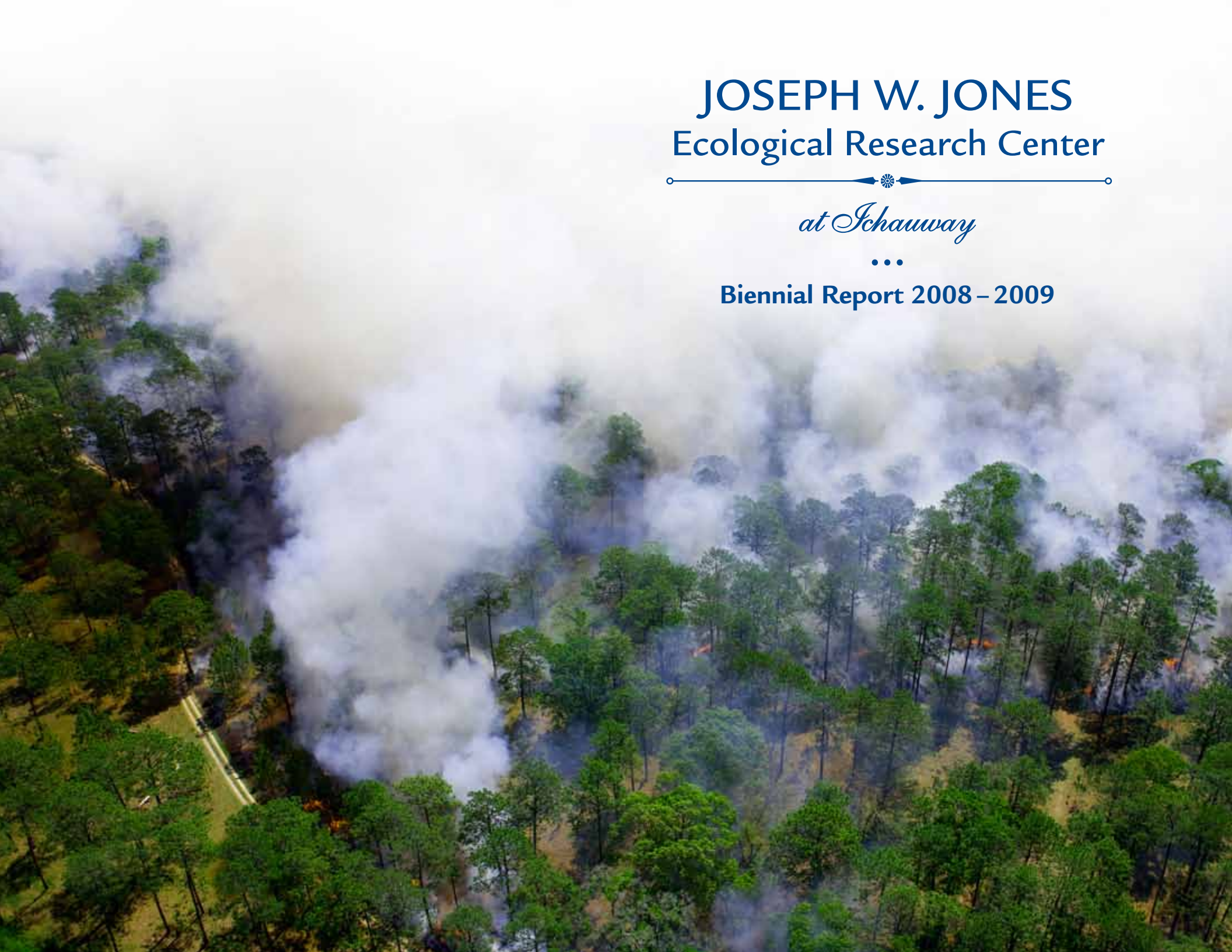




JOSEPH W. JONES Ecological Research Center

at Ichauway

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Biennial Report 2008 – 2009



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Dr. Stephen W. Golladay

Associate Scientist, Aquatic Ecology

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Scientist, Hydrology

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Assistant Scientist, Fire Ecology, 2008

Dr. Steven B. Jack

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Mission & Values

The Joseph W. Jones Ecological Research Center at Ichauway seeks to understand, to demonstrate and to promote excellence in natural resource management and conservation on the landscape of the Southeastern Coastal Plain of the United States.

The Jones Center was founded on a long-standing ethic of conserving land and water resources. Ichauway is maintained as the tangible expression of this natural resource management philosophy. Central to this philosophy is the conviction that management and research inform each other and are partners in their contribution to knowledge. One of the Center's most important products is people who combine a rigorous understanding of ecological principles with proficiency in natural resource management.

