

DEPARTMENT OF FOREST RESOURCES STRATEGIC PLAN

Contents	
INTRODUCTION	1
MISSION.....	2
VISION AND GOALS	2
BACKGROUND	3
STRATEGIES	4
<u>FUNDING</u>	5
<u>FACULTY CAPACITY FOR TEACHING, RESEARCH AND EXTENSION</u>	7
<u>COMMUNICATIONS AND DEVELOPMENT PRIORITIES</u>	9
<u>STUDENT RECRUITMENT</u>	10
<u>FACILITIES</u>	10
<u>COMMITTEE ROLES AND SERVICE</u>	10
ACKNOWLEDGEMENTS / PROCESS	10
LITERATURE CITED AND REFERENCESAPPENDIX	10
APPENDIX	11

INTRODUCTION

This strategic planning document describes the mission, vision, goals, organization, opportunities and aspirations of the Department of Forest Resources, plus strategies and action steps. This document is especially important as the first strategic plan for the Department under the framework of the new college (CFANS) and in response to changes in the University due to the implementation of the institution's *Strategic Positioning*. From the standpoint of stakeholders, the roles and opportunities for students, industry, state and federal governments, nongovernmental organizations, and landowners has also changed considerably in the past decade.

This strategic plan identifies a unique and important set of roles, goals and aggressive strategies for FR programs. Successful execution of these strategies will strengthen the College and University, raise their relevance and visibility in the environment and natural resources arena and provide substantial benefits to stakeholders.

MISSION

The core mission of the Department of Forest Resources (FR) is to advance the science and management of forest and related natural resources, to develop the next leaders in science and management through undergraduate and graduate education, and to serve citizens of the state, country, and world through broad-based outreach.¹ We do so by unique research and education that informs the conservation, protection, and use of natural resources. We accomplish this through core expertise focused on research and discovery, and education and outreach that integrates and translates the physical, biological, social, and managerial sciences. We target issues that are local to global in scale seeking opportunities and solutions to problems that enhance our natural resources and the benefits they provide to society.

FR plays a lead role in keeping Minnesota's natural resources sector connected, sustainable, and competitive as new challenges arise in the areas we research and integrate. Our education, research, and outreach also involves and informs such interests regionally, nationally and internationally. We foster scholarship to understand how physical, ecological, economic, and social systems function and interact, and to support intelligent management of natural resources given social, economic, and other constraints. Our work addresses the interrelatedness of physical and ecological systems (e.g., forest health and productivity, climate change), new technologies (e.g., renewable energy), and the economic, communication, and policy issues and solutions associated with these areas.

As a department closely identified with the University's historical, land grant roots, our programs strengthen the University's core mission and support the University's "top three" goal through a cross-disciplinary approach to complex problems and corresponding translational research efforts. Furthermore, our proximity to and involvement with public agencies provides a nationally unique capability for scientific support in the areas of planning and policy analysis. More detail on this mission and program effectiveness is provided in the Appendix.

VISION AND GOALS

The vision of FR is to be a leader in advancing natural resources scholarship by providing extraordinary education, breakthrough basic, applied and integrating research, and outreach. This vision includes recognition as one of the top three forest resources programs in the nation for instruction, research, and public engagement. Major components of this vision are articulated in the following goals:

- Position the University to develop crucial forest and natural resource conservation, health, protection, and management systems for the 21st Century
- Position the University as a national center of excellence in research related to global climate and environmental change, renewable energy, economic competitiveness, and associated environment and natural resource management policy.
- Position the University as a global leader in integrative interdisciplinary graduate and undergraduate education as well as extensive public engagement.

¹ In developing this plan, we are guided by Minnesota Statutes Chapter 89.001 Definitions... "Forest resources" means those natural assets of forest lands, including timber and other forest crops; biological diversity; recreation; fish and wildlife habitat; wilderness; rare and distinctive flora and fauna; air; water; soil; and educational, aesthetic, and historic values. Additionally, Minnesota Statutes Chapter 89.66 describes the respective responsibilities of the Agricultural Experiment Station and Extension in providing scientific information on forest resources.

