



MISSISSIPPI STATE
UNIVERSITY™

DEPARTMENT OF WILDLIFE,
FISHERIES AND AQUACULTURE

SUMMER 2016
NEWSLETTER



MSU RESEARCH IN TANZANIA HELPS CONSERVE LION POPULATIONS

In 2011, environmental groups put pressure on the U.S. Fish and Wildlife Service to list lions under the Endangered Species Act based on research that showed declines in lion populations. Others were less confident about the data presented, and called for further research on lion population numbers prior to making regulatory decisions. Matt Eckert, Director of Conservation for Safari Club International Foundation was one of them.

“Many environmental organizations reported drastic declines, and it was being presented as fact without empirical evidence to support it. When these claims were used in a petition to list the lion under the Endangered Species Act, we committed ourselves to providing the best possible science on lion populations,” said Eckert.

The foundation sought out Dr. Jerry Belant, a professor in the Forest and Wildlife Research Center at Mississippi State University to conduct research designed to shed light on the status of lion populations in Tanzania, which in turn would give policymakers reliable metrics on which to base their decisions.

“The most important aspect of our work is to ensure sound decision making within wildlife management, and we seek the best experts we can find to inform those decisions,” stated Eckert. “Jerry Belant is an internationally renowned expert in carnivore ecology and management.”

Belant’s research will improve upon the two traditional methods of estimating lion populations: call-in surveys, where lions are attracted to a location using broadcasted recordings of female lions and wounded prey and then counted; and track surveys, in which researchers estimate population sizes by examining the prints that the animals leave behind.

The past estimates of lion populations used these methods without incorporating any number of factors that could bias the results. For example, a paper published recently in the Proceedings of the National Academy of Sciences stated that lion populations had suffered severe declines and that they should be considered endangered throughout much of their historic range.

“That analysis is potentially misleading on a couple of fronts. A recent reassessment of that work showed that at least in part as a consequence of how they did their analyses, the declines are not as severe as thought. Second, the methods used to estimate lion abundance in some of the studies that were included in this overall assessment were less rigorous and potentially less accurate than current methods, such as the methods we are developing. Nevertheless, I don’t think anyone would challenge that the global population of lions has declined,” Belant explained.

continued on page 2

MSU RESEARCH IN TANZANIA HELPS CONSERVE LION POPULATIONS

(continued from page 1)

A comparison of the two commonly used surveys revealed how big a difference results may be based on the survey method employed.

“Using track surveys and call-in surveys in the same populations, in the same week, we found a difference of 200 lions. So the question is—which one of these is right?” said Belant.

It turns out that neither estimate was likely to be accurate. Belant hopes to come up with a better method of estimating the population through modifications of existing field techniques and the use of more sophisticated statistical models, which will account for the effects of environmental conditions and differences between observers that may have compromised past population estimates.

Although researchers were successful in estimating lion abundance and identifying variables to use in models not previously considered, they still have challenges to overcome. They have found that after the first session of call-in surveying, the lions’ response to broadcasts declined considerably. This is a behavioral process called habituation, and it has the potential to alter population estimates.

“After the first session the lions seemed to figure out that it was just scientists in a green truck,” explained Belant. “We recently evaluated three modifications to using call-in surveys and have determined how we can reduce this habituation response in future surveys.”

The lion project is only one among many at MSU that address conservation concerns around the globe. Check out <http://fwrc.ms-state.edu/carnivore/projects.asp> to learn more.

This research is a collaborative effort among MSU, SCI Foundation, Tanzania Wildlife Research Institute, and Tanzania National Parks, with primary funding provided by the SCI Foundation.

New Faculty in Wildlife Fisheries and Aquaculture



Dr. Andy Kouba

Department Head
Conservation Biology



Dr. Beth Baker

Assistant Extension Professor
Water Resources Conservationist



Dr. Mike Colvin

Assistant Professor
Fisheries Scientist



Dr. Blair Goodridge

Assistant Professor
Aquatic Biogeochemist



Dr. Marcus Lashley

Assistant Professor
Habitat Disturbance Ecologist



Dr. Eric Sparks

Assistant Extension Professor
Marine Ecologist



Dr. Garrett Street

Assistant Professor
Wildlife Movement Ecologist



PALLID STURGEON RECOVERY

The Pallid Sturgeon has existed since the time of the dinosaurs—70 million years ago during the early Cretaceous period. Despite the species long history, populations have not fared well in modern times. Specifically, Pallid Sturgeon was listed as an endangered species in 1990 due to perceived dramatic population declines, especially in the Missouri River. This decline is attributed to modification of the Missouri River by dams operated by the U.S. Army Corps of Engineers (USACE) to provide a suite of human use like navigation and recreation.