To understand the natural systems of the Southeastern Coastal Plain, the Center assembles information from respected practitioners and the scientific literature and conducts targeted research to expand the knowledge of the field. Through a rigorous and creative research program the Center aspires to improve management and stewardship of resources of the Southeastern Coastal Plain and also to contribute to natural resource science at the national and international levels.

To demonstrate excellence in natural resource management, the Center manages Ichauway to protect and enhance the diversity of natural communities and their component species. The practical and economic aspects of proper stewardship are fundamental considerations of this work.

To promote excellence in natural resource management and conservation, the Center develops and conducts education and outreach programs for undergraduate and graduate students, interns, land owners and managers. The Center serves as a science-based resource for public officials, policymakers and the public.

From The Director

We are pleased to provide updates in this 2008-2009 Report that highlight the progress of our conservation, research and education programs. Most importantly, our staff continues to define and address key conservation issues and information needs with our core research and natural resource management projects and transfers information to a wide range of constituents through publications as well as education and outreach programs.

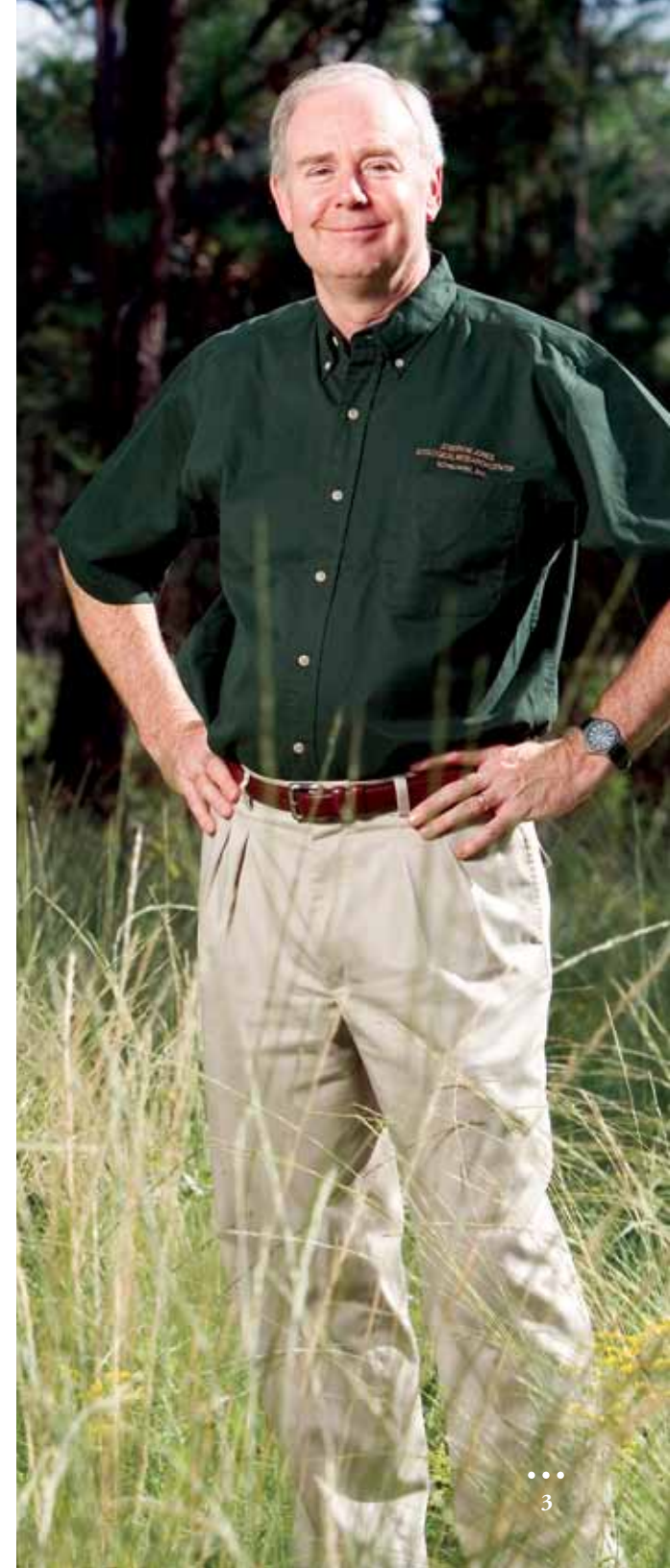
We continue to expand our collaboration with external scientists and new institutions. Over the past two years we hosted 11 Visiting Scientists during the summer at Ichauway and worked with 44 other scientists and collaborators on cooperative projects and co-advisement of graduate students jointly sponsored with regional universities. This approach builds upon the internally supported long-term projects at the Jones Center by leveraging these resources with diversely supported on- and off-site collaborations. Our pursuit of externally-funded projects has met with success over the past two years and has provided additional resources to complement our ongoing long-term research and outreach efforts.

