dakota May 22–24. ❖

## Graduate Students

### Elizabeth (Beth) Forbus

*M.S. Graduate Research Assistant*

Beginning mid-May, Beth will return to established research sites in Southeast Nebraska to collect second-year data for the Landowners Incentive Program (LIP). In 2005, baseline data was collected prior to the removal of invasive trees. 2006 data will help understand how bird communities respond to changes resulting from the invasive tree removal.

### Nathan (Nate) Gosch

*M.S. Graduate Research Assistant*

Nate is excited to be working with Kevin Pope and Jeff Stittle at the Nebraska Coop Unit. In late May, Nate will attend the Motorboat Operator Certification Course in Brookings, South Dakota.

### Aaron Lotz

*Ph.D. Graduate Research Assistant*

Aaron's poster, *Monitoring of Amphibians within the Rainwater Basin Sub-Ecoregion: Diversity and Observer Error*, was presented at the Nebraska Chapter of the Wildlife Society annual meeting on October 21, 2005 in Grand Island, Nebraska, winning third place. The poster reported findings from his work this past summer with the Nebraska Game and Parks Commission on the Amphibians in the Rainwater Basin project. He also presented the poster at the First Annual Western Wetland Conference held in Golden, Colorado on October 24–26, 2005. Aaron received a scholarship to attend the conference.

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*This will be the Coop Unit's first  
graduate student publication!*

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Aaron's first manuscript, *Observer Bias in Anuran Call Surveys*, will be published in the *Journal of Wildlife Management* sometime this year. This will be the Coop Unit's first graduate student publication! Aaron presented this paper at the Third Annual Rainwater Basin Research Symposium on May 9–10, 2006, in Grand Island.

Aaron will continue amphibian call survey work in the Rainwater Basin this summer from May through July, and also his dissertation research which is focused upon understanding ecological resilience.

### Thaddeus (Thad) Miller

*M.S. Graduate Research Assistant*

Thad's experience with Geographic Information Systems (GIS) will be useful for predicting the range of the plant species on

Nebraska's invasive species watch list. Thad plans to build GIS-based habitat suitability models in order to forecast the potential distribution of these species. After devising acceptable models, Thad will evaluate the potential impact of the introduced species on at-risk native species.

### Donald (Don) Wardwell

*M.S. Graduate Research Assistant*

In 2005, Don set out to field test the cross-scale resilience model using bird communities at Fontenelle Forest in Bellevue, Nebraska. Field work was postponed due to logistical difficulties. Don then tested the model with simulations using empirical data. The results supported the hypothesis. He worked with several landowners to select 2006 field sites. The study sites have been selected and research is ready to begin.

Don finished a manuscript, *A test of the cross-scale resilience model: Functional richness in Mediterranean-climate ecosystems*, which has been submitted for publication. Don, along with Lance Gunderson and Craig Allen, contributed to chapter five, *Temporal scaling in complex systems: Resonant frequencies and biotic variability*, of a book scheduled to print sometime in 2007—*Pulsed resources and wildlife population response: The importance of time*, by J. A. Bissonette and I. Storch, editors. ❖

## WE'RE MOVING!

### NEW LOCATION

The Coop Unit is scheduled to move along with the rest of the University of Nebraska–Lincoln's School of Natural Resources (SNR) to the newly remodeled Hardin Hall. This move will consolidate the diverse units of SNR into one location. The move is tentatively scheduled near the end of June. Telephones, fax, and email addresses will not change—only the address.

## Teaching

Craig Allen instructed a new, graduate-level course for the University of Nebraska–Lincoln Spring 2006 semester: NRES 896, *Ecology of Biological Invasions*. Biological invasions are an accelerating global phenomenon with potential far-reaching economic and ecological impacts. This course is designed to increase understanding of invasions and their impacts, and draws from plant, invertebrate and vertebrate examples. The focus is primarily on animal invasions and understanding the effects on structure, process and function of “native” ecological systems. ❖

## Conferences/Meetings/ Workshops

Craig Allen, Beth Forbus and Aaron Lotz participated in the annual meeting of the Nebraska Chapter of the Wildlife Society in Grand Island, Nebraska, October 21–22, 2005.

In October, 2005, Allen traveled to Umea, Sweden where he co-presented the workshop *Advances in Macroecological Methods* at the Swedish University of Agricultural Sciences, and gave an invited presentation at the Stockholm Seminar series at the Royal Swedish Academy of Sciences: *Resilience and Novelty in Ecosystems and other Complex Systems*.

Aaron Lotz participated in the Western Wetland Conference, October 26–28, 2005, in Golden, Colorado.

Kevin Pope completed the Motorboat Operator Instructor Certification Course sponsored by the U.S. Geological Survey in St. Petersburg, Florida from November 14–18, 2005.

January 2006, Allen was invited to participate in a meeting of the National Center for Ecological Analysis and Synthesis Working Group in Santa Barbara, California. The Working Group is exploring new methods for the USGS Aquatic Gap Analysis Program.

On January 30, 2006, Craig Allen and Kevin Pope joined other state, university and federal scientists at the Corp of Engineers Office in Yankton, South Dakota, to discuss the need for and prospects of a cooperative study in the Missouri River delta. Represented were both the Nebraska and the South Dakota Cooperative Research Units, Nebraska Game and Parks Commission, U.S. Fish and Wildlife Service, U.S. Army Corp of Engineers, and National Park Service.

Pope attended the Southern Division of the American Fisheries Society (AFS) meeting in San Antonio Texas, February 8–12, 2006, and the Nebraska Chapter of the AFS meeting in Gretna, Nebraska on February 28.

In April 2006, Allen attended the annual Science Meeting of the Resilience Alliance (RA) in Kruger National Park, South Africa. Allen is on the RA Board of Directors. Current research was presented and future research activities were discussed.

*Adaptive Management for Resilient Water Resources* was the title of the Third Annual Water Law, Policy and Science Conference held on May 4–5, 2006 in Nebraska City. This was an opportunity for national and international scholars to come together and discuss water resource issues. Craig Allen was one of the conference planners.

On April 25–27, Valerie Egger attended the USGS Cooperative Research Units Program administrative conference in Jacksonville, Florida. In addition to training on federal reporting, travel, budgets and other processes, the agenda included ample time for the administrative assistants from all forty national units to meet and network. ❖

## EVENTS

### COORDINATING COMMITTEE MEETING

The Unit's first Coordinating Committee Meeting was held December 6, 2005. Committee members met with Unit staff and cooperators to discuss the Unit's progress, mission, challenges and opportunities. In addition to Unit staff and members of the Coordinating Committee, about 22 interested cooperators and collaborators also attended. Participating members of the Coordinating Committee were: Mike Van Den Avyle (USGS), John Owens (UNL), Terry Sexson (U.S. Fish and Wildlife Service) and Kirk Nelson (Nebraska Game and Parks Commission).

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### *Our Mission*

*Train graduate students for professional careers in natural resources research and management*

*Conduct research that will create new information useful for management of natural resources*

*Provide technical assistance to cooperators*

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