2012-2013 Assessment Report
Program: Wildlife, BS

School of Forestry & Wildlife Sciences
Wildlife, BS

Expected Outcome 1. Understanding of Wildlife Management Concepts
Students will understand population dynamics, predation, and competition, be able to identify the species (plant and animal) in an ecosystem, and understand how they interact.

Assessment Method 1: Comprehensive Exam
Assessment Method Description
A comprehensive exam covering all course specific student learning outcomes will be created and updated regularly to provide baseline information for each of the Specific Learning Objectives in the degree program. This exam will consist of multiple choice questions that will be administered at the beginning of the professional program where it is anticipated that the scores will be low, and again at the end of the professional program where it is anticipated that the scores will be high. Those questions that don’t have a statistically significant improvement will identify areas of concern to be considered for the development of an action plan. This comprehensive plan will assess the knowledge base of the students at the beginning and end of the professional program.

Findings
Exam: A bank of 35 multiple choice questions was administered that covered issues associated with wildlife management concepts. The exam has not yet been administered to sophomores at the beginning of the professional program. It has been administered for 3 years to seniors at the end of the program. Because of the small number of students in the wildlife program, it was felt that several years of observation of performance on the exit exam was important. The first administration of the entry exam was administered in WILD 2050 in Fall 2013 to sophomores.

Wildlife Ecology and Management Questions are in Appendix A.
How did you use findings for improvement?

Additional Comments
In Fall of 2009, the wildlife curriculum was significantly changed to enhance the ability of the students to address complex issues in wildlife management and ecology. This change was implemented following discourse with alumni, employers, students, and faculty. The current assessment was designed to examine aspects of the curriculum that were significantly changed, with the hope that the knowledge and skills that were modified were being adequately taught. Our first graduates under the new curriculum completed the course of study in Spring 2013. Thus, we have not yet collected sufficient data to identify trends or warrant modification of the new curriculum.

Expected Outcome 2. Understanding of Applied Statistics and Population Dynamics

Students will understand the basis statistical functions used to analyze wildlife data, and be able to interpret data.

Assessment Method 1: Comprehensive Exam

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Findings

Exam: A bank of 10 multiple choice questions was administered that covered issues associated with statistics and population dynamics. The exam has not yet been administered to sophomores at the beginning of the professional program. It has been administered for 3 years to seniors at the end of the program. Because of the small number of students in the wildlife program, it was felt that several years of observation of performance on the exit exam was important. The first administration of the entry exam was administered in WILD 2050 in Fall 2013 to sophomores.

Statistics Questions are in Appendix B.

How did you use findings for improvement?

Additional Comments
In Fall of 2009, the wildlife curriculum was significantly changed to enhance the ability of the students to address complex issues in wildlife management and ecology. This change was implemented following discourse with alumni, employers, students, and faculty. The current assessment was designed to examine aspects of the curriculum that were significantly changed, with the hope that the knowledge and skills that were modified were being adequately taught. Our first graduates under the new curriculum completed the course of study in Spring 2013. Thus, we have not yet collected sufficient data to identify trends or warrant modification of the new curriculum.

Expected Outcome 3. Understanding of Structured Decision Making
Students will understand the basic components of structured decision making, and be able to apply their knowledge towards solving wildlife-related problems.
Assessment Method 1: Comprehensive Exam

Assessment Method Description

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Findings

Exam: A bank of 21 multiple choice questions was administered that covered issues associated with structured decision making. The exam has not yet been administered to sophomores at the beginning of the professional program. It has been administered for 3 years to seniors at the end of the program. Because of the small number of students in the wildlife program, it was felt that several years of observation of performance on the exit exam was important. The first administration of the entry exam was administered in WILD 2050 in Fall 2013 to sophomores.

Structured Decision Making Questions are in Appendix C.

How did you use findings for improvement?

Additional Comments

In Fall of 2009, the wildlife curriculum was significantly changed to enhance the ability of the students to address complex issues in wildlife management and ecology. This change was implemented following discourse with alumni, employers, students, and faculty. The current assessment was designed to examine aspects of the curriculum that were significantly changed, with the hope that the knowledge and skills that were modified were being adequately taught. Our first graduates under the new curriculum completed the
course of study in Spring 2013. Thus, we have not yet collected sufficient data to identify trends or warrant modification of the new curriculum.