These past two years we have achieved a milestone of 80 masters and doctoral students completing or enrolled in our graduate student co-sponsorship program since 1995. We have new and noteworthy graduate studies linking the ecological services of healthy forests, wetlands and wildlife to human health and well being. These include studies of wildlife health related to ticks and tick-borne diseases, wetland ecosystem linkage to mosquito ecology and mosquito vectored diseases and the value of longleaf pine woodlands in the storage of carbon in biomass and soils.

We continue to appreciate the long-term core support of the Robert W. Woodruff Foundation through both their generous financial support of programs and facilities, as well as their commitment of Ichauway's natural resources for conservation, research and educational demonstrations.



Dr. Lindsay R. Boring, Director





Highlights

- » Approximately 1,350 natural resource professionals and university students visited the Center in 2008–2009 as part of 84 groups that participated in educational programs including field tours, short courses, workshops and professional conferences. In addition, approximately 500 visitors attended our 2009 Open House.
- » Thirty-three graduate students from six cooperating universities conducted their research at Ichauway during 2008–2009 as part of our cooperative graduate student program. In addition, two individuals participated in the Center's conservation apprentice program during this time.
- » The Center continued to broaden collaborative relationships and partnerships. Ichauway was designated as a National Ecological Observatory Network candidate site by the NEON leadership. Center staff hosted 11 visiting scientists from 8 universities and agencies during summer residencies at Ichauway during 2008–2009 and collaborated with 44 other scientists and cooperators.
- » The Center expanded the scope of application for its ongoing research on below-ground ecosystem processes. Long-term data from these studies were leveraged with significant new collaborative projects to address critical information gaps in carbon dynamics of longleaf pine forests that could support carbon sequestration policies.
- » Center staff continued to provide leadership and support for the Georgia Prescribed Fire Council as well as leading the organization of a national Coalition of Prescribed Fire Councils. Both promote education, human safety and ecological stewardship using prescribed fire.
- » The Center began implementing experimental selection harvest treatments for the long-term ecological forestry research project on several hundred acres across Ichauway. Ecological forestry outreach efforts continued in 2008–2009, with four ecological forestry workshops, a popular publication on the Stoddard-Neel system for land owners and managers and numerous presentations at workshops and conferences.
- » The Center co-sponsored and organized a regional conference on environmental flows, "Water for People and Nature in the Southeast," in Athens, GA, in October 2008. Preparations have begun for a follow-up conference which will continue to raise awareness of the goods and services provided by healthy streams and rivers.
- » The Center was awarded \$1,985,095 in new externally-funded research and outreach projects during 2008–2009. Several of these are multi-year grants. Five projects were continued from awards prior to 2008.
- » Research staff published 17 articles in peer-reviewed journals in 2008 and 14 in 2009. Center staff also produced 9 technology transfer and other publications in 2008 and 9 in 2009. There are an additional 20 "in press" publications for 2009.





Pursuing Research, Education and Conservation

The Joseph W. Jones Ecological Research Center at Ichauway is a research and conservation site of regional, national and international significance. Ichauway's 29,000 acres contain approximately 17,000 acres of rare, mature, longleaf pine woodlands, 3,000 acres of young restoration plantings of longleaf pine, innumerable depressional wetlands, 25 miles of streams and 3,000 acres of field habitat. This land base is complemented by 50,000 square feet of research and education facilities and a permanent staff of 88.

Research

Our research programs focus on two broad themes: the ecology, restoration and management of the longleaf pine ecosystem; and water resources and aquatic ecosystems of the Southeastern Coastal Plain. These areas of focus reflect the Center's location and the information needs of the region. Ichauway is situated in the heart of the historic range of longleaf pine. The longleaf pine ecosystem is one of the most biologically diverse systems in North America and, with less than 3% of the original extent remaining, is increasingly a focus of conservation efforts. Southwest Georgia is also a hydrologically unique karst region that serves as the major recharge area for one of the most prolific and heavily used aquifers on earth, the Upper Floridan aquifer. We balance basic research of these systems with applied work of interest to the natural resource management and conservation communities. Much of the Center's research is integrated under five long-term projects that incorporate various components of terrestrial, aquatic and wildlife research in an interdisciplinary approach.

Information generated from our research program is disseminated through peer-reviewed journal articles, technology-transfer products, popular publications and by participation in local, regional, state and national scientific meetings. Our approach to research is based on cooperation between scientific staff and information users and seeks to address relevant natural resource management questions so that policymakers and land owners can utilize science to support the development of sound resource management plans and policies.