BACKGROUND

The Department of Forest Resources (FR) has a more than 100-year history in research, education, and outreach. There is a legacy of direct and indirect benefit to several overlapping communities, from the community of scientists, with high faculty productivity consistently ranked high among our national peer group, and with one of the five most-cited ecologists internationally, through industry and business, exemplified by leadership through the Minnesota Tourism Center and strong links to the Minnesota Forest Products Council, through broad public engagement, and through award-winning and well-patronized extension programs.

The department has 20 tenured and tenure-track faculty plus supporting research, instruction and outreach staff. Several joint and numerous adjunct faculty from other campus units also support the program. The department offers the number one ranked undergraduate forest resources program in the nation (Gourman Report, 1997), consistently ranks among the top six graduate programs (Gourman Report 1998), among the top research program (JF 2006), and for a century has provided graduates who fill leadership positions in natural resources education, research, government, and industry globally (including Nobel Prize winner Dr. Norman Borlaug). More detail on the faculty and programs is provided in the appendix and on the department web site at www.forestry.umn.edu. This website includes information on graduate and undergraduate instruction, research, centers, extension, and outreach.

The department also administers an undergraduate program in Recreation Resource Management (RRM) that has been historically been highly successful in the placement of its graduates. Faculty also contribute substantial leadership, instruction, and coordination of the Environmental Sciences Policy and Management (ESPM) curriculum, which has more than 160 enrolled undergraduate students. This role includes considerable teaching, advising, and service. The faculty participate in a number of graduate programs (e.g., Natural Resource Science and Management [NRSM], Conservation Biology [CB], Water Resource Science [WRS], Ecology, Evolution and Behavior [EEB], Plant Biological Sciences [PBS], and Geography [MGIS]). The NRSM program has eight tracks that encompass FR faculty interests; it is the graduate program most closely linked with the department, though its membership includes faculty from twelve departments across campus.

The FR core mission seeks to equip society to make complex choices on the management of natural resources while protecting and enhancing our environment. Faculty from FR have a long history of actively advising industry, government at all levels, nongovernmental organizations, international entities, and individuals on, forest and natural resource condition and function, risks, policies, new management technologies, and improved practices for the protection and use of our natural resources.

Recent examples of mission-focused efforts include (1) leadership in developing the state's first generic environmental impact statement and follow-up, (2) drafting and working successfully to implement major new state legislation organizing forest management and establishing resource management guidelines for on-the-ground practices, (3) providing new and critical ecological understanding and modeling capability for enabling new national forest plans in the state, (4) leading research quantifying human impacts on biodiversity in forests, (5) leading research to quantify the impacts of climate change on forest and other wildlands, and (6) service and leadership to state and federal agencies in developing the full potential of efforts within the agencies' purview. Examples of service include the Governor's task forces on the competitiveness of the primary forest products industry, tourism in Minnesota, and the Governor's Conservation Legacy Council. In turn these efforts have become models for other states.

Additionally, the faculty has been working as major facilitators of natural resource industry investments in the state and nationally—investments totaling billions of dollars since 1990. Wood products are the nation's leading agricultural crop, and nationally, forest products is a \$200 billion per year industry that employs more than 1.5 million people. In Minnesota alone, the forest products industry generates \$7

billion in annual sales; this sector employs 45,000 people and competes globally. Additionally, forest-based outdoor recreation involving fisheries and wildlife is a key part of the \$9 billion tourism industry. Sustainability of water resources in forested areas and agroforestry and watershed management are also important aspects of the overall FR program. Our relevance will only strengthen, as the fraction of our materials and energy needs furnished by renewable natural resources will increase to 25% by the year 2030, based on prediction by the US Department of Agriculture and the US Department of Energy. Given the University's initiative on Renewable Energy and the Environment and the Governor's initiatives on conservation, climate change, renewable energy, and the forest products industry, we have a unique opportunity to develop the resources, technologies, and policy to maintain national leadership and develop world leadership in renewable resources protection, management, and utilization.