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Students will have an understanding of the history of wildlife management, and know how its history has influenced current policy and laws.

**Assessment Method 1: Comprehensive Exam**

**Assessment Method Description**

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**Findings**

Exam: A bank of 9 multiple choice questions was administered that covered issues on history, policy and law relating to wildlife management and ecology. The exam has not yet been administered to sophomores at the beginning of the professional program. It has been administered for 3 years to seniors at the end of the program. Because of the small number of students in the wildlife program, it was felt that several years of observation of performance on the exit exam was important. The first administration of the entry exam was administered in WILD 2050 in Fall 2013 to sophomores.
How did you use findings for improvement?

Additional Comments

In Fall of 2009, the wildlife curriculum was significantly changed to enhance the ability of the students to address complex issues in wildlife management and ecology. This change was implemented following discourse with alumni, employers, students, and faculty. The current assessment was designed to examine aspects of the curriculum that were significantly changed, with the hope that the knowledge and skills that were modified were being adequately taught. Our first graduates under the new curriculum completed the course of study in Spring 2013. Thus, we have not yet collected sufficient data to identify trends or warrant modification of the new curriculum.
Appendix A

Wildlife Ecology and Management Questions

(Questions 1-4): A 20,000-acre piece of property in Alabama is being trapped in an effort to significantly reduce density of coyotes. Prior to trapping, it was estimated that coyote density was extremely high. Coyotes are the only animal that is being removed from the property: no other predators are being trapped. The plan is to maintain trapping effort indefinitely.

1. Which species would you expect to exhibit the greatest increase in numbers following the reduction in coyote density?
   a. Gray fox
   b. White-tailed deer
   c. Eastern cottontail
   d. Bobcats

2. What would you expect to happen to reproduction in coyotes on the property?
   a. Stay the same
   b. Increase
   c. Decrease
   d. Continue to follow the natural pattern of coyote reproduction across the region.

3. To maintain the coyote density at a predetermined low level, what level of trapping pressure do you think would be required?
   a. Constant level
   b. Continually increasing
   c. Continually decreasing
   d. The same level that you would expect for anywhere else across the region.

4. How would you expect antler size in deer to respond to the reduction in coyote density?
   a. Stay the same
   b. Increase
   c. Decrease
   d. Mirror the average antler size that is found for that region.

(Questions 5-8): This same 20,000-acre piece of property is being managed using a QDM philosophy. The landowners are serious deer managers and commit considerable resources (time and money) towards their objectives. The goal of the landowners is to maintain a high quality deer population that provides the opportunity to harvest large-antlered bucks and keep the herd in balance with existing habitat conditions. The landowner has evidence that fawn predation by coyotes has caused recruitment to decline significantly.
5. Which of the following aspects of deer management should take priority?
   a. Maintain a high antlerless harvest
   b. Reduce harvest pressure on young bucks
   c. Continually work to improve habitat quality
   d. All of the above are equally important

6. Which of the following techniques would you recommend for monitoring the balance between deer density and carrying capacity?
   a. Assess condition of the herd by collecting data from hunter-harvested animals
   b. Spotlight counts
   c. Infrared-triggered camera surveys
   d. None of the above, there are no effective ways to monitor population density

7. How would a significant reduction in coyote density affect deer management?
   a. There will be an increase in the number of deer seen on food plots because of less pressure by coyotes, so deer harvest might have to be decreased to protect against overharvest
   b. There will be an increase in fawn recruitment, and antlerless harvest will have to increase to keep the population below K
   c. There will be an increased prevalence of disease in the population because coyotes now are not predating the sick and weak in the herd
   d. It wouldn’t affect it – just keep going as usual

8. How would an intensive deer management program affect the susceptibility of the herd to EHD (epizootic hemorrhagic disease)?
   a. Maintaining deer density below K would improve deer condition and thus reduce susceptibility to the disease
   b. Food plots or feeders would create artificial concentrations of deer and increase prevalence of the disease
   c. Because EHD is not a density-dependent disease, deer management would have no impact on prevalence of the disease
   d. Deer don’t get EHD