In 2013, the USACE and U.S. Fish and Wildlife Service (USFWS) initiated an “Effects Analysis” for the Missouri River Recovery Program. The collaborative effort involves several universities and agencies, including the U.S. Geological Survey (USGS), USFWS, USACE, and Mississippi State University. Dr. Mike Colvin is a member of the Pallid Sturgeon Effects Analysis Team. Project objectives are to provide quantitative models to evaluate the potential response of Missouri

River Pallid Sturgeon to management actions. The team will also provide a structured decision-making framework and tools to support ongoing adaptive management efforts. Efforts have focused on developing a decision support framework that has transparent objectives, as well as collaborative and science-based.

Dr. Colvin is the technical lead for population model development, structured decision making, and adaptive management within the Pallid sturgeon group. Most of his effort has been developing the quantitative model that will support Pallid Sturgeon recovery. The model will be developed into a web-based and desktop tool, providing a means to evaluate the effects of management actions on population dynamics and viability. The model will also allow for the evaluation of monitoring designs and estimators that can be fed into an integrated population model, such that agencies can evaluate what monitoring is needed to feedback into the adaptive management process and help with the species recovery. This work is funded by the USGS.





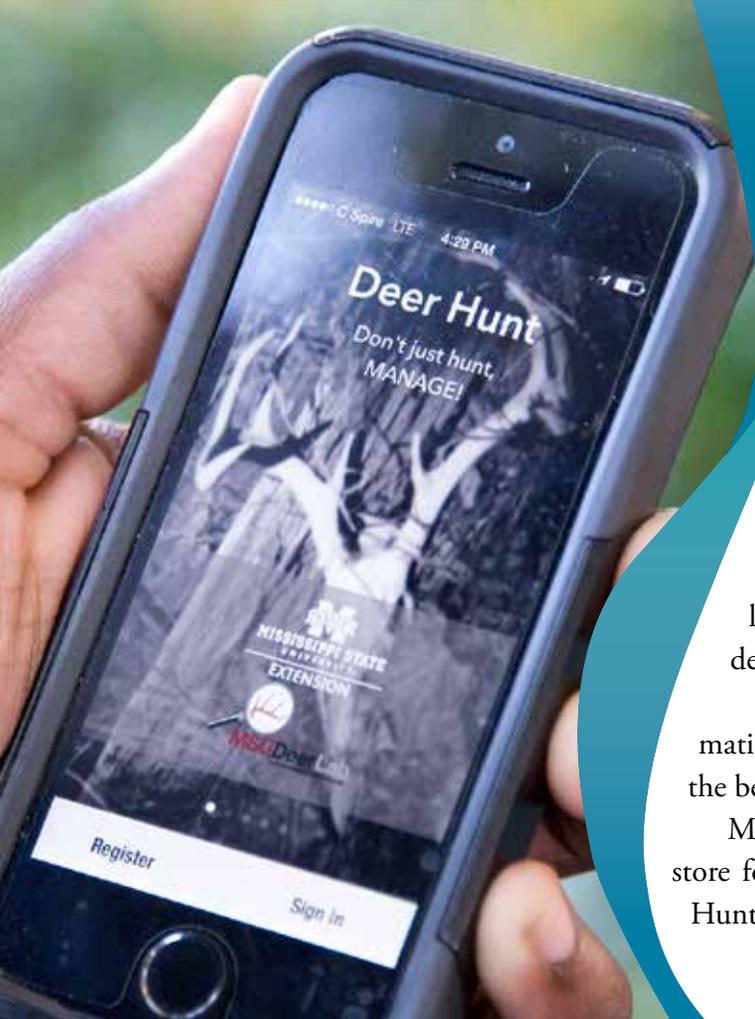
SUMMER CAMPS AND BIOBLITZ

provide educational opportunities & fun

Dr. Leslie Burger, offered three Conservation Camps in June 2016. The camps were developed to promote natural science, conservation careers and outdoor engagement in junior and senior high youth from across the southeast US. The Wildlife Recreation Edition engaged students hailing from five states in activities centered around Mississippi's wildlife and outdoor recreational opportunities. Students participated in fishing, archery, and canoeing activities, as well as ecological field experiences and hunter education training. The Day Camp Edition focused on science, nature, and outdoor topics. The Discovery Days Edition provided a special opportunity for female high school students to have an inside look into the professional lives of women with careers in wildlife conservation.

In addition to the camps, Dr. Burger directed the 2016 Mississippi BioBlitzes in partnership with the National Park Service, Mississippi Geographic Alliance (a state subsidiary of National Geographic), Mississippi Museum of Natural Science and MSU Extension. These events allow students, teachers, scientists and citizens to work together to identify as many species as they can in a particular habitat. The goal of the program is to provide a picture of local biodiversity while sparking interest in ecology and natural science.

