

# Strategic Plan

Department of Natural Resource Ecology and Management (NREM)

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## Background & Current Status

The Morrill Act of 1862 created the Land Grant University system. As the first Land Grant University, Iowa State changed the role of higher education. Prior to the Morrill Act, a university education was reserved for America's aristocracy. With the establishment of Land Grant colleges and universities, the resources of the academy were open to all, regardless of their station in life. They were established as "the people's universities".

In 1887, the Hatch Act was passed by Congress, providing yearly grants for agricultural research stations at the emerging Land Grants. Within a year, all Land Grants had accepted the funding and were conducting research within a decade. While supported by agricultural interests, the research station still had to convince farmers that what they were researching was of relevance.

This social contract of Land Grant institutions, however, goes beyond the provision of classes at the university and research at their stations. With the support of agricultural interests, the Smith-Lever Act of 1914 was passed and the federal mandate of the Cooperative Extension Service was established. The Smith-Lever Act provided federal funding to the universities in support of the extension outreach function. The vision was to extend the reach of the university's research beyond its borders and out into the state, reaching those who had neither the time nor money to attend the university as students. Thus, the coupling of research, teaching, and extension has operated for approximately the past century.

The Department of Natural Resource Ecology and Management (NREM) is a member of the College of Agriculture and was created in 2002 through the consolidation of the former Animal Ecology and Forestry departments. Members of the Animal Ecology Department focused their attention on the interactions of animals with one another and with a wide variety of plant communities and aquatic ecosystems, whereas members of the Forestry Department focused on a wide variety of uses and products that forest communities provide. Both addressed the impacts of humans on the landscape, namely oversimplification, loss of habitat, loss of biodiversity and rapid loss of materials such as soil, nutrients and water from the landscape. Both departments focused research on developing methods for maintaining the remnants of communities and ecosystems native to Iowa. Both departments also worked to develop strategies and methods for restoring perennial communities in the agricultural landscape that are compatible with production agriculture while providing environmental benefits to the landscape. Both departments have worked on ecologically sound ways to diversify Iowa's economy. The consolidation of the two departments combines the expertise of both departments into a unit able to provide holistic solutions to the environmental challenges facing rural and urban Iowa and midwestern landscapes. Members of NREM have a strong history of conducting interdisciplinary research with other departments and local, state, federal and international natural resource organizations and agencies.

Historically and currently NREM has strong undergraduate programs serving the needs of about 430 students (330 Animal Ecology and 100 Forestry). Each major has several options, some of which attract large numbers of students. Graduates find employment with various natural resource agencies or organizations, both public and private, and our programs have been successful in providing the appropriate educational background. The heavy commitment to undergraduate education will continue in the new department. There currently are about 60 graduate students affiliated with NREM. This is fewer than would be expected of a department of this size. Recent and projected faculty retirements have reduced the numbers of graduate students for five faculty members. These numbers are expected to grow and the graduate program will become stronger as new faculty members are hired and integrated into the department.

NREM has a strong research history in the natural resource area. Examples of major contributions include the areas of tree improvement, nursery seedling production, valuation of the wood industry in Iowa, use of woody plants for shelterbelts, riparian buffers, Christmas tree production, fine hardwood woodlot management, urban tree evaluation and culture, composite wood/agriculture fiber products, soy flour based glues for the forest products industry, aquatic habitat management, avian habitat development in agricultural landscapes, population dynamics, predator-prey relationships, age-growth studies of fish, animal behavior, habitat use, habitat management, toxicology, and restoration ecology. Many of these contributions have been made through formal collaborative efforts with the Iowa Cooperative Fish and Wildlife Research Unit (30+ years) and the Leopold Center for Sustainable Agriculture (Agroecology Issue Team) and numerous informal efforts with such groups as the USDA ARS National Soil Tilth Laboratory, the Iowa Department of Natural Resources, Agriculture Commodity Groups, and NGO's such as Trees Forever and others.

The extension program in the department is well known and respected in the state and region, despite having few FTEs committed to it. On the forestry side, the specialist is currently 100 percent Extension, while in wildlife and fisheries/aquaculture, the specialists have split appointments. All three have statewide commitments, and no field staff support them in their natural resources responsibilities. The fisheries/aquaculture specialist also has regional administrative responsibilities. In recent years, the extension program has suffered from severe cuts in its state budget, and has grown only through acquisition of outside funding.

## **Vision Statement**

The Department of Natural Resource Ecology and Management is dedicated to the understanding, effective management and sustainable use of our renewable natural resources through the land-grant missions of teaching, research, and extension. NREM's disciplinary focus is broad in scope, ranging from individual organisms to landscapes, from natural to managed ecosystems, from wilderness to agricultural and urban systems, from local to international environments, and from resource preservation to utilization. Understanding and effectively managing our natural resources requires long-term vision and multidisciplinary approaches involving NREM personnel working with people from other diverse disciplines across the university and within federal and state agencies and non-governmental organizations. NREM reflects a diversity of disciplines, including ecology and other biological sciences, social science, economics, sustainable resource management and utilization, and human dimensions. NREM serves society through the land-grant tradition of working with undergraduate and graduate students, state and federal government agencies, non-governmental organizations, businesses, and the public.

## **Goals**

**University Goals:** The university's strategic plan cites three goals that will assist Iowa State in becoming the best at achieving the land-grant mission. Goal one: Enhance learning through exceptional learner-centered teaching, services, and enrichment opportunities. Goal two: Promote discovery and innovation characterized by preeminent scholarship, including increasingly interdisciplinary and collaborative activities. Goal three: Engage with key constituents through synergistic sharing and partnership of knowledge and expertise to address needs of communities and society. All three goals relate directly and indirectly to the goals and plans of NREM for continued and enhanced excellence in teaching, research and extension.

**College Goals:** The College of Agriculture's draft strategic plan states that "a healthy environment is an important part of the future economic health of Iowa" and that "the College of Agriculture must be a responsive resource for protecting and enhancing natural resources, and for developing new ways to harness the state's abundant renewable resources for the good of society." In support of those ideas, the college has two goals. Goal one: Enhance training in integrated resource management for undergraduate and graduate students. Goal two: Enhance research and extension in natural resources, landscape enhancement, and bioproduct development.

**Department Goals:** NREM is dedicated to the land-grant missions of undergraduate and graduate education, basic and applied research, and extension and outreach. Therefore, we are committed to the following:

- *A strong undergraduate program serving existing majors in Animal Ecology and Forestry and the development of new integrative majors or options in Natural Resource Ecology and Management.*
- *A strong graduate program with majors in animal ecology, fisheries biology, forestry, and wildlife biology, and active participation in interdepartmental graduate programs.*
- *An excellent research program that spans basic to applied sciences, as well as the human dimensions aspects of natural resource management. Meeting the research needs of Iowa citizens, governmental natural resource agencies, and other constituents is of the highest priority.*
- *Highly respected extension and outreach programs and activities that address the many and growing expectations and needs of our stakeholders around the state and nation.*

## **Teaching**

### **Background**

As the department approaches the future, it carries with it a rich history of success as related to teaching and learning. The animal ecology and forestry programs within NREM each have distinguished themselves nationally in their respective disciplinary areas, yet we strive to achieve more and sustain excellence in teaching and learning.

