

Management and Conservation of Natural Resources for Society

STRATEGIC PLAN

(2006 – 2015)

for

Instruction, Outreach, and Research Programs

in the

**Daniel B. Warnell School of Forestry and Natural Resources
University of Georgia**

Final Draft Version – July 2006

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PURPOSE, MISSION, AND BACKGROUND

Strategic plan and mission of the Warnell School

This strategic plan has two *purposes*: (1) to state the social and professional context for instruction, outreach, and research programs within the Daniel B. Warnell School of Forestry and Natural Resources (Warnell School); and (2) to identify specific goals, objectives, and actions that will enable the Warnell School to be recognized as one of the top five forestry and natural resource programs in the United States. This document is intended as an expansion of the Warnell School's Five-year Program Plan (2005-2010) submitted to the University of Georgia in 2004, and which is attached at the end of this document. This strategic plan will be reviewed annually by the Warnell School's Administrative and Leadership Committee to ensure that it is current and responsive to the changing needs of the natural resource professions represented within the School, as well as changing opportunities on the University of Georgia campus.

The *mission* of the Warnell School is to prepare future leaders in the conservation and sustainable management of forests and other renewable natural resources; to discover improved methods for the restoration and utilization of the earth's renewable natural resources; and to place the latest ideas and technology in forestry and natural resource management into real world applications.

Importance of Georgia's natural resources

The forest products, pulp and paper, and allied industries annually contribute more than \$20 billion to Georgia's economy. Georgia's nearly 24 million acres of forest land, 93% of which is privately owned, provide the basis for the largest forest resource economy in the United States. Its location at the center of the primary commercial forest region of the U.S. and the associated easy access to major U.S. and off-shore markets enables Georgia to lead the nation in the production of a variety of goods and services from its forest industry. This strong and vibrant forest industry has generously supported the Warnell School since its inception and continues to do so today.

Forests and related natural resources in Georgia also provide numerous other economic benefits to the state. Expenditures by people participating in hunting, fishing, and wildlife-watching in Georgia equal approximately \$3 billion per year. Tourist expenditures on outdoor recreation (biking, camping, hiking, boating, backpacking, etc.) in Georgia represent another \$3 billion annually. The total economic value of water and soil resources in Georgia is difficult to quantify; however, it is certain that the state's economy would suffer greatly without an abundant supply of clean water and fertile soils. Thus, the state's forests and related natural resources are extremely important to the strength of Georgia's economy.

Just as important, Georgia's forests and natural habitats also provide numerous non-market values for its citizens. More than 75% of Georgia's nearly 9 million citizens, as well as the majority of their elected officials, reside in urban and suburban communities within the state. Most of Georgia's communities are surrounded by forest-based natural resources, which sustain and generate quality-life-values as well as providing employment and mitigating environmental impacts. The prudent management of all forest-based natural resources must continue to meet the increasing demand for housing, safety, recreation, and green spaces that urban, suburban, and rural citizens all require.

It is this unique combination of climate, species, infrastructure, governments, and social and legal systems that makes Georgia ideal for forestry and natural resource investments to fulfill a variety of market and non-market objectives. Demand for market and non-market goods and services from forests and related natural resources in Georgia is increasing, while the availability of land for both industrial forestry and natural resource conservation uses is being reduced by suburban development and other alternative land uses. At the same time, there is increasing recognition of the critical importance of natural resource sustainability, habitat conservation, and ecosystem management. The Warnell School has long held a clear leadership role within the state, region, nation, and world in providing instruction, outreach, and research programs that integrate natural resource management for solving multi-disciplinary problems, while ensuring sustainable production, use, functions, values, benefits, and enjoyment of forests and related natural resources. Effective management of the many resources and uses of this vast

and diverse forested landscape require the application of a broad set of skills and disciplines that have long been principally assembled together in a single location at the University of Georgia — the Daniel B. Warnell School of Forest Resources.