Conservation Camps are supported in part with financial support from MDWFP's Youth Participation Initiative. For more information please contact Leslie Burger at leslie.burger@msstate.edu.



DEER APP SHARES MSU EXPERTISE WITH HUNTERS

Hunters can go into the woods armed with the knowledge of Mississippi State University deer experts, thanks to a newly updated MSU phone app called "Deer Hunt."

Developed by the MSU Deer Lab and MSU Extension Service, Deer Hunt enables hunters and wildlife managers to use mobile technology to easily collect critical deer observation information.

It allows hunting club members to record observations and harvest data to share with hunting partners; manage stand locations and identify occupied stands; and view summaries of deer seen and harvested by stand, hunter and entire property.

Other updated features allow hunters to access weather information, such as wind speed and direction, which helps them find the best locations in the field for deer-sighting opportunities.

MSU-ES Deer Hunt can be downloaded free from the iTunes app store for Apple devices. For Android devices, search MSU-ES Deer Hunt to find it on Google Play.

IS MOSQUITO REPELLANT TOXIC TO CATFISH FRY?

Warm weather during the catfish spawning season combined with open facilities and moisture can cause mosquito infestation problems. Mosquito infestation can obviously be unpleasant for workers, not to mention dangerous in regards to the potential transmission of diseases such as West Nile and Zika Viruses. For biosecurity reasons, most hatcheries are reluctant to use space application of insecticides, which have been found to cause acute toxicity in channel catfish fry. Using insect repellent is the most common solution in hatcheries, where it is applied to exposed skin and clothing.

The active ingredient, DEET (N,N-diethyl-m-toluamide), is contained in 225 registered products in the USA and its application is widespread. However, the toxicity of DEET to channel catfish is unknown. Wildlife, Fisheries, and Aquaculture faculty members, Dr. Charles (Chuck) Mischke and Dr. David Wise of the Thad Cochran National Warmwater Aquaculture Center partnered with the USDA-ARS Warmwater Aquaculture Research Unit to determine acute DEET toxicity in



Channel Catfish fry. Results showed that after a 24 hour exposure, the concentration of DEET required to kill 50% of experimental organisms was at a level considered to be practically nontoxic. Hatchery workers can rest assured that when air movement from fans is not sufficient to control mosquitoes, that using insect repellent containing DEET should be safe.

This research is funded by the USDA-ARS.