For over a decade, the college and department have set goals to 1) incorporate communication, environmental, ethics, and critical thinking/problem solving intensive activities into our educational programs at the course and curriculum levels; 2) build capacity among our instructional faculty as related to current learning theory, student-centered learning strategies and techniques, and classroom assessment techniques, both formative and summative; 3) integrate teamwork both in the classroom and in the coordination of instruction within our programs; and 4) provide quality experiential learning opportunities through internships, summer employment, and on-campus learning communities.

NREM plays a crucial role in the university in training undergraduate and graduate students for future challenges in natural resource ecology and management. These challenges will be complex and multidisciplinary, and learning in NREM reflects this by employing a diversity of approaches, ranging from the classroom to outdoors, lectures to group projects, on-campus to off-campus activities, and local to international experiences.

### **Goals & Strategies**

Over the next five years, our teaching and learning goals are to:

- sustain excellence in instructional capabilities, curriculum composition and operation, and to focus on teamwork and student-centered learning, and
- capitalize on emerging trends in learning, technology, and outcomes assessment.

**Note on timing:** Because of the two-year production cycle of the university catalog (Bulletin), some of the strategies will need to be applied so that useful information and decisions can be incorporated into the next catalog. Strategic planning for curriculum development must follow a timeline consistent with the development and finalization of the 2005-2007 Iowa State University Bulletin.

For example, decisions related to possible development of a new undergraduate major in NREM must be made by fall semester 2003 so that college, university, and Regent's approval can be obtained prior to summer 2004. Other strategies will be implemented as needed and when personnel and resources are available (see Staffing Strategies, page 12).

Many of the curricular issues that NREM will be considering will also need to be coordinated with other life science departments and interdisciplinary programs, especially the Biology Program and EEOB. The goal of curricular decisions is to provide programs that meet the expected learning outcomes of the university, college, department, majors and options.

**Goal #1: Sustain excellence in instructional capabilities, curriculum composition and operation, and to focus on teamwork and student-centered learning.**

**Strategy 1: Assess existing undergraduate courses and options in terms of their contribution to this goal. Evaluate ways to improve the efficiency and effectiveness of instruction in the undergraduate programs and options.**

- Determine the role NREM should seek to maintain on the Interdepartmental Biology Curriculum Committee and in the teaching of Biology Program core courses.
- Assuming limited resources, determine the degree to which we should follow the general principle that before new options and courses are instituted, an equivalent reduction in existing options and courses should occur. Implement other strategies that would produce greater efficiency and effectiveness in our programs.
- As we plan for the 2005-2007 bulletin, we will determine which courses now in the 2003-2005 bulletin should be dropped or merged with others, what new courses should be added, and the justifications for these decisions. We will also address the following questions:
  - How can we best cooperate with the faculty of other departments and programs to provide the desired learning opportunities for our students and, perhaps, structure some NREM courses to help service the needs of non-majors. This should then tie in with our hiring strategy.
  - How should we integrate our various disciplines into a capstone course in natural resource ecology and management? To what extent should this be done with input from other departments, such as EEOB and Landscape Architecture?
- Assess what blending of instruction and teamwork across animal ecology, forestry and NREM courses should occur to more effectively and efficiently meet the needs of our students and the constraints of our resources.

**Strategy 2: Determine whether, with current resource levels, we can effectively accommodate the large numbers of students (currently 430) majoring in Animal Ecology and Forestry. We will address the following questions:**

- Should we work to reduce these numbers? How could we accomplish the reduction? What should be the target enrollment?
- Should we work to increase resources and try to maintain student enrollment levels? How could we accomplish this increase in resources?

**Strategy 3: Assess existing graduate courses and options in terms of their contribution to this goal and decide on appropriate changes. The assessment will include the following:**

- Decide whether a separate NREM graduate major should be developed. If so, what current majors might be dropped or integrated into the new NREM major?
- Determine the role NREM faculty should play in the various interdepartmental graduate majors.
- Assess the graduate course offerings and decide which should be dropped or transferred to EEOB or other programs.
- Determine what new courses should be developed to support new or existing majors.

**Strategy 4: Assess ways to recruit and retain high quality undergraduate and graduate students in the department**

- Determine strategies to effectively make potential students aware of the changes in our department. What do the high school and community college advisors know about the changes in our programs? How can we improve recruitment of outstanding students?
- Graduate numbers in the department are going to experience a temporary drop with retirements and realignment of faculty to other departments. Special recruiting efforts should be considered to rebuild the graduate student base. Both highly qualified resident and international students should be sought to provide a regional and international perspective to the graduate program.

**Strategy 5: Evaluate international components of the curriculum.**

- Determine if/how international content has been incorporated into courses.
- Assess if/how international content affects recruitment and retention
- Determine the degree to which changing international situations affect the careers of our graduates.
- Assess the content and success of departmentally sponsored or co-sponsored international courses and whether the number of opportunities is sufficient to meet our students' needs.
- Assess the importance of international students in the graduate program, the perspective they provide other students and staff and the department's ability to provide them with meaningful learning and research experiences that transfer useful knowledge and expertise back to their homelands.

**Goal #2: Better capitalize on emerging trends in learning, technology, and outcomes assessment.**

**Strategy 1: Determine what new initiatives should be taken to improve teaching/learning effectiveness in NREM.**

- Continue to provide opportunities and incentives for all faculty to evaluate and adopt learner-centered approaches that are appropriate to their courses.
- Keep abreast of new approaches to learning by participating in programs sponsored by the Center for Teaching Excellence, and similar teaching/learning centers and workshops.

**Strategy 2: Assess new initiatives that could be taken to better assess the effectiveness of our teaching and our student's learning.**

- Implement an effective student learning outcomes assessment program for the department.
- Determine how we might implement a program at the course level so all instructors integrate classroom assessment of learning into their planning.
- Assess how outcomes assessment can be used to develop a more effective and efficient curriculum.

**Strategy 3: Assess how emerging trends in science and technology, as related to environmental stewardship, quality of life, and integration of environmental, socio-economic, and institutional/political factors and models of decision making, might better be incorporated into our curriculum.**

- Decide to what extent these emerging trends should be incorporated into our current majors and options.
- Determine whether a new, more integrative, NREM major should be developed. What would it look like? What would be the student learning outcomes, employment opportunities, and the other justifications for this?

## **Research**

### **Background**

The Animal Ecology and Forestry departments (herein referred to as NREM for simplicity) have had a history of maintaining a stable cadre of faculty and staff that have shaped the research strengths for which the department is well known. New faculty members have expanded programs in natural resource management in urban areas as well as in landscape and restoration ecology. Over the next half decade, a substantial proportion of the faculty of the department will retire, providing significant opportunities to refocus research efforts or strengthen historically strong ones. Members of the department have been successful in the past using both individually focused and collaborative research strategies. With the merger of the two departments, more opportunities exist for collaborative, holistic research efforts in natural resource ecology and

management. Successful collaborative research with nationally and internationally recognized peers will also continue and expand.

