

NATURE RESEARCH ON DISPLAY



FWCB RESEARCH ON DISPLAY AT NEW NATURE RESEARCH CENTER - PAGE 2

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2012 FRED AND JOAN BARKALOW DISTINGUISHED LECTURER

On 31 October 2012, Dr. Paul Krausman gave the 2012 Frederick and Joan Barkalow Distinguished Conservationist Lecture. The lecture was titled, "W4: Wildlife Wars in the West." **4**

Nature Research Center highlights FWCB work

ADDITION TO THE NC MUSEUM OF NATURAL SCIENCE FEATURES WORK OF NC STATE GRADUATE STUDENTS

The North Carolina Museum of Natural Sciences just completed a giant addition that includes the largest globe in the world and a new laboratory where FWCB faculty and students share their research with the eager eyes of museum visitors.

The Nature Research Center (NRC) is a new 80,000 ft² LEED green building in the heart of Raleigh. The centerpiece of the NRC is the Daily Planet, an immersive, high-definition, multi-media space that hosts amazing nature videos, as well as presentations by scientists to museum visitors and K-12 schools connected through the internet. Flanking the theater are five active research labs and four interactive labs. Museum visitors can enter the interactive labs and join hands-on activities ranging from microscopes to animal skeletons and the latest virtual reality visualizations. The research labs are not open to the public, but do involve dozens of students, interns, and volunteers in cutting edge science around five different centers: Biodiversity, Genomics, Veterinary Medicine, Astronomy and Paleontology. Each research lab has tight connections to North Carolina Universities, collaborating on research, teaching, and community outreach.

FWCB Professor Dr. Roland Kays is the director of the Biodiversity Lab, and has involved a number of wildlife students in his research on the ecology and conservation of mammals and birds. Students working in the lab have the opportunity to interact with museum visitors, who watch the lab



Photo courtesy of Roland Kays

The Nature Research Center in downtown Raleigh.

work through a long glass wall that separates the working lab space from the museum exhibits. For example, FWCB undergraduates Rebecca Owens and Allison Stewart helped volunteers run camera traps to survey backyard wildlife as part of the Great Chicken Coop Stakeout. Rebecca is continuing now on a study mapping color variation in eastern coyotes, along with FWCB student Summer Higdon. Also, wildlife graduate students are taking advantage of the premium lab space for their bench work, including graduate student Morgan Elfelt's study of coyote diet and Steven Grodsky's study of insects associated with various types of ground cover in managed forests.

Connections between the NRC and NCSU extend throughout the other fields of study as well. The center's Director and forest canopy expert, Dr.

Meg Lowman, and the Director of the Paleontology Research lab, Dr. Lindsay Zanno, both hold joint appointments in the Biology Department, while the center's Director of Science Communication, Dr. David Kroll, is jointly appointed with the NCSU English Department. The Museum's vet staff have a long history of collaborating with the NCSU Veterinary School, and students are often involved in the daily animal check-ups that can be seen in the Vet Research Lab on the second floor of the NRC.

The NRC opened on Earth Day of 2012 to a crowd of 70,000 and expects to host over 1 million visitors over the year. This is a great opportunity not only to show visitors the types of research being conducted by FWCB, but also to train our students how to communicate their science with the public.

Dr. Kays leads week of wildlife surveys in South Mountains

FWCB professor Dr. Roland Kays led a week's of wildlife surveys in South Mountains State Park and Game Lands. The goal was to use distance sampling to estimate the density of deer to compare with simultaneous estimates from camera trapping. Night-drives cruised the park's back-roads with spotlights armed by FWCB volunteering students Jason Whited, Tyler Moody, Joshua Bivens. Monica Chen, Meghan Lob-singer, Daniel Carlin, and Lindsey House. Although camera traps had recorded numerous wildlife species, the spotlighting revealed a low density of deer, and one opossum.



