



# FOREST AND WILDLIFE ECOLOGY NEWS



*A Newsletter for Dept. of Forest and Wildlife Ecology Staff, Students, Alumni, and Friends*

Vol. 18, No. 1

May 2015

## Kirtland's Warbler: Setting proactive management guidelines for the next 100 years

*by Associate Professor Christine Ribic and Postdoctoral Fellow Donald Brown, Wisconsin Cooperative Wildlife Research Unit*

The Kirtland's Warbler is an endangered migratory songbird that breeds primarily in Michigan and winters in the Bahamian Archipelago. The species is an extreme habitat specialist on the breeding grounds, showing a strong preference for large, dense patches of young jack pine and well-drained sandy soils. Due to intensive collaborative management, the species has recovered from about 200 breeding males in 1971 to roughly 2,000 breeding males today, and is now a candidate for federal delisting. However, potential post-delisting management changes and climate change on both the breeding and wintering grounds could impact the long-term viability of the species.

We are working with the US Fish and Wildlife Service and the US Forest Service to assist in proactive management of this species over the next century. We are doing this with a series of modeling studies to project environmental changes on the breeding and wintering grounds, and linking those changes to the Kirtland's Warbler population. On the breeding grounds, we are using a space-for-time approach to project changes in jack pine establishment probabilities and growth rates across Michigan, Wisconsin, and Minnesota



*Plans for managing breeding habitat quality and control of cowbirds will greatly impact the viability of Kirtland's Warbler in the future.*

*Artwork by Donald Brown*

under several climate change scenarios. Most of the species' current breeding habitat is created through jack pine plantations, and high seedling establishment is critical for creating the dense patches used as breeding habitat. Thus, the impact of climate change on jack pine establishment will affect where future Kirtland's Warbler Management Areas should be located. We are also quantifying potential loss of wintering grounds foraging habitat due to sea-level rise, and changes in wintering grounds habitat quality due to changes in precipitation. Using a full-annual-cycle approach, these habitat changes will be linked to a population dynamics simulation model we have developed, allowing us to assess how climate change might influence long-term population viability.

In addition to climate change, funding for Kirtland's Warbler breeding habitat management will decrease after the species is delisted. In response, managers are currently considering integrating experimental jack pine plantations into the Kirtland's Warbler habitat creation program. The goal of these plantations will be to continue providing moderately suitable breeding habitat, while increasing timber value through changes in tree density and/or configuration and introduction of red pine. In addition, managers are seeking to reduce costs of a Brown-headed Cowbird removal

*Warbler continues on page 2*



## Alumni Update

**Ethan Lee** (BS Forest Science 2014) is parks and forestry coordinator for the City of Janesville. He works with the public to resolve park and forestry related problems throughout the community, works with friends groups and other community groups, inspects projects underway, and identifies areas for new tree plantings.

ethan.lee3737@gmail.com

**Veronique St-Louis** (PhD Forestry 2009) is the wildlife biometrician for the Minnesota Department of Natural Resources. Veronique obtained her MS in Biometry at the UW-Madison as well as her PhD. Veronique.St-Louis@state.mn.us

**Joe Huck** (BS Forest Science 2007) has transferred from a position as forester on the Clearwater National Forest in northern Idaho to a timber management assistant position, Chequamegon-Nicolet National Forest, Great Divide Ranger District based in Glidden, Wisconsin. jhuck@fs.fed.us

**Brian Beisel** (BS Forest Science 1981) retired on Jan. 2, 2015, after serving 33 years in the Forest Service, most recently with the Land Between the Lakes National Recreation Area in Kentucky. bhbeisel@yahoo.com

**Ted Sickley** was recently appointed director of Cartographic Databases for the National Geographic Society. Prior to that position, he was with the US Census Bureau and an earlier position with National Geographic. Ted was a GIS analyst and research program manager in the Mladenoff Lab for 17 years. tsickley@gmail.com

## News from the Chair



Bill Karasov

**C**ongratulations to our newest alumni – our May graduates! We are proud that we could offer them strong academic, pre-professional, and community-building experiences.