The department has been successful in obtaining significant external funding which continues to become more and more important as funding from the Agriculture Experiment Station and the state decrease. Increases in funding will be required to attract top quality graduate students and post-doctoral candidates and maintain state-of-the-art laboratories. Methods must be found to provide graduate students with a tuition waiver. It is also imperative that a number of top quality research associates be maintained to provide continuity to long-term projects that are common in the natural resource ecology and management arena.

The department has few permanent university field facilities at which to conduct research, but an extensive history of working with landowner collaborators provides many on-farm sites in each of the major physiographic regions of the state. These opportunities provide landowner input and immediate feedback on research that is conducted. The department has a significant investment in field equipment for installation, sampling and maintenance of perennial plant communities and for sampling of aquatic communities. Maintenance and replacement of that equipment must continue if a strong field program is to be continued.

## **Goal & Strategies**

**Goal: The department strives to attain national and international recognition for its research program in natural resource ecology and management.**

On January 8, 2003, faculty and staff in NREM participated in a retreat to determine the future research focus of the new department. The session involved most of the faculty and many staff, and was assisted by a professional facilitator. After assessing present strengths and future opportunities, it was determined that the department's research strategy will focus on the following areas: 1) Water quality and watershed-level processes, 2) Agroecology and landscape ecology, 3) Species, communities, and ecosystems of special concern, 4) Bio-product development, and 5) social and economic dimensions of natural resource management.

- **Strategy 1: NREM will seek to identify and evaluate alternative practices for watershed management to improve surface and ground water quality**

Water quality, quantity and timing have been dramatically modified by present day production agriculture, as well as urban development. These modifications have led to significant non-point source pollution problems in surface and ground waters. There is strong consensus that effective placement and management of perennial plant communities can greatly reduce the impacts of non-point source pollution on Iowa's water resources. NREM has a history of studying the biophysical processes of water movement at the watershed scale and developing strategies for improving and maintaining high water quality in Iowa's landscapes. The goal is to continue to develop tools to assess watershed characteristics, evaluate water movement, and measure water quality and aquatic ecosystem health at the watershed scale. NREM also will evaluate

alternative strategies for using perennial plant communities to improve water quality that are compatible with other land uses (production agriculture, urban land use).

- **Strategy 2:** NREM will seek to identify alternative and effective natural resource management practices for agroecosystems, native ecosystems, and urban ecosystems.

The development of the highly productive agroecosystem of Iowa has resulted in the loss of 99% of the original prairie and wetland and 80% of the forest communities in the state. This loss has created non-point source pollution problems, loss of biodiversity and diminution of quality of life for both rural and urban residents in the state. Identification of alternative resource management strategies will contribute to quality of life goals articulated by leaders and citizens of the state of Iowa. NREM has a history of evaluating placement and management of perennial communities in patches and corridors in strategic locations of the agricultural landscape. Research in the department has already led to practices that are supported by the USDA Farm Bill. Future efforts of NREM will continue to focus on identifying strategic priorities for mitigation of the negative effects associated with intensive land use.

- **Strategy 3:** NREM will seek to identify practices suitable to protect or improve the status of species, communities, and native ecosystems of special concern in Iowa and the Midwest.

NREM has a strong history of serving the needs of natural resource agencies in their fisheries, forestry, and wildlife management efforts (e.g. U.S. Fish and Wildlife Service, U.S. Forest Service, Iowa Department of Natural Resources, Natural Resource Conservation Service). NREM will continue to examine the impacts of resource management practices at the species, community, and ecosystem scale, which will complement other work of the department at the watershed and landscape scales. Examples may include development of better management practices for production-oriented systems (e.g. harvestable forest resources, management of fish and game species). In addition, NREM will examine the effectiveness of practices used for landscape-level restoration and protection of vital native communities and ecosystems (e.g. identification and control of invasive species). Lastly, NREM will develop and evaluate techniques to protect or restore rare and endangered species that occur in Iowa and the Midwest.

- **Strategy 4:** NREM will seek to develop and evaluate prototypes of bio-products from resources in the Iowa landscape.

As an agricultural state, Iowa has large amounts of raw plant and animal materials. Much of the raw material produced is sold without processing to add value. NREM has a strong history of developing unique value-added products using a mix of materials from perennial and annual communities. Bio-production opportunities include particleboard products made with mixtures of wood, native grass and agricultural fibers as well as further development of aquaculture systems, and more focused habitat management for production of native fishes and terrestrial wildlife. NREM will conduct research that will lead to product diversification and economic development for Iowa and the Midwest.

- **Strategy 5: NREM will evaluate the human dimensions of natural resource management, including educational, social, and economic factors.**

NREM will work to understand the social impact of existing natural resource policies and will devise natural resource management practices that are congruent with citizen priorities. NREM will expand existing research in the areas of collaborative and adaptive natural resource management to broaden the number of individuals and agencies engaged in natural resource management and use. Inquiries focusing on wildlife-human interactions, land-use decision-making, and human-wildlife disease vectors are examples of anticipated research. So, too, are projects aimed at understanding educational methods and impacts of natural resource education on expanding the public's ecological literacy. Economic modeling to determine optimum natural resource allocation and use will be another focus area for NREM. Conducting participatory research will facilitate the transition from research and demonstration, to outreach and subsequent adoption of new practices in the landscape. Expanding this emphasis on the human dimensions of natural resource use will necessitate collaborative work with allied departments.

**Strategy 6:** NREM will strive to maintain and improve on its strong research reputation through a combination of individual and collaborative research efforts.

NREM will continue to seek interdisciplinary collaboration with other university departments and interdisciplinary programs as well as with state, federal, international, including the College of Agriculture Strategic International Partners, and NGO's to develop projects of regional, national and international importance. The department will establish teams, including collaborators from outside the department, in some or all of the research focus areas who will work collaboratively to secure funding to conduct research. Individual NREM members will also continue to conduct highly focused research in their specific areas of expertise.

## **Extension**

### **Background**

Extension has been through many changes as the university has changed. In the last quarter century, we have seen reductions in the number of field staff stationed in counties, splits in the appointments of campus specialists that once were 100 percent extension, reductions in the absolute dollars and in the percentage contributions of federal and state partners, and changes in the demands and demographics of various client groups. Changes in funding have demanded changes in policies, including, in part, new charges for publications and programming as well as using extramural funding to support basic extension programming. Similarly, technological innovations have changed how extension programs are delivered with increased use of web-based technologies and electronic media. Although extension was once seen as the only provider of research-based information to the public, the public's access to the World-Wide Web has made us only one of many sources—though university-based science, disseminated by extension, is still one of the most trusted sources.

In the past, the research and extension functions of various faculty were seen as mostly separate functions: researchers did research and published in journals read mostly by other researchers and extension faculty translated and took that research to the public. As the university rewards system (i.e., promotion and tenure) became more formalized and institutionalized, disparities between people in these functions (and that of teaching) began to grow. Today, though some researchers also teach, few have extension appointments. In contrast, today's Extension faculty are often split between multiple functions, having expectations in 2, 3, or even 4 faculty functions (teaching, research, extension, and administration). That provides a challenge to the extension faculty but especially to the extension function of a Land Grant university.

