

# Indiana State University

2004 - 2005 Academic Annual Report

Department of Ecology and Organismal Biology

## Year in Review

### Accomplishments

**As you have heard, increasing public awareness of Indiana State University's accomplishments is crucial to building student enrollment, influencing policy makers, and developing a place of pre-eminence in the Midwest. What do you consider to be your department's 5-10 top accomplishments for the 2004-2005 year that will help contribute to this effort?**

In his Fall 2003 address, President Benjamin outlined a vision for ISU in which the institution would move towards A.... becoming a research-intensive university recognized for experiential learning, programs of eminence, and vital community engagement@. The Ecology and Organismal Biology (EOB) group is strongly committed to that vision and has demonstrated excellence in all three components of Dr. Benjamin's vision. Thus, we believe that a Department of EOB would play a key and prominent role in making this vision a reality. Departmental status for EOB will allow us to (i) pursue that vision unimpeded by competing visions, and (ii) devote our considerable energies towards becoming a program of national distinction in graduate research and undergraduate experiential learning at Indiana State University. Credentials of the EOB Program ISU's future as a Carnegie R-II, research-intensive university lies (in part) in the development of nationally-recognized graduate research programs. EOB has an exceptionally solid base from which to build such a program here at ISU. Perhaps more so than any other unit on this campus, EOB is staffed with faculty who have consistently been committed to high quality graduate and undergraduate education, and to the pursuit of research programs of state and national significance. The EOB faculty includes Drs. Amlaner, Angilletta, Bakken, Hews, Lima, Mitchell, Scott and Whitaker. The expertise of EOB faculty covers a wide range of the ecological and organismal sciences, including: • animal behavior and behavioral physiology • environmental physiology • ecology of individual organisms, populations, and communities • systematics and taxonomy of complex biological communities, with a special emphasis on poorly understood taxa • mathematical ecology • plant-animal interactions • evolutionary biology • environmental biology and conservation biology

A. National and International Recognition One key component of Dr. Benjamin's vision for ISU is the development of programs of eminence. At the national level, programs of eminence in the sciences are recognized by the research and grantsmanship of their faculty. The eight individuals comprising the EOB faculty provide a strong foundation from which to form an ISU Program of Eminence. Specifically, these faculty have national and international reputations in their fields of study, as judged by: • Over 550 publications in international, national, and regional scientific journals and edited volumes, the highest of any unit at ISU (this does not include several books and monographs) • Over 8,000 citations to EOB faculty's work in the primary scientific literature, the highest of any unit at ISU, and comparable to units at research-extensive (R-1) universities (Source: The Institute for Scientific Information's Web of Knowledge) • The highest citation rate of any unit at ISU for research done at ISU (approx. 3,700) • Over 60 invitations to speak at national meetings, symposia, and research universities over the past 5 years alone • Research of several EOB faculty has been highlighted prominently in many widely used undergraduate and graduate-level textbooks • EOB research has been published and featured in news articles in the two most prestigious scientific journals (Science and Nature), and well as a variety of popular media, including, Discover Magazine, Scientific American, Natural History, New

Scientist, Science News, BBC, NPR, AP, UPI, Reuters • Serving as Editors and on Editorial Boards of international journals • Serving as PI or Co-PI on external research grants and contracts totaling \$3,600,000 over the last five years • Continuing to demonstrate their ability to secure federal grants in a highly competitive environment (for example: funding rates for proposals submitted to NSF programs relevant to EOB faculty submit proposals have ranged from 8 to 17 percent in the last seven years) • Acting as invited ad-hoc grant reviewers and as grant review panel members for the National Science Foundation • Serving as outside members of dissertation committees at major institutions (e.g., University of Minnesota, University of British Columbia, University of Illinois, Indiana University, Duke University, Rutgers University; consulting or serving as a resource for many more)

### Research and Scholarship

**What is your assessment of accomplishments in the area of research and scholarship? Are you satisfied overall? In which areas do you feel your department does particularly well? In which areas do you feel your department needs to improve?**