Our programs for them continue to be recognized as top-notch – a new ranking has placed us 5th in the world in forestry programs (pg. 3). In addition to strong academics, our students enjoy a wide variety of other activities organized by their own forestry and wildlife clubs (pgs. 5, 6). Our undergraduates receive fantastic mentoring from graduate students like Autumn Sabo and professors like Scott Bowe, whose mentoring activities won each of them campus awards (pg. 4). Autumn guided undergraduate Andy Muench through his senior research thesis, and undergraduates Morgan Walcheck and Kelsey Rayment each won competitive fellowships based on their research proposals (pg. 6). We have so much to offer undergraduates! Please share that message with any new prospects you know.

On July 1 Professor Mark Rickenbach will take over as department chair. Mark, a 15-year member of the depart-

ment, has been Associate Chair since 2009 and has an excellent understanding of the programs and staff in the department and college. Join me in welcoming Mark into his new position, and also in welcoming our newest Assistant Professor Craig Johnston (pg. 4). As I am stepping away from the Chair towards regular faculty status, I am reflecting again on how pulling together and working as a team the faculty, staff, students, and alumni help maintain our excellent forest and wildlife programs. To foster this spirit, and especially to enable us to fund community-building activities, the department recently created a “Sense of Community Fund.” We need such a fund because the spending restrictions on other gift funds have made it difficult to do such simple things as provide a gift of condolence to an ill or mourning colleague, or refreshments at our “Friday Flock” social that follows Friday departmental seminars. To help kick off this fund, I will contribute up to \$1000 in match to contributions to this fund in the coming year (see pg. 7 for how to contribute). Please join me in further building our sense of community, which ultimately helps us succeed in an enterprise that transcends our personal life stories in time and impact on the world – providing a continuing stream of well-trained people, as capable as our alumni, to carry into the future the important work of management and conservation of natural resources.

*Warbler; continued from page 1*

program. This program has been implemented continuously since 1972, with removal of this nest parasite resulting in dramatic increases in Kirtland’s Warbler fledgling production. We have used our model to assess the impacts of changing habitat management and reduced cowbird removal on the Kirtland’s Warbler population. Our preliminary results indicate that moderate reductions in breeding

habitat quality will not threaten the persistence of the species, but reduced cowbird removal would likely have substantial negative impacts on abundance. Ultimately, our project will assist managers with understanding the importance and influence of different Kirtland’s Warbler management strategies on population viability, and provide geographically-focused information that will assist with adaptation strategies to mitigate climate-induced habitat changes.



## Department News

### UW-Madison near top in ag and forestry

The UW-Madison has been ranked 5th in the world in the area of Agriculture and Forestry by QS World University Rankings. The rankings highlight the world's top universities in 36 individual subjects based on academic reputation, employer reputation, and research impact, according to QS's web site [<http://www.topuniversities.com/university-rankings>]. Ranked 1st through 4th were University of California-Davis, Cornell, Wageningen University in The Netherlands, and University of California-Berkeley.

### Craig Johnston joins the FWE faculty



*Craig Johnston*

In January the Department of Forest and Wildlife Ecology welcomed a new faculty member—Assistant Professor Craig Johnston. Craig grew up in Canada and earned his undergraduate degree at Queen's University in Ontario. He continued his studies at the University of Victoria, earning his MA in 2011 and PhD in 2014.

Craig's research focuses on the relationship between the forest and its role in climate change mitigation. "Governments around the world are quick to adopt legislation that rely on

forests as an answer to climate change, yet little is known about the true cost of these policies," says Craig. "My goal is to better understand how we can maximize the carbon sequestration potential of forests, while at the same time improve the economic viability of the forest products industry. With this in mind, my research group works on issues in forest management, international trade, and bioenergy systems." You can learn more about Craig and his research at his web site at: <http://labs.russell.wisc.edu/Johnston/>

### Craig Lorimer retires



*Craig Lorimer*

After serving as a member of the Forest and Wildlife Ecology faculty for 37 years, Professor Craig Lorimer retired at the end of December 2014. Craig has made a significant impact on the department and in his field of forest stand dynamics and in teaching and advising undergraduate and graduate students. Over the years he advised 31 graduate students (20 MS and 11 PhD). He also taught and advised many undergraduates. He estimates that the silviculture course he taught was taken by more than 750 students and his fire behavior/management course by more than 600 students across a wide range of majors. Last year the Forestry Club honored Craig by awarding him the Extra Chain Award for his excellence in teaching and advising.