A Fond Farewell

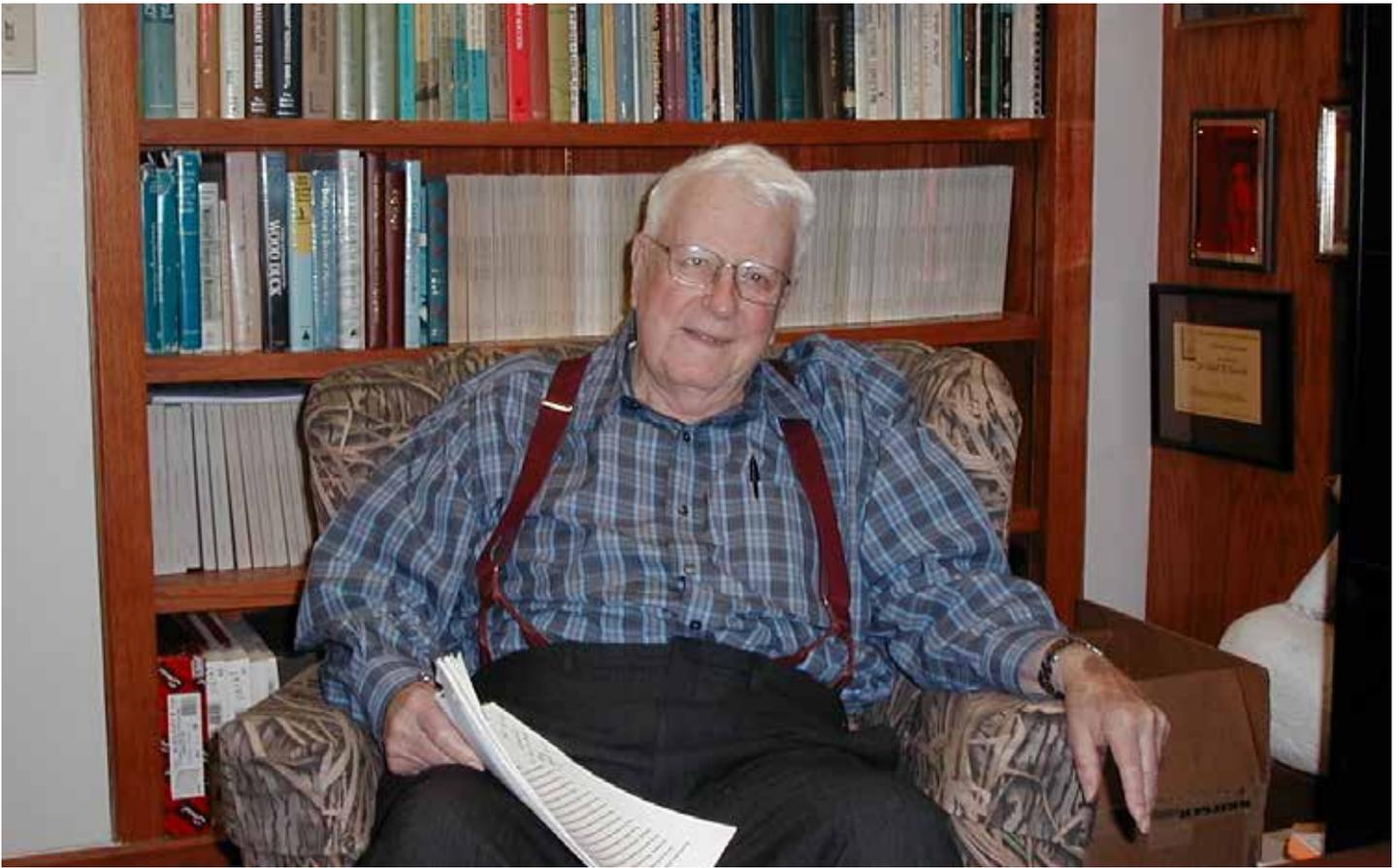
Eric Dibble (left) is a fisheries biologist and has been with the department for 20 years. He served as interim department head in 2014-2015.

Jeanne Jones (left) is a wildlife ecologist and has been with the department for 32 years. She is also an alumnae of the College of Forest Resources.

Diane Weeks (right) served the department for 18 years as an office associate.

Dave Burrage (not pictured) is an extension professor of fisheries at the Coastal Research and Extension Center and was with the university for 32 years.





In loving Memory

Above: *Dr. Dale Arner*

DALE HOWARD ARNER

February 10, 1920 – June 10, 2016

We are saddened to share the news with you that Dr. Dale H. Arner, the first department head for the Wildlife, Fisheries and Aquaculture department at Mississippi State University, passed away on June 10, 2016, at the age of 96. During his physically-declining years, his sharp mind continued to focus on his former students and profession. We hope you'll be able to join us in September as we take time to focus on his memory and meet to share stories.