STRATEGIES

This plan will allow us to achieve the strategic goals outlined above. However, while the past successes are substantial, the recent merger of the College of Natural Resources and the College of Agriculture, Food and Environmental Sciences into the College of Food, Agricultural and Natural Resource Sciences (CFANS) has unfortunately sent a message of diminished interest in natural resources by the University. Consequently this plan includes elements intended to achieve both the strategic goals and a restoration of the University's interest in and focus on natural resources. The plan elements are outlined in the following sections.

- Strategies for goal 1: Position the University to develop crucial forest and natural resource conservation, health, protection, and management systems for the 21st Century.
 - Increase research and extension support for parity with other CFANS Units through specific state special funding
 - rename as School of Forest Resources
 - Maintain federal Hatch funding
 - Enhance RREA funding share
 - Link Cloquet Forestry Center administratively to Forest Resources
 - Fill a natural resources analysis/GIS extension position
 - Add key positions in forest ecosystem health
 - Fill a forest health position
 - Create a Forest Resources advisory committee

- Strategies for goal 2: Position the University as a national center of excellence in research related to global climate and environmental change, renewable energy, economic competitiveness and associated environment and natural resource management policy.
 - Refill vacant positions and pending retirements, particularly in hydrology and water quality
 - Maintain federal Hatch funding
 - Increase secured grant funding to \$3.5 million annually
 - Expand laboratory space
 - Build endowment to \$25 million by 2015

- Strategies for goal 3: Position the University as a global leader in integrative interdisciplinary graduate and undergraduate education as well as extensive public engagement.
 - Increase instructional support by refining CFANS instructional accounting and allocations
 - Build stronger program links and recognition within the ESPM division, College, University and stakeholders
 - Rename as School of Forest Resources
 - Hire student recruitment staff to increase undergraduate enrollment
 - Hire graduate program staff
 - Build endowment to \$25 million by 2015
 - Develop and publish a departmental newsletter

FUNDING

The funding goal for the department is financial support parity with comparable CFANS units, and commensurate with the mission, vision and potentials of FR as described in this document. This section outlines priorities and strategies for enhancement of the funding that underlies major areas of departmental activity.

Instructional funding: We seek greatly increased instructional support to achieve department and CFANS strategic goals. A key to achieving these goals is the allocation of instructional funding proportional to instructional revenue generation. Last year FR received \$60,000 of the CFANS instructional support pool funding, representing 5.6% of the College's instructional allocation. We note that for 2006-07, FR generated 14% of the CFANS instructional revenue. The strategy for increasing the allocation is articulation of the advantages of such improvements as incentives for the department and College overall.

State Special: We seek increased research and extension support for parity with other CFANS units, and, most importantly, to achieve FR, CFANS, MAES, and Extension goals. Specifically, we seek recognition in the state by special initiatives that address forest and related natural resources. State special funding of FR research provides a major part of departmental capacity, yet it is considerably less than for other CFANS units. Extension support to FR is very limited compared to other CFANS units, yet the number of forest landowners in Minnesota has grown dramatically in recent decades (to more than 150,000 today). As a strategy for improvements, FR will articulate potential roles and new initiatives for the department in state special planning to inform both College planning and the director of the MAES and Extension.

Federal Formula Research funding: FR currently receives approximately 60% (approximately \$300,000) of the state allocation of federal monies under the McIntire-Stennis (M-S) Cooperative Forest Research Program. Given strong stakeholder interests in forest and related natural resources research, it is imperative for the FR share of M-S funding be enhanced as these funds grow in magnitude (from the current \$24 million in USDA CSREES to approximately \$30 million and beyond). Additionally, we seek to maintain the department's current percentage share of Federal Hatch funding as this program grows, especially in view of increasing interests in water quality, agroforestry and energy. The department head has historically played a leadership role in the National Association of University Forest Resource Programs (NAUFRP), which has been the leader in articulating and fostering support of the M-S program in the National Association of State Universities and Land-Grant Colleges (NASULGC), federal agencies, and among industry and landowner stakeholders. Consequently our strategy will be continued active participation in NAUFRP and articulation of the importance and potentials of the M-S program (and the Hatch program) to stakeholders and decision-makers.