Craig has also made a number of research contributions ranging from studies on oak regeneration problems to the dynamics of old-growth forests.

These contributions include developing a widely-used method to estimate past disturbance frequency and intensity to forest canopies based on tree-ring evidence and, more recently, completing a computer model (CANOPY) that was calibrated with data spanning the complete range of forest developmental stages. This model has made it possible to investigate a number of difficult long-term issues in forest dynamics, including the question of whether older forests are a carbon sink or carbon-neutral (important for global warming implications). Craig is author or co-author on about 90 scientific publications. In addition to his teaching and research, Craig participated in numerous outreach and service activities over the years. We wish Craig all the best in retirement, although we may see him around the office for a while as he wraps up several projects in progress.

### Stanosz appointed to Forestry Research Advisory Council



*Glen Stanosz*

Professor Glen Stanosz has been appointed to the Forestry Research Advisory Council (FRAC), a national-level committee.

FRAC meets annually to provide advice to the Secretary of Agriculture regarding priorities for forestry research through land-grant colleges or agricultural experiment stations and other State-supported universities offering graduate training in forest sciences. Glen specializes in forest pathology.





*Department News, continued from p. 3*

## Radeloff selected for Kellett Award



*Volker Radeloff*

Professor Volker Radeloff was honored with a Kellett Mid-Career Award. The award, supported by the Wisconsin Alumni Research Foundation

(WARF), recognizes outstanding mid-career faculty members. The award includes \$60,000 in research funding. Volker's research focuses on land use change and its implications for biodiversity conservation.

## CALS selects Bowe for Extra Mile Award



*CALS Dean Kate VandenBosch (left) with Scott Bowe and Ellen Mauer at awards ceremony.*

Professor Scott Bowe, wood products specialist, was selected to receive the CALS Arthur J. Mauer Extra Mile Award. Current and former students, faculty members and colleagues at WI DNR all supported Scott's nomination for the award, which was presented at a ceremony on campus on April 29. His nominators were all adamant that Scott is willing to go beyond normal expectations in his teaching, extension and service activities. Scott's professional interests focus on wood products manufacturing in both Wisconsin and the global forest products industry.

## Student News

### Two selected for McCabe-Keith Award

The Forest and Wildlife Ecology Department selected MS student Wynne Moss and PhD student Brendan Reid to receive this year's McCabe-Keith Award. Wynne's research focuses on the impacts of human development on mountain lions. She uses stable isotope analysis, capture and monitoring, demographic models, and spatial analysis in collecting and analyzing her data. She has an impressive list of publications in her field and is actively presenting her work at professional meetings and in the classroom.

Brendan's research focuses on the demography and genetics of turtle species in Wisconsin, in particular, the endangered Blanding's turtle. He has built upon and eventually assumed control over a long-term mark-recapture program initiated by WI DNR in 1990.

He also designed and implemented a statewide, four-year survey of multiple turtle species. He has published 9 articles and made 11 conference presentations. In addition, he actively disseminates his research findings at public events, classroom lectures, as a guest on public radio, and teaching and mentoring undergraduate students. Wynne and Brendan will each receive \$500. The McCabe-Keith award is limited to wildlife ecology graduate students.

### Sabo receives undergrad mentoring award

The Office of the Provost and Vice Chancellor for Academic Affairs has selected graduate student Autumn Sabo as this year's recipient of the Award for Mentoring Undergraduate Students. The award highlights the important role mentors play in fostering intellectual, personal, and professional growth among undergrads. Autumn was honored April 16 during a ceremony at the Ideas to Excellence Reception held following the UW-Madison Undergraduate Symposium. Autumn is working

*mentoring award continues on page 5*

## Alum donates deer skeleton to department

The department is fortunate to take ownership of a deer skeleton display donated by UW-Madison alumnus Glenn Helgeland of Mequon, Wis. Glenn no longer uses the skeleton at the deer and turkey expos he produced for 31 years. So he chose to donate it to the department as "a small way to say thanks to an educational institution and department I thoroughly enjoyed." The skeleton is professionally mounted and enclosed in a Plexiglas case. Anna Pidgeon has already used the skeleton in her Terrestrial Vertebrate Ecology course for a lab exam on mammals. Future students will be fortunate to have the skeleton as a visual teaching aid. Thank you, Glenn, for choosing our department as the skeleton's next home.





