



School of Natural Resources  
 College of Agriculture, Food and Natural Resources  
 University of Missouri

# The Resource

SPRING 2011

## FROM THE DIRECTOR

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As I write this, spring is still struggling to succeed winter; the redbuds have peaked and the dogwoods are in full flower here in Columbia. When (if?) the sun shines campus and city environs are simply beautiful! What a wonderful way to wrap up another academic year.

It's been the usual hectic scene around the Anheuser Busch Natural Resources building this year. ABNR is home to more students this year than the School has ever seen. That's in part due to our new emphasis area, Sport Management, in Parks, Recreation, and Tourism. But, our undergraduate population is up strongly in Fisheries & Wildlife Sciences, along with good growth in the Environmental Science emphasis area in Soil, Environmental & Atmospheric Sciences, and a positive trend in Forestry. Some areas are experiencing modest growth in graduate student numbers, as well. The larger numbers are positive for us in many ways, but we are also challenged to accommodate so many students in some of our classes (especially labs). Although these are not trivial concerns, it is better to be growing than shrinking in the academic world.



Mark Ryan

One of the biggest changes we are working toward is a consolidation of our graduate degrees. Political (external to MU) concerns about "low productivity degree programs" (oh, how I hate that phrase!) put tremendous pressure on us to do something. The faculty has agreed, in principle, to restructure our graduate (none of this affects our undergraduate degrees) degree offerings. Over the next 12-18 months faculty will be working to establish single "umbrella" M.S. and Ph.D. degrees in "Natural Resources" (even the name has yet to be decided) with Emphasis Areas. The Emphasis Areas almost certainly (faculty will have to vote later) include the traditional areas of Forestry, Fish & Wildlife, PRT, and SEAS. But, new interdisciplinary areas (e.g., something we might call "Human Dimensions in Natural Resources" or "Water Quality & Management") may well emerge from our discussions. Although the issue was thrust upon us, faculty are responding with positive, creative ideas that will ultimately strengthen our graduate education programs and outcomes. We'll keep you posted on this as we move forward.

The School is weathering the financial storm affecting higher education nationwide quite well. This year's budget isn't finalized as I write, but signs point to much more modest cuts than we initially planned for. Still, I would appreciate our alums and stakeholders reminding our elected representatives of the value of education for Missouri's future.

Summer will follow spring (big assumption there that spring will happen!) and faculty and students will re-focus on research, summer jobs, internships, professional development, and...I hope for everyone a little time to re-energize and re-create themselves. I extend that wish to all of you, as well! Enjoy those wonderful natural resources this summer!

*Mark Ryan,*

Director

## SAVING THE TUAMOTU KINGFISHER



Dr. Dylan Kesler

been researching the cause of the Kingfisher's plummeting population, which was estimated to consist of 125 individuals in 2008, a sharp decline from about 500 individuals in 1974.

To research these birds, Kesler traveled to their only remaining natural habitat, the Niau atoll, or a coral island that surrounds a lagoon. The Niau atoll spans approximately ten-square miles and rests in the central South Pacific Ocean.

The Tuamotu Kingfisher once prospered on the islands of South Polynesia, but has since been sequestered into the Niau atoll. The reason for the Kingfisher's decline is still being determined, but Kesler theorizes that the birds began to compete for food with rats, which came from ships sailing through the area. Feral cats living on the island also hunt the Kingfisher, and typhoons destroy their nests. The combination of these fac-

Dr. Dylan Kesler, assistant professor in the Fisheries and Wildlife Department, has been working to save the Tuamotu Kingfisher, one of the world's most endangered species. Kesler has

tors has had a dramatic negative impact on the Kingfisher population, and Kesler has not been the only one to take notice. The species is now cited as "Critically Endangered" according to the International Union for Conservation of Nature.

"If we lose these birds, we lose 50,000 years of uniqueness and evolution. Because it has lived in isolation for a very long time, it's unlike any other bird. There is no other bird like this on the planet," Kesler said.

As part of his research on the kingfisher, Kesler has not only investigated the reasons behind their population decline. He and his team spent five years researching the bird, its behaviors and its relationship with the Niau atoll. Because of the hunting patterns of the Kingfisher, the local farmers' coconut groves have proven to be a haven for the remaining birds.