Conservation

The Center's conservation program is charged with the stewardship and management of the Ichauway land base. It also serves as a technical information resource for the Center and as an example of wise resource management in the region.

Integration of research and natural resource management on Ichauway presents a unique opportunity for these programs to inform one another. Information from our research programs can be scaled up to an operational level for implementation and demonstration, with these same management applications providing valuable feedback and generating additional questions for researchers.

The Center's conservation program incorporates a diverse range of activities into a management model that balances multiple values in the context of a deeply-rooted land ethic. These activities include an extensive prescribed fire program, game management for species such as bobwhite quail and whitetail deer, management and monitoring of nongame and endangered species such as red-cockaded woodpecker, conservation-based forest management and restoration of the longleaf pine ecosystem across the Ichauway landscape.

Education and Outreach

The results of our scientific studies, as well as information generated from our conservation and land management programs, are shared with a diverse constituency including natural resource management agencies, policymakers, private land owners, conservation groups and university classes. These audiences visit the Center for field tours, short courses and workshops, while Center staff also work with them at other sites in Georgia and across the Coastal Plain of the Southeastern U.S.

Our primary constituents are those actively involved in making decisions that influence the management of natural resources. Our work with university students helps prepare the next generation of natural resource professionals. Through our outreach efforts, the Center influences conservation and management at both the state and national level.

Sixty students from regional research universities have completed advanced degrees through our cooperative graduate education program and 23 students are actively pursuing degrees at this time. Key cooperating institutions include the University of Georgia, University of Florida, Auburn University and 6 other nationally-ranked programs. The development of well-trained professionals through our cooperative graduate program is one of the Center's most important contributions. It provides a unique legacy that continues to influence the management and conservation of natural resources through the course of these individuals' careers in conservation, research and education.



Long-Term Projects

Long-Term Research on Wetlands

Principal Investigators: L.K. Kirkman, S.W. Golladay, D.W. Hicks, S.P. Opsahl and L.L. Smith

Isolated wetlands are widely distributed across the Coastal Plain of the Southeastern U.S. and are well known for their conservation values. These wetlands are important reservoirs of biological diversity and play a critical role as habitat for wildlife such as amphibians, wading birds and waterfowl. The study of the ecology and hydrology of wetlands has had an historical presence on Ichauway for more than 70 years. Because of his interest in bringing an end to malaria, Robert W. Woodruff used his influence to establish a facility on Ichauway with a staff of ecologists and medical professionals to study the causes of widespread malarial infections still common in the region at the time. The malaria research was jointly administered by the Emory School of Medicine, U.S. Public Health Service and the U.S. Geological Survey. Studies of malaria at the Emory Field Station were conducted on Ichauway from 1939 to 1958.

Healthy isolated wetlands support unique communities of plants and animals adapted to cycles of inundation and dry-down largely driven by rainfall. The significance of these wetlands and their contribution to the biological diversity of the Southwest Georgia region has been largely overlooked because of their relatively small size. Data from on-going studies at the Jones Center indicate that while isolated wetlands comprise less than 5% of Ichauway, they harbor almost 30% of the plant species found on the property as well as a diverse amphibian community. In addition to their contribution to biological diversity, these systems also provide habitat for many rare and protected plants and animals.

In many states, including Georgia, isolated wetlands lack legal protection at the state level and, because they are not connected to streams and rivers, are excluded from the protection afforded most other wetland types under federal law. Ongoing human development and agricultural conversion are causing the cumulative loss or significant alteration of isolated wetlands. For the past several years the Center has been conducting a multi-disciplinary, long-term study of wetlands to provide scientific basis for State wetland protection policies as well as to stimulate interest in wetland restoration among natural resource managers. We are hopeful that information gained through our studies may contribute to the development of policies for protection of isolated wetlands in Georgia.

The long-term study targets isolated wetlands on Ichauway that are relatively undisturbed. These undisturbed wetlands will be used as a comparison to assess the impacts on degraded wetlands and how we might effectively restore them. Studies of disturbed agricultural wetlands outside of Ichauway will develop a better understanding of the impacts on wetland function and ecology. Our long-term wetland research is being augmented with complementary studies through graduate student projects, external grants and collaboration with visiting scientists that will maximize our available resources and knowledge base. Graduate student projects have included studies of basic wetland function, amphibian communities and, in keeping with the tradition that began with the Emory Field Station 70 years ago, an examination of breeding mosquito communities and their connection to human health and vector-borne diseases.





The Jones Center is uniquely suited to conduct wetland-related research based on the exceptional examples of this ecosystem found on Ichauway. The many years of background data on wetland ecology and hydrology and the management and research staff expertise offer a rare opportunity to address both basic and applied questions relevant to wetland conservation and management.