9. Conversion of lands to agriculture has resulted in the fragmentation of forest habitats. What species of bird, that is a nest parasite (lays eggs in other species nests), has benefited from forest fragmentation?
   a. brown-headed nuthatch
   b. black-capped chickadee
   c. brown thrasher
   d. brown-headed cowbird

10. What is not true about cellulose?
    a. it is a carbohydrate
    b. it is not easily digested by most vertebrates
    c. it is composed of carbon, hydrogen, and oxygen
    d. it is composed of amino acid groups
11. Duck production in the Prairie Pothole Region is tied most closely to what factor?
   a. predation  
   b. precipitation  
   c. food  
   d. quality of winter habitats

12. Which of the following is not used to create an accurate habitat base map?
   a. aerial photographs  
   b. ground sampling or ground "truthing"  
   c. measuring habitat use of animals  
   d. GIS program

13. Which of the following is the most important factor for creating good quality habitat for ruffed grouse in the Northcentral U.S.?
   a. creating shelter from weather  
   b. providing concealment from predators  
   c. providing a good supply of winter foods  
   d. creating an appropriate interspersion of different forest age classes

14. Which of the following does not help to characterize a wetland?
   a. lands that are transitional between terrestrial and aquatic systems  
   b. supports hydrophytes  
   c. there is always some open water  
   d. soils are hydric

15. Which of the following is true of a population that responds to hunting mortality in a compensatory way?
   a. population is regulated by density dependent processes  
   b. population is regulated by density independent processes  
   c. hunting mortality is above the threshold level  
   d. reproductive rate does not increase

16. What is not true of a ‘bucks-only’ deer harvest management strategy?
   a. most bucks are surplus  
   b. rate of population growth depends on number of females  
   c. it is a good long-term management strategy  
   d. sex ratios become skewed to females

17. Is hunting mortality more or less likely to be compensatory for small game species (like bobwhites and rabbits) compared to large game species like white-tailed deer?
18. In the Harvest Survey used for waterfowl, data from the Migratory Bird Harvest Information Program (HIP) are combined with what other data to estimate the number and species composition of ducks and geese harvested each year in the U.S.?
   a. Breeding Ground Survey
   b. Mid-winter Survey
   c. Parts Collection
   d. Banding

19. Which of the following is part of the Framework Regulations that are the core of the annual waterfowl hunting regulations?
   a. zoning
   b. daily bag limits
   c. split seasons
   d. bonus birds

20. Which of the following silvicultural practices is most influential in determining the character of the forest?
   a. Use of herbicide
   b. Prescribed fire
   c. Tree harvest
   d. Site preparation

21. Which of the following timber harvest method does not result in an even-aged forest?
   a. Clearcut
   b. Seed tree cut
   c. Shelterwood cut
   d. Group selection cut

22. What should not be a goal of wildlife managers in a forested habitat?
   a. maintain a diverse overstory
   b. maintain a sparsely stocked overstory
   c. manage timber on a long-rotation (60-80 yrs)
   d. eliminate hardwood understory

23. What state is the exotic game capital of the U.S. with > 700 exotic game ranches?
   a. Alabama
   b. Texas
   c. California
   d. Florida

24. Why is the release of captive-reared mallards a concern for the U.S. Fish & Wildlife Service?
a. possible increased risk of disease transmission  
b. greater potential for violating regulatory statutes  
c. increased risk of hybridization with native wild ducks  
d. all of the above

25. How did the release of Arctic foxes on the Aleutian Islands indirectly change the dominant plant community on these islands from grasses to tundra-associated vegetation?  
a. through reduction in numbers of seabirds and the associated nutrient-rich guano  
b. through reduction in numbers of the dominant grazer on the islands, Aleutian Canada Goose  
c. through a reduction in the small mammal community on the islands  
d. none of the above

26. Which of the following is not an invasive exotic species?  
a. Nutria  
b. Zebra mussel  
c. Feral pig  
d. Ruffed grouse

27. Next to Hawaii and California, what state has the most species listed by the Endangered Species Act as either threatened or endangered?  
a. Texas  
b. Oregon  
c. Florida  
d. Alabama

28. What has been the primary cause of death for the wolves that were reintroduced to Yellowstone National Park?  
a. Vehicles  
b. Malnutrition  
c. Disease  
d. Intraspecific fighting