Warnell School's history and recognition

The Warnell School is the oldest university program in the southeastern United States providing instruction, outreach, and research in the conservation and sustainable management of forests and other renewable natural resources. Formal education in forestry at the University of Georgia began with the formation of the Department of Forestry within the College of Agriculture in 1906, just six years after the new profession of forestry was established in the United States with the founding of the Society of American Foresters. In 1935 the Department was reorganized and renamed the George Foster Peabody School of Forestry. In 1968 the name was changed to School of Forest Resources, and in 1991 it became the Daniel B. Warnell School of Forest Resources.

The Warnell School is recognized nationally and internationally for its excellent programs in fisheries and aquaculture, forest business, forest productivity, quantitative forest management, water and soil resources, and wildlife ecology and management. Humans use forests and natural resources consumptively, but they also demand that these resources be managed in ways that conserve and protect ecological and biological diversity while providing a range of outdoor recreational opportunities and ecological services from forest land. The Warnell School's instruction, outreach, and research programs emphasize the interrelationships among non-market values of natural resources and their management to meet human needs. The School's programs are among the best in North America and provide outreach, professional education, and research applicable to Georgia, the nation, and the international community.

Warnell School's academic programs

The Warnell School offers a professional degree, the Bachelor of Science in Forest Resources (BSFR), with four professional majors: fisheries and aquaculture, forestry, water and soil resources, and wildlife. A fifth major in natural resources recreation and tourism is planned, starting during the 2005-

2006 academic year. In addition, the School offers the Master of Science (MS), the non-thesis Master of Forest Resources (MFR), and Doctor of Philosophy (Ph.D.) degrees. Present enrollment in the School includes more than 200 undergraduate and 160 graduate students in residence, continuing education programs for more than 9,000 natural resource professionals, and educational services (e.g., Internet-based information) provided for more than 175,000 individuals each year.

Warnell School's human and physical resources

The 54 faculty members, 125 support staff, and 160 graduate students in the Warnell School work in a diversity of disciplines that reflect the five professional majors. The Warnell School engages in a number of partnerships both on-campus (i.e., interdepartmental and interdisciplinary) and off-campus (i.e., industry, state and federal agencies, nongovernmental organizations, foundations, and internationally) to increase program efficiency. The strengths of the Warnell School's instructional, outreach, and research programs are especially enhanced by collaborative efforts with other academic programs on campus, such as agricultural economics, biological and agricultural engineering, business, crop and soil sciences, ecology, entomology, environmental health sciences, geography, geology, horticulture, marine sciences, law, and plant sciences.

The Warnell School's facilities include four campus buildings that provide office, classroom, and laboratory space; four statewide outreach centers; the 740-acre Whitehall Forest near Athens; and another 23,000 forested acres across the state. The School's administration and faculty have consistently committed significant funding to ensure that computer and information technology used in instruction, outreach, and research programs in the Warnell School remain as current as possible.

SOCIAL AND PROFESSIONAL CONTEXT

The management and conservation of Georgia's economically important forests and other renewable natural resources have always been, and will continue to be, an important component of the Warnell School's instruction, outreach, and research programs. For the Warnell School to achieve its

mission, this strategic plan must continue to recognize and maintain these traditional programmatic strengths, as well as develop new strengths identified through demands generated by societal well being and professional responsibilities. Listed below are eight major overarching principles which provide the current and future context for the Warnell School's instruction, outreach, and research programs:

Conservation ethic based on science, critical analysis, knowledge synthesis, and decision making

Providing students and clients with a conservation ethic based upon the sustainable use and diverse values of natural resources is a primary goal for the Warnell School. With greater, competing, conflicting, and more complex demands placed upon the use and distribution of natural resource goods and values, informed consideration and decision making is essential. One tool required for natural resource value allocation, generation, and utilization is an educated mind. Effective education does not involve the accumulation of isolated facts placed into a personal framework, but rather is knowledge derived from synthesized facts integrated over many scales and situations leading to a person's view of how the world works and how it is changing. The Warnell School's instruction, outreach, and research programs must enable its students and clients to make objective observations, critically evaluate situations, and integrate potentially conflicting or complementary perspectives prior to making decisions.