As a result of his discoveries, Kesler worked to educate the local farmers about the unique bird. He taught the farmers how to create a hospitable environment for the Kingfisher and taught the local children to appreciate the birds' value as well. He also moved some of the birds to another appropriate habitat, in the hopes that the relocated population will thrive if the Kingfishers in the Niau atoll die out.

Kesler and his team have yet to see a booming increase in the Kingfisher popu-

lation. Though the farmers have attempted to eradicate the brush containing their rat competition, it seems the birds have a long road to recovery, if recovery is in their future at all. The relocation seemed to be an initial success, giving Kesler and his team hope for more successful moves in the future, which seem to be the most feasible option to save the population from extinction. Kesler's efforts to relocate the Kingfisher provide information about a largely undocumented process and its success, garnering much attention across the scientific world.

"Unfortunately, even with all our work to date, the Tuamotu Kingfisher population on Niau is still crashing," Kesler said. "We're seeing some turnover, but each year when we return, there are more empty territories and the population decreases. At this rate, these birds will be gone within our lifetimes."

For more information, go to <http://cafnr.missouri.edu/news/stories2011/bringing-a-birdback-from-the-brink.php>.



The Tuamotu Kingfisher, photo property of Dylan Kesler.

## Strauch receives Excellence in Advising Award



Dr. Trista Strauch

Dr. Trista A. Strauch, adjunct professor of animal science and fisheries and wildlife, was awarded the 2011 Excellence in Advising Award for her outstanding commitment as an undergraduate student advisor. She was chosen from six other faculty advisors from various MU departments.

Susan Klusmeier of the Trulaske College of Business was also a 2011 award recipient in the professional advising division.

"I am very honored to have received the award, however, the true reward was in the students' letters that were in support of my nomination," Dr. Strauch said in a press release.

Though she is a dedicated advisor, Dr. Strauch also teaches zoology courses and is the coordinator of the Captive Wild Animal Management minor for CAFNR.

The Excellence in Advising Award, established in 1995, was created to recognize the exceptional service MU advisors provide to their students.

## MIZZOU ADVANTAGE Grant Funding

Each year, the Mizzou Advantage grants are awarded to University collaborators who "increase MU's visibility, stature and impact in higher education" in accordance with their five initiatives.

28 out of 140 proposals received funding, four of which represent the School of Natural Resources:

### SHIBU JOSE

"Bio2Cor: The Biomass/Biofuel Corridor along the Mississippi/Missouri River"

### MARK RYAN

"MU Environmental Policy Network to Enhance the Statue and Impact of Mizzou Advantage Strategic Areas"

"Missouri Metagenomics Symposium"

### CHUNG-HO LIN

"Exploring the Health Benefits and Economic Opportunities of the Bioactive Compounds Isolated from Eastern Red Cedar in Missouri"

### JOHN DWYER

"Bioenergy Plantations - Biomass Supply Chains"

### 3 FACULTY AFFAIRS

## THE EASTERN RED CEDAR:

### *Once a Nuisance, Now a Viable New Cash Crop for Missouri*

Chung-Ho Lin, a research assistant professor with the Center for Agroforestry, and his research team discovered a use for the Eastern Red Cedar (ERC) tree previously determined to be nothing more than a nuisance—and it could save lives. The ERC has a rather bad reputation as an invasive species, taking over farmland and prompting farmers to destroy them. In Missouri there are an estimated 500 million ERC trees, and in 2007 Lin began his research in the hopes of finding a profitable use for the trees.

“I was told to find an entrepreneurial use for this ‘trash tree’ so land owners could put their energy into profiting from them instead of cutting them down,” Lin said.

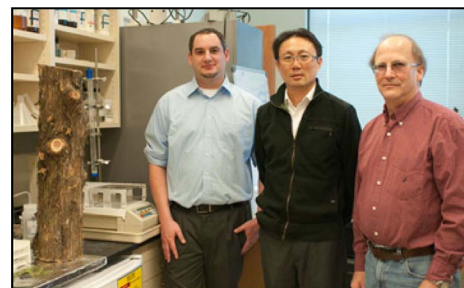
Lin and his team eventually discovered value within the species as an antibiotic. Chemical compounds in the ERC have been proven to be effective as an anti-bacterial agent, most notably against MRSA (methicillin-resistant *Staphylococcus aureus*), which is resistant to most medicines and accounts for a large amount of deaths caused by staph infection. It would only take a relatively small amount of this bacteria-killing compound, which is found in the tree’s needles,

to effectively “defeat” MRSA.