Flint River Basin Research Project

Principal Investigators: S.W. Golladay, D.W. Hicks and S.P. Opsahl

This long-term research project will advance our understanding of the consequences of human development on the water resources of this region of Georgia. This work integrates new and ongoing studies that will evaluate threats to regional water availability and the health of aquatic systems. Recent droughts have allowed us to monitor the human impacts on streamflow and our aquifers as well as on sensitive aquatic ecosystems.

As a component of this project, we have evaluated more than 60 years of water data collected by the U.S. Geological Survey as well as data from Jones Center studies to assess long-term changes in our stream flows. This research has concluded that the volume and seasonality of streamflow has changed as a result of human water use and altered climate patterns, which has resulted in reduced water availability as well as degraded stream health.

Because of concern over the observed human and climate related changes in streamflow and aquatic habitat and the obvious need for sustainable water use in Georgia, the Center undertook an outreach initiative to develop an environmental flow paradigm for water resources policy development. The term “environmental flows” refers to the water regime of a river, wetland or other aquatic or marine system necessary to maintain the sustainability and health of the system. Center staff led and organized a regional environmental flows conference that was held in Athens, Georgia, in October 2008. This was the first conference in the Southeastern U.S. to focus on environmental flow issues. With the increased demand for water throughout the southeast region and the extreme drought events of recent years, interest in the conference was high. In addition to the Jones Center, a wide range of partners contributed to this effort, including federal and state agencies, nongovernmental conservation organizations and regional universities. Based on the success of this effort, discussions have begun to hold a second conference.

Streamflow conditions observed during prior studies have prompted a geographical expansion of our efforts from the Coastal Plain into the northern part of Georgia. We have begun new studies to evaluate the Flint River and the Chattahoochee River drainages as a paired watershed experiment. The Flint is a natural stream system in which flows are relatively uninterrupted, whereas the Chattahoochee is literally constrained throughout its entire reach by 13 dam structures.

The Chattahoochee River and the Flint River merge in Southwest Georgia to form Lake Seminole, a reservoir which serves as the headwaters for the Apalachicola River. Studies on Lake Seminole were initiated in 2008 to provide new information about how differences in water quality reflect patterns of urban and rural land use that are characteristic of different parts of these river basins. Lake Seminole appears to play an important role in mitigating a substantial amount of nutrient pollution before water flows into Florida and the Apalachicola Bay system. New studies examining the sources and fate of trace chemical and biological contaminants were begun in 2009 in cooperation with the USGS and the University of Florida. These studies will further our knowledge of the environmental costs and benefits associated with dams and reservoirs

The studies encompassed by this project will help us gain a better understanding of how to balance the environmental, economic and cultural issues related to water resources in the face of increasing human demand and climate change. We are hopeful that the results of our ongoing work will provide water planners and regulators with beneficial knowledge as our state leaders move forward with the development of water management policies.

The Ecological Role of Mesopredators, the Effects of Mesopredator Control and Habitat Approaches for Managing Predation

Principal Investigators: L.M. Conner and L.L. Smith

The objective of this study is to better understand the complex interactions between predators and prey in longleaf pine ecosystems and to understand the impacts of habitat management on these interactions. In Georgia, some mammalian predators (mesopredators), such as raccoon, skunk and opossum, can be legally harvested to reduce predation and enhance populations of species of management interest, such as game or endangered species. While studies have shown that removal of predators can result in increases in populations of species that they prey upon, the impact of such activities on the broader wildlife community is poorly understood. Much of the research on predator-prey interactions has been driven by game management considerations and has been focused at the species level rather than the community level. Given this consideration, there is a need to further examine the role of predators in today's ecosystems. We are conducting a field experiment in which mesopredators are removed and excluded with electric fencing from four 100-acre experimental plots. We are measuring the impacts of reduced populations of these predators on selected prey (specifically bird nests, gopher tortoise nests and hatchlings) and on alternative predator species (snakes, birds of prey and small mammals). Thus, our primary goals are to determine the effect of mesopredator control on prey populations and the wildlife community as a whole.

To date, this study has shown that mesopredator exclusion has no effect on nest survival of shrub nesting birds. Rather, the major predators of eggs and nestlings include red imported fire ants, snakes and birds of prey, with fire ants being the dominant predator. These results have prompted us to begin a larger scale experiment across Ichauway to measure the impacts of fire ants on vertebrates in the longleaf pine ecosystem. Mesopredator control did have a significant positive effect on gopher tortoise nest and hatchling survival, suggesting that predator control may be a viable option to manage populations of this rare and declining species.



