

Course Student Learning Outcomes Assessment

BIOL 212 Animal Diversity and Ecology

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General Information (Course Student Learning Outcomes Assessment)

Standing Requirements

📖 Course Description

A study of ecological principles and relationships between animal diversity and ecosystems. Habitat populations ecological interactions and environmental influences are stressed while surveying animal diversity and addressing structure function behavior and adaptation of major taxonomic groups. Required of majors in biology medicine forestry and agriculture. Field trips required.

📖 Course Student Learning Outcomes

BIOL 212 Animal Diversity and Ecology Outcome Set

Outcome	
Outcome	Mapping
Outcome 1 Demonstrate a coherent understanding of the relationship between animal diversity, form and function, habitat, and life style.	Institutional Student Learning Outcomes: Act 3, Communicate 1, Communicate 3, Learn 1, Learn 2, Learn 3, Think 1, Think 2, Think 3
Outcome 2 Express a fundamental comprehension of ecological principles by citing examples.	Institutional Student Learning Outcomes: Act 3, Communicate 1, Learn 1, Learn 2, Think 1, Think 2, Think 3
Outcome 3 Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results.	Institutional Student Learning Outcomes: Act 3, Communicate 1, Communicate 3, Learn 1, Learn 3, Think 1, Think 2, Think 3

2014-2015 Assessment Cycle

Measurements

Outcomes and Measures

BIOL 212 Animal Diversity and Ecology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent understanding of the relationship between animal diversity, form and function, habitat, and life style.

▼ **Measure:** Means of assessment 212
Course level; Direct - Exam

Description of Measurement Tool: A series of questions will be embedded in the midterm exam.

Criteria for Success: Individual & Collective Student Criterion: The questions are ranked according to degree of difficulty with the expectation that the 10% of the students will correctly answer the "A" question (reflecting the typical "A" student), 20% will answer the "B" question correctly, and 68% will answer the "C" question correctly.

Cycle of Assessment: Spring 2015

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Outcome 2

Express a fundamental comprehension of ecological principles by citing examples.

▼ **Measure:** Means of assessment 212
Course level; Direct - Exam

Description of Measurement Tool: A series of questions will be embedded in the final exam.

Criteria for Success: Individual & Collective Student Criterion: The questions are ranked according to degree of difficulty with the expectation that the 10% of the students will correctly answer the "A" question (reflecting the typical "A" student), 20% will answer the "B" question correctly, and 68% will answer the "C" question correctly.

Cycle of Assessment: Spring 2016

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Outcome 3

Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results.

▼ **Measure:** Means of assessment 212
Course level; Direct - Exam

Description of Measurement Tool: A lab experiment comparing the species diversity of barn owl prey found in the Northwest versus Southeast regions of the U.S. was conducted. Using the basic steps of the scientific method, students wrote a question reflecting the species diversity of barn owl prey in these two areas, a hypothesis which tentatively answered the question, and a prediction as to the outcome of the experiment which would test their hypothesis. After conducting the experiment, a conclusion accurately reflecting the results was to be written indicating whether the hypothesis was supported.

Criteria for Success: Individual & Collective Student Criterion: It is expected that 25% of the student reports would contain a valid question, hypothesis, prediction, and conclusion based on the experiment. 40% would have one part of the exercise that was not an accurately reflection of the experiment, and the remaining 35% would have more than one aspect of their report that was not valid.

Cycle of Assessment: Spring 2017

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings

Finding per Measure

BIOL 212 Animal Diversity and Ecology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent understanding of the relationship between animal diversity, form and function, habitat, and life style.

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Course level; Direct - Exam

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Cycle of Assessment: Spring 2015

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings for Means of assessment 212

Summary of Findings: "A-level" question: While sampling marine plankton, a student encounters a large number of eggs in his sample. He incubates some of the eggs in the laboratory and finds that the blastopore becomes the mouth in a complete digestive system. The embryo develops into a veliger larva and eventually has a coelom and an open circulatory system. These eggs belonged to:

a) annelids b) arthropods c) mollusks d) nematodes e) echinoderms

18/32 correct responses (56.3%).

"B-level" question: You live on a coastline and are not able to eat the local clams because of high levels of toxins even though you can drink the water taken from the same source. Why?

a) clams seasonally produce toxic substances
b) clams regularly consume poisonous red tide organisms
c) most of the safe native clams have been replaced by a new, toxic species d) clams filter-feed and therefore concentrate the pollutants from the water
e) clams carry toxic worms

27/32 correct responses (84.4%).

"C-level" question: While snorkeling, a student observes an active marine animal that has a series of muscular tentacles bearing suckers associated with its head. The animal also has a pair of large, well-developed eyes. The animal observed belongs to the class:

a) Oligochaeta
b) Cephalopoda
c) Polyplacophora
d) Malacostraca
e) Polychaeta

31/32 correct responses (96.9%) .

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: Thirty-two students took the exam. Eighteen students answered the "A" question correctly (56%), twenty-seven students answered "B" question correctly (84%), and thirty-one answered the "C" question correctly (97%). All results fell within the accepted range with a higher percentage of correct responses than expected.

Note: "C" question was changed from the last time that this SLO was assessed to incorporate a higher degree of analysis.

Recommendations: This SLO will be assessed again, increasing the data base to provide a more valid conclusion.

Outcome 2

Express a fundamental comprehension of ecological principles by citing examples.

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Cycle of Assessment: Spring 2016

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings for Means of assessment 212

No Findings Added

Outcome 3

Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results.