Photos courtesy of Roland Kays

Spotlighting revealed a low density of deer and one opossum.

eMammal project uses citizen science to document wildlife

Camera traps are a fun way to explore the wildlife in any forest, and offer a photographic voucher of what species live at a specific spot. A new research project led by FWCB Professor Dr. Roland Kays, in collaboration with the Smithsonian Institution, is working with citizen scientists to run camera traps and contribute the data and images to a central repository that can be used to better understand the broad scale abundance and diversity of mammals. This new project, eMammal, started in 2012 with volunteers (including FWCB student Alix Robins and Michael Biggerstaff) running camera traps in South Mountains State Park and Game Lands, Stone Mountain State Park, and Thurmond Chatham Game Lands. In 2013, eMammal will be looking for additional volunteers to run cameras in Eastern NC (Spring) and the Smokey Mountains (Fall). Follow the project at www.facebook.com/eMammal.



Battling bucks.



Coyote captured on camera.



THE 2012 FREDERICK AND JOAN BARKALOW DISTINGUISHED CONSERVATIONIST LECTURE

DR. PAUL KRAUSMAN

“W4: WILDLIFE WARS IN THE WEST”

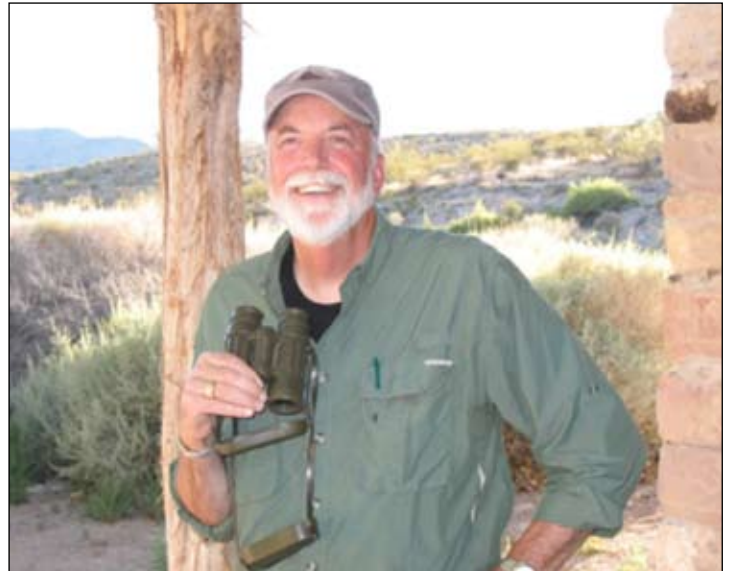
On 31 October 2012, Dr. Paul Krausman gave the 2012 Frederick and Joan Barkalow Distinguished Conservationist Lecture. The lecture was titled, “W4: Wildlife Wars in the West. The lecture was well attended.

ABSTRACT

Before water was described as a limiting factor, wildlife managers and biologists in the arid Southwest assumed that the availability of free-standing water was a primary factor limiting the distribution, productivity, and recruitment of desert ungulates. As a result, wildlife management agencies and sportsman organizations invested significant time and resources in the construction and maintenance of water catchments. Recently, the efficacy of these catchments has been questioned and their construction and subsequent use by wildlife has become controversial. The presentation will outline the controversy water plays in the management of desert bighorn sheep and describe the results of an experiment in which water catchments were removed from an entire mountain range.

BIOGRAPHY

Dr. Paul R. Krausman is the Boone and Crockett Professor at the University of Montana and Past President of The



Photos courtesy of Paul Krausman

Dr. Paul Krausman presented his lecture on October 31.

Wildlife Society. He has received many awards, including the Leopold Medal from The Wildlife Society. Dr. Krausman has written 7 books, 5 monographs, 26 book chapters, and over 200 peer-reviewed articles. He has taught an array of wildlife related courses throughout his career and has accepted 7 Boone and Crockett Fellows working on mule deer, mountain goats, bison, caribou, wolves, and black bears.



Desert bighorn sheep.

