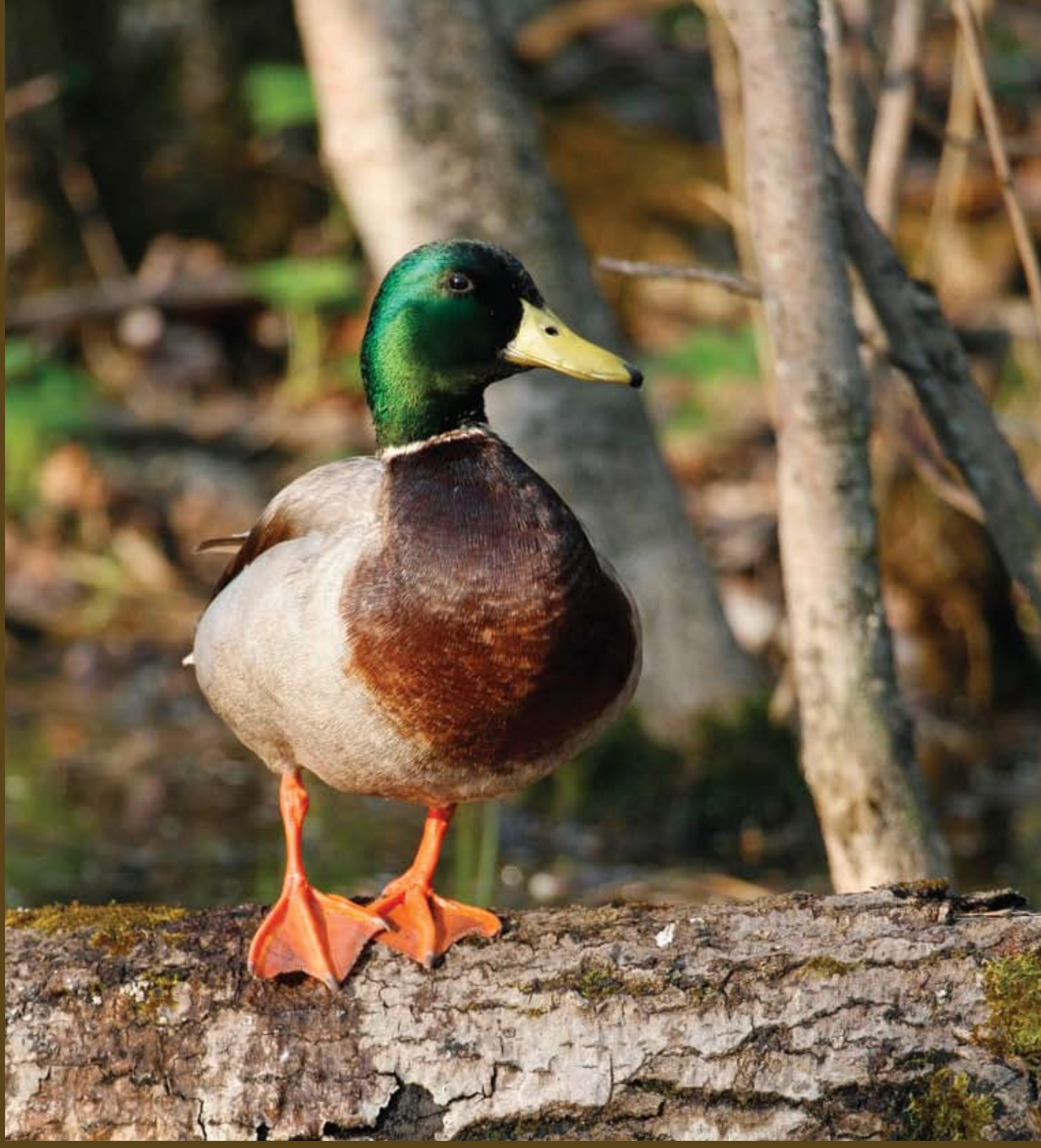


2010 ANNUAL REPORT

JAMES C. KENNEDY

ENDOWED CHAIR IN WATERFOWL AND WETLANDS CONSERVATION

FROM THE CHAIR

The James C. Kennedy Endowed Chair in Waterfowl and Wetlands Conservation is two years young. Despite its youthfulness, assistant professor Brian Davis, professor and chair holder Rick Kaminski, and a dozen graduate students have been busy conducting waterfowl and wetlands teaching, research, and outreach.