Federal Formula Extension funding: FR currently receives approximately 30% (approximately \$20,000+) of the state allocation of federal monies under the Renewable Resources Extension Act (RREA). Given strong stakeholder interests in forest resources and related natural resources extension, we seek an enhanced share of RREA funding as these funds nationwide grow in magnitude (from the current \$4 million in USDA CSREES). Additionally, the FR percentage share of Federal Smith-Lever Act Extension funding should also be maintained as this program grows. The NAUFRP was a leader in establishing the RREA program. Consequently, as with the M-S program, our strategy will be to articulate further support through NAUFRP, Extension, and the University as appropriate.

Grant and contract funding for research and outreach: With new support systems in place for competitive grant proposals, we seek to grow departmental grant funding to a target of \$3.5 million annually in the next five years. The department has successfully competed for and brought in approximately \$2.5+ million annually as measured by either new grant awards or sponsored fund expenditures. With fulfillment of funding and staffing plans outlined in this document, the grant

support target would move to \$4.5+ million annually. Our strategy is to commit the entire faculty to writing proposals seeking substantial project funding from foundations, agencies and competitive grant programs. Doing so will also increase grant indirect cost funding to CFANS and FR.

ADMINISTRATIVE PRIORITIES

A goal for the department is to build stronger program linkages and recognition within the ESPM Division, the College, the University, and with stakeholders. The following strategies are considered key to success in this effort:

Designation of the Department as a *School of Forest Resources*. Elevation of the department to a *School of Forest Resources* is a vital step in the restoration of the University's image as a leader in forestry and related natural resource education, research, and outreach. This step would provide greatly improved state, national, and international visibility. We note that among the 69 NAUFRP programs, 11 are named as *schools* of forestry; 6 are designated as *colleges* of forestry. Such naming would also foster the unit's distinctiveness and ability to increase enrollment, endowments, and sponsored funding, and assist in the recruitment of the best students and faculty.

Assignment of the administrative home for the Cloquet Forestry Center (CFC) to the Department (or *School*) of Forest Resources. FR was functionally the home for the CFC from its inception until the School of Forestry developed a departmental structure in the 1960s. Also, most of the CFCs coordinators have come from the ranks of FR faculty. Additionally, FR is the leading user of the CFC and such a change would in no way limit other uses and users. This step would also facilitate administration of the Wilderness Research Center (WRC), now handled operationally by the CFC. A natural, strong programmatic tie between the WRC and FR already exists, but would be enhanced by an explicit FR-CFC linkage. This linkage has additional advantages including an administrative home closely aligned by subject matter with the CFC, improved FR/CFC visibility and research investment potential (via grants), and a more effective basis for building outstate support for forest resources and related programs, e.g., legislative support of facilities and faculty positions at the CFC.

Additional support staffing for enhancement of selected program areas. FR plans to add support staffing in the areas of (1) student recruitment and stakeholder relations, (2) graduate programs, and (3) laboratory operations. The first of these will be implemented with gift/endowment funding. Funding for the remaining items will be sought from within the College, the University, and via gifts from outside donors. The laboratory operations would assist researchers and instructors in the areas of remote sensing and geospatial analysis and forest biology, ecology, genetics, silviculture, and hydrology.

FACULTY CAPACITY FOR TEACHING, RESEARCH, AND EXTENSION

This section outlines goals and strategies for growth of the capacity that underlies core subject matter areas of present and potential activity. The tabulation below outlines current staffing. The staffing goal is 25 core faculty members in professorial ranks. This goal would ensure the top three ranking indicated as part of our vision. Additionally, it represents a capacity that would effectively cover instructional demands for FR, RRM, and ESPM curricula. Note that most current faculty members are located on the St. Paul Campus; two are located at the North Central Research and Outreach Center in Grand Rapids. However, all faculty members participate in our undergraduate and graduate instructional programs.