Publications & Presentations



Research Publications

- Anderson, E.T., S. Frasca, M. Asakawa, M. H. Fatzinger, J. Johnson, K. Marchettere, L. Goodale, G. R. Risatti, and C. A. Harms.** 2012. Splenic mycobacteriosis in an Atlantic guitarfish, *Rhinobatos lentiginosus* (Garman). *Journal of Fish Diseases* 35: 541-544, doi:10.1111/j.1365-2761.2012.01367.
- Avens, L., L. R. Goshe, C. A. Harms, E. T. Anderson, A. G. Hall, W. M. Cluse, M. H. Godfrey, J. Braun-McNeill, B. Stacy, R. Bailey, and M. M. Lamont.** 2012. Population characteristics, age structure, and growth dynamics of neritic juvenile green turtles (*Chelonia mydas*) in the northeastern Gulf of Mexico. *Marine Ecology-Progress Series* 458: 213-229, doi: 10.3354/meps09720.
- Brown, D. D., S. D. LaPoint, R. W. Kays, W. Heidrich, F. Kummeth, and M. Wikelski.** 2012. Accelerometer-informed GPS telemetry: reducing the tradeoff between resolution and longevity. *Wildlife Society Bulletin* 36:139–146. doi:10.1002/wsb.111
- Clarke, E. O., III, C. A. Harms, J. M. Law, J. R. Flowers, V. N. Williams, B. D. Ring, A. S. McGinty, M. Hopper, and C. V. Sullivan.** 2012. Clinical and pathological effects of the polyopisthocotylean monogenean, *Gamacallum macroura* (MacCallum and MacCallum 1913) Unnithan 1971, in white bass (*Morone chrysops*). *Journal of Aquatic Animal Health* 24: 251-257.
- Clode, A. B., C. A. Harms, M. H. Fatzinger, F. Young, C. H. Colitz, and D. Wert.** 2012. Identification and management of ocular lipid deposition in association with hyperlipidemia in captive moray eels *Gymnothorax funebris* Ranzani, *Gymnothorax moringa* (Cuvier), and *Muraena retifera* (Goode & Bean). *Journal of Fish Diseases* 35: 683-693.
- Douglas, D. C., R. Weinzierl, S. Davidson, R. Kays, M. Wikelski, and G. Bohrer.** 2012. Moderating Argos location errors in animal tracking data. *Methods in Ecology and Evolution* 201, doi: 10.1111/j.2041-210X.2012.00245.
- Emsens, W. J., L. Suselbeek, A. Winkelhagen, B. Hirsch, R. Kays, and P. A. Jansen.** 2012. Effects of food availability on space and refuge use by the Central American agouti (*Dasyprocta punctata*). *BIOTROPICA*, DOI: 10.11.
- Harris, J. E., and J. E. Hightower.** 2012. Demographic population model for American shad: will access to additional habitat upstream of dams increase population sizes? *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Services* 4:262-283.
- Hirsch, B. T., R. Kays, and P. A. Jansen.** 2012. A telemetric thread-tag for tracking seed dispersal by scatter-hoarding animals. *Plant Ecology* 213: 933–943.
- Hirsch, B. T., R. Kays, V. E. Pereira, P. A. Jansen, and M. Rejmanek.** 2012. Directed seed dispersal towards areas with low conspecific tree density by a scatter-hoarding rodent. *Ecology Letters* 15:1423–9. doi:10.1111/ele.12000

Publications & Presentations



- Kranstauber, B., S. LaPoint, R. Kays, and K. Safi.** 2012. A dynamic Brownian bridge movement model to estimate utilization distributions for heterogeneous animal movement. *Journal of Animal Ecology* 81:738–746. doi:doi: 10.1111/j.1365-2656.2012.01955.
- Martin, J., H. H. Edwards, M. A. Burgess, H. F. Pervival, D. E. Fagan, B. Gardner, J. G. Ortega-Ortiz, P. G. Ifju, B. S. Evers, and T. J. Rambo.** 2012. Estimating distribution of hidden objects with drones: from tennis balls to manatees. *PLoS ONE*. 7(6): e38882, doi:10.1371/journal.pone.003888
- Noss, A. J., B. Gardner, L. Maffei, R. Cuéllar, R. Montano, A. Romero-Munoz, R. Sollmann, and A. F. O'Connell.** 2012. Assessment of density estimation methods for animal populations with camera traps in the Kaa-Iya del Gran Chaco landscape. *Animal Conservation* DOI: 10.1111/j.1469-1795.2012.00545.x
- Rowcliffe, J., C. Carbone, R. Kays, B. Kranstauber, and P. Jansen.** 2012. Bias in estimating animal day range: the effect of sampling frequency. *Methods in Ecology and Evolution* 3:653–662. doi:doi: 10.1111/j.2041-210X.2012.00197.
- Sherrill, B. L., A. G. Snider, S. Kennedy-Stoskopf, and C. S. DePerno.** 2012. Survey of zoonotic pathogens in white-tailed deer on Bald Head Island, North Carolina. *Southeastern Naturalist* 11:529-533.
- Wegan, M.T., P. D. Curtis, R. E. Rainbolt, and B. Gardner.** 2012. Temporal sampling frame selection in DNA-based capture mark-recapture investigations. *Ursus* 23:42–51.