Continued human population growth

The increasing human population and its concentration in urban/suburban centers is the primary driving force behind the accelerating global demand for natural resources. Sustaining people in urban/suburban areas ultimately provides both an economic incentive for continued development and consumption of natural resources at an accelerating rate. These demands include increased use of forest products (e.g., building products, paper), clean water, fossil fuels for energy, recreation (visitor impacts), and a safe, clean, comfortable space in which to live. It is possible to partially offset the effect of these increasing human demands on natural resources through intensive management in some places and through conservation in others, along with recycling and enhanced waste treatment. Educational and research initiatives are needed to help students and clients better understand how natural resource

management can help maintain an acceptable quality of life and a sustainable future through planned development without a net loss of natural resource productivity or alteration of ecosystem functions.

Changing patterns for green space at multiple scales

Human population growth combined with the land use and value changes associated with urban/suburban sprawl and associated land use changes are seriously disrupting the traditional economic, recreational, and aesthetic uses of forest lands and aquatic habitats. Increasingly, larger tracts of forests are being divided and sold as smaller tracts in response to market forces, but in the process this change creates a more fragmented landscape with less green space. Changes in landownership and land uses are removing many forest-based natural resource systems from intensive economic production and management activities, and have the potential for modifying important ecosystem functions. New societal pressures placed on natural resources may be associated with human demands for environmental goods and services, investments and business opportunities, or with taxation that encourages development, subdivisions, and other land use changes. Students and clients need to understand how these forces directly affect our future ability to manage, enhance, and sustain forest systems, fish and wildlife habitat, water and soil resources, and outdoor recreational opportunities. To effectively conserve America's natural resources into the future, students and clients will need to know how to work with public and private interests, and with the political structure that control or influence the use of natural resources, urban/suburban growth, and other land use changes. Where possible, Warnell School students should be encouraged to participate in service and outreach experiences so they can gain more experience working with these political, public, and private influences both in this country and abroad.

Concern for water quality and quantity

Forests, wildlands, and wetlands are critical to the protection of headwaters, water quality, and fish populations. The increased human population, urban/suburban growth, and land use changes cause an increase in demand for water and alterations in watershed patterns such as surface permeability and water quality. Impervious surfaces in urban areas cause increased surface water flow, prevent infiltration

and evaporative cooling, and reduce water quality, all of which increase the importance and value of traditional and urban forests to society. Warnell School students and clients must be able to understand the ecological production and transport features of water systems, as well as assist in policy development and application to maintain water quality and quantity. They also should be familiar with the standard of practice in their professions so as to ensure water quality is protected while production forestry, game management, or recreation and tourism are practiced in close proximity to streams or within critical watersheds.

Management of forests and their role in ecosystem health

Private and public forest lands provide both market and non-market values to society, whether in rural or urban landscapes. These market and non-market values are affected by the interconnected nature of natural resource management and ecosystem health. The integrated processes that sustain ecosystem health can be changed and often degraded by societal pressures. Understanding the individual components and the whole system of environmental responses to disturbance is critical to developing management programs that maintain ecosystem health. Key management issues for the future include biodiversity, use of fire to maintain forest health, waste and pollution treatment, regenerative and restoration processes, carbon sequestration, and invasive/exotic species. Education and research programs must enable students and clients to understand the ecological factors that determine ecosystem health, and equip graduates to develop and implement management activities that maintain the health, function, safety, and productivity of natural resources.

Influence and importance of societal will

Public perceptions, expectations, and attitudes about environmental quality and economic stability determine the societal will of Americans. Our increasingly urban and suburban society will continue to have a profound influence on natural resource conservation and management. Ultimately, societal will determines directly (through governmental programs and regulations) or indirectly (through economic development or nongovernmental organizations) how public sector agencies, private sector

businesses, and landowners manage natural resources. To help develop an educated citizenry, the Warnell School's instruction, outreach, and research programs must convey a better understanding of how societal will affects the perceptions and actions of decision-makers.