The compounds within the ERC have various other possible uses as well, from a topical acne treatment to killer of skin cancer cells. However, treatments derived from the ERC are still in progress,

but Lin and his fellow researchers are hopeful for the future of the tree. The results of further research could have economic implications for Missouri as well, with the ERC as a source of income for the state, rather than a nuisance.

“This discovery could help people fight the bacteria as well as give farmers another cash crop,” Lin said.



Chung-Ho Lin (center) with fellow ERC researchers, Brian Thompson (left) and George Stewart (right). Image property of Keith Montgomery.

## PLAYGROUNDS WITHOUT BORDERS

Through a grant from the Robert Wood Johnson Foundation’s Active Living Research program, Sonja Wilhelm Stanis (Parks, Recreation and Tourism) and Charles Nilon (Fisheries and Wildlife) are collaborating with the Department of Family and Community Medicine to collect in-depth data to provide a better understanding of the issues of childhood obesity, especially within low-income families. With Missouri’s childhood obesity rates consistently exceeding the national average, this project could ultimately give mid-Missouri communities the insight needed to maximize local children’s activity levels.

Since its pilot study in 2010, the Playgrounds Without Borders project continues to collect data from fourth-grade children out of four Columbia elementary schools. These schools have a significant number of low-income families, providing insight into a key demographic needed to find lasting solutions to childhood obesity community-wide.

The children are first exposed to playground environmental interventions, where aspects of the school’s playtime routines are changed with the intent to increase students’ moderate-to-vigorous physical activity (MVPA) levels both inside and outside of school. The data will largely come from the children’s perspectives, in the hopes that more effective combatants to childhood obesity will be discovered. This data is compiled before and after the intervention using accelerometers, which accurately record each student’s daily activity levels. This data is compiled before and after the intervention using accelerometers and GPS data loggers, which accurately record each student’s daily activity levels as well as where that activity occurs. Post-intervention, researchers also use digital cameras to uncover the places children prefer to play for physical activity through photos of these places taken by the

students themselves.

Post-intervention, researchers also use GPS data loggers to uncover the places children prefer to play, accompanied by photos of these places taken by the students themselves.

In order to get a comprehensive view of the project, the parents and teachers are also involved in the process, participating in post-intervention focus group interviews along with the children. They are all consulted to give the researchers their perspective on the intervention and its effectiveness.

Though still in the process of collecting data for the project, Nilon says they have already taken valuable information out of the pilot study. “We found that children were most active at school,” he said. However, there is quite a wide range of places where children play, including parks, trails and wildlife areas.

Project researchers hope to get a more comprehensive view on the types of environments that encourage activity in children. Since a child’s environment influences their physical activity levels, the project could provide ideas to better these communities (and others like them) in terms of encouraging physical activity. These betterments would be based on what the children and their guardians want.

This “community driven change” is the ultimate goal of the project, Wilhelm Stanis said. “It’s empowering for the kids.”



#### **The Equipment:**

Each participating student is asked to wear a GPS locator (left) which documents where and when they were the most active. The students are also given a small camera (right) to document their favorite places to play.



## AWARDS



Ashley Schulz

### *Mizzou Unsung Hero Award*

Ashley Schulz (Forestry, undergraduate) was chosen to receive one of the 2011 Mizzou Unsung Heroes Awards by the Student Union Programming Board.

The program honors undergraduates with “dedication, integrity, initiative, hard work, creativity, perseverance and character.” A committee comprised of both MU students and faculty members chose Schulz and her fellow award winners.

Recipients were presented with their awards this April at a banquet in their honor.

### *Barnes Award Recipients*

The Barnes Award, enstated by Ronald and Norma Barnes in honor of Byron Barnes, was awarded to six Soil, Environmental and Atmospheric Sciences (SEAS) undergraduates this year.