<u>Department of Forest Resources - Existing Staffing*</u> (assist, assoc, & full professors, A & B appointments)	<u>Full Time Equivalent</u> (FTEs)
Ek (A) -measurements & resource analysis	
TBD (B) -recreation resources management	
Bauer (A) -remote sensing	
Baughman (A) -forest management	50% Admin; 50% Ext
Becker (B) -natural resources and environmental policy	
Blinn (A) -forest management, economics, harvesting	70% Extension
Burk (A) -resource assessment, information systems	
Brooks (A) -hydrology and watershed management	
Bolstad (B) -geographic information science and systems science	
Hoganson (A) -forest management, economics, planning	90% NCROC
D'Amato (B) -silviculture, vegetation management	
David (B) -forest genetics	located at NCROC
Johnson (A) -urban & community forestry	
Kilgore (B) -economics, natural resource policy	
Knight (B) -remote sensing & geographic information systems science	40% SWC
Montgomery (B) -forest ecology, ecophysiology	
Nelson (B) -human dimensions (new position since 1992)	40 % FWCB
Reich (B) -forest ecology, ecophysiology	Endowed chair
Schneider (B) -recreation resources management & tourism	
Snyder -atmosphere-biosphere modeling	60% SWC
Stafford (B) -applied statistics	
Gustafson (A) -tourism	Tourism Center/Extension
Messer (A) -tourism	Tourism Center/Extension

*Plus other frequent P&A teaching faculty- with various teaching, research and extension appointments.
(e.g., Current, Domke, Enzler, Frelich, Jenks, Rich, Splett, Vogt)

The above staffing assumes the retention and refilling of positions with retirements and resignations. Potential additional positions that would address important issue areas and revenue generation are:

Faculty position possibilities for the future for teaching, research and extension

- forest ecosystem health (restoration of S. Seybold and/or D. Gilmore position)
- forest water quality (return of J. Perry position from FWCB to FR)
- natural resources and environmental policy and law
- forest genetics and molecular biology or genomics (formerly G. Furnier position)
- forest management and planning (formerly D. Rose position)
- landscape ecology / land use planning / geographic information systems
- natural resources analysis / geographic information systems
- natural resources industry and natural resources as raw materials
- agroforestry and international forestry
- forest soils ecology and management
- forest / wildlife habitat management

Proposed regular faculty positions: Given these potentials, the top priorities at this time are:

(1) Forest ecosystem health: This position would interact with silviculture, forest ecology, forest entomology, and forest pathology faculty to extend our research and integration capability in the areas of forest productivity and adaptation to impacts of changing environments. We view this as an important unifying position. Given our already world class programs in forest ecology and resource monitoring (e.g., the Remote Sensing and Geospatial Analysis Lab [RSGL]), the department is well positioned to be the leader in research and assessment of forest health and productivity in the face of myriad regional to global changes. We also have access to unique facilities including the Cloquet Forestry Center, Wilderness Research Center, the Cedar Creek Natural History Area, and close proximity to the USDA Forest Service Northern Research Station on campus and in the region. Potentials for research funding and instructional revenue are also substantial. This might be viewed as a replacement for the S. Seybold and/or D. Gilmore positions.

(2) Forest water quality: This position is critical in terms of great existing and potential demand for coursework and for research contributions as society attempts to mitigate the impacts of changing land use, intensive forestry and agroforestry management. Existing course offerings in this area are sought by students in numerous majors. The role of watershed management in water quality and sustainable natural resources systems is articulated in a number of ways by the FR directly, for example via the Center for Integrated Natural Resources and Agricultural Management (CINRAM), and also through our participation as faculty supporting the Water Resources Center (WRC). However, staffing is insufficient compared to the demand. This is a critical activity for Minnesota's future. Filling it would also accomplish the return of the J. Perry position to FR.

