

## **Meeting the Purposes of the Program**

The purpose of the Graduate Assistance in Areas of National Need (GAANN) Program is to attract students with excellent academic records, who also demonstrate financial need and plan to pursue the highest degree available in their course of study, into high-quality graduate programs in areas of national need. Through this program Purdue University, led by the Departments of Forestry and Natural Resources (hereafter FNR) and Biological Sciences (hereafter BIOL), proposes a multidisciplinary enhancement of its graduate training in ecology, a field of biology that integrates components of several areas identified as national needs, including biology, botany, and zoology. Ecology, the study of interactions of organisms with their environments, spans the spectrum of biological organization and includes molecular, physiological, behavioral, population, community, and ecosystem levels of organization. Ecology also encompasses a range of space and time scales, including properties that emerge from large, complex systems (macroecology) derived over long periods of time (evolutionary ecology). Traditionally, training in ecology has emphasized either basic or applied aspects of the science, not both.

Administrative strictures have segregated these two arms of ecology, with evolutionarily based ecology that relies on a strong theoretical foundation residing in biology or zoology departments and applied ecology that directly addresses human intervention into ecological systems residing in natural resources, wildlife, or fisheries departments. Consequently, few students nationally are provided with a strong foundation in theoretical and applied ecology. This is alarming, since virtually all advances in environmental remediation, environmental risk assessment, and conservation biology will require a multidisciplinary understanding of ecology that enables linkages between basic and applied scholarship. Our program's principal goal is to increase opportunities for U.S. citizens from underrepresented backgrounds to obtain multidisciplinary

training in ecology, thereby providing the next generation of professionals with the tools necessary to achieve cutting-edge advances in discovery.

Purdue University has internationally recognized research groups in basic and applied ecology, with the former located in BIOL and the latter located in FNR. Historically, multidisciplinary training that integrated these 2 research groups was hampered because the departments reside in separate schools (Science and Agriculture). Fortunately, a vision for Purdue has emerged from a recent strategic planning exercise, with an emphasis on removal of administrative obstacles to collaboration. University President Martin Jischke specifically cited several characteristics of Purdue's vision in its strategic plan for 2001-2006 that ensure promotion of the purposes of GAANN, including

*“Model interdisciplinary and collaborative partnerships in the university community”,  
“Advancement of human and intellectual diversity to enrich the academic community, and to overcome the barriers separating individuals, populations and cultures”, and  
“A superior and diverse student body...”.*

Further, the Schools of Agriculture and Science, and the Departments of FNR and BIOL, are committed to forging strong collaborative ties that enhance graduate training in multidisciplinary ecology. Toward this end, a proposal to create an Institute for Sustainable Resources, Populations and Landscapes is in programmatic review by Purdue University.

### **1. General goals and specific objectives**

The development of a multidisciplinary program in ecology at Purdue University will enhance our current research strengths and facilitate the development of new interdisciplinary course offerings. However, additional funding for graduate training will be needed to develop this opportunity. To increase the number of high-quality graduate students trained in multidisciplinary ecology, the Fellowship Program in Multidisciplinary Ecology has 2 major goals:

a. Recruit from underrepresented groups 8 outstanding graduate students with financial need into the multidisciplinary ecology training program, with the financial assistance provided by GAANN Fellowships and university cost sharing.

b. Provide curriculum and training in research and teaching to Fellows that will promote a broad understanding of basic and applied ecology, so that they complete their Ph.D.s and are well prepared to participate in learning and discovery at the interface of these areas.

These general goals will be attained by fulfilling the following specific objectives:

Objective 1 - Increase the recruitment and admission of high-quality GAANN Fellows from underrepresented groups into the multidisciplinary training program in ecology

- Advertise the multidisciplinary ecology training program through brochures, departmental Web pages, professional email list-serves, visits to institutions for minority recruitment, and personal mailings to students in underrepresented groups. Our advertising efforts will include groups in traditional programs of ecology and natural resource sciences, as well as non-traditional programs (including other areas of biology, math, and computer science).
- Screen applicants to ensure high quality of academic and research qualifications, financial need, and a commitment to careers in research and/or teaching.
- Aggressively recruit targeted students into the program after pre-admission screening, through personal contacts and visits to the Purdue campus.
- Submit applications of selected students to the departmental graduate admissions committees. The committees consider an applicant's undergraduate (and graduate, if applicable) grades, GRE scores, letters of reference, personal statement of goals, and other relevant indicators of performance, including prior research experience and productivity. Following admission by the department, the applicant's file is forwarded to the Purdue

Graduate School for consideration. Upon approval by the Graduate School, the Executive Committee of the Fellowship Program in Multidisciplinary Ecology (Swihart, Levy, Rhodes, Lucas) will make a final decision on awarding of a GAANN Fellowship.

Objective 2 – Enhance the retention of GAANN Fellows entering the multidisciplinary training program in ecology

- Develop a plan of study that is individually tailored to ensure that each GAANN Fellow is given the opportunity to maximize her/his knowledge of basic and applied ecology. The plan of study will be developed during the first year of residence, with the Fellow working closely with the Major Professor and advisory committee in selecting coursework.
- Monitor the progress of each fellow by frequent meetings with the Major Professor and other faculty and students in ecology. Additional feedback will be provided in the form of annual meetings of the student's advisory committee, with the intent of evaluating the Fellow's progress in research, teaching, and coursework.
- Provide for each GAANN Fellow a graduate student mentor with at least 2 years of experience as a graduate student at Purdue to assist the incoming student to integrate themselves into the academic, social and multicultural fabric of Purdue. Such a mentoring program has been used successfully in FNR for several years.
- Increase retention by evaluating progress twice each year and providing prompt assistance if needed. Two ombudspersons, Drs. Shorna Broussard and Jeff Lucas, will be available to provide advice and assist in resolution of academic or research issues for Fellows.

Objective 3 – Increase training opportunities for fellows in instructional and research methods

- Provide training in instructional and research methods during the first year of enrollment by using courses in pedagogy and research methods.

- Provide supervised teaching experiences in at least two formats (laboratory, lecture, module, seminar) during one semester in each Fellow's second and third year.

Objective 4 – Assist in the placement of former GAANN Fellows into academic positions with an ecological teaching and/or research emphasis

- Assist the Fellows in securing research or teaching positions after graduation by bringing to their attention job openings and by assisting them in preparation for the application and interview process.

**2. How the objectives sustain and enhance the capacity for teaching and research**

The GAANN Fellowships will allow Purdue to increase dramatically the number of underrepresented graduate students trained in multidisciplinary ecology. GAANN Fellows also will benefit from training that spans the spectrum of basic and applied research and education in ecology, with coordination of efforts among faculty that previously was lacking. The proposed training program will encourage more students to broaden their training in ecology, resulting in more scientists trained in an area of national need. Recruiting efforts in other disciplines also will increase the pool of students who receive graduate training in multidisciplinary ecology.

**3. Ensuring that fellowship recipients satisfy requirements of 648.40**

The project Director, in conjunction with the departmental graduate committees, will ensure that GAANN Fellowships are awarded only to individuals satisfying the requirements of 648.40. Specifically, we will offer GAANN Fellowships only to students who 1) have been accepted and are enrolled as graduate students at Purdue, 2) have outstanding academic credentials as indicated by prior grades, GRE scores, letters of reference, prior research experience, and personal statements of research interests, 3) demonstrate financial need according to Title IV criteria, 4) intend to pursue a Ph.D. for purposes of attaining a career in teaching or research, 5)

are citizens of the U.S. or one of the Freely Associated States, are U.S. nationals or permanent residents, or provide evidence from INS of their intent to become permanent residents.