The Barnes Award is “used to promote professional growth, and support opportunities for teaching research and service in environmental soil science program.”

The following students received the award this year:

Elizabeth Dolan  
Leanna Erickson  
Laura Gosen  
Rebecca Nordenholt  
Carrie Tanner  
Melissa Vatterott

### *Bullinger receives AGU Outstanding Student Paper Award*

Ed Bulliner (Forestry, graduate) was recently chosen to receive the Outstanding Student Paper Award by the American Geophysical Union (AGU).

Bulliner attended the AGU 2010 Fall Meeting, and won the award for his presentation, “Measuring and Modeling Stream Temperature in a Forested Ozark Border Stream: An Energy Balance Approach.”

There were over 18,000 attendees at the 2010 AGU Fall Meeting, including many leading geophysicists in their field.

Bulliner’s award will be highlighted in Eos, AGU’s weekly Earth and space sciences newspaper. According to the AGU, over 50,000 geophysicists have access to Eos worldwide, giving Bulliner’s research global exposure.

He will be honored at the 2011 AGU meeting for his award as well.

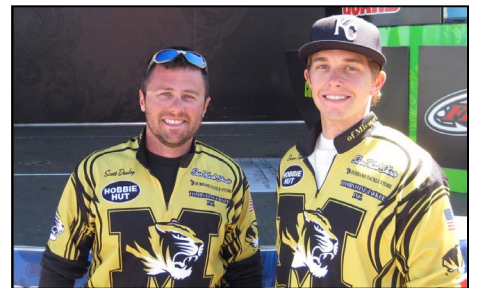
### *Bass Fishing Club*

#### *3rd Place: Kentucky/ Barkley Lake Tournament*

The Bass Fishing Club, represented by Scott Dooley and Duron Netsell, won third place in the 2011 Kentucky/Barkley Lake Tournament in Gilbertsville, KY.

The team caught five fish weighing a combined 10 lbs. 11 oz., garnering prize money for both their club and the University.

There were a total of 40 teams participating in the competition.



Netsell and Dooley at the Kentucky/ Barkley Lake Competition.

### *Kozlowski chosen for NCAR Undergraduate Leadership Workshop*

Danielle Kozlowski (SEAS) was recently chosen to participate in the National Center for Atmospheric Research (NCAR) Undergraduate Leadership Workshop. Kozlowski was one of only 20 students in the nation selected to attend. Kozlowski is the fifth MU student to be selected in the workshop’s ten-year history. She follows Meaghan Langland (2010), Madison Burnett (2009), Chris Foltz (2005) and Eric Kelsey (2002). Students must be nominated to participate in the workshop, and must also have substantial experience

in atmospheric and related sciences. With over 100 UCAR programs nationwide and only 20 openings, the nomination process is rather competitive. The workshop aims to inform “students about exciting research and career opportunities in the atmospheric and related sciences,” according to their official website. Students will have the chance to explore a variety of topics with scientists at numerous NCAR locations. The five-day workshop is in mid-June and takes place at the University of Colorado in Boulder.

# 5 EVENTS

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## PRT PICNIC

On May 5th students of Parks, Recreation and Tourism enjoyed their annual spring picnic. BBQ, raffles and lots of fun.

The event was a great success due to student support and all the prizes donated by local businesses. Almost all attendees won a prize.

Special thanks to Columbia Parks and Recreation for their support and giant BBQ grill needed to cook for over 125 students.



## TRIVIA NIGHT

The SNR Alumni Board and the Student Ambassadors of SNR partnered in early March to host the 2nd Annual Trivia Night at Mizzou's Bradford Farm. In all, 17 teams of students, alumni, faculty, and friends of the University competed for prizes and the honor of being "Top Team." This year's questions included such things as famous cities, weather, and so much more.

During the evening, the teams enjoyed good company, good food, and were able to play a variety of raffles.

Funds raised at Trivia Night are used to support student scholarships, travel grants, various cosponsored alumni/student activities,

and to support SNR student organizations on campus.

Special thanks go out to Laura Hertel and Sharon Burnham for their hard work in organizing the event and to the student ambassadors.