(3) Natural resources and environmental policy and law: This position would add great breadth, capacity, and depth to ESPM and related environment and natural resource curricula offerings. Coursework in this area is in great demand by students. In research, it would also add greatly to capacity and stature for CFANS in the increasingly important areas of policy evaluation and policy development for addressing environmental issues. The College has considerable capacity in the physical and biological science areas, but very modest staffing in the social sciences, notably in the applied areas that would be addressed by this position. Thus we are limited in vision for research direction and implementation of findings in society. The area of natural resources and environmental policy as addressed by the FR has produced shaping contributions to the state for over a century. Modest support to expand capacity in this area would pay major dividends, especially for environmental quality, investment and sustainability issues.

Proposed Extension faculty positions: The top priorities at this time are:

(1) Forest health: This position would interact with the above forest ecosystem health position and silviculture, forest ecology, entomology, and plant pathology faculty to extend research findings to stakeholders in industry, agencies, and among natural resource professionals landowners. The coming decades will carry major forest health issues and associated resource management needs for both rural and urban forests. We view this as an important unifying position in Extension. Potentials for research funding and extension revenue are substantial. This position might be located in St. Paul to operate statewide or in Cloquet or Grand Rapids to work with state agency staff to address regional issues.

(2) Natural resources analysis / geographic information systems: This campus-based position would support increased depth for a wide range of environment and natural resources extension statewide by especially instructive analysis, synthesis, and communications. This position would have close linkages with the University's campus-based Remote Sensing and Geospatial Analysis Laboratory (RSGL) facilities and associated faculty. The RSGL integrates satellite-based remote sensing capabilities with geospatial analysis and information technologies that inform a wide range of basic science and natural resources focused application areas, including land use change and global climate change. This hiring would also position Extension and CFANS well for federal funding in support of such efforts.

All of these position options have considerable revenue generation potential in teaching, research or extension. However, they will be studied and outlined further to provide more detail for specific case and position descriptions...for these positions and possibly others. One or more of these positions

should be located at Cloquet or Grand Rapids to interact with stakeholders, federal agency scientists or specific forest resources. We do know that the preferred tenure home and most effective location for such regular faculty is in a unit focused on forest resources. In the case of extension faculty, they would likewise look first FR for subject area support.

Finally, as we suggest the above positions, there is great potential for FR success in the areas below that we have not yet fully articulated in terms of corresponding position priorities.

- The role of natural resources in economic development has been substantial. Natural resources-based industry including tourism is an area where FR has been very visible and effective for the state. Support in terms of applied research, local to global opportunity analysis, and sector-specific educational programs would be important to a wide range of stakeholders.
- The areas of biotechnology and genomics have had a strong funding commitment in the University. Forests cover a third of our land base and therefore offer much potential for applications. Yet the funding in these areas so far is very laboratory focused and operating with little connection to the potentials and problems with applications to woody plants and forests. Support for translational research efforts in the department could offer real applications potential and widespread instruction on implications of the technology, environmental and economic, that this area sorely needs for an informed student body and stakeholders.

COMMUNICATIONS AND DEVELOPMENT PRIORITIES

Improving communications and development are both key to maintaining leadership and enhancing departmental programs. Given funding trajectories, the long history of our program, the strong public interest in environmental solutions, and our longstanding relationships statewide and through national communities, we believe our endowment funding can be substantially increased. Improved communications is a part of this, and also key to recruiting, education, and serving the interests of our broader constituencies. We envisage an expanded joint communications and development effort, as these two subjects are increasingly important and linked. With the help of CFANS communications staff, the department has been improving its communications on the web in program marketing in general. With the help of CFANS development staff, the department has been organizing its fund raising efforts. A goal for FR is to reach an endowment total of \$25 million by 2015.

Presently, the department has approximately \$10 million in endowments that fund scholarships, fellowships, and an endowed chair position. A recent large gift has also aided operations. In total, the department now administers endowments for 18 named scholarship funds, 10 named fellowships, 9 operational funds, and one endowed chair position. Additionally, pending gifts over the next decade total approximately \$5-10 million. Annual giving to the department and its funds is approximately \$50,000. However, the annual and overall potentials are higher with appropriate articulation and attention to this effort. To facilitate reaching the goal for endowments, three new departmental funds have also been established for (1) scholarships, (2) fellowships, and (3) program operations. A dedicated development committee will also assist in this effort.