Although the Land Grant mission was initially aimed at solving agricultural problems, it rapidly expanded, based on early successes, to other areas of need. Today, extension professionals apply their expertise to a plethora of society's problems and a diversity of clientele. For us, the natural resource problems Iowa faces are similarly diverse: they are not confined to the few large "wild areas" of Iowa that remain. Rather, they cut across the diverse landscape: from rural to sub-urban to urban; across diverse native communities: from forests to prairies to wetlands and streams; and across diverse audiences: from youth to adults to retired Iowans, from English speakers to those for whom English is a second or third language.

The population of Iowa is rapidly changing. Though increasing in number only slowly, Iowans are shifting residences and primary occupations. In contrast to the general conception of Iowa as primarily rural, 60 percent of the state's 2.9 million residents actually reside in urban areas. Of those that live in rural areas, there is a steady decline in those classified as farmers. Iowa farms now number under 90,000 and those are increasing in a bimodal distribution relative to size: very large farms and very small farms, with few of the medium sized farms (160-500 acres) that once dominated this landscape. The number of "rural, non-farm" residents on small acreages is increasing rapidly. Often, those residents have retreated from the city for residence, but still commute to cities for employment. The "full-time farmer" is becoming a rarity as most farmers have off-farm jobs to supplement their farm income. All these trends offer special opportunities and challenges for Extension natural resource programs.

Despite dramatic changes in demographics, there have been few changes in the composition of field extension staff. During extension reorganization in the 1990s, ISU extension administration appointed more specialized livestock specialists to field positions. Despite the dramatic changes in the federal farm bills since 1985 as well Iowa demographic changes, extension resources for natural resources were left largely unchanged. The natural resources of forests and wildlife (and other natural systems) were left to the responsibility of 2-3 FTEs located on the ISU campus and responsible for the whole state.

## **Goals & Strategies**

**Goal #1: NREM extension programming will improve the stewardship of natural resources in Iowa and the Midwest through education.**

**Strategies will include:** meetings, field days, conferences, Master Programs including Master Conservationist, NatureMapping Program, Master Woodland Managers, Community Tree Stewards, multi-state programs and meetings, mass media efforts, publications, and web-based information.

Indicators of success may include meeting evaluations and surveys of program participants, changes in attitudes and behavior, management practices adopted and implemented, level of public service contributions, and the economic benefits obtained from improved management practices.

Almost all educational programming will be done in cooperation with many partners. Partners within Iowa State University include the County Extension offices; departments of Agronomy, Horticulture, Entomology, Plant Pathology, and Landscape Architecture; Iowa 4-H; and the Leopold Center for Sustainable Agriculture. Other outside partners include the Iowa Department of Natural Resources, Natural Resource Conservation Service, Community Forestry Society of America, Trees Forever, Iowa Urban and Community Forestry Council, Iowa Arborist Association, County Conservation boards, Iowa Conservation Education Council, Iowa Association of Naturalists, Iowa Aquaculture Association, Iowa Society of American Foresters, Iowa Woodland Owners Association, and many other local and community organizations

**Goal #2: NREM extension personnel will serve as communicators between researchers and the extension clients.** This goal will strive to better identify researchable needs for the improved management and utilization of the natural resources. NREM educators should facilitate the extension of the research information to the user of this knowledge.

**Strategies will include:** research projects that include extension as part of the project, extension publications and/or popular media efforts resulting from research projects, and cooperative research efforts with landowners and other stakeholders.

Indicators of success may include an increase in departmental and interdepartmental research projects suggested from the field staff and other clientele, an increase in the number of research projects with extension as a component or part of the project, increases in the dollars from research projects designated for extension or publication of the project results, and the number of extension publications and/or popular media efforts as a result of research projects.

**Goal #3: Obtain additional internal and external extension resources for natural resource management in Iowa.** This will enhance our ability to accomplish both goals 1 and 2 (above) by being able to expand our abilities to communicate with and educate the people of Iowa. As the population shifts from traditional agricultural enterprises, there is an increasing need for more education of new rural landowners as well as the increasingly urban population.

**Strategies will include:** the hiring of area extension natural resource specialists with a broad background in wildlife, forestry, and resource management.

# Curator

## Background

NREM teaching, extension and research activities depend on large archives of animal, fish, insect and plant materials. The department presently maintains a museum of mammals and birds in Science I, large collections of birds and mammal specimens in Science II, uses pressed plant materials that are stored in the Bessey Herbarium and in the Dendrology Teaching Laboratory, and uses wood specimens stored in the wood science teaching laboratory. These collections of bird, mammal, fish, herps, and plant species are historically valuable, extensive, and often-used. These are used in a large proportion of undergraduate courses as well as in extension presentations and research projects. In the past, they have been maintained through the expertise and good will of faculty who have now or will soon retire. To find that expertise--or perhaps even expect it--in a new faculty hire is highly unlikely.

**Goal:** Establish a 1/2 time museum-trained person to maintain the collections, add new specimens, and maintain the museum currently in the basement of Science I, the dendrology and wood science teaching laboratories currently in Bessey Hall.

**Strategy:** The vertebrate and invertebrate specimens require the most expertise because of the permits that are needed to keep and handle the specimens. The person in this position would have to hold and maintain state and federal permits, handle the annual load of paperwork, prepare specimens, maintain the chemicals and storage facilities, check out specimens, etc. The animal portion of this position would not a full-time position but definitely would be 1/2 time. It is possible that additional time for this person could be used for maintaining and adding new specimens to the dendrology teaching specimens. This is a collection separate from the herbarium collection and because of extensive handling requires maintenance and replacement. The same person could probably do both jobs with some training. Or collaboration with the herbarium curator might be possible.

## Staffing Strategies

**Introduction:** The need for development of a strategy for the timely replacement of recent retirements, planned retirements that will occur in 2004 and 2005, and the transfer of four faculty members from NREM to Ecology, Evolution and Organismal Biology has been identified. The staffing strategy is based not just on maintaining past stature and programs, but on becoming even better through strengthening traditional animal ecology and forestry programs, and developing a more integrative program in NREM. Following are our goals for a short-term faculty replacement strategy, the personnel constraints that justify those goals, and our strategy for addressing those constraints.

To meet the goals outlined in previous sections, NREM must have a strong faculty and support staff. NREM has the potential to develop outstanding undergraduate and graduate curricula, address critical research needs, and provide excellent extension programs, but must have appropriate and sufficient administrative commitments to achieve excellence as a department.

### **Current and near future constraints:**

Currently, NREM has two unfilled faculty vacancies (Drs. Dinsmore & Franklin), and one faculty member on phased retirement (Dr. Summerfelt). Research productivity and graduate student numbers are down because of these vacancies, and the significant teaching load (including two capstone courses) represented by those positions has been shifted to temporary and non-tenure track positions. In addition, one other faculty member (Dr. Morris) has taken on an additional appointment in teaching (his appointment had been a three-way split of research, extension, and administration). The Fisheries and Aquatic Sciences and Wildlife options will continue into the future and draw significant numbers of students. In order to teach capstone courses in these options, NREM must hire tenure-track faculty with expertise and experience teaching in these areas.

Five other full-time NREM faculty currently meet the needs of the 330 students currently majoring in Animal Ecology (based on Fall 2002 data). Three of these faculty have already scheduled their retirement in June 2004 (Drs. Atchison, Best and Menzel), and the other two (Drs. Morris and Pease) are heavily committed to extension and administration. They will not be able to greatly expand their teaching and advising without adjustments in their other commitments.

