

Department of
Natural Resource Ecology & Management

Student Learning Outcomes Assessment
Annual Report
for
2004

Introduction

During the 2003-2004 academic year, a Student Learning Outcomes Committee was established within the Department of Natural Resource Ecology and Management. The committee consisted of Steve Jungst, Chair; Gary Atchison, and Jan Thompson and was charged with the following:

To help individual faculty and staff work toward more effective use of student learning outcomes in guiding development and modification of their own courses

To coordinate student learning outcomes for the department with activities of the departmental curriculum committee

To develop and maintain the department's student learning outcomes website.

Beginning with Fall Semester, 2004 the committee makeup was changed to include undergraduate representatives as well. The committee for the 2004-2005 academic year consists of: Steve Jungst, Chair, Jan Thompson, Jim Pease, Nellie Young (undergraduate representative from forestry) and Luke Schiller (undergraduate representative from animal ecology)

This report documents activities by the committee as well as a portion of the efforts of the Department's Curriculum Committee and its work to develop general student outcomes for all curricula offered by the department.

General Student Learning Outcomes

Following the merger of Animal Ecology with Forestry to form the new department of Natural Resource Ecology and Management, a merged curriculum committee with representation from both major programs was formed to review curricula within the new department and to make recommendations to the faculty concerning needed changes. A portion of the work completed by that committee involved the refinement of ten student learning outcomes which apply to all students graduating from any of the department's options (Initial development of the draft outcomes had taken place at a departmental outcomes retreat the previous spring). The outcomes, approved by a vote of the general faculty on November 17, 2003 are listed in Table 1.

The department's goal is that all students, regardless of the option from which they graduate, should be competent in each of the outcomes. Even though the outcomes were first articulated during the 2003-2004 academic year, both the Animal Ecology and Forestry programs included work to prepare students in these areas for a number of years. Clear statement of the outcomes now makes it possible to assess our success in helping students to achieve the outcomes, and, where success appears to be low, to make modifications to courses and curricula improve success.

Table 1. NREM Student Learning Outcomes

- Develop, explain and evaluate their own beliefs, values and behavior in relation to professional and societal standards of ethics.
 - Anticipate, analyze and evaluate natural resource issues and explain the ecological, economic, and social consequences of natural resource actions at various scales and over time.
 - Actively seek the input and perspectives of diverse stakeholders regarding natural resource problems and issues.
 - Assess, analyze, synthesize, and evaluate information fairly and objectively.
 - Work effectively, both individually and with others, on complex, value-laden natural resource problems that require holistic problem solving approaches.
 - Formulate and evaluate alternative solutions to complex problems and recommend and defend best alternatives.
 - Communicate clearly and effectively with different types of audiences using appropriate oral, visual, electronic, and written techniques.
 - Recognize and interpret resource problems across spatial scales from local to global.
 - Appreciate cultural diversity and understand the impact of the global distribution of people and wealth on natural resource use and valuation.
 - Exercise life-long learning skills developed before graduation.
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To place more emphasis on the importance of the outcomes, faculty position responsibility statements were modified during the annual review to include a statement that required courses (those courses required as a part of any of the departments options) are expected to contribute to the accomplishment of one or more of the ten general learning outcomes. The Outcomes Committee has now begun a process of documenting which outcomes are addressed in each of the required classes to ensure that all outcomes are adequately covered at some point in each of the options within the department. Initial work on that curriculum mapping effort was started in Fall, 2004 with classes being taught during fall semester. Not all faculty teaching required courses during fall semester submitted information for their courses, so that effort will need to be continued during Fall Semester, 2005. Faculty who teach required courses for Spring Semester 2005 have been asked to submit a course map showing which outcomes their courses address so the curriculum mapping activities can continue.

Action needed:

- **Complete first curriculum map for all options.**

Assessment Measures

As the program within the department matures, it is expected that assessment will involve a coordinated and balanced set of both direct and indirect assessment techniques. At

present, direct assessment is at the discretion of individual faculty within individual courses. The Outcomes Committee anticipates that direct assessment techniques used within classes will continue to be at the discretion of the faculty teaching those courses, but that coordination of those assessment efforts will be enhanced through improved understanding of assessment and better communications among all faculty involved. Additionally, other direct measures of outcomes will likely be developed involving but not limited to such things as student portfolio's, and faculty assessment of capstone course reports.

During the 2004 calendar year, the Outcomes Committee began to develop indirect measures of the ten general outcomes. A sample of past graduates was surveyed to determine their perception of how well their education prepared them to accomplish each of the outcomes, and how important each outcome is to success in their current job. Beginning with Fall Semester, 2004, new freshmen and transfer students were asked to self-assess their current preparedness in each of the 10 outcomes. That assessment, coupled with a similar assessment conducted by the Department Chair among all graduating seniors will provide an outcomes assessment measure for the department.

The current time schedule for data collection efforts is shown in Table 2.