The F. B. Hubachek Family / Wilderness Research Foundation Endowments are especially large, notable and very shaping for the department, College and University. Consequently, these funds and associated program development will receive special attention from the department head and associated faculty. Close communications with the donors and the University Foundation is essential.

In making this progress in development, extensive and quality communications are essential. Communications from paper to the web and specialized vehicles are crucial today. They are regular ways for reaching prospective students, stakeholders, alumni, donors, and the broader University, professional community and beyond. A part-time editor has been employed but more help will be needed. Various communications vehicles are being considered to enhance this effort. A top priority in communications is a departmental newsletter geared to alumni and stakeholder audiences.

STUDENT RECRUITMENT

Undergraduate recruitment and successful placement is a key to program visibility, University support, and stakeholder support. The addition of a professional advisor has increased our ability to help students complete our programs (FR and RRM) in a timely manner. However, we must increase the undergraduate enrollment. Target enrollments are FR = 100 and RRM = 40 by 2012. ESPM enrollment is expected to be maintained by CFANS and University recruiting. But improvements for FR and RRM will require augmentation of those efforts. Toward that end, a dedicated recruiter and expanded marketing is essential; gift funding will be used to create that position and for marketing support. Recruitment will also require considerable communications support.

FACILITIES

Green Hall is widely recognized as the home for the University's forest resources programs. However, it was last remodeled in the early 1990s and today lacks certain specialized research equipment and teaching laboratory accommodations. Such improvements would greatly facilitate the work of the proposed faculty positions and allow the offering of more laboratory experience to undergraduate students. Needed FR laboratory and office space has also been compromised by crowding due to lack of progress on remodeling on the northern portion of the St. Paul Campus. Moving toward FR goals in staffing and revenue generation will require attention to these space needs.

COMMITTEE ROLES AND SERVICE

FR faculty and staff serve on a wide range of College and some University committees. Below is a list of present and planned departmental committees and roles. The department head is ex-officio to all committees. The collective role of these committees is to advance departmental vision and strategic goals per the above strategies.

ADVISORY COMMITTEE (with external stakeholders)
CURRICULUM COMMITTEE
DEVELOPMENT AND COMMUNICATIONS COMMITTEE
GRADUATE STUDY COMMITTEE
MENTORING COMMITTEE
RECRUITING COMMITTEE
SCHOLARSHIP AND AWARDS COMMITTEE
SEMINAR COMMITTEE
STUDENT CLUB/ORGANIZATION ADVISORS

ACKNOWLEDGEMENTS / PROCESS

This draft was first assembled from department planning conducted over the past decade and refined by comments received at and as a result of a (12/13/2007) faculty meeting. Subsequently, more input was received from a faculty subcommittee charged with a further review, comment, and refinement. Additional review and comment will also be sought from outside stakeholders. Finally, it is anticipated the document will continue to undergo discussion, review and refinement as the Department, college and University needs evolve. At the department level, an annual review is planned.

LITERATURE CITED AND REFERENCES

APPENDIX

CORE MISSION OF THE DEPARTMENT

Description: Further to the mission as stated at the beginning of this document, the uniqueness and centrality of the mission is clear in the state statutes (reference these here). The nature and importance of this mission is evidenced by its breadth, depth integration and translation necessary to support stakeholders, which includes students; 150,000 forest landowners in Minnesota, and millions nationally; tens of thousands of natural resource industry employees; professionals working in education, government and industry; the hundreds of thousands of Minnesotans who use our natural resources for outdoor recreation annually; and society as a whole. We are also the only state higher education unit offering B.S., M.S., and Ph.D. degrees in forestry and related areas of natural resources science and management—and one of the top such programs in the nation. Further, our graduates are in great demand—with employment success rates near 100 percent. Finally, we bring unique understanding of subject matter and implications to University of Minnesota students in a way that only an involved land grant institution can accomplish.