Book Chapters

- Millspaugh, J. J., R. A. Gitzen, J. L. Belant, R. W. Kays, B. J. Keller, D. C. Kesler, C. T. Rota, et al.** 2012. Analysis of Radiotelemetry Data. *The Wildlife Techniques Manual: Volume 1 Research*: 480–501. Baltimore: Johns Hopkins University Press.
- Millspaugh, J. J., D. C. Kesler, R. A. Gitzen, R. W. Kays, J. H. Schulz, C. T. Rota, C. M. Bodinof, et al.** 2012. Wildlife radiotelemetry and remote monitoring. In N. J. Silvy (Ed.), *The Wildlife Techniques Manual: Volume 1 Research* 258–283. Baltimore: Johns Hopkins University Press.

Research Presentations

- Chitwood, M. C., C. S. DePerno, M. A. Lashley, M. B. Elfelt, J. C. Kilgo, and C. E. Moorman.** 2012. The white-tailed deer-coyote dynamic: Evidence of fawn and adult deer mortality. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Durso, K., and C. DePerno.** 2012. Preliminary life history of a human-introduced population of Mediterranean geckos (*Hemidactylus turcicus*) in Cary, North Carolina. 2012 North Carolina Herpetological Society Fall meeting, David Clark Labs, North Carolina State University, Raleigh, North Carolina.

Publications & Presentations



- Elfelt, M. B., C. S. DePerno, and C. E. Moorman.** 2012. Habitat selection of coyotes in relation to food availability. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Ergon, T., and B. Gardner.** 2012. Separating mortality and emigration: modeling space use, dispersal, and survival with robust-design spatial capture-recapture data. International Statistical Ecology Conference, Oslo, Norway.
- Farrell, C., S. Fritts, S. Castleberry, C. Moorman, and J. Homyack.** 2012. Response of small mammals to variable retention of woody debris following biomass harvests. 19th Annual Conference of The Wildlife Society, Portland, Oregon. Poster.
- Ferraz, G., B. Gardner, and J. A. Royle.** 2012. Inference about survival and movement in marked animals using multi-state models with spatially-indexed states. International Statistical Ecology Conference, Oslo, Norway.
- Flowers, H. J., and J. E. Hightower.** 2012. A novel approach to surveying sturgeon using side-scan sonar and occupancy modeling. 142nd Annual Meeting of the American Fisheries Society, St. Paul, Minnesota.
- Fritts, S., C. Moorman, D. Hazel, J. Homyack, C. Farrell, and S. Castleberry.** 2012. Effects of biomass harvesting guidelines on reptile and amphibian use of clearcuts. 19th Annual Conference of The Wildlife Society, Portland, Oregon. Poster.
- Fritts, S., C. E. Moorman, and D. Hazel.** 2012. Effects of biomass harvesting guidelines on herpetofauna use of clearcuts. North Carolina Association of Environmental Professionals, Raleigh, NC.
- Gardner, B., and J. Belant.** 2012. Demographic parameter estimation from spatial capture recapture data. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Gardner, B., J. K. Raabe, and J. E. Hightower.** 2012. Spatial capture - recapture in linear networks: estimating survival and migration patterns in fishes. International Statistical Ecology Conference 2012, Krokkleiva, Norway.
- Grote, A. B., J. Zydlewski, M. Bailey, and J. Hightower.** 2012. DIDSON assessment of American shad approaching a hydroelectric dam. 142nd Annual Meeting of the American Fisheries Society, St. Paul, Minnesota.
- Harris, J. E., and J. E. Hightower.** 2012. Migration and mortality of tagged striped bass in the Roanoke River and Albemarle Sound, North Carolina. 142nd Annual Meeting of the American Fisheries Society, St. Paul, Minnesota.
- Karns, G. R., R. A. Lancia, C. S. DePerno, and M. C. Conner.** 2012. Impact of hunting pressure on adult male white-tailed deer behavior. 66th Annual Southeastern Association of Fish and Wildlife Agencies (SEAFWA) Conference, Hot Springs Convention Center, Hot Springs Arkansas.