Table 2. Calendar of outcomes assessment activities within the department

Assessment of 10 department-wide outcomes

<u>ASSESSMENT ACTIVITY</u>	<u>CONDUCTED BY</u>	<u>FREQUENCY</u>
New Student Interview	NREM 110 Instructors	Each Fall Semester
Senior Exit Interview	DEO	Each Semester
Sample of 2& 5 year grads	Outcomes Committee	Annually
Sample of employers	Outcomes Committee	Every 4 years
Individual class contribution	Instructor	As class is taught
Outcomes review & revision	Faculty	Every 4 years
Outcomes mapping	Outcomes Committee	Every 4 years

Individual course outcomes assessment

<u>ASSESSMENT ACTIVITY</u>	<u>CONDUCTED BY</u>	<u>FREQUENCY</u>
Determined by instructor	Instructor	As class is taught

Baseline Data Collection

To establish baseline data on accomplishment of the ten general learning outcomes, a survey was mailed to 117 past graduates of the Animal Ecology and Forestry majors during the summer of 2004. The sample was stratified to ensure representation from all of the options available in either major. Numbers of surveys sent are shown in Tables 3 and 4. The first number for each option represents the number of students who graduated in that option for the specified year, while the number in parentheses is the number of graduates sampled in that option.

Approximately 6 weeks after the first mailing, a second mailing was sent out to increase the response rate. However, even with the second mailing, the response rate was low.

Nineteen of the 2002 graduates responded along with 16 of the 1998 graduates for a total response rate of 29.9 percent.

Table 3. Number of Animal Ecology graduates and number surveyed

1998 graduates		2002 graduates	
Aquaculture	0(0)	Aquaculture	2(2)
Ecology	13(9)	Ecology	8(6)
Fisheries & Aquatic Sciences	7(7)	Fisheries & Aquatic Sciences	12(9)
Interpretation of Natural Resources	6(6)	Interpretation of Natural Resources	8(8)
Pre-veterinary & Wildlife Care	1(1)	Pre-veterinary & Wildlife Care	14(9)
Wildlife	27(12)	Wildlife	18(10)
Other*	11(2)	Other*	0(0)
Total	65(37)	Total	62(44)

*Includes honors students, double majors, and students with area of specialization rather than option, and FWB majors on 1993-95 catalog

Table 4. Number of Forestry graduates and number surveyed

1998 graduates		2002 graduates	
Forest Ecosystem Management	18(11)	Forest Ecosystem Management	21(10)
Natural Resource Conservation	0(0)	Natural Resource Conservation	0(0)
Urban & Community Forestry	0(0)	Urban & Community Forestry	2(2)
Wood Science	7(7)	Wood Science	6(6)
Total	25(18)	Total	29(18)

On a scale from 1 to 5 with 1 being “Very Poorly Prepared” and 5 being “Very Well Prepared”, graduates were asked to indicate how well their curriculum prepared them to accomplish each of the ten departmental outcomes. In addition, on a scale from 1 to 5 with 1 being “Not Important”, and 5 being “Very Important”, they were asked to indicate how important they felt each outcome is to the successful performance of their job. Results of the survey are shown in Table 5.

Because of the small response numbers results are reported for the group as a whole rather than by option or year of graduation.

Table 5. Average Response of graduates from 1998 and 2002 to Outcomes Assessment Survey

Table 1. NREM Student Learning Outcomes

Develop, explain and evaluate their own beliefs, values and behavior in relation to professional and societal standards of ethics.

Preparation	3.97*	Importance	4.09**
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Anticipate, analyze and evaluate natural resource issues and explain the ecological, economic, and social consequences of natural resource actions at various scales and over time.

Preparation	4.09	Importance	3.86
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Actively seek the input and perspectives of diverse stakeholders regarding natural resource problems and issues.

Preparation	3.69	Importance	3.66
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Assess, analyze, synthesize, and evaluate information fairly and objectively.

Preparation	4.14	Importance	4.54
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Work effectively, both individually and with others, on complex, value-laden natural resource problems that require holistic problem solving approaches.

Preparation	4.17	Importance	3.80
Formulate and evaluate alternative solutions to complex problems and recommend and defend best alternatives.			
Preparation	3.97	Importance	4.43
Communicate clearly and effectively with different types of audiences using appropriate oral, visual, electronic, and written techniques.			
Preparation	4.34	Importance	4.69
Recognize and interpret resource problems across spatial scales from local to global.			
Preparation	3.71	Importance	3.43
Appreciate cultural diversity and understand the impact of the global distribution of people and wealth on natural resource use and valuation.			
Preparation	3.74	Importance	3.49
Exercise life-long learning skills developed before graduation.			
Preparation	4.14	Importance	4.49

* 1=Very Poorly, 2=Moderately Poorly, 3=Average, 4=Moderately Well, 5=Very Well

**1= Not Important, 2=Moderately Unimportant, 3=Neutral, 4=Moderately Important, 5=Very Important

Given the low response numbers, it is probably premature to attach great significance to any one value in the table. However, as the number of respondents increases through subsequent surveys, low averages for either Preparation or Importance will be cause for further inquiry and discussion among the faculty.