Prescribed Fire

The critical role of fire in the longleaf ecosystem is a unifying theme of many areas of the Jones Center's work including ecological forestry, wildlife, ecosystem productivity and even isolated wetlands. Prescribed fire is an essential management tool if we are to maintain the conservation values and other societal benefits of healthy longleaf forests. Ichauway provides a remarkable and rare example of a longleaf landscape that has been consistently managed with fire for at least 80 years and the Center's expanding focus on fire research and education is a natural outgrowth of that legacy.

The ability to use prescribed fire as a management tool for forestry, wildlife, conservation and wildfire prevention is under growing threat. Particularly in the Southeastern U.S., rapid population growth and expansion of the wildland urban interface present growing smoke management challenges for fire managers. Tightening restrictions in air quality regulations at the federal level will require more sophisticated understanding and management of fuels, fuel consumption and emissions of regulated pollutants.

In 2008–2009, the Center focused more effort on both research and outreach related to prescribed fire. Fire ecology research explored the relationship of fine-scale fuel loading and structure to fire behavior as well as the physical and combustion characteristics of both pine and hardwood fine fuels. Work was also begun on better understanding emissions from prescribed fire and the role of prescribed fire in the carbon cycle of longleaf forests. Much of this work involved collaboration between Jones Center staff and visiting researchers, including a week-long effort to fully instrument and measure several prescribed burns on Ichauway.

Ongoing programs in fire education included university classes, courses for Center staff and raising awareness of the importance of prescribed fire with all visitors to Ichauway. Our increased focus on prescribed fire outreach continued, with Center staff serving in leadership positions with both the Georgia Prescribed Fire Council and the recently-formed national Coalition of Prescribed Fire Councils. The Center also hosted personnel from air quality regulatory agencies to introduce them to the importance of prescribed fire for healthy forests in general, as well as its more specific role in maintaining habitat for rare species associated with the longleaf pine ecosystem.







We are also examining other aspects of wildlife community interactions on Ichauway. Our studies of small mammal communities of the longleaf pine ecosystem present a compelling case that the dynamics of these communities are driven by fire events. Prescribed fire eliminates vegetative cover, making small mammals more susceptible to predation. Another study suggests that the Ichauway deer herd may be limited by predation on fawns. Our data from this work suggests that predators, particularly coyotes, have a significant effect on fawn survival, as controlling coyotes during the fawning season resulted in an approximate 200% increase in fawn recruitment.

In 2008 we also began initial data collection on a project that links prescribed fire, white-tailed deer and mesopredators to human health issues. We are investigating the role of fire and host populations on the abundance of several tick species and the prevalence of tick-borne disease. Collaborators include the Southeastern Cooperative Wildlife Disease Study and the Centers for Disease Control. This project is particularly interesting in that it brings ecological concepts and land management to the forefront of human health issues.

This line of research clearly demonstrates the complexity of wildlife community interactions and the amplifications of this complexity that result from human objectives and activities for wildlife management. A more complete understanding of functional relationships between wildlife communities and their environment is essential as we seek to better manage natural resources for objectives that range from species conservation to human health.

Ecological Forestry

Principal Investigators: R.J. Mitchell, S.B. Jack, L.K. Kirkman, R.K. McIntyre, L.L. Smith and L.M. Conner

Ecological forestry is an approach to forest management that uses natural disturbance and ecological processes as a guide to silvicultural prescriptions. Exemplified in our region by the Stoddard-Neel approach to forest management, questions remain in our scientific understanding of mechanisms that support the practical application of ecological forestry. The longleaf pine ecosystem is unique in the degree to which ecologically-based timber harvest is compatible with the wealth of conservation values of these forests. This long-term project seeks to fill information gaps and refine silvicultural techniques through integrated research, management and outreach efforts.

This research has three primary areas of focus:

1. how natural disturbances in longleaf pine shape forest structure and how managed disturbances, such as harvest, compare to those patterns;
2. the relationships between overstory structure, prescribed fire, fuels and forest demographics; and
3. recovery of the system, particularly understory communities, after natural and managed disturbances.

Initiated in late 2007, on-the-ground implementation of this project has occurred over the last two years. Plots have been established, trees individually mapped and pretreatment sampling conducted. Harvests were conducted in late 2009 across approximately 635 acres of Ichauway. Treatments will compare control (no cut), single-tree selection and gap-based approaches to harvest. Research results during the



next few years will help refine understanding of the critical issues and questions related to sustainable management of longleaf pine ecosystems.

The Center's education and outreach program continues to respond to increased interest in managing forests for a wider range of values. Four ecological forestry workshops were held at Ichauway during 2008–2009. Since the inception of the program in 2006, over 140 individuals with management responsibility for over 4 million acres have attended this four-day workshop. Center staff also contributed to the development of a range-wide conservation plan for longleaf pine called "America's Longleaf."