Four former animal ecology faculty will transfer to EEOB in 2003 (Drs. Clark, Danielson, Debinski and Downing). They teach courses that are extremely important for our undergraduate majors. These courses include a core course required of all Animal Ecology majors and required courses in four of the six options. In addition, they teach several graduate courses that are taken by some of our undergraduate and many of our graduate students. Based on the transfer arrangements, they will continue to be responsible for the teaching of these courses for the foreseeable future. However, it will be necessary that we resolve issues relating to the listing and support of these courses once the EEOB department becomes functional. In the near term it is more important to recognize that the departure of these four faculty members will increase the advising and committee loads of remaining faculty and significantly impact our departmental research capability in the key areas of terrestrial and aquatic ecology/management as well as water quality.

Other faculty members in the animal ecology area include four federal employees (Drs. Hohman, Koford, Otis and Pierce) who are NREM collaborators and do not teach undergraduate courses or advise undergraduate students. In addition, a new faculty member in Landscape Architecture with a research appointment in NREM (Dr. Miller) was hired in 2002. He will not teach any NREM core courses, but his Landscape Architecture courses may be used by NREM undergraduates as electives.

The need to provide sufficient staffing to meet the commitment to the Animal Ecology major is immediately critical. Therefore, a focus is on replacing the retiring animal ecology faculty. However, forestry lost several positions due to budget cuts. These include a full-time faculty position in wood science, a P&S instructor in agroforestry, and two full-time P&S research associate positions.

In NREM, we wish to integrate the two existing programs and to expand the natural resources focus in the department beyond fish, wildlife and forests. Our vision statement reflects this integration, but in the short term it is critical that we address the existing and impending retirements in animal ecology. How we fill even the present open positions will greatly enhance our opportunities to be a strong, cohesive faculty capable of making a valuable contribution to the College, University and state of Iowa. To that end we suggest that new hires have a holistic approach to their chosen specialties rather than a narrowly focused one to help provide the flexibility that the department will want for future development.

### **Proposed Strategy for hiring new faculty (2003-2006):**

We propose a three-tiered approach to hiring new faculty. Phase one hires have either already been approved or are needed to fill immediate teaching needs and to strengthen research capabilities; these new faculty should be hired this academic year so they can begin no later than Fall 2003. Phase two hires will require more in-depth faculty discussions, and will depend to some degree on hires in phase one, shifts in responsibilities of current faculty, and future developments in the roles of faculty leaving the department. In this strategic plan we suggest likely areas of research expertise for phase two hires. We feel that these positions should be filled by spring or fall of 2004. Phase three will focus on strengthening NREM in existing areas and developing new integrative areas. This will clearly take a great deal more discussion.

### **Phase One (2003)**

- **Landscape Ecology with background in GIS/Spatial Statistics Assistant/Associate Professor** – This faculty position will help integrate research expertise in animal ecology, forestry and other aspects of natural resource ecology and management. It is important to provide students with contemporary theory, applications, and technology in landscape analysis for studying complex ecological systems. This position has already been approved as part of the reorganization start-up allocation. This person will develop a new NREM course as well as teach one of the core courses depending on his/her expertise.
- **Wildlife Ecology and Management Assistant/Associate Professor** – We prefer an Associate Professor position because of the need to have a person with experience in wildlife research and management and a track record of working with natural resource agencies. We have a present and continuing need for graduate research expertise and coursework in wildlife ecology and management. The primary undergraduate teaching role will be the capstone course for wildlife majors (A ECL 451 – Wildlife Management). Dr. Stafford (part-time faculty member) is currently teaching this course. Unfortunately, Dr. Stafford has indicated that she wishes to terminate or reduce further her position after the 2003/2004 academic year.
- **Conservation Biology/Vertebrate Biology Assistant Professor** – primary undergraduate teaching role would be the vertebrate biology (A ECL 310) course. This person would also be responsible for one of the natural history of vertebrates courses, depending on background. Research interests in conservation biology or some other aspect of vertebrate biology.

## Phase Two (2003-2004)

- Replacement of retirements anticipated in 2003-2005
- Courses to cover after these retirements include two service courses (A Ecl 120, 130), a core course required in all options (A Ecl 312), four aquatic courses (A Ecl 321, 401, 440/540, 442/542; three are required in at least one option), two other undergraduate courses (A Ecl 362, 460), and four graduate level courses (A Ecl 513, 516, 544, 580).
- Research areas to consider based on these retirements: aquatic ecology, especially stream and lake fish ecology; aquatic toxicology; avian ecology, agroecosystems, avian toxicology, fish biology, and aquaculture.
- Meeting critical needs:
  - We should hire an ecologist to teach the Ecology course. We want to maintain a strong presence in that course and continue to co-list it with Biology.
  - We should hire a fish biologist to teach Fish Biology and Natural History of Fishes.
  - We should offer at least one of these positions at the Associate Professor level to avoid having a faculty that is highly skewed towards Assistant Professors in the areas of animal ecology.
- Many other issues will be in consideration during Phase II:
  - We will decide if we wish to continue an involvement in toxicology.
  - We will decide whether we will continue with the non-majors course, Wildlife and Agriculture (A Ecl 130), or if we should combine it with FOR 310 (Management of small forest properties) to develop a new course in natural resource management in agricultural landscapes.
  - Other existing faculty have expressed interest in taking over three of the courses taught by retiring faculty, but taking advantage of some of these opportunities would have repercussions for extension appointments.
  - We may consider expanding the course in Research Methods in Ecology (A Ecl 580) to be offered as an NREM course. If so, we will need to decide if it will be a responsibility of a new hire or an existing NREM faculty member.
  - We will consider whether to hire a new faculty member specifically to team-teach NREM 120.
  - We will consider whether some phase-two hires be aimed at the NREM undergraduate teaching commitments now held by faculty going to EEOB. If so, we can think more broadly about developing new areas of teaching and research in NREM during phase three.
  - Two other, relatively new courses (A Ecl 455 and NREM 460) will be affected. We will have to decide whether to continue offering A Ecl 455 as an A Ecl course or as an NREM course.

As the curricula evolve for the 2005-2007 catalog, it is expected that changes will occur with deletion and/or merging of some options in the Animal Ecology and Forestry majors, and development of a major and options in NREM. There are several cases in which two or more

courses might merge into new, more integrative courses under the NREM designator. Other courses might be dropped. These developments must be considered as we plan new hires in phases two and three.

Preliminary suggestions for phase two hires are listed below. Further discussion with the entire NREM faculty will be needed to decide on the details and to consider other alternatives. Phase one hires may affect these decisions.

- **Natural Resource Ecology Assistant Professor** – primary undergraduate teaching responsibility for the core ecology course for majors.
- **Wildlife Ecology and Management Assistant Professor** – primary undergraduate teaching responsibility Ecological Methods and Analysis. May wish to return the emphasis in this course more to wildlife habitat and population assessment.
- **Fish Biology Assistant /Associate Professor** – primary undergraduate teaching role in Fish Biology and Natural History of Fishes. Research interests in fish physiology, fish health, or fish ecology.
- **Aquatic Ecology Assistant/Associate Professor** – primary undergraduate teaching responsibility for Aquatic Ecology and Lab. This may be team-taught with an EEOB faculty member and may include Identification of Aquatic Organisms. Research interests in water pollution analysis or aquatic toxicology.