For example, "Team Duck," as our group is affectionately known in the College, produced six theses and a doctoral dissertation in the past year. From recent research, Team Duck also published or has in press seven publications and a book on moist-soil wetland plants. Faculty and students have also made 19 presentations, and convened several outreach events including participating in youth waterfowl hunting and natural resources summer camps. We also are making plans to host an international waterfowl symposium in January 2013.

Brian Davis has established a Mississippi and regional research program. He is major professor to new master's students Joe Lancaster (Michigan), Joe Marty (Wisconsin), and Kira Newcomb (Alabama). Joe Lancaster and Kira Newcomb are studying habitat use and survival of wintering mallards and black ducks in Mississippi and Tennessee, respectively. The black duck research project is a collaborative effort with University of Tennessee associate wildlife professor Matt Gray, who is a 1995 MSU alumni. Joe Marty is conducting research to estimate abundance of waste rice and natural seeds in active and idled ricefields in Louisiana and Texas. His project will provide important data on food abundance for waterfowl wintering in the Gulf Coast Joint Venture region. Visit the Kennedy Chair website (www.cfr.msstate.edu/kennedychair) to learn more about these new members of Team Duck.

Research funding efforts have been successful this year, garnering nearly $1.7 million dollars in extramural funds in support of ongoing and new research. The single largest grant was from the USDA Natural Resources Conservation Service to assess waterfowl and other avian use and foods on lands under management through the Migratory Bird Habitat Initiative in response to the Deep Horizon oil spill in the Gulf. A private gift has also been received to construct the Wetland Education Theater on the MSU campus. This is the first-ever wetland educational theater on a university campus. It will consist of a complex of seasonally flooded and permanent wetlands and an adjacent prairie to illustrate the ecological and environmental characteristics and values of wetlands and associated grasslands. Construction will begin soon with an anticipated dedication in fall 2011. It is expected to draw thousands of people each year and will be named the Carsie C. Clark and Diane Worthington Young Wetlands Education Theater in honor of the donors.

Cover photo by Michael Furtman, a freelance writer and photographer from Duluth, Minnesota. The photo on page 11 is also by Michael Furtman.

Like many waterfowl species, Team Duck students fledge after completing their degree programs and migrate to fill important niches in wildlife science and conservation. The following individuals graduated during the last academic year:

Alicia Wiseman

Alicia received her master's degree in December 2009. She is currently employed as a biologist with Ducks Unlimited Inc.'s Southern Regional Office in Lafayette, Louisiana.

Sarah Fleming

Sarah received her master's degree in May 2010. She is currently employed as a biologist with Ducks Unlimited Inc.'s Great Lakes Regional Office in Ann Arbor, Michigan.

James Callicutt

James received his master's degree in 2010. He is currently working as a research associate in Mississippi State University's Department of Wildlife, Fisheries, and Aquaculture.

Heath Hagy graduates in December 2010. He has accepted a position as a post-doctoral research associate with Matt Gray of the University of Tennessee. Heath will be conducting Wetlands Reserve Program research, conservation, and outreach.

Elizabeth St. James has completed here master's degree requirements and is employed as an Intern with Ducks Unlimited's Great Lakes Regional Office in Michigan. She graduates in May 2011.

Dr. Mike Schummer, former post-doctoral research associate, moved to Michigan after a 2.5+ year period in the department. Recently, Mike has accepted the position of scientist with Long Point Waterfowl in Ontario, Canada.

Team Duck, the Department of Wildlife, Fisheries and Aquaculture, and the College of Forest Resources extend their sincere gratitude to Mr. Jim Kennedy for establishing the Kennedy Chair, enabling a diverse and productive program in waterfowl and wetlands conservation through MSU in perpetuity. Indeed, we pledge to sustain our world-class program in teaching, research, and service for waterfowl, wetlands, and producing future scientists and stewards of these resources.