Market and non-market values for natural resources

Americans increasingly value forests and related natural resources for recreation, tourism, and other non-consumptive and/or non-market values (e.g., existence value, aesthetics). Furthermore, personal history (e.g., cultural or ethnic background, gender, etc.) determines an individual's knowledge of and interactions with natural resources, which then directly affects the attitudes and values that each person expresses regarding natural resources. To effectively conserve America's natural resources into the future while also meeting society's needs, the Warnell School's instruction, outreach, and research programs need to focus on methods, processes, and alternatives which help the public to better understand how to best balance the market and non-market uses/values of natural resources.

Global view of natural resources

The Warnell School's instruction, outreach, and research programs must place an emphasis on the global context influencing natural resource economics and societal perceptions of value. The Warnell School's programs must put research findings to use locally yet place the use and conservation of natural resources in a global context. Students and clients need to understand that the demand for and supply of natural resources on a global scale affect the management objectives and potential returns of landowners on a local scale (i.e., county or state). Instructors should provide examples of natural resource use by other cultures and in other nations, whenever possible. More study abroad courses should be developed and offered, and more Warnell School students should be encouraged to take them. Georgia citizens would make better decisions if they were informed of and learned to appreciate natural resource quality, quantity, and allocation decisions from a broad, global perspective.

VISION, GOALS, OBJECTIVES, AND ACTIONS

Vision and Goals

The *vision* of the Warnell School is to be recognized as one of the top five forestry and natural resource programs in the United States. Given the context of the wise use, conservation, and preservation of natural resources enumerated in the previous section, the Warnell School has developed the following future *goals* for its instruction, outreach, and research programs:

Instruction goals — The Warnell School will produce forestry and natural resource graduates with the skill sets, technical abilities, and confidence to be leaders in natural resource management and conservation. These graduates will possess excellent analytical and integrative abilities, be able to demonstrate fundamental resource knowledge, deal with change and resolve conflicts effectively, have the ability and commitment to work with others, and be positive, action-oriented leaders. Warnell School graduates will have superior communication skills and will be able to advocate natural resource conservation and management within both a local and global context.

Outreach goals — Through their involvement in outreach, Warnell School faculty and staff have a role in helping society make ordered and informed decisions, assuring citizens have access to the best natural resource management information, and enabling research findings to impact and change people's behaviors. The goal of the Warnell School's outreach programs will be to go beyond merely building awareness to the point of actually stimulating a change in societal and individual perceptions about natural resource conservation and preservation. Outreach faculty will assume leadership roles in interpreting and synthesizing research findings, creating instructional materials, and structuring educational delivery programs to serve both traditional and emerging audiences.

Research goals — Faculty, staff, and graduate students in the Warnell School will conduct relevant and timely research that improves the prudent use, conservation, and preservation of the world's natural resources. The Warnell School will conduct research that will influence and guide future natural resource policy and be used by decision-makers in Georgia and around the world. This research will not

only address current natural resource issues, but also anticipate and address tomorrow's natural resource concerns. Faculty will enhance, renew, and redirect their scientific skills and knowledge to assure this outcome. Warnell School faculty will be experts in their fields and will have an outstanding ability to bring various interests and disciplines together in a problem-solving manner.

Objectives and actions

In order to achieve these goals, the Warnell School has established the following short, medium, and long-term *objectives and actions* for change and improvement:

Short-term objectives and actions (0-2 years) —

1. Complete searches and hire faculty for positions in (1) geographic information systems and landscape ecology; (2) human dimensions, natural resource recreation and tourism; (3) quantitative silviculture; (4) water resource economics and policy; and (5) wildlife disease ecology.
2. Change the name of the Warnell School of Forest Resources to the Warnell School of Forestry and Natural Resources.
3. Obtain approval for a new major under the BSFR degree in natural resource recreation and tourism.
4. Evaluate the need for new faculty members in the forest business and fisheries programs.
5. Readvertise and reopen the search for an urban and community forester (teaching/outreach appointment).
6. Increase the number of women and underrepresented ethnic groups among the faculty, staff, and students.
7. Evaluate the possible causes for the recent declining student enrollments in the Warnell School and hire an additional student recruiter to increase student enrollments in all majors within the School.