*mentoring award, continued from p. 4*  
with Eric Kruger on a PhD in Forestry. Her research interests include forest resilience and recovery, rare plant conservation, climate change, invasive species, and restoration. Her dissertation focuses on how white-tailed deer affect understory plant communities.

## FWE announces Best Dissertation Awards

The Department of Forest and Wildlife Ecology announced the recipients of its Best Dissertation Awards. **Jennifer Stenglein** and **Christina Locke** share the honor of inaugural award recipients. Awards are based on a combination of intellectual merit and broader impacts of the PhD research. Candidates must have completed their dissertation within the past 2 years. Each recipient will receive a \$500 award.

Jennifer Stenglein earned her PhD in Wildlife Ecology in 2014. Her dissertation is titled, "Survival of Wisconsin's gray wolves from endangered to harvested, 1980-2013." Jennifer used data from WI DNR on recovered wolf carcasses, annual population counts, and radio-tracked wolves to study the survival of an endangered wolf population during initial reestablishment to recovery and into the first year of harvest. In her dissertation she developed new models in a Bayesian framework that have broad application to wildlife conservation. Jennifer's graduate advisor, Tim Van Deelen, notes that her dissertation stands out because of its "profound and immediate impact on conservation." Jennifer currently is Quantitative Wildlife Research Scientist with WI DNR.

Christina Locke earned her PhD in Forestry in 2014. Her dissertation is titled, "Spatial heterogeneity of policy effects on land-use change." She notes that the goal of her dissertation research



*In March the UW Forestry Club invited the Steven's Point Forestry Club to join them for a tour of the Forest Products Lab followed by a grill out and hockey game*

## Forestry Club networks with Steven's Point students

*by Donnie Radcliffe*

This semester the Forestry Club has focused on professional development and networking with members of the Steven's Point Forestry Club. In February, the club traveled to Steven's Point for their annual forestry student's banquet. The Society of American Foresters (SAF) President, Matt Manashes, was also in attendance. Club leaders from Madison and Steven's Point Forestry Clubs met with Mr. Manashes and discussed ways to increase contact among different student groups. Cooperation is becoming especially important because the SAF National Convention is coming to Madison in Fall of 2016.

In March the Steven's Point Forestry Club came down to Madison. The two clubs toured the Forest Products Lab, grilled out, and went to a Badger hockey game together. (The Badgers lost to Ohio State on the 9th shootout, but it was a heck of a game!)

In addition to the networking events, several students attended chainsaw certification and a wildland firefighting class. The club also hosted a tree walk, where older students were able to refresh their leafless tree identification skills, and learn new ID tricks. Some club members went camping and hiking in the Kickapoo Valley Reserve in western Wisconsin.

As we head toward the end of the academic year, the club is gearing up for the annual forestry vs. wildlife kickball game and is planning a tree climbing demonstration. Stay tuned!

was to quantify the effects of local land-use policies on residential and industrial development and forest fragmentation at regional scales. In order to conduct her research, Christina took a multidisciplinary approach, combining methods and research designs in novel ways. Her advisor, Adena Rissman,

states that Christina's dissertation "makes important advances in the causal analysis of zoning policy on housing development, forest fragmentation, and natural resources use." Currently, Christina is a Post-Doctoral Researcher in the Claudio Gratton Lab at the UW-Madison.





## Undergrads selected for Holstrom and Hilldale awards

**Morgan Walcheck** was selected a recipient of the Holstrom Environmental Scholarship. Morgan will be collaborating with Bill Karasov on a project titled, "Effects of 2,4-Dichlorophenoxyacetic Acid (2,4-D)

Exposure on Hormone Concentrations in Larvae of Fathead Minnows." She was awarded \$3,000 and Karasov will receive \$500-\$1,000 to support the collaboration. A grant from Carleton and Mary Beth Holstrom supports the award.