### **Phase Three (2004-2006)**

In this section we will not attempt to provide specific suggestions for position descriptions. Choices will depend on the expertise and interests of those we hire in the first two phases, on what new areas we feel will strengthen the department, the status of partnership relations with EEOB, and on additional retirements that may occur.

- Replacement of four former animal ecology faculty who will transfer to EEOB.
- This group currently teaches twelve courses. They include one core animal ecology course, three courses required in at least one option, eight graduate courses, and one course in the Biology program.
- Some of their courses will continue to exist as EEOB courses and our students can access those courses through that department. We can negotiate co-listing or cross-listing with EEOB for some of these. We suggest co-listing or cross-listing several that are required in the Animal Ecology major with NREM as the primary listing. We recognize this is a sensitive area and wish to clearly affirm that appropriate discussions will be undertaken with all interested parties in order to address these needs equitably.
- Therefore, NREM will need to fill positions to teach the five courses (A Ecl 310, 350, 410, 410L, 515) for which it has primary listing and responsibility.

- Other issues to consider:
  - We will need to decide whether we will continue to contribute to Biology. If so, it may be part of one or more of the position descriptions.
  - We will decide how to strengthen existing areas and/or venture into new areas with these hires. We may use them to strengthen our extension programs.
  - We will decide how to strengthen our bioproducts research and teaching components that lost the contributions of one faculty member recently.

# Appendices

## **Appendix A: Overview of Responsibilities of Faculty Lost to Retirement or Transfers to EEOB**

### Tier 1: Retirements of Drs. Franklin and Dinsmore

- Dr. Franklin – 100% teaching at time of retirement. Taught Biol 123 – Environmental Biology, A ECL 451 – Wildlife Biology, and A ECL 551 – Wildlife Behavioral Ecology and advised students in the Wildlife Option. His research area was the behavioral ecology of mammals.
- Dr. Dinsmore – 70% teaching and 30% research at the time of retirement. Taught A Ecl 310 – Vertebrate Biology, A Ecl 363 – Natural History of Birds, A Ecl 455 – International Wildlife Issues, and A Ecl 496/596 – Travel Course (to Costa Rica). He also advised students in the Wildlife Option. His research was in avian ecology and wetland ecology.

### Tier 2: Retirements of Drs. Atchison, Best, Menzel, and Summerfelt

- Dr. Atchison – 86% teaching and 14% research. Teaches A Ecl 120 – Introduction to Renewable Resources (with Dr. Hall; 50% of a large enrollment course required by all NREM students in addition to meeting the needs of many non-majors), A Ecl 321 – Fish Biology, A Ecl 460 – Controversies in Renewable Resource Management, A Ecl 544 – Aquatic Toxicology. Until recently taught A Ecl 513 – Ecological Toxicology. Research in aquatic toxicology.
- Dr. Best – 55% teaching and 45% research. Teaches A Ecl 130 – Wildlife and Agriculture (non-majors course), A Ecl/Biol 312 – Ecology (with Dr. Jurik in Bot), A Ecl 516 – Avian Ecology, A Ecl 580 – Research Methods. Research in avian ecology, agroecosystems, and avian toxicology.
- Dr. Menzel – 71% teaching and 29% research. Teaching A Ecl 310 – Vertebrate Biology, A Ecl 362 – Natural History of Reptiles and Amphibians, and A Ecl 401 – Introductory Aquatic Animal Health and Medicine. Research in aquatic ecology, especially stream and lake fish ecology.
- Dr. Summerfelt – 37% teaching and 38% research. On phased retirement. Teaches A Ecl 442/542 – Aquaculture. Prior to phased retirement taught A Ecl 440/540 – Fisheries Management. Research in aquatic toxicology, fish biology, and aquaculture.

### Tier 3: Transfer of Drs. Clark, Danielson, Debinski, and Downing

- Dr. Clark – 55% teaching and 45% research. Teaches A Ecl 350 – Ecological Methods and Analysis, A Ecl 588 – Population Ecology, and A Ecl 611 – Analysis of Populations. Research on population dynamics and ecology of vertebrates, statistical estimation, and simulation modeling.
- Dr. Danielson – 49% teaching and 51% research. Teaches A Ecl 413 – Community Ecology and Management, A Ecl 514 – Evolutionary Ecology, and A Ecl 570 – landscape Ecology. Research in landscape ecology and community ecology.

- Dr. Debinski – 58% teaching and 42% research. Teaches Biol 201 – Principles of Biology I, A Ecl 310 – Vertebrate Biology, and A Ecl 531 Conservation Biology. Research in conservation biology and restoration ecology.
- Dr. Downing – 55% teaching and 45% research. Teaches A Ecl 410/410L – Aquatic Ecology, A Ecl 515 – Ecology of Freshwater Invertebrates (with Dr. Morris), and A Ecl 560 – Ecological Resource Management. Research in lake management, limnology, molluscan ecology, biogeochemistry, and nutrient transport.

**Appendix B**  
**NREM Courses - 2003-2005 Catalog**

draft: 10-25-02

Course	Name	Offered	Credits	Instructor	How Used (see footnotes)
AECL 130	Wildlife and Agriculture	S	2-lec	Best	Elective
AECL 130	Wildlife and Agriculture -- Off campus	S		Forsberg	
AECL 211	Careers in Animal Ecology	F	2-lec	Burnett	Req. all AECL
AECL 310	Vertebrate Biology	F	4-lec/lab lab	Dinsmore/Menzel/Debinski Forsberg	Req. all AECL
AECL 312	Ecology	F, SS	3-lec/lab	Best/Jurik	Req. all AECL
AECL 321/521	Fish Biology	S	3-lec/lab	Atchison	Req. F, A, I
AECL 330	Interpretation of Natural Resources	S	3-lec/lab	Pease	Req. I, P
AECL 350	Ecological Methods and Analysis	S	3-lec/lab	Clark	Req. W; RE. I
AECL 361	Natural History of Fishes	F	1-lab	Forsberg	Req. F, I; RE. W
AECL 362	Natural History of Reptiles & Amphibians	S	1-lab	Menzel	Req. I; RE. W
AECL 363	Natural History of Birds	S	1-lab	Dinsmore/Stafford	Req. I; RE. W
AECL 364	Natural History of Mammals	F or S	1-lab	?	Req. I; RE. W
AECL 401	Introductory Aquatic Animal Health & Medicine	F	1-lec/lab	Menzel/Uhlenhopp	RE. F
AECL 410	Aquatic Ecology	F	3-lec	Downing	Req. F, A, E, RE. I
AECL 410L	Aquatic Ecology Lab	F	1-lab	Downing	Req. F, A, E; RE. I
AECL 411	Identification of Aquatic Organisms	F	1-lab	Downing/Crumpton	Req. A, F, RE. I
AECL 413	Community Ecology & Management	S	3-lec/disc	Danielson	Req. E; RE. W, F
AECL 425/525	Aquatic Insects	alt S	3-lec/lab	Courtney	taught by Ent.; RE. A, E, F, W
AECL 430	Media Techniques in Nat. Res. Interpretation	alt F	3-lec	Pease	Req. I