Center staff have also published two technology transfer publications, one an overview of ecological forestry principles across forest types in North America and another focusing on the Stoddard-Neel approach to ecological forestry. As a product of a Center-sponsored graduate student project, the University of Georgia Press has published a memoir of Leon Neel as part of its environmental history series.

Ecosystem restoration is another aspect of longleaf pine ecology in which the Center works. Advances in groundcover restoration during the last two years include refined native seed cleaning techniques, automated harvest of new species and expanded partnerships with commercial growers in an effort to develop supplies of native plant materials. We also continue our work on conversion of offsite pine plantations to mature, longleaf pine-grasslands.

The legacy of extensive longleaf pine and wiregrass on Ichauway serve as both an inspirational model and a living laboratory. As interest in longleaf conservation and restoration grows across the Southeast, our efforts and land base put us in a unique position to contribute new information to refine management and conservation of this ecosystem.

Productivity, Biodiversity and Carbon Dynamics of Longleaf Forests

Principal Investigators: R.J. Mitchell, L.K. Kirkman and L.R. Boring

Compared to other species of southern pine, the basic ecology of longleaf pine has historically received less attention. Because of the focus on faster-growing species for production-oriented forestry in the South, relatively few resources were devoted to longleaf pine research. When the Jones Center was established in the early 1990s, renewed interest in longleaf conservation and management was just beginning to develop. This offered a unique opportunity for the Center to begin to address critical information gaps about the longleaf pine ecosystem. Our first long-term research effort, the Productivity and Biodiversity Project has explored basic questions about how longleaf pine forests function, such as net primary productivity, patterns of plant species composition and nutrient cycling. Many of the studies associated with this project have included components that assessed both above-ground and below-ground cycling of carbon through the fire-maintained longleaf ecosystem.

Carbon, like currency in an economy, is a basic building block of ecological systems. Through photosynthesis, plants take carbon from the atmosphere and water from rainfall and soils, and produce carbohydrates and oxygen. While ecologists have always been interested in patterns and controls of carbon dynamics and foresters have studied the productivity of forests and what constrains them, interest in the carbon cycle has increased dramatically in recent years in response to concerns about climate change.



Since the early 1900s, levels of carbon dioxide (CO_2) in the atmosphere have increased at a rate that is unprecedented in the natural history of our planet, largely through human activities such as burning fossil fuels and deforestation. This increase is of concern to many because scientific studies suggest that increased levels of CO_2 contribute to warming of the planet, resulting in rising sea levels and significant alterations in global and regional weather patterns. This has led to growing interest in the ability of forests to capture and sequester carbon, particularly highly productive forests such as Southeastern U.S. pine forests.

Protocols for accounting for how much carbon is stored in forests are poorly developed, particularly for mature, multi-aged longleaf forests. Basic questions remain in our understanding of the carbon cycle and how management may influence carbon storage in both above- and below-ground pools. Multiple approaches are being used to study carbon dynamics. Research into patterns, controls and gradients of productivity from wet to dry longleaf sites has been on-going since the inception of research programs at the Center in 1993, and this long-term project continues and builds on that work. Through this project, innovative work in below-ground ecosystem processes continues to be a unique contribution of the Jones Center in addressing critical information gaps in our understanding of carbon cycling. In addition, through partnership with colleagues at the University of Alabama, instrumented towers are measuring ecosystem-level carbon dynamics of longleaf forests. All of this work is being integrated into a state-of-the-art Carbon/Fire process model with collaborators at the University of Edinburgh, Scotland.

Refinement of our understanding of how carbon cycles through forests will help provide the scientific basis for more informed decisions as policies for management of CO_2 are developed in the years ahead. Accurate accounting for carbon pools in forests offers the opportunity for the development of incentive programs for land owners to sequester carbon on private forestland. These opportunities offer important tools to help conserve the broad range of societal values and ecological services that forests provide.





Conservation

The qualities that make Ichauway unique and valuable are the result of a long tradition of excellence in land management. Many of the finest examples of the longleaf ecosystem on private lands are the legacy of visionary individuals such as Robert Woodruff, who assembled large properties as quail preserves in the early 20th century. Today, the Center builds upon this tradition of conservation by integrating science and land management in a dynamic setting in which each informs the other.

The Center's conservation staff includes land managers, wildlife biologists and foresters. They carry out programs in forest management, silviculture and restoration; management of game species such as bobwhite quail and whitetail deer; conservation of endangered, threatened and special concern species; and long-term habitat monitoring. Their work includes ongoing activities, such as using prescribed fire as a management tool, as well as new efforts to restore or improve forest or wildlife habitat based on sound science. Significant effort is also spent in support of the Center's research and education programs. Highlights of activities over the last two years include the following:

Prescribed fire is the most essential tool for management of the longleaf pine ecosystem. In 2008 Center staff burned 13,240 acres, while in 2009 approximately 14,500 acres were burned for management, research and education objectives. The Center's conservation staff maintain an exemplary prescribed fire program that simultaneously sustains the longleaf ecosystem and minimizes wildfire danger. The long history of prescribed fire on Ichauway demonstrates the critical role of fire in maintaining the values of longleaf forests, including conservation values, wildlife habitat and timber resources.