**Kelsey Rayment** was awarded a Hilldale Research Fellowship to support her research project titled,

"Intestinal Digestive Enzyme Modulation in Northern Bobwhite Quail." Kelsey will also receive \$3,000 along with \$500-\$1,000 in support for her advisor Bill Karasov. The Hilldale Fellowships are funded by grants from the Hilldale Foundation and the Wisconsin State Legislature.

Both Morgan and Kelsey were recognized at the Chancellor's Undergraduate Awards Ceremony on May 4.



*TWS club members Lucas Olson (second from right), Kyle Andreska (third from right), and Cody Tisdale (fourth from right) help move 750 hay bales as part of pre-elk release preparation near Black River Falls.*

## Evans chosen for best research presentation

The Wisconsin and Minnesota chapters of The Wildlife Society selected MS graduate student Bryn Evans to receive the Best Graduate Student Poster award at its joint meeting in Duluth, MN, in February this year. Her poster titled, "Recovery of Semi-Aquatic Mammals in the St. Louis Area of Concern," was co-authored with her advisor Tim Van Deelen and post-doctoral researcher Shawn Crimmins. The poster summarizes her research on mammal populations—focusing on mink, river otters, and beavers—in the highly degraded habitat of the St. Louis River Estuary on Lake Superior.

## Global Health Institute selects Cornelius

The Global Health Institute selected PhD candidate Emily Cornelius to receive a \$5,000 Graduate Student Research Award for her proposal titled, "Investigation of the Reservoir Competency of Two Resident Passerine Birds for West Nile Virus." Emily's advisor is Bill Karasov. The Global Health Institute is based at the UW-Madison and strives to improve health in Wisconsin as well as across the world through research, education, and service.

## Student Chapter of The Wildlife Society has busy spring

*by Jade Arneson*

With chesty honking by Canada Geese cruising over cornfields and guttural calls of sandhill cranes flying over marshland, we wildlifers are happy to know that spring has arrived in Wisconsin. With spring's arrival, The Wildlife Society's (TWS) officers have been busy hosting events for student chapter members. Here are highlights of our spring activities so far: Carolyn from the Madison Audubon Society headed an Owl Prowl at Picnic Point, we led an early morning Picnic Point birding trip, helped educate kids at Wingra School about common Wisconsin wildlife during a Family Science Night, assisted David Drake in aiding salamanders across high traffic roads, organized a highway cleanup, and lent a few hands to help with pre-elk release preparations in Black River Falls. Our club members were excited to learn that 26 elk were recently translocated from Kentucky to an acclimation pen in Black River State Forest, Wisconsin. Three of our members helped move hay bales as part of the pre-elk release preparations. The student chapter recently hosted officer elections as well as participated in a frog and toad survey with the WI DNR.



## Thank you to those who donated to FWE

Donations from alumni and friends of the Department of Forest and Wildlife Ecology allow us to do things and support activities that would be difficult or impossible without your support. We extend a heartfelt thank you to all who donated in 2014. If we've mistakenly left you off the list, we apologize, and ask that you please alert us.

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### Forest and Wildlife Ecology Fund

We invite you to join us in our efforts to provide support for important department priorities. Donations to the three funds are, respectively, used to support activities that promote a sense of community in the department, help cover the costs of the summer field camp and host activities such as special lectures, and support student travel to professional meetings.

I/we would like to donate to: ☐ Sense of Community Fund ☐ General FWE Fund ☐ Grad Student Travel Fund

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## FOREST AND WILDLIFE

**ECOLOGY NEWS** is published by the  
 Dept. of Forest and Wildlife Ecology

Please send comments and news to:  
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Web site: [www.fwe.wisc.edu/](http://www.fwe.wisc.edu/)

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# RESEARCH CAPSULE

*Chadwick Rittenhouse*  
*Adena Rissman*

## QUESTION

Have changes in winter weather  
 conditions impacted timber harvesting  
 in Wisconsin?

## PROJECT

We analyzed weather station records  
 from 1948 to 2012. We looked at timber harvest records from Wisconsin state and  
 county forests from 1996 to 2012 for associations with winter weather.

## FINDINGS

Frozen ground declined two to three weeks between 1948 and 2012, which is  
 important for timber harvesting. Years with less frozen ground or snow duration  
 had more harvest of jack pine and red pine and less harvest of aspen, black spruce,  
 hemlock, red maple, and white spruce.