Wishing you a rewarding 2011,

Richard M. Kaminski, Ph.D.
James C. Kennedy Endowed Chair
Waterfowl & Wetlands Conservation

FACULTY & STUDENTS

FACULTY

Dr. Richard (Rick) M. Kaminski
James C. Kennedy Endowed Chair, Associate Dean of the College of Forest Resources, and Professor of Wildlife Ecology and Management in the Department of Wildlife, Fisheries, and Aquaculture

Dr. J. Brian Davis
Assistant Professor of Wildlife Ecology and Management in the Department of Wildlife, Fisheries and Aquaculture

STUDENTS

Heath Hagy
Ph.D. candidate in the Department of Wildlife, Fisheries, and Aquaculture

Amy B. Spencer
Ph.D. student in the Department of Wildlife, Fisheries, and Aquaculture

Jacob N. Straub
Ph.D. student in the Department of Wildlife, Fisheries, and Aquaculture

Justyn Foth
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

Joe Lancaster
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

Alan Leach
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

Joseph Marty
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

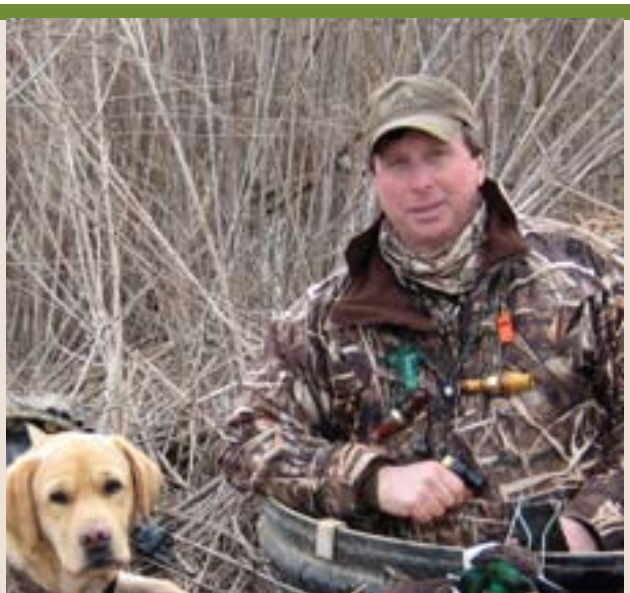
Kira Newcomb
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

Elizabeth St. James
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

Mitch Weegman
M.S. student in the Department of Wildlife, Fisheries, and Aquaculture

RESEARCH ASSOCIATE

James Callicutt
Research Associate, Department of Wildlife, Fisheries, and Aquaculture



James C. Kennedy
Chairman, Cox Enterprises Inc.
Chairman, Cox Radio, Inc.

ATTRACTING DUCKS USING NATURAL VEGETATION

By Heath M. Hagy

The Lower Mississippi Alluvial Valley (LMAV) comprises the historical floodplain of the southern reach of the Mississippi River. This vast alluvial plain stretches from the boot heel in Missouri to the Louisiana gulf coast and consists mostly of cleared bottomlands used for agriculture. Every fall and winter, millions of ducks descend on this region after migrating more than a thousand miles from breeding grounds in the north-central United States and Canada. When the ducks arrive in the LMAV, many species forage intensively to replenish fat reserves depleted during their long journey. Recent research in Mississippi State University's Forest and Wildlife Research Center has found that waste seeds in harvested agricultural fields are often decomposed, consumed by other animals, or have sprouted before waterfowl arrive in winter and only provide limited food for ducks and other waterfowl. Waterfowl habitat managers often maintain seasonal wetlands composed of natural vegetation to help meet nutritional needs of migrating and wintering waterfowl. These "moist-soil" wetlands produce natural grasses, sedges, and other herbaceous plants that produce abundant seeds and tubers desirable to waterfowl, especially dabbling ducks. Furthermore, moist-soil plants can be produced in harvested crop fields, impoundments, field margins and buffers, or fallow fields. Moist-soil wetlands are typically flooded in fall and winter to create shallow seasonal wetlands desirable to dabbling ducks. Moist-soil management is an economical waterfowl habitat management strategy that requires only periodic disking and winter flooding.