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### Grants, Contracts & Off Campus Professional Service

**What is your assessment of accomplishments in the area of grants, contracts, and off campus professional service? Are you satisfied overall? In which areas do you feel your department does particularly well? In which areas do you feel your department needs to improve?**

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### Best Practices

**Describe the progress your unit has made thus far. Were you able to take these steps? What steps or goals have been particularly difficult to achieve and why? What practices, actions, initiatives are you doing that could be considered eminent?**

With the reorganization of our department, we are making considerable progress at meeting our stated goals in the new vision document prepared by EOB faculty.

### Student Credit Hours

**What did you learn? What steps will you take during 2004-05 to meet your department's student credit hour target by fall 2005?**

Our department continues to meet the SCH targets and has done so for the past 4 years.

### Budget

**Identify and describe any collaborative efforts that have been undertaken by your department with other academic or administrative units to maximize resources to meet departmental goals. Please also consider collaborative opportunities with external partners.**

Travel matching grants to undergrads and grads to professional meetings with the College, Graduate School, Provost's office, and OSP. Equipment matching grants to faculty with money coming from extramural grants and contracts. Matching grants of time and personell with IDNR, USFWS, and other state/federal agencies as part of the faculty committment to external research

### Assessment

**For each program in the department, provide one or two examples of how the program is using assessment and evaluation (student outcomes, program review, and/or accreditation) to enhance student learning and program strength this year.**

## Strategic Initiatives

### Development Activities

#### **What steps have you taken to support development activities in your department? How can your efforts be supported?**

A. Goals for the Undergraduate Program • Development of two new undergraduate programs (see below) • Integrate EOB undergraduate program with the interdisciplinary environmental science undergraduate major being developed and other areas within the university \$ Have an incoming class of 20 - 30 undergraduates in the new EOB-associated majors/ concentrations. We estimate that currently there are approximately about 5 – 8 such students in the freshman LIFS class. We are certain that this number would increase with the visibility of a separate Department of EOB \$ Establish a federally-funded program for undergraduate research experiences (Research Experience for Undergraduates grant from National Science Foundation) \$ Capitalize on EOB strengths in biological mathematics and computer simulation modeling to obtain National Science Foundation funding designed to enhance excellence in mathematics for undergraduate science majors (e.g. Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences) \$ Have the top 50% of students pursuing a with-thesis option in the major, working closely with our graduate research programs \$ Require all majors to pursue a research or professional (i.e. internship) experience in their junior or senior year. Ensure access to these important experiential learning opportunities by providing summer intern positions (funded from Lily Foundation for 2004-2009), research assistant positions (funded from research grants to faculty), by steering interested students towards a multitude of summer internships and undergraduate research positions, and by seeking federal funds at the departmental levels to establish additional positions here at ISU (UMEB, Undergraduate Mentoring in Environmental Biology funds, and REU, both from National Science Foundation) B. Goals for the Graduate Research Program • Solidify EOB's national reputation in graduate research, as assessed by: - continued high citation rates in primary scientific literature to work done here at ISU - continued publication in the top-rated, peer-reviewed journals in our field, as well as continued publication in state and regional journals • At least double present external grant production from federal (NSF, NIH, USFWS, USGS, etc.) and state (INDR) agencies, and to have active grants in excess of \$2 million at any point in time within the department • Continue to pursue research of importance to Indiana and our region: - develop even closer ties to Indiana Department of Natural Resources (INDR), - capitalize on probable increase in federal funding to Indiana for biological conservation - cement ties to a new USGS Fish and Wildlife Cooperative Research Unit soon to be established in Indiana, which will provide many new funding opportunities • The higher departmental profiles will strengthen recruitment of high-quality graduate students from across the USA as well as Indiana, as reflected in: - test scores of incoming students, number of incoming students with completed MS work, and research accomplishments of incoming students - the quality of the institutions with whom we are competing for students (which we assess during graduate student interviews). In recent admissions cycles EOB faculty competed with institutions such as UC- Davis, Arizona State University, University of Montana, University of Nebraska, Princeton University, and Duke University • Maintain a rate of 100 % of PhD graduates placed in postdoctoral positions, university/college faculty positions, or professional positions within 2 years of graduation • Exceed our current rate of about 80 % of Master of Science (with thesis) graduates in graduate school pursuing a Ph.D., or in entry-level professional positions, within 2 years of graduation • Increase the proportion of graduate students pursuing the PhD in EOB to at least 75% • At least double the graduate students in the EOB program, having the stipends of a full 50 % or more of our graduate students funded on external grants • Continue to enhance our productive relationships with environmentally-oriented faculty in GGA and other departments at ISU, which