Publications & Presentations



- Kilburg, E., C. Moorman, and C. S. DePerno.** 2012. Poult or coals? Wild turkey nest survival in the presence of growing-season fire. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Klimstra, R., C. Moorman, J. Marcus, C. Harper, and C. Sorenson.** 2012. Breeding songbird use of native, warm-season and non-native, cool-season grass forage fields. 19th Annual Conference of The Wildlife Society, Portland, Oregon. Poster.
- Kramer-Schadt, S., B. Gardner, O. Ganbataar, and P. Kaczensky.** 2012. Understanding Asiatic wild ass (*Equus hemionus*) population size estimates in the Great Gobi B Strictly Protected Area, Mongolia. International Statistical Ecology Conference, Oslo, Norway.
- Lashley, M. A., A. P. Rockhill, M. C. Chitwood, C. E. Moorman, and C. S. DePerno.** 2012. The effects of solunar activity on white-tailed deer movements. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Noss, A. J., B. Gardner, L. Maffei, R. Cuéllar, R. Montano, A. Romero-Munoz, R. Sollmann, and A. F. O'Connell.** 2012. Assessment of density estimation methods for animal populations with camera traps in the Kaa-Iya del Gran Chaco landscape. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Noss, A. J., B. Gardner, L. Maffei, R. Cuéllar, R. Montano, A. Romero-Munoz, R. Sollmann, and A. F. O'Connell.** 2012. Assessment of density estimation methods for animal populations with camera traps in the Kaa-Iya del Gran Chaco landscape. International Wildlife Management Congress, Durban, South Africa.
- Palamar, M. B., M. R. Sandfoss, C. W. Betsill, G. Erickson, S. Kennedy-Stoskopf, and C. S. DePerno.** 2012. A serosurvey for *Brucella suis*, classical swine fever, porcine circovirus type 2, and pseudorabies virus in feral swine of eastern North Carolina. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Prince, A., C. E. Moorman, and C. S. DePerno.** 2012. The effect of growing-season prescribed fire on southeastern fox squirrel habitat selection. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Raabe, J. K., B. Gardner, and J. E. Hightower.** 2012. A spatial capture – recapture model to estimate fish survival and migration patterns from linear telemetry arrays. 142nd Annual Meeting of the American Fisheries Society, St. Paul, Minnesota.
- Sahlén, E., C. S. DePerno, J. Crowsigt, R. V. Nichols, and G. Spong.** 2012. Ungulate foraging behavior in relation to predation risk. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Sahlén, E., C. S. DePerno, J. Crowsigt, R. V. Nichols, and G. Spong.** 2012. Ungulate foraging behavior in relation to predation risk. 14th International Behavioral Ecology Congress, Lund University, Lund, Sweden.

Publications & Presentations



- Sollmann, R., B. Gardner, R. B. Chandler, and J. A. Royle.** 2012. Spatial capture-recapture models for partial identifiability. International Statistical Ecology Conference, Oslo, Norway.
- Sollmann, R., B. Gardner, R. B. Chandler, S. Sillett, and J. A. Royle.** 2012. Spatial mark-resight models. 19th Annual Conference of The Wildlife Society, Oregon Convention Center, Portland, Oregon.
- Sollmann, R., B. Gardner, D. Shindle, D. Onorato, A. F. O'Connell, R. B. Chandler, and J. A. Royle.** 2012. Estimating Florida panther density from camera-trapping data. International Wildlife Management Congress, Durban, South Africa.
- Taillie, P.J., C. E. Moorman, and M. N. Peterson.** 2012. The influence of multi-scale factors on Bachman's sparrow occupancy. The Wildlife Society's 19th Annual Conference. Portland, OR.