Waterfowl use of managed moist-soil wetlands in the LMAV was evaluated in response to fall management practices and changing food resources throughout winter. In addition to spring or summer disking every 2-3 years to reduce woody and perennial vegetation, fall manipulation of moist-soil vegetation by mowing or disking creates openings for waterfowl in tall, dense vegetation. Sometimes, moist-soil vegetation can grow so densely that it may constrain waterfowl access to seeds and tubers when wetlands are flooded shallowly (1-6 inches). In these instances mowing dense vegetation after seeds matured in late summer and early fall doubled waterfowl use and species diversity while maintaining abundant seeds, tubers, and invertebrates used by waterfowl as food. Conversely, fall disking resulted in a 30% reduction in abundance of seeds and tubers and fewer aquatic invertebrates. Thus, mowing openings or strips in dense moist-soil vegetation in fall may attract a greater abundance and diversity of ducks and other waterbirds to moist-soil wetlands. Additionally, mowing or otherwise manipulating natural (i.e., unplanted) moist-soil vegetation does not prevent legal hunting of migratory waterfowl. Therefore, wildlife management areas and private landowners can mow openings in moist-soil vegetation in fall to attract waterfowl in winter without creating baited wetlands.

In addition to evaluating fall management of moist-soil vegetation, researchers examined seed removal during winter from wetlands by dabbling ducks. Unlike flooded rice fields, moist-soil wetlands contain a diverse community of plant seeds, some of which may be more attractive foods for ducks than others. Ducks apparently preferred seeds from grasses and sedges in greater proportion than other seeds from broadleaf plants. This finding suggests that ducks may select seeds based on size and shape. Generally, ducks reduced grass seeds to lowest densities which suggests a need for management for these species rather than other broadleaf plants such as cocklebur and coffeeweed. Furthermore, a threshold at which ducks no longer removed seeds and tubers from wetlands was identified. We assume ducks no longer use foods below this density threshold because of increased searching and processing of seeds at low densities. This threshold was greater than had been originally estimated, suggesting that moist-soil wetlands should be actively managed for desirable species, such as grasses and sedges, to maximize seed production and availability to waterfowl. Furthermore, reduced seed availability may require additional moist-soil wetlands in the LMAV to meet nutritional requirements of wintering waterfowl.

In summary, our research has demonstrated that fall management of dense moist-soil wetlands is important to attract waterfowl and conserve foods for the birds. Increasing food production and availability in seasonal wetlands is important to offset reduced availability of waste grain in harvested crop fields. Waterfowl have likely fed on natural seeds for thousands of years in the LMAV and continue to feed in moist-soil wetlands even when agricultural crops are available. Managing moist-soil wetlands is an excellent and economical way to attract waterfowl and provide food during winter. Thus hunters, bird-watchers, and other conservationists should consider actively managing moist-soil vegetation during spring-fall to provide excellent foraging habitat in winter while increasing opportunities to observe and harvest waterfowl.

MANAGING MOIST-SOIL WETLANDS FOR WINTERING DUCKS

By Sarah Fleming

Wintering waterfowl in the Mississippi Delta need a variety of food and wetlands to sustain them during the winter. Many wetlands are privately owned and enrolled in the Wetlands Reserve Program. As such, the intensity to which the wetlands are managed varies by landowners. A recent project in the Forest and Wildlife Research Center evaluated the influence of wetland management intensity of plant communities and subsequent winter duck use.

Ducks use a variety of habitats on wintering grounds and, although food is important, there are numerous factors that can attract ducks to individual wetlands. Thus, management activities often focus on maximizing the amount of quality duck foods, producing a diversity of seeds and tubers that are high energy, maintaining water depths ≤ 12", and reducing percentage cover of invasive species. Funded by Agricultural Wildlife Conservation Center of the Natural Resources Conservation Service, this project examined how wintering ducks responded to wetland management, specifically summer draw-down date, quality of the vegetation, and percentage of woody vegetation.