For more than 50 years, Dr. Dale H. Arner served natural resources and the wildlife profession. From a humble German background in Pennsylvania, Dr. Arner began his natural resources career in 1949 after receiving a forest ranger's certificate and a bachelor's degree in biology from The Pennsylvania State University. He spent the next five years as a wildlife biologist for the Maryland Game and Inland Fish Commission, while at the same

time earning his master's degree in zoology from Penn State. In 1954, Dr. Arner moved to the south, where he received the first-ever doctorate awarded in wildlife ecology and management from Auburn University in 1959. He worked as a wildlife biologist for the U.S. Soil Conservation Service in Alabama until 1962, when he joined the Zoology Department at Mississippi State University as the department's wildlife biologist. In just six years, Dr. Arner was promoted to full professor.

In 1968, Dr. Arner moved from the Zoology Department to the College of Forest Resources at Mississippi State University and created the Department of Wildlife and Fisheries. He remained professor and head of the department until his retirement in 1987. During his tutelage at Mississippi State, Dr. Arner served as major professor to more than 50 graduate students. While department head and professor, he participated in all graduate committees

and attended all oral defenses in the department, an astonishing number totaling nearly 180. After retiring and celebrating his 75th birthday, Dr. Arner continued annually to teach (gratis) wildlife habitat management and analysis, guest lecture in several other wildlife courses, and advise students.

Dr. Arner was internationally recognized for his research on rights-of-way habitat ecology and management and beaver control and habitat management. Most of Dr. Arner's research was supported by extra mural funds generated by his grantsmanship, which attracted more than \$5 million. He held a number of elected and volunteer offices during his career, and was many times honored, including The Wildlife Society's 1989 Special Recognition Award and the 1993 Honorary Membership Award in recognition of his dedication to education and research in wildlife ecology and management, the only Mississippian to date to be so honored. In 1985, he was honored by receiving the prestigious Clarence W. Watson Award for outstanding contributions to fish and wildlife management.

We will celebrate the life of Dale H. Arner during the evening of September 24, 2016. The event will be held at the Hunter Henry Center on the Mississippi State Uni-

versity campus, beginning at 5:00 p.m. Following a social hour and dinner, we'll take time to share our recollections about our dear teacher, colleague, and friend. Dinner and cocktails are \$40 per person and include transportation to the event and back from hotel(s) or Thompson Hall. Due to the social hour at the event, we urge everyone to take advantage of our shuttle service. Please visit our website (<http://www.cfr.msstate.edu/workshops/arner/>) or contact Laura Andrews, Department of Wildlife, Fisheries and Aquaculture (laura.s.andrews@msstate.edu; 662-325-6694) by September 14, 2016, to register to attend. After this date, please call to check availability. Many will travel long distances or want to spend more time with friends, so we've arranged a block of rooms with a group rate of \$115.00 per night at Hilton Garden Inn. Please contact Hilton Garden Inn at 662-615-9664, request the WFA Event Attendees group rate, and reserve your room by 9/10/16 to obtain the group rate.

We also hope you'll want to honor Dale and Julia in perpetuity by contributing to the Arner Scholarship Fund. For more information on supporting the Arner Scholarship, contact Jeff Little at (662) 325-8151 or email jlittle@foundation.msstate.edu.



MISSISSIPPI STATE
UNIVERSITY™

DEPARTMENT OF WILDLIFE,
FISHERIES AND AQUACULTURE

Check out our new website!

www.cfr.msstate.edu/wildlife



MISSISSIPPI STATE UNIVERSITY™
DEPARTMENT OF WILDLIFE,
FISHERIES AND AQUACULTURE

Box 9690
Mississippi State, MS 39762

Wildlife, Fisheries and Aquaculture: By the Numbers

calendar year 2015

211

undergraduate
students



53

graduate
students

13

faculty
awards



\$3,875,284

in extramural awards

90

refereed
publications



OPPORTUNITIES

There are numerous ways to support the Department of Wildlife, Fisheries and Aquaculture. Research and extension activities mentioned in this newsletter need your support.

\$5000 - to radio-collar a lion in Tanzania

\$300 - sponsor a youth for summer camp

\$100 - feed a deer for a month

No amount is too small to support research and education. Contact Charlsie Halford at 662.325.5548 or c.halford@msstate.edu.