

MSU Departmental Assessment Plan 2007-2009

Department: Ecology

Department Head: David Roberts

Assessment Coordinator: David Roberts

Degrees/Majors/Options Offered by Department

B.S. in Biological Sciences

Ecology and Evolution Option

Fish and Wildlife Management Option

Organismal Biology Option

Biology Teaching Option

Assessment Plan: Department of Ecology

Undergraduate Major and Degree Options:

The Department of Ecology offers four undergraduate degree options in the Bachelor's of Science in Biological Sciences: Fish & Wildlife Management, Organismal Biology, Ecology & Evolution, and Biology Teaching. Fish & Wildlife Management is a professional degree program designed for students seeking a career in fish & wildlife management with state or federal agencies, private consulting firms, or non-government organizations. Organismal Biology provides a rigorous program of study in plant or animal biology at the whole-organism, species, population, and community levels, while allowing students the greatest flexibility in selecting those biology courses which best meet their interests and objectives. Ecology & Evolution combines (1) a basic sequence of courses in ecology, (2) a broad background in the sciences and mathematics, and (3) a flexible curriculum of advanced courses in biology and related disciplines. The program requires students to develop strength in one supporting science or in mathematics and statistics. Biology Teaching certifies graduates to be qualified to teach secondary school biology. It is similar to the Organismal Biology Option, but includes professional preparation courses required for state teacher certification.

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Assessment management structure:

The primary responsibility for gathering data specific to each degree option and recommending changes to respective curricula resides in the faculty assigned to advise students in the respective options. The ultimate responsibility for managing all curricula and ensuring that curricula meet the needs of students resides with the Department Head.

Degree Objectives:

Specific degree objectives differ among options, but share many attributes. Most positions for professional biologists require a graduate degree. Accordingly, the degree options in Fish & Wildlife Management, Organismal Biology, and Ecology & Evolution are intended to provide the prerequisite educational background for graduate programs. The Biology teaching options is intended to qualify to teach secondary school biology, and does not lead to additional graduate coursework or degrees.

All four degree options are basic science degree programs requiring at a minimum: (1) two semesters of chemistry, (2) a semester of physics, (3) mathematics through calculus, (4) a semester of physics, (5) statistics, and (6) significant coursework in biology. The degree options differ in extending these basic requirements in different directions, and adding requirements in varied fields. Each degree options has specific faculty advisors assigned who perform undergraduate advising and degree monitoring.

Expected Competencies:

Discipline-Specific Knowledge

Graduates in all four degree options are expected to have:

- a broad knowledge of biology, including cellular, molecular, physiological, and organismal biology, genetics, as well as extensive understanding of ecology.
- effective communication skills
- well-developed quantitative problem solving skills in mathematics and statistics

In addition, specific degree options emphasize:

- **Fish & Wildlife Management:** Social science expertise in economics and resource management
- **Organismal Biology:** Advanced coursework in basic sciences and laboratory sciences, as well as a sequence of courses in a structured set of biology electives
- **Ecology & Evolution:** Significant coursework in one supporting science or in mathematics and statistics.
- **Biology Teaching:** Extensive coursework in pedagogy and social science required for certification to teach secondary school.

Assessment Plan:

The department's assessment effort is conducted at both the course and degree option levels.

- Degree option reviews: Individual degree options are assessed on a biennial basis to monitor changes in available coursework within the department and across campus, and to assess the degree to which the current degree requirements meet our objectives. When necessary, new course proposals are prepared and submitted to the university curriculum committee to revise the courses in degree options.
- Transcript databases: Because the specific coursework in Organismal Biology and Ecology & Evolution varies as a function of student interest, the department maintains a database of course selections determined by student and their advisors to meet degree requirements. On a biennial basis, these transcripts are reviewed to identify trends in student interest and to ensure that the degree options maintain a rigorous scientific basis.
- Retention and completion rate: The department maintains an ongoing assessment of student progress, including transfers into and out of the degree options and department, leaves of absence or withdrawals, and graduation rates.
- Capstone Courses: All degree options require a capstone course experience where we assess the degree to which the curriculum is producing students with the specific knowledge and skills identified above by individual project assessment.
- Senior Survey: Fall and spring semester the Department Head meets with graduating seniors to assess the degree to which current curricula are meeting their needs, and to determine where possible changes are warranted. Students complete a written survey,

and offer commentary on the degrees and department in a group forum. Specific questions address admission to graduate school or professional employment, or other future educational or professional plans, as well as a retrospective assessment.

- Professional preparation: The Fish & Wildlife Management degree option has both Federal and State curriculum guidelines that constrain or determine course requirements within the degree. The Department Head and the Director of the Fish & Wildlife Program in the department monitor the relevant specific job requirements published by the Office of Personnel Management and meet periodically with the Director or Management staff of relevant management agencies to assess the preparation of our graduates with respect to current professional requirements.

Implementation Plan:

Many of the assessment activities identified above are ongoing and will continue. We will implement the undergraduate transcript database and written senior survey instruments over the next year (academic year 2008-2009) as well as maintain all ongoing activities.