Management of moist-soil wetlands varies by landowners and can range from active to passive management. The intensity of management techniques and date of water draw-down can substantially influence plant community responses. Researchers define active management of moist-soil wetlands as a combination of monthly inspections of sites, annual soil disturbance (e.g., disking), and herbicide control of plants with little or no known food value for waterfowl. The timing of water removal from a wetland during the growing season also can influence the plants that grow in these wetlands. Thus, active management was further refined to include two drawdown periods: 1) active-early: drainage completed by June 15; and 2) active-late: drainage occurring over three weeks after active-early drawdown dates. Landowners also may chose to manage their wetlands passively, whereby wetlands are subject to infrequent soil disturbance (three or more years), limited or no control of undesirable low quality plants, and minimal or no management of hydrology.

Scientists counted over 36,874 ducks of 15 species, and dabbling ducks accounted for 60 percent of all ducks observed during the study. Results suggest that dabbling and diving duck densities (ducks/acre) were slightly greater when landowners practiced active management with late-drawdowns, were able to produce high quality waterfowl food, such as seed and tuber producing grasses and sedges, and reduced the amount of woody vegetation, such as willow and green ash. Actively managed sites with early-drawdown and passively managed sites produced lower quality foods than active-late wetlands, but ducks were regularly observed using actively-early and passively managed wetlands. Therefore, ducks may use wetlands regardless of management type or food quality. However, ducks may be more likely to use actively managed wetlands with late-drawdown and high quality food compared to active-early and passive managed site.

Scientists found that management of quality waterfowl forage on moist-soil wetlands did not guarantee increased use of these wetlands by wintering ducks. Scientists recommend sustaining various wetland habitat conditions, which provide wintering ducks with a variety of foraging and resting habitats. Management and restoration of wetlands should continue to focus on developing a variety of wetland conditions in a 'complex', such as active-early, active-late, and passive management to maximize benefits for wintering ducks.

WATERFOWL HUNTING TWO OR FOUR DAYS PER WEEK, WHAT'S BEST?

By Elizabeth St. James

Waterfowl hunting is important historically, culturally, and economically in Mississippi and elsewhere. Hunters support the economy through the purchase of hunting licenses, migratory bird stamps, hunting equipment, and conservation organization memberships. These funds are used to conserve habitat for waterfowl and other migratory birds through the creation of public hunting areas, federal waterfowl production areas, and national wildlife refuges. Thus, many state and federal and non-governmental conservation organizations cooperate to provide opportunities for quality hunting on public lands.

Recent research was conducted to determine the number of hunting days per week to maximize hunter opportunities, optimize hunting quality, and maintain abundance and harvest of waterfowl on Mississippi Wildlife Management Areas (WMAs). We thought that duck abundance and harvest may both decrease as the number of hunting days per week on WMAs increased. However, neither duck abundance nor harvest differed statistically between areas open to hunting two or four days per week. Interestingly, duck use increased approximately 30% in sanctuaries during the first few hours of hunting each morning regardless of hunting disturbance on the area, suggesting ducks learned locations of sanctuary areas. Additionally, hunters who remained in the field longer harvested more ducks.

Hunter perception of quality hunting can be influenced by duck abundance and harvest. Predictably, hunter perception of quality did not differ whether they hunted on areas open to two or four days of hunting per week. Hunter perception of quality was greatest when hunters harvested four or more ducks per day. Hunter perception of quality also was perceived greater when hunters harvested larger bodied species such as mallards.

Duck abundance, harvest, and perception of hunt quality were similar between areas open to hunting two or four days per week, suggesting weekly hunting frequency can be four days per week on Mississippi WMAs. Increasing hunting frequency to four days per week will increase hunter opportunities, not reduce duck numbers significantly on WMAs, and provide quality hunts at WMAs. However, duck populations and hunter attitudes are dynamic. Thus we will begin a study to determine individual duck responses to hunting disturbance, using radio telemetry. Additionally, this study will determine use of hunted and non-hunted habitats in the region. This knowledge will allow biologists and managers to understand how hunting pressure influences habital use, behavior and survival of mallards during the hunting season and thereby enable better management of habitat and hunging. Finally, continued evaluation of hunt quality is necessary to ensure hunters perceive they are experincing quality hunts on public lands.