To address its mission and focus on discovery, integration and translation, the department employs several types of faculty by subject matter expertise. These areas of expertise may be described as:

- Forest biology, ecology, silviculture, conservation, and management
- Environment and natural resources economics, policy, and management
- Human dimensions of natural resources and the environment
- Recreation resources, tourism, and environmental education
- Forest hydrology and watershed management
- Resource assessment, modeling, spatial analysis, and information systems

This mix of backgrounds is unique in the University yet it works very effectively together and with others on campus and beyond. It provides for a highly interdisciplinary and integrative environment for discovery and learning. In part this is because of one common thread in faculty backgrounds—a strong interest in and formal education in the conservation and management of natural resources.

Education: An education in the curricula we advance involves the integration of biological, physical, social and managerial sciences with technology and interdisciplinary understanding and skills that is uncommon and unique in a university education. Specialization in any one or a few of these areas can not produce the overall capability we provide and for which society has consistently expressed a need. Our curricula involve intense integration of diverse subject matters. At the graduate level, most students enroll in the Natural Resource Science and Management program which likewise provides an integrating experience. Our graduates then fill the ranks of professional resource managers, technical specialists, scientists, and educators. Additionally, the need for graduates of our programs is very high—both state and federal employers anticipate a very high (40-46 percent) workforce turnover in the coming decade (largely through retirements). At the same time, changing technologies and increasing demands on natural resources professionals requires increasing attention to continuing education.

Research and Outreach: In terms of research, the department provides basic to applied and translational work central to the needs of our stakeholders. In forest ecology, remote sensing and geospatial analysis, and natural resources related policy, we lead the University and faculty are among the leaders in international scientific circles. In turn, the faculty often lead interdisciplinary research and outreach efforts because of their breadth of knowledge and translational skills. For example, we are the home of the University's Tourism Center, the Remote Sensing and Geospatial Analysis Laboratory, the Center for Environment and Natural Resources Policy, the Center for Integrated Agricultural and Natural Resource Management, and several University-industry-government research and outreach cooperatives and entities. Further, the potentials of modern biological research are limited without the translational function of our program. FR functions both to inform basic science of problems and opportunities and

to develop solutions that are effective and acceptable from social, economic and environmental perspectives.

Support and Effectiveness: Per annual CFANS reporting, we are among the most entrepreneurial units in the college. We produce the most instructional revenue per dollar of instructional support, substantial ICR per dollar invested, and lead natural resource outreach efforts. The department has also been especially effective in leveraging to build capability and revenue generation. Examples of leveraging and cooperation include:

- University-government-industry research and technology transfer cooperatives
 - Minnesota Tree Improvement Cooperative (MTIC)
 - Aspen / Larch Genetics Cooperative
- Great Lakes Northern Forest Cooperative Ecosystems Studies Unit (GLNF CESU)
 - supporting federal agency needs; we are the host and leader among 17 universities across the region from Minnesota to Maine
- Center for Integrated Agriculture and Natural Resources Management (CINRAM)
 - (with other CFANS units)
- Center for Hardwood Ecology built with major endowment gifts
- Midwest Center for Urban and Community Forestry (with USDA)
- Remote Sensing and Geospatial Analysis Laboratory
 - linking ten departments across the University
- Participation in New Joint Law/Natural Resource Science and Management Degree Program
- Leadership of the Forest Resources Interagency Information Cooperative
- The Tourism Center (with the Minnesota Extension Service)
- The Center for Changing Landscapes (with College of Design)

FR programs further cover a wide range of subject matter, similar to that covered by a large group of departments. By design, the numerous specializations are housed in but a single unit. However, the unit remains of modest size in terms of number of faculty because supporting expertise in forest entomology, forest pathology, forest soils, etc., were distributed historically to other campus units within the then College of Agriculture. For greater effectiveness in faculty recruiting and in operation, we argue these supporting areas should henceforth be developed within FR.