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Course	Name	Offered	Credits	Instructor	How Used (see footnotes)
AECL 440/540	Fisheries Management	F	3-lec/lab	Morris	Req. F; RE. A
AECL 442/542	Aquaculture	S	3-lec/lab	Summerfelt	Req. A; RE. F
AECL 451	Wildlife Management	F	3-lec/lab	Franklin/Stafford	Req. W
AECL 455	International Wildlife Issues	S	3-lec	Dinsmore	RE. E, I, W; International Persp
A ECL 506X	Natural Resource Public Policy (off campus)	S	2	Forsberg	
AECL 513	Ecological Toxicology	on hold	3-lec	Atchison	RE. F
AECL 514	Evolutionary Ecology	alt F	3-lec	Danielson	RE. E
AECL 515	Ecology of Freshwater Invertebrates	alt S	3-lec/lab	Downing/Morris	RE. A, F, I
AECL 516	Avian Ecology	alt S	3-lec	Best	RE. E, I
AECL 518	Stream Ecology	alt S	3-lec	Pierce	RE. F
AECL 520	Fish Ecology (recently only at ILL)	alt S	3-lec	Pierce	RE. E, F, I
AECL 531	Conservation Biology	alt S	3-lec	Debinski	RE. E
AECL 535	Restoration Ecology	F	3-lec/lab	Koford	RE. E, F, I
AECL 544	Aquatic Toxicology	on hold	3-lec	Atchison	RE. F
AECL 551	Wildlife Behavioral Ecology	alt S	3-lec	Franklin/Bowen	
AECL 560	Ecological Resource Management	alt S	3-lec/lab	Downing	
AECL 570	Landscape Ecology	alt F	3-lec/lab	Danielson/Moloney	
AECL 580	Research Methods in Ecology	F	2-lec	Best	
AECL 588	Population Ecology	F	3-lec/lab	Clark	
AECL 611	Analysis of Populations	alt F	3-lec/lab	Clark	

**Appendix B**  
**NREM Courses - 2003-2005 Catalog**

Course	Name	Offered	Credits	Instructor	How Used (see footnotes)
FOR 201	Forest Biology	F	2-lec	Thompson/ Kelly	Required all options
FOR 202	Wood Utilization	F	2-lec	Kuo	Required all options
FOR 203	Resource Measurements/Evaluation	F	2-lec	Jungst	Required all options
FOR 204	Forest Ecosystem Decision-Making	F	2-lec	Colletti	Required all options
FOR 205	Integrated Forestry Laboratory	F	3-lab	Mize and cast of 10	Required all options
FOR 206	Fall Forestry Camp	F	4--3-wk	rotation w/ 2 faculty	Required all options
			off campus	e.g. Colletti-Asbjornsen; Jungst-Thompson	
FOR 280	Wood Anatomy and Properties	S	4-lec/lab	Stokke	FEM, ForProd, Urban
FOR 302	Silviculture	S	3-lec/lab	Hall	Req. all options; AECL RE: W
FOR 342	Dynamics of Forest Stands	F	3-lec/lab	?	FEM
FOR 356	Dendrology (same as Bot 356)	F	4-lec/lab	Farrar/ Asbjornsen:50/50	FEM, NRC, Urban
FOR 402	Watershed Hydrology & Surficial Processes	F	4-lec/lab	Burras/Simpkins	not required / cross-list
FOR 416	Forest Pest Management (same as Plant Path)	S	3-lec/lab	Harrington	FEM, Urban /Relective-NRC
FOR 451	Forest Resource Economics & Quant. Methods	S	4-lec/lab	Rule	Required all options
FOR 452	Forest Ecosystem Management	F	3-lec/lab	Colletti	Required all options
FOR 453	Forest Resource Policy & Administration	S	3-lec/lab	Rule	FEM, ForProd, NRC
FOR 454	Forestry Practicum- (Client-driven Capstone course)	S	3-lec/lab	Colletti	Req. all options; AECL RE: W
FOR 460	Agroforestry Systems	alt F	3-lec/lab	Negreros (possibly)	elective: AECL RE: W
FOR 475	Community Tree Management	F	3-lec/lab	Thompson	Urban /Relective-NRC
FOR 476	Urban Forest Resource Planning & Policy	alt S	2-lec	Thompson	Urban /Relective-NRC
FOR 481	Chemical Conversion of Wood	alt F	3-lec/lab	Kuo	ForProd

**Appendix B**  
**NREM Courses - 2003-2005 Catalog**

Course	Name	Offered	Credits	Instructor	How Used (see footnotes)
FOR 483	Wood Deterioration and Preservation	alt F	3-lec/lab	Kuo	ForProd
FOR 485	Adhesive Bonded Wood Products	alt F	3-lec/lab	Stokke	ForProd
FOR 486	Wood-Moisture Relations	alt S	3-lec/lab	Stokke	ForProd
FOR 487	Mechanical Properties of Wood	alt S	4-lec/lab	Kuo	Required all options
FOR 501	Genecology	alt F	3-lec	Hall	
FOR 504	Advanced Forest Ecology & Silviculture	alt F	4-lec/lab	Hall & Schultz	
FOR 550	Advanced Quantitative Methods in Forestry	alt S	3-lec/lab	Colletti	
FOR 560	Agroforestry Systems	alt F	3-lec/lab	Negreros?	
FOR 570	Resource Allocation in Forestry	alt S	3-lec/lab	Colletti	
FOR 587	Advanced Topics in Wood Science	alt F	2-lec	Kuo/Stokke	
FOR 603	Tree Growth and Development	alt S	4-lec/lab	Schultz	
FOR 654	Advanced Topics in Forest Economics	alt S	1-rec	Colletti	
NREM 110	Orientation in NREM	F	1-lec	Menzel/Burnett	
NREM 120	Introduction to Renewable Resources	F,S	3-lec	Atchison/Hall	Required of all
NREM 120	Intro to Renewable Resources--off campus	F,S, SS	3	Forsberg	
NREM 301	Forest Ecology & Soils	F	4-lec/lab	Schultz/Sandor	FEM, NRC; AECL RE:W
NREM 303	Internship	F,S,SS	1 to 3	Pease	AECL RE: I
NREM 310	Nat Res Management on Small Properties	S	2-Lec	Jungst	Non-majors; AECL RE:I, W
NREM 345	Nat Res Photogrammetry & GIS	F	3-lec/lab	Jungst	FEM; AECL RE:W
NREM 390	Fire Ecology & Management	F	3-lec	Asbjornsen	FOR Elective; AECL RE:W