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Weegman, M.D., **R.M. Kaminski**, G. Wang, M.L. Schummer, A.W. Ezell, T.D. Leininger. 2010. Sweep-net sampling acorns in forested wetlands. Journal of Wildlife Management 74:1931-1933.

AWARDS

Justyn Foth
Travel Award, Society of Wetland Scientists South Central Chapter annual meeting

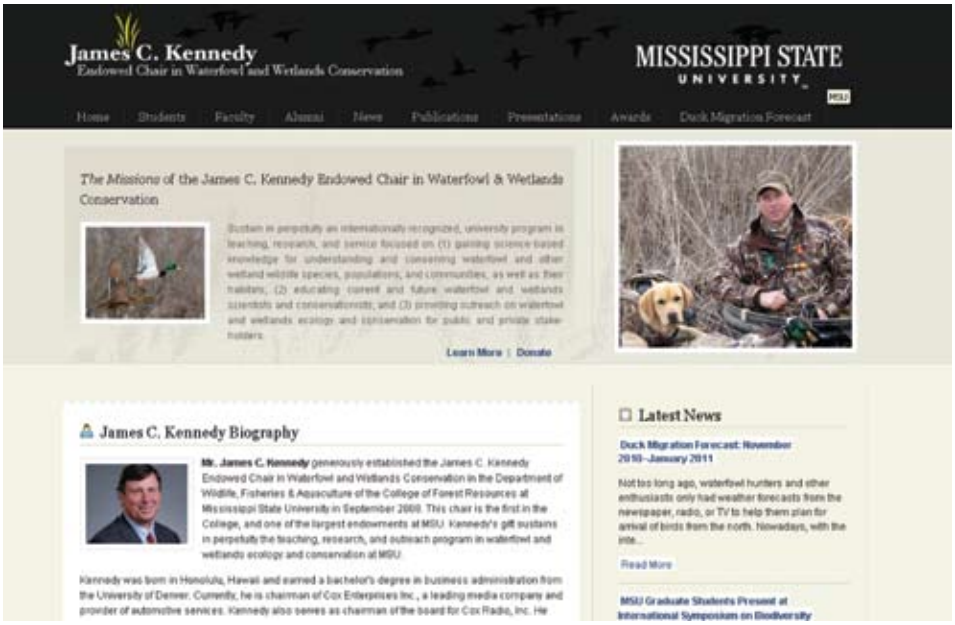
Elizabeth St. James
Best Student Poster Award, 17th Wildlife Society Annual Conference

Amy Spencer
Best Student Oral Presentation Award, Mississippi Water Resources Conference

Heath Hagy
Ernest A. Gluesing Memorial Award for Outstanding Doctoral Student, Department of Wildlife, Fisheries, and Aquaculture
Inaugural recipient of the James C. Kennedy Graduate Student Fellowship in Waterfowl and Wetlands Conservation

NEWS

please visit the Kennedy Website for news and other information: www.cfr.msstate.edu/kennedychair



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Callicutt, J.T., **H.M. Hagy, M.L. Schummer.** 2010. What do we really know about fall-winter food use by dabbling ducks: a critical review (1900-2009). Lower Mississippi Valley Joint Venture Annual Summit for Coordinated Science for Conservation. College of Forest Forest Resources, Mississippi State University.

Foster, M.A., M.J. Gray, C.A. Harper, J.G. Wells, **R.M. Kaminski**. 2010. Post-harvest fates of agricultural seeds in Tennessee croplands. The 64th Annual Southeastern Association of Fish and Wildlife Agencies Conference. Biloxi, MS.

Foth, J.R., RM. Kaminski. 2010. Estimating aquatic invertebrate biomass in the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Annual Summit for Coordinated Science for Conservation. College of Forest Resources, Mississippi State University.

Foth, J.R., RM. Kaminski. 2010. Estimating aquatic invertebrate biomass in the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Waterfowl Working Group Technical Subcommittee Meeting. University of Missouri-Columbia.