▼ **Measure:** Means of assessment 212
Course level; Direct - Exam

Description of Measurement Tool: A lab experiment comparing the species diversity of barn owl prey found in the Northwest versus Southeast regions of the U.S. was conducted. Using the basic steps of the scientific method, students wrote a question reflecting the species diversity of barn owl prey in these two areas, a hypothesis which tentatively answered the question, and a prediction as to the outcome of the experiment which would test their hypothesis. After conducting the experiment, a conclusion accurately reflecting the results was to be written indicating whether the hypothesis was supported.

Criteria for Success: Individual & Collective Student Criterion: It is expected that 25% of the student reports would contain a valid question, hypothesis, prediction, and conclusion based on the experiment. 40% would have one part of the exercise that was not an accurately reflection of the experiment, and the remaining 35% would have more than one aspect of their report that was not valid.

Cycle of Assessment: Spring 2017

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings for Means of assessment 212

No Findings Added

Overall Recommendations

No text specified

 **Plans of Action**

 **Status Reports**

2013-2014 Assessment Cycle

Measurements

Outcomes and Measures

BIOL 212 Animal Diversity and Ecology Outcome Set

Outcome

Outcome 1

Demonstrate a coherent understanding of the relationship between animal diversity, form and function, habitat, and life style.

▼ **Measure:** Means of assessment 212
Course level; Direct - Exam

Description of Measurement Tool:

Criteria for Success: Individual & Collective Student Criterion:

Cycle of Assessment: Spring 2015

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Outcome 2

Express a fundamental comprehension of ecological principles by citing examples.

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Cycle of Assessment: Spring 2014

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Outcome 3

Conduct laboratory investigations according to given experimental procedure, collect and analyze resulting experimental data, and formulate valid conclusions based on the results.

▼ **Measure:** Means of assessment 212
Course level; Direct - Exam

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Cycle of Assessment: Spring 2013

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings

Finding per Measure

BIOL 212 Animal Diversity and Ecology Outcome Set

Outcome

Outcome 1

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Course level; Direct - Exam

Description of Measurement Tool:

Criteria for Success: Individual & Collective Student Criterion:

Cycle of Assessment: Spring 2015

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings for Means of assessment 212

No Findings Added

Outcome 2

Express a fundamental comprehension of ecological principles by citing examples.

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Cycle of Assessment: Spring 2014

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings for Means of assessment 212

Summary of Findings: "A" Question: Elephants are NOT the most common species in the African grasslands. The grasslands contain scattered woody plants that are kept in check by the uprooting activities of the elephants. Take away the elephants and the grasslands convert to forests or to shrub lands. Elephants can be defined as what type of species in this community? A) invasive b) dominant c) keystone d) foundation e) more than one answer is correct.

"B" Question: Which of the following statements about the logistic model of population growth is incorrect?

A) it fits an S-shape curve b) it incorporates the concept of carrying capacity c) it describes population density shifts over time d) it accurately predicts the growth of most populations e) it predicts an eventual state in which birth rate equals death rate

"C" Question: A cow's diet indicates that it is a(n):

a) producer b) autotroph c) primary consumer d) carnivore e) secondary consumer

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: Twenty-three students took the final exam in which the assessment questions were imbedded. Thirteen students answered the "A" question (54%) correctly, eleven students answered the "B" question (52%) correctly, and all twenty-three students answered the "C" question correctly. While all results fell within the accepted range, however more students missed question "B" than question "A".

Recommendations: After using this assessment for 4 semesters, the "B" question has consistently been missed most frequently even after bolding and underlining the word incorrect. After reviewing the question & answer options, the incorrect answer option selected by 9 out of the 10 students (answer option "b" carrying capacity) reflects another concept highly emphasized

relative to population growth and is an obvious correct answer. More instruction needs to be given in the future so that students will keep the concepts separate.

Outcome 3

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Cycle of Assessment: Spring 2013

Who is Responsible for Assessment Activity?: Biology faculty currently teaching the course.

Findings for Means of assessment 212

Summary of Findings: 24 students responses: 6 (25%) were correct in all parts, 10 (42%) were correct in 3 of 4 parts, 6 (25%) were correct in 2 of 4 parts, and 2 (8%) were correct in 1 of 4 parts.

Question: 17 correct responses (71%), 3 did not state the question, 4 questions did not reflect the study but considered prey size, prey numbers, or predation rate.

Hypothesis: 11 correct responses (46%), 8 were incomplete restating the question, 5 did not reflect the premise of the experiment

Prediction: 16 correct responses (67%), 7 did not reference the hypothesis, 1 was actually the hypothesis

Conclusion: 24 correct responses (100%), 8 responses did not justify their conclusion

Results: Criteria for Success Achievement Status: Met

Analysis of Findings: It was expected that 25% of the student reports would contain a valid question, hypothesis, prediction, and conclusion while 40% would contain one inaccuracy and 35% would contain more than one inaccuracy. The results fall within the expected range. However when looking at the individual components of the exercise it became obvious that students had the greatest degree of difficulty with recognizing and expressing a valid hypothesis.

Recommendations: This SLO was expanded upon relative to its previous assessment to include formulating a valid question. The expectations were also modified to include this additional component. A greater emphasis needs to be made regarding the role of a hypothesis in the scientific method. Due to the small sample size, more data needs to be collected to be able to make a valid assessment.

Overall Recommendations

No text specified

Plans of Action

Status Reports

2012-2013 Assessment Cycle

 **Measurements**

 **Findings**

 **Plans of Action**

 **Status Reports**