Action needed:

- **Continue surveys of past graduates on an annual basis, and shift the timing of the survey to January in an attempt to improve response rates.**

Other Assessments Conducted

Four other assessments have been conducted, all involving student self-determination of their ability to accomplish each of the ten objectives. At the beginning of the 2004-2005 academic year, students in both the freshman section and transfer-student section of NREM 110 and the students in the forestry sophomore series were asked to indicate “how well you think you are prepared to perform” each of the outcomes. The ranking scale was the same as that used past graduates. The fourth survey consisted to graduating seniors whose response was solicited by the Department Chair at the time of their senior exit interview.

Average responses for each of the four groups for each outcome is shown in Table 6.

Table 6. Average Responses for groups surveyed in Fall, 2004

		Outcome									
		1	2	3	4	5	6	7	8	9	10
Freshmen	(37)	3.45	2.89	2.53	3.32	3.34	3.05	3.34	2.82	3.17	3.63
Transfer	(42)	3.09	3.05	2.72	3.26	3.30	3.07	3.33	2.93	3.19	3.58
For. Soph.	(20)	3.81	3.29	3.43	3.40	3.76	3.38	3.62	3.30	3.38	4.10
Grad. Sr.	(24)	4.40	4.40	4.32	4.40	4.56	4.44	4.62	4.48	4.52	4.76

Perhaps most surprising about the responses of current students is the high averages. Before the surveys of the Freshmen and Transfer students were conducted in NREM 110, the expectation was that responses would be quite low, indicating that students didn't have much faith in their ability to perform the objectives. Further analysis of responses from those two groups was done to determine what percentage of the respondents ranked themselves as either "moderately well prepared" or "very well prepared" to perform each of the objectives. Those percentages are shown in Table 7.

Table 7. Percent of students indicating "moderately" or "very well" prepared

	Outcome									
	1	2	3	4	5	6	7	8	9	10
Freshmen	53	26	21	53	47	39	50	24	37	66
Transfer	26	35	16	40	40	26	37	26	33	53

At this point, we wondered, who students were comparing themselves to when indicating how well prepared they were to perform the objectives. The intent was that they rank themselves in relation to practicing professionals, but that wasn't clearly stated in the survey. In an attempt to answer that question, the same survey was administered to the forestry sophomores enrolled in the fall 200-series of courses. Once they had completed the survey, the question was then asked, "When you ranked yourselves on how well you could perform the objectives, whom did you compare yourself to?" Discussion indicated that they had been thinking of how well they could perform in relation to others in the class rather than in comparison to a practicing professional.

Table 8 shows the percent of students among the forestry sophomores and graduating seniors who ranked themselves as either "moderately well prepared" or "very well prepared" to perform each of the objectives.

Table 8. Percent of students indicating "moderately" or "very well" prepared

	Outcome									
	1	2	3	4	5	6	7	8	9	10
For. Soph	62	43	43	45	67	48	52	40	48	71
Grad. Sr.	96	100	92	100	100	96	100	100	92	100

At the very least, the initial results indicate a need to modify the surveys to indicate that respondents should be comparing themselves to practicing professionals. Results also underscore the need to develop direct measures of student abilities for each of the outcomes as well.

Action needed:

- **Modify current student assessment forms to specify how well prepared they think they are in relation to a practicing professional.**
- **Begin development of direct measures of ability for each of the outcomes**

Established Benchmarks

Data collected during 2004 begin to establish baseline information for the department to assess the effectiveness of its curricula in preparing students for professional service. However, department faculty have yet to discuss and agree on acceptable benchmark levels of accomplishment by which to measure success of the curricula. The outcomes committee agreed that a reasonable starting point for acceptable performance would be to have 80 percent of the past graduates ranking themselves as “moderately well prepared” or “very well prepared” to accomplish each of the options.

Outcomes with moderately to very well prepared response levels of 80% or more were:

1. Develop, explain and evaluate their own beliefs, values and behavior in relation to professional and societal standards of ethics. (83%)
5. Work effectively, both individually and with others, on complex, value-laden natural resource problems that require holistic problem solving approaches. (80%)
4. Assess, analyze, synthesize, and evaluate information fairly and objectively. (83%).
7. Communicate clearly and effectively with different types of audiences using appropriate oral, visual, electronic, and written techniques. (86%)
10. Exercise life-long learning skills developed before graduation. (86%)

Outcomes with relatively low levels of attainment below 80% were:

2. Anticipate, analyze and evaluate natural resource issues and explain the ecological, economic, and social consequences of natural resource actions at various scales and over time. (74%)
3. Actively seek the input and perspectives of diverse stakeholders regarding natural resource problems and issues. (60%)
6. Formulate and evaluate alternative solutions to complex problems and recommend and defend best alternatives. (74%)
8. Recognize and interpret resource problems across spatial scales from local to global. (54%)
9. Appreciate cultural diversity and understand the impact of the global distribution of people and wealth on natural resource use and valuation. (66%)

Action needed:

- **Wait until responses are obtained from the second survey to see if percentages reported to see if percentages appear to be representative. If the second survey confirms the first, begin discussions of what changes need to be made to reach acceptable levels of accomplishment.**