**Appendix B**  
**NREM Courses - 2003-2005 Catalog**

Course	Name	Offered	Credits	Instructor	How Used (see footnotes)
NREM 407	Watershed Management	S	4-lec/lab	Schultz	NRC; AECL RE: A, E, F, W
NREM 446/546	Integrating GPS & GIS for Natural Resource Mgt	S	3 lec/lab	Jungst	elective
NREM 460	Controversies in Natural Resource Mgmt	F	3-lec	Atchison	Req. P; RE. F
NREM 465/565	Landscape Change and Conservation	F	3-lec/lab	Miller	
NREM 496/596	Travel Course		1 to 3	Pease/Dinsmore Schultz	
NREM 510	Methods for Presenting Scientific Results	S	2-lec	Colletti, Jungst	Req. all FOR graduate students
NREM 532	Human Dimensions of Nat. Res. Mgmt	alt F	3-lec	Pease	RE. F, I
NREM 542	Introduction to Molecular Biol. Techniques				cross listed

Notes: A = Aquaculture, E = Ecology, F = Fisheries, I = Interpretation, P + PreVet and Wildlife Care, W = Wildlife options

RE = restricted elective - students choose from a small set of courses

PreVet Wildlife Care requires two of the four natural history courses (361, 362, 363, 364)

FEM= Forest Ecosystem Management Option

Urban= Urban & Community Forestry Option

ForProd = Forest Products Option

NRC = Natural Resource Conservation Option

Retired; Franklin and Dinsmore

Transferred to EEOB: Danielson, Debinski, Downing, Clark

Will retire in next 2-3 years: Atchison, Best, Menzel, Summerfelt

Not in NREM;

Bowen (Affiliate Assistant Professor), Forsberg (Lecturer), Stafford (Adjunct Assistant Professor-permanent part-time)

Negreros (Affiliate)

### Appendix C NREM Faculty/Staff Involvement in Undergraduate Teaching and Advising

	Teaching Appointment (based on Position Statement)	Level of Advising (F 2002 - see footnote)
Asbjornsen, Heidi	72	0
<b>Atchison, Gary</b>	<b>86</b>	<b>17</b>
<b>Best, Louis</b>	<b>55</b>	<b>22</b>
Burnett, John	0	200
Colletti, Joe	70	10
<b>Forsberg, James</b>	<b>100</b>	<b>0</b>
Hall, Richard	47	4
Harrington, Thomas	16	0
Hawkins, Ann	0	0
Hohman, William	0	0
Isenhardt, Thomas	0	0
Jungst, Steven	85	45
Kelly, J. Michael	4	0
Koford, Rolf	0	0
Kuo, Monlin	48	4
<b>Menzel, Bruce</b>	<b>71</b>	<b>12</b>
Miller, James	50--In Landscape Architecture	0
Mize, Carl	50	2
Morris, Joseph	0	7
Otis, David	0	0
Pease, James	30	28
<b>Pritchard, James</b>	<b>34</b>	<b>0</b>
Pierce, Clay	0	0
Rule, Lita	47	5
Schultz, Richard	50	12
<b>Stafford, Tammy</b>	<b>100</b>	<b>22</b>
Stokke, Douglas	53	8
<b>Summerfelt, Robert</b>	<b>37</b>	<b>0</b>
Thompson, Janette	55	8
Wray, Paul	10	0
<b>Clark, William</b>	<b>55</b>	<b>6</b>
<b>Danielson, Brent</b>	<b>49</b>	<b>6</b>
<b>Debinski, Diane</b>	<b>58</b>	<b>8</b>
<b>Dinsmore, James</b>	<b>70</b>	<b>0</b>
<b>Downing, John</b>	<b>55</b>	<b>6</b>
<b>Franklin, William</b>	<b>100</b>	<b>0</b>
A ECL advising faculty will have an increase as students now with John Burnett choose options.		
About 50-60 students will move to other A ECL advisors		
Total students: A ECL = ~ 330; FOR = 100		
<b>Transferred to EEOB -- still having teaching responsibilities in NREM</b>		
<b>Retired -- teaching percentage based on last year of service</b>		
<b>Will retire in next 2-3 years</b>		
<b>Stafford and Pritchard (permanent part-time Adjunct Assistant Professors)</b>		
<b>Forsberg (Lecturer) -- not permanent</b>		

Appendix D NREM Faculty/Staff Involvement in Research		
Graduate Faculty	Research Interests	Appt. %
Asbjornsen, Heidi	Forest ecosystem ecology, restoration ecology, ecosystem management	28
<b>Atchison, Gary</b>	<b>Aquatic toxicology</b>	<b>14</b>
<b>Best, Louis</b>	<b>Avian ecology, agroecosystems, avian toxicology</b>	<b>45</b>
<b>Bowen, Bonnie</b>	<b>Effects of behavior and ecology on evolutionary processes and genetic structure</b>	<b>0</b>
Colletti, Joe	Forest resource economics, integration of forestry and agriculture, forest management	30
Hall, Richard	Genetic selection and intensive silviculture	53
Harrington, Thomas	Pathogens in forest trees	84
Hohman, William*	Life history strategies of birds, especially waterfowl, wildlife responses to land management practices	0
Isenhardt, Thomas	Landscape buffers, nitrogen biogeochemistry in agroecosystems and aquatic systems, aquatic ecology	100
Jungst, Steven	Remote sensing and GIS	15
Kelly, J. Michael	Forest soils and tree nutrition	94
Koford, Rolf*	Ecology and behavior of grassland-nesting birds	0
Kuo, Monlin	Wood adhesion and adhesives	52
<b>Menzel, Bruce</b>	<b>Aquatic ecology, especially stream and lake fish ecology</b>	<b>29</b>
Miller, James	Landscape ecology, conservation biology, land-use planning, riparian systems	50
Mize, Carl	Forest biometry, forest growth and yield, agroforestry	50
Morris, Joseph	Zooplankton population dynamics, fish culture, fish management, water quality	23
Otis, David*	Population biology, field ecology statistical techniques for use in, restoration ecology	0
Pease, James	Human dimensions of wildlife management	0
Pierce, Clay*	Growth, population dynamics, habitat, and community relationships of freshwater fishes	0
<b>Pritchard, James</b>	<b>History of natural resource management</b>	<b>11</b>
Rule, Lita	Agroforestry, forest economics	53
Schultz, Richard	Restoration ecology, watershed management	50
Stokke, Douglas	Forest products	47
<b>Summerfelt, Robert</b>	<b>Aquatic toxicology, fish biology, aquaculture</b>	<b>38</b>
Thompson, Janette	Urban and community forestry	45
Wray, Paul		0
<b>Clark, William</b>	<b>Population dynamics and ecology of vertebrates, statistical estimation, simulation modeling</b>	<b>45</b>
<b>Danielson, Brent</b>	<b>Landscape ecology, community ecology</b>	<b>51</b>
<b>Debinski, Diane</b>	<b>Conservation biology, restoration ecology</b>	<b>42</b>
<b>Dinsmore, James</b>	<b>Avian ecology, wetland ecology</b>	<b>30</b>
<b>Downing, John</b>	<b>Lake management, limnology, molluscan ecology, biogeochemistry, nutrient transport</b>	<b>45</b>
<b>Franklin, William</b>	<b>Behavioral ecology of mammals</b>	<b>0</b>
*Federal employees, so not on ISU budget		
<b>Transferred to EEOB</b>		
<b>Retired -- research percentage based on last year of service</b>		
<b>Will retire in next 2-3 years</b>		
<b>Bowen (Affiliate Assistant Professor) and Pritchard (permanent part-time Adjunct Assistant Professor)</b>		