enhances the graduate programs of all concerned.

## Future Goals

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**The University is highlighting experiential learning, community engagement, and eminent programs as aspects of our campus that will attract students and resources. How is your department planning to contribute to these strategic initiatives in ways that will help ISU be recognized as a Pre-eminent University?**

We have many goals for our future as a new departmental unit. We are also committed to achieving ambitious but realistic goals that we feel can be met in a 5-year time frame. Below is a sampling of our more important goals, all of which are inter-related. We also suggest ways in which our success can be assessed objectively.

A. Goals for the Undergraduate Program

- Development of two new undergraduate programs (see below)
- Integrate EOB undergraduate program with the interdisciplinary environmental science undergraduate major being developed and other areas within the university
- Have an incoming class of 20 - 30 undergraduates in the new EOB-associated majors/ concentrations. We estimate that currently there are approximately about 5 – 8 such students in the freshman LIFS class. We are certain that this number would increase with the visibility of a separate Department of EOB
- Establish a federally-funded program for undergraduate research experiences (Research Experience for Undergraduates grant from National Science Foundation)
- Capitalize on EOB strengths in biological mathematics and computer simulation modeling to obtain National Science Foundation funding designed to enhance excellence in mathematics for undergraduate science majors (e.g. Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences)
- Have the top 50% of students pursuing a with-thesis option in the major, working closely with our graduate research programs
- Require all majors to pursue a research or professional (i.e. internship) experience in their junior or senior year. Ensure access to these important experiential learning opportunities by providing summer intern positions (funded from Lily Foundation for 2004-2009), research assistant positions (funded from research grants to faculty), by steering interested students towards a multitude of summer internships and undergraduate research positions, and by seeking federal funds at the departmental levels to establish additional positions here at ISU (UMEB, Undergraduate Mentoring in Environmental Biology funds, and REU, both from National Science Foundation)

B. Goals for the Graduate Research Program

- Solidify EOB's national reputation in graduate research, as assessed by: - continued high citation rates in primary scientific literature to work done here at ISU - continued publication in the top-rated, peer-reviewed journals in our field, as well as continued publication in state and regional journals
- At least double present external grant production from federal (NSF, NIH, USFWS, USGS, etc.) and state (INDR) agencies, and to have active grants in excess of \$2 million at any point in time within the department
- Continue to pursue research of importance to Indiana and our region: - develop even closer ties to Indiana Department of Natural Resources (INDR), - capitalize on probable increase in federal funding to Indiana for biological conservation - cement ties to a new USGS Fish and Wildlife Cooperative Research Unit soon to be established in Indiana, which will provide many new funding opportunities
- The higher departmental profiles will strengthen recruitment of high-quality graduate students from across the USA as well as Indiana, as reflected in: - test scores of incoming students, number of incoming students with completed MS work, and research accomplishments of incoming students - the quality of the institutions with whom we are competing for students (which we assess during graduate student interviews). In recent admissions cycles EOB faculty competed with institutions such as UC- Davis, Arizona State University, University of Montana, University of Nebraska, Princeton University, and Duke University
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