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Foth, J.R., **R.M. Kaminski**, **J.N. Straub**, T.D. Leininger. 2010. Winter aquatic macroinvertebrate communities in Mississippi River Alluvial Valley forested wetlands. Third International Symposium on Ecology and Biodiversity in Large Rivers of Northeast Asia and North America. Memphis, TN.

Hagy, H.M., **A.J. Wiseman, R.M. Kaminski**. 2010. Cropland and moist-soil management for waterfowl in Mississippi wetlands. The 64th Annual Southeastern Association of Fish and Wildlife Agencies Conference. Biloxi, MS.

Hagy, H.M., R.M. Kaminski. 2010. Winter food dynamics of dabbling ducks in moist-soil wetlands in the Mississippi Alluvial valley. The Southeastern Section of The Wildlife Society Wetlands Committee

Hagy, H.M., **J.N. Straub**, **R.M. Kaminski**, K.J. Reinecke. 2010. Moist-soil food dynamics of dabbling ducks during winter in the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Waterfowl Working Group Annual Meeting, Wappapello, MO.

Hagy, H.M., **R.M. Kaminski**. 2010. Winter food and waterfowl dynamics in managed moist-soil wetlands in the Mississippi Alluvial Valley. Wetlands and Wildlife Committee. The 64th Annual Southeastern Association of Fish and Wildlife Agencies Conference. Biloxi, MS.

Hagy, H.M., **R.M. Kaminski**. 2010. Winter food dynamics of dabbling ducks in moist-soil wetlands in the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Annual Summit for Coordinated Science for Conservation. College of Forest Resources, Mississippi State University.

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Kaminski, R.M., **J.B. Davis**. 2010. Waterfowl and wetlands science for conservation in the Mississippi Alluvial Valley. Ducks Unlimited, Inc., State Convention. Greenwood, MS.

Leach, A.G., **J.N. Straub**, **J.R. Foth**. 2010. Red oak acorn production in the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Waterfowl Working Group annual meeting. Wappapello, MO.

Spencer, A.B., **R.M. Kaminski**. 2010. Ancillary ecosystem services from moist-soil wetlands managed for waterfowl. Lower Mississippi Valley Joint Venture Annual Summit for Coordinated Science for Conservation. College of Forest Resources, Mississippi State University.

Spencer, A. B., R. M. Kaminski, J. L. Avery, L. D'Abramo, and R. Kröger. 2010. Ancillary ecosystem services from moist-soil wetlands. Mississippi Water Resources Conference. Bay St. Louis, MS.

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St. James, E.A., **M.L. Schummer, R.M. Kaminski**, E.J. Penny, K.D. Brunke, J.H. Havens. 2010. Effect of hunting frequency on waterfowl harvest, abundance, and hunter satisfaction in Mississippi. Mississippi Department of Wildlife, Fisheries, and Parks Annual Meeting. Mississippi State, MS.

St. James, E.A., **M.L. Schummer, R.M. Kaminski**, K.M. Hunt, E.J. Penny, K.D. Brunke, J.H. Havens. 2010. Effect of hunting frequency on waterfowl harvest, abundance, and hunter satisfaction in Mississippi. The 17th Wildlife Society Annual Conference. Snowbird, UT.

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Straub, J.N., R.M. Kaminski, A. Ezell. 2010. Red oak acorn production and abundance in forested wetlands of the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Annual Summit for Coordinated Science for Conservation. College of Forest Resources, Mississippi State University.

Straub, J.N., **A.G. Leach**, **J.R. Foth**. 2010. Waterfowl food resources in bottomland hardwood forests of the Mississippi Alluvial Valley. Lower Mississippi Valley Joint Venture Waterfowl Working Group annual meeting. Wappapello, MO.

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Weegman, M.D., A.D. Fox. 2010. Breeding ecology of Greenland white-fronted geese: An expedition to the Arctic. Mississippi Chapter of The Wildlife Society Annual Meeting. Jackson, MS.

Wiseman, A.J., **R.M. Kaminski**, K.J. Reinecke, E. Larson. 2010. Ratoon grain sorghum and other seeds for waterfowl in sorghum fields in the Mississippi Alluvial Valley. The 64th Annual Southeastern Association of Fish and Wildlife Agencies Conference. Biloxi, MS.

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