8. Work with the Institute of Ecology and Division of Biological Sciences to assume instructional responsibilities for the University's courses in Mammalogy, Ornithology, Herpetology, Ichthyology, and Animal Behavior.
9. Increase the number of Warnell School students studying abroad and establish a scholarship program to help defray the cost of study abroad programs.
10. Develop a new interdisciplinary certificate program in community and urban forestry.
11. Encourage and better recognize faculty and staff for their efforts in outreach and service activities.
12. Evaluate the current use and future need for non-faculty instructors, and appropriately reward those support staff who are assigned additional instructional duties.
13. Increase alumni giving, both in terms of dollars and participation percentage.
14. Increase assistantships and scholarships available to students.
15. Continue to increase non-state budget dollars (grants and contracts).

Mid-term objectives and actions (2-5 years) —

1. Obtain commitment for a new building to provide more office, classroom, and laboratory space.
2. Obtain approval from the Georgia Legislature for faculty and support staff positions in three new initiatives — (1) sustaining forest industry, (2) maintaining Georgia's forests, and (3) managing and conserving urban forests and related natural resources.
3. Increase student numbers to 250 undergraduate and 175 graduate students.
4. Integrate distance learning into nonresident instruction to provide continuing education opportunities for more citizens in Georgia.
5. Update the Warnell School's website to make it more interactive and add more information on the wise use, conservation, and preservation of natural resources.
6. Evaluate the need for and, if appropriate, develop on-line continuing education modules to serve working natural resource professionals.

7. Evaluate the need for and, if appropriate, develop a new interdisciplinary certificate program in conservation/environmental education by working cooperatively with other University departments.
8. Evaluate the need for and, if appropriate, develop a new interdisciplinary certificate program in forest engineering by working cooperatively with other University departments.
9. Evaluate the need for and, if appropriate, expand the Warnell School's program in international forestry and natural resources.
10. Work with Georgia Ports Authority to add faculty expertise in International Trade in Forest Products as a component of the Center for Forest Business.
11. Evaluate the need for and, if appropriate, expand the Warnell School's program in the legal aspects of forestry and natural resource policy.
12. Develop an avian research facility to support instruction, outreach, and research programs in the ecology and management of game and non-game birds.
13. Develop a fisheries and wildlife genetics laboratory.
14. Evaluate the need for and, if appropriate, develop a short-term (1-3 weeks), management development academy aimed at mid-level professionals to improve business skills (personnel management, strategic planning, budgeting, communication, and the legal aspects of business).
15. Partner with forest industry and other programs on campus to create a credible forest products development/marketing effort.
16. Increase the size of the MFR program with a special emphasis in forest business.
17. Increase the number of endowed chairs to eight by 2010.
18. Reach Capital Campaign goal of an additional \$25 million for the Warnell School's endowment.
19. Grow to become a College of Forestry and Natural Resources.
20. Evaluate the need for and, if appropriate, develop mechanisms for delivering Warnell School programs to other institutions of higher education within the University System of Georgia.

Long-term objectives and actions (5-10 years) —

1. Build a new building to provide more office, classroom, and laboratory space.
2. Establish dual degree programs with sister universities in Africa, Asia, Europe, Oceania, and South America to facilitate exchange and experience of both faculty and students.
3. Increase the number of outreach faculty with joint appointments (outreach/instruction or outreach/research) to more effectively translate and disseminate research findings to society, especially in water resources, fisheries, urban wildlife, and tree health care areas.
4. Evaluate the need for and, if appropriate, develop a MFR degree for online education in professional community forestry and environmental management.
5. Hire a forest pathologist and develop a national Center for Tree Health Care to serve research and outreach needs.
6. Increase endowment to \$75 million.
7. Increase student numbers to 400 undergraduate and 300 graduate students, assuming the Warnell School's facilities and faculty are sufficient to effectively teach this number of students.
8. Evaluate the need for and, if appropriate, establish a Center for International Trade in Forest Products and/or a Center for Global Natural Resource Conservation, Policy, and Law.
9. Evaluate the need for and, if appropriate, create an Institute for Tropical Natural Resources Conservation and Research.
10. Evaluate the need for and, if appropriate, develop a Center for Southern Ecosystem Studies.
11. Develop a graduate program for training students in outreach and service learning.