Some of us are already working on questions for next year's Trivia Night. So practice up and get ready to test your knowledge in the third annual Trivia in the Wild in March 2012.

## MATTHEW WOOD *SCD PROBIOTICS*

SNR alumni Matthew Wood founded his bioscience firm, SCD Probiotics, in 1998 while he was still completing his undergraduate Soil and Atmospheric Sciences degree at MU. His company has certainly grown since then; SCD Probiotics has evolved into an international enterprise with 80 percent of its sales generated in international markets.

This February, Gov. Jay Nixon granted SCD Probiotics a \$1.4 million incentive package for company expansion. Those funds helped the company move to a new headquarters in the heart of Kansas City and should generate about 62 new jobs in the downtown area.

SCD Probiotics also recently announced its partnership with OCCU-TEC to “promote, sell and fulfill a complete line of probiotic products geared for consumer applications,” according to a news release. These products will be sold online, targeting the rapidly growing global probiotic market.

Probiotics are live microorganisms, usually bacteria, which are comparable with the beneficial microorganisms that are found naturally in the human gut. They can also be found in certain foods, like yogurt or milk. These probiotics can benefit the health of the host when taken in sufficient quantities. Friendly bacteria

are essential for proper immune system development, protection against disease and the absorption of nutrients.

In recent years, growing health consciousness and accessibility of dietary supplements have caused a boom in the industry. The growth of the probiotic market is not strictly limited to human consumption. SCD Probiotics manufactures products that can be applied to various operations, including agriculture, livestock health and waste treatment.

This growth is largely caused by rising health consciousness and the accessibility of probiotics in dietary supplements, but its use is not limited to humans. SCD Probiotics also plans to distribute natural lawn and garden care products online. This variety and accessibility to sustainable products certainly benefits the consumers, but it also puts Missouri (and Kansas City specifically) on the map in terms of life science technology, especially in the already-thriving animal-health sector.

With a strong market, partner company, global success and support from the state government, there are surely promising prospects on the horizon for SEAS graduate Matthew Wood and his successful corporation.

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## DR. ERNEST M. AGEE

### *MU Graduate School Distinguished Graduate Alumni Award Recipient*

Dr. Ernest Agee graduated from the University of Missouri in 1968 with a Ph.D. in Soil and Atmospheric Science. Dr. Agee’s specialization was in mesoscale meteorology, and this has been his primary area of study throughout his career. His advisor was the late Dr. Grant Darkow. After graduating from the University of Missouri, Dr. Agee joined the faculty at Purdue University at the rank of assistant professor. At that time, he and two colleagues founded the Earth and Atmospheric Science Department there. He has been at Purdue for over 40 years, and since that time the department has grown to more than 55 faculty, associated faculty, and staff. Dr. Agee has published over 70 peer reviewed publications and has supervised nine postdoctoral and visiting scientists. He has graduated 11 Ph.D students and 27 M.S students, and supervised 10 honors students at Purdue University. He has taught 13 different courses during his time at Purdue. In addition to his publications, he has co-edited a book, *Cloud Dynamics*, and contributed a chapter to another book. Dr. Agee is very well known for his research in the area of mesoscale meteorology.

Dr. Agee has served in a leadership role for his department during various intervals since about 1990. From 1990 to 1996 he served as chair of his department. He has also served as a member

representative to the University Corporation to Atmospheric Research (UCAR) for the last 25 years. Dr. Agee’s service beyond the department has included significant outreach programs to various communities across Indiana and the United States. He has built a strong alumni base, reached out to the private sector, and has been dedicated to improving earth science education in the state of Indiana. His service to the community-at-large led to him being designated as a “Sagamore of the Wabash” by the Governor of Indiana, an award bestowed on a person who is noteworthy for their public service. Dr. Agee’s service to the profession has included serving on various committees within UCAR and the American Meteorological Society (AMS). His service to the public and within the AMS has included a dedication to outreach for increasing the involvement of women in science as well as under-represented groups. Dr. Agee is a Fellow of the AMS, an honor given to those who have made significant contributions to the atmospheric sciences over a sustained period of time, as well as service to the society. Finally in 2010, Dr. Agee was awarded the Cleveland Abbe Award. This award is the highest honor the AMS bestows on someone for service to their profession and the community.