Longleaf restoration efforts continued across Ichauway. Although commercial crews were contracted to remove undesirable hardwoods in the past, in 2008 and 2009 Center conservation staff conducted hardwood removals on approximately 700 acres. These removals were conducted in more sensitive areas (typically with intact native groundcover) where more careful and controlled harvest activity was required. While much of Ichauway offers some of the best remaining examples of the longleaf pine ecosystem left today, some areas of the property have been altered by past land use activities and restoration to a pine-grassland ecosystem on these sites is a primary objective for management. Other restoration activities practiced include selective herbicide application, planting longleaf seedlings and re-establishing native groundcover.

The Center continues to adapt the Stoddard-Neel system of selection harvest to our forests. In late 2009, a 635-acre pine timber sale was conducted as part of the implementation of a long-term research project on ecological forestry. The harvest will establish measurement plots with specific silvicultural treatments and the forest "matrix" surrounding the research plots will also have a single-tree selection based harvest to remove poor quality trees. As an ongoing practice, Conservation staff salvage dead and downed trees that present a hazard near roads and buildings or will cause significant smoke issues during prescribed fire operations. This salvaged timber is milled with a portable saw mill and used for building projects and repair. The Ichauway forest demonstrates that conservation-based management of longleaf pine can produce economic benefits.





Visiting Scientists

Dr. Mark Blackmore
(2008, 2009)-Valdosta State University

Dr. Craig Clements
(2008)-San Jose State University

Dr. Alan Covich
(2008)-University of Georgia

Dr. Patrick Inglett
(2008, 2009)-University of Florida

Dr. Rhett Jackson
(2009)-University of Georgia

Dr. Daniel Markewitz
(2009)-University of Georgia

Mr. Ralph Nelson
(2008)-U.S. Forest Service

Dr. Madan Kumar Oli
(2009)-University of Florida

Dr. Pedro Quintana-Ascencio
(2009)-University of Central Florida

Dr. Greg Starr
(2008, 2009)-University of Alabama

Dr. Albert Way
(2009)-University of South Carolina

Other Collaborators and Graduate Co-Advisors

Connie Best, Pacific Forest Trust

Dr. Bob Boyd, Auburn University

Dr. Emilio Bruna, University of Florida

Dr. Ron Carroll, University of Georgia

Dr. Steven Castleberry, University of Georgia

Dr. Mike Chamberlain, Louisiana State University

John Cox, Lolly Creek

Dr. Wendell Cropper, University of Florida

Dr. Phil Cunningham, Florida State University

Dr. Chelcy Ford, U.S. Forest Service

Dr. George Gallagher, Berry College

Dr. Doria Gordon, The Nature Conservancy

Dr. Craig Guyer, Auburn University

Dr. Ron Hendrick, University of Georgia

Dr. Jeff Hepinstall, University of Georgia

Dr. Sonia Hernandez, University of Georgia

Kevin Hiers, Eglin Air Force Base

Dr. Erik Hobbie, University of New Hampshire

Dr. Rhett Jackson, University of Georgia

Dr. Steve Johnson, University of Florida

Dr. Robert Jones, Virginia Tech

Dr. Shibu Jose, University of Florida

Dr. Brian Katz, U.S. Geological Survey

Cody Laird, Lolly Creek

Dr. Edward Loewenstein, Auburn University

Dr. Michelle Mack, University of Florida

Dr. John Maerz, University of Georgia

Barrett McCall, Larson and McGowin

Dr. Mike Mengak, University of Georgia

Dr. Darren Miller, Weyerhaeuser

Dr. Joe Nairn, University of Georgia

Dr. Joe O'Brien, U.S. Forest Service

Michael Prevost, The Nature Conservancy

John Seymour, Roundstone Native Seed

Dr. Mark Smith, Auburn University

Dr. Paul Sutter, University of Georgia

Rob Sutter, The Nature Conservancy

Dr. Robert Teskey, University of Georgia

Dr. George Vellidis, University of Georgia Tifton

Dr. Jeff Walters, Virginia Tech

Dr. Bob Warren, University of Georgia

Laurie Wayburn, Pacific Forest Trust

Dr. Matthew Williams, University of Edinburgh

Dr. Michael Yabsley, University of Georgia

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