Extension and Outreach

- Chitwood, M. C., M. A. Lashley, C. E. Moorman, and C. S. DePerno.** 2012. Can coyotes and deer co-exist? Presented to ~70 members and guests of the Wake County Wildlife Club.
- Durso, K., and C. S. DePerno.** 2012. Mediterranean geckos at East Cary Middle School. Presented to 30 students and staff, East Cary Middle School, Cary, North Carolina.
- Durso, K., and C. S. DePerno.** Have you seen me? 2012. Mediterranean geckos at East Cary Middle School. Presented to students and staff, East Cary Middle School, Cary, North Carolina.
- Kilburg, E. L., C. E. Moorman, and C. S. DePerno.** 2012. Wild turkey nest site selection and nest survival in the presence of growing-season prescribed fire. Sandhills Natural History Society Monthly Meeting, Weymouth Woods, North Carolina.
- Prince, A., C. E. Moorman, and C. S. DePerno.** 2012. The effect of growing-season prescribed fire on southeastern fox squirrel habitat selection. Sandhills Natural History Society Monthly Meeting, Weymouth Woods, North Carolina.

Popular press

- Bowling, S., C. Moorman, and C. DePerno.** 2012. Bobwhite use of field borders. The Upland Gazette, North Carolina Small Game Notes Fall 2012:7-8.
- Plush, C., C. Moorman, D. Orr, and C. Reberg-Horton.** 2012. Wildlife use of planted field borders. The Upland Gazette 17(1):11-13.
- Shake, C., C. Moorman, and M. Burchell.** 2012. Improving woody, early-successional habitat to benefit shrubland birds. The Upland Gazette 17(2):9-10.



READ BACK ISSUES ONLINE

If you missed the last issue of the Fisheries and Wildlife newsletter you can catch up on back issues on the department's Web site under the news tab.

<http://www.cnr.ncsu.edu/fer/fishwild>

ORGANIZATIONS AND OPPORTUNITIES

North Carolina State University Fisheries, Wildlife, and Conservation Biology students and faculty are active in a number of peer and industry organizations devoted to aspects of Fisheries, Wildlife, and Conservation Biology.

The Leopold Wildlife Club offers students the opportunity to network and learn from professionals in wildlife science and management. Meetings are held twice a month and typically feature speakers on a variety of topics. Past speakers have included falconers, fishing guides, taxidermists, decoy carvers and more.

The Student Fisheries Society is a sub-unit of the North Carolina Chapter of the American Fisheries Society. It encourages the exchange of fisheries and aquatic science information among students, faculty and regional professionals while also providing career guidance to students. The American Fisheries Society is the oldest and largest not-for-profit professional society for government, academic and industry scientists associated with conservation, development and management of fishery resources in North America.

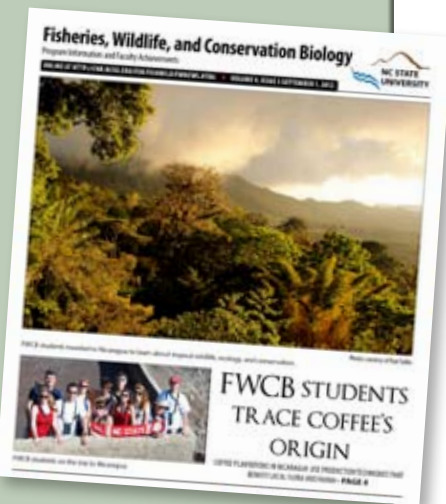
The NC Chapter of The Wildlife Society provides a forum for wildlife professionals and others to interact to improve wildlife conservation and management while fostering high professional standards and ethics within all related fields. It is an acknowledged source of current scientific information and expertise and acts as a collective voice on matters relating to wildlife biology, management, education and policy.

SUMMER CAMP STUDENT ENDOWMENTS

Please consider giving to our two Summer Camp student endowments. These endowments help undergraduate students attend the Fisheries and Wildlife Summer Camp. For more information on how to contribute, contact **Dr. Chris Moorman** at 919-515-5578 or chris_moorman@ncsu.edu

PHIL DOERR ENDOWMENT FUND

Also, you may consider giving to the **Phil Doerr Endowment Fund**. The endowment, established with the North Carolina Natural Resources Foundation, will be used to fund an annual award to assist undergraduate or graduate student(s) in gaining valuable field experience. For more information on how to contribute, contact **Dr. Chris Moorman** at 919-515-5578 or chris_moorman@ncsu.edu



THE NEWSLETTER

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Got a story idea or a great photo?

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