29. Which of the following recovery methods did not help the Aleutian Canada Goose recover and get removed from the endangered species list?  
a. eliminated arctic fox from islands  
b. closed hunting season in the U.S.  
c. release of captive-reared geese  
d. none of the above

30. For some wildlife species, habitat in federal ownership is critical to their existence. For what species is this not true?  
a. Red-cockaded woodpecker  
b. Grizzly Bear
c. Whooping Crane  
d. Wood Duck  

31. The theory of island biogeography predicts that extinction rates of wildlife species using habitat fragments will depend on what factor?  
   a. Size of the fragment  
   b. Habitat quality  
   c. Distance of the fragment from similar habitats  
   d. Management of habitats within the fragment  

32. What is the best way to promote biodiversity on federal lands?  
   a. Use a “hands-off” approach  
   b. Focus management efforts at the landscape level  
   c. Use intense management at local levels  
   d. Limit the number of visitors  

33. Which of the following is not true of the Alabama Gap Analysis Project?  
   a. It is a state-funded program  
   b. It promotes conservation of biodiversity  
   c. It uses Geographic Information System (GIS)  
   d. It is used to identify areas where biodiversity is not protected  

34. What is the major organizing factor of wildlife species that live in groups?  
   a. Social dominance  
   b. Predation  
   c. Competition  
   d. Decreased vigilance  

35. Which of the following has not happened since wolves have been reintroduced to Yellowstone National Park?  
   a. Increase in numbers of coyotes  
   b. Increase in numbers of red fox  
   c. Regeneration of willows and aspen  
   d. Decrease in elk population
Appendix B

Statistics Questions

36. $\lambda$ is the finite rate of increase. What value is $\lambda$, if the population is declining?
   a. $\lambda > 0$
   b. $\lambda < 0$
   c. $\lambda < 1$
   d. $\lambda = 0$

37. Which of the following is true of the intrinsic rate of increase ($r$)?
   a. it is always a positive value
   b. it is a ratio
   c. it measures per capita rate of increase
   d. $e^r$

If $N_0 = 600$ and for a 1 year period births = 65 and deaths = 25, answer questions 3 and 4.

38. What is the intrinsic rate of increase?
   a. 0.0666
   b. 0.1083
   c. 1.1520
   d. 2.60

39. Starting at $N_0 = 600$, what will be the population size in 5 years?
   a. 837
   b. 1200
   c. 2600
   d. 712

40. The Chapman Method is preferred to the Petersen Method because it produces a less biased estimate of population size. Which statement is true about the Chapman Method compared to the Petersen Method.
   a. Estimate of N is lower for Chapman
   b. Estimate of N is higher for Chapman
   c. Estimate of N is less precise for Chapman
   d. None of the above

41. When thinking about how violations of capture-recapture model assumptions will affect the estimate of N, “always think in terms of how violations will affect the ratio”. Which ratio should I be concerned with?
a. \( \frac{m_2}{n_2} \)

b. \( \frac{n_2}{n_1} \)

c. \( \frac{n_2}{m_2} \)

d. \( \frac{n_1}{n_2} \)

42. There are 4 assumptions for using the Line Transect method to estimate animal density. Which one is **most** critical?

   a. Animals don't move before being detected
   b. Distance and angles are measured without error
   c. Animals directly on the line will never be missed
   d. Sightings are independent

43. Precision is measured by which of the following?

   a. Variance
   b. Reliability
   c. Mean
   d. Average performance of the estimate

44. During logistic growth, when is growth rate the highest?

   a. when the population size is lowest
   b. when all females are breeding
   c. when population size is half the carrying capacity
   d. when mortality is zero

45. In a capture-recapture study, how would the fact that marked animals are **trap happy** influence your estimate of \( N \) using the Petersen Method?

   a. Underestimate
   b. Overestimate
   c. No influence
   d. None of the above
Appendix C

Structured Decision Making Questions

46. Adaptive management for wildlife populations is:
   a. the process of adjusting management actions based on trial and error.
   b. a statistical procedure used to compare management strategies.
   c. a method for evaluating iterative decisions.
   d. the application of ecology and good scientific process.

47. Structured decision making involves (circle all correct answers)
   a. creating predictive models for management outcomes.
   b. formulating objectives so progress can be measured.
   c. selecting building techniques.
   d. defining a problem so success can be recognized.

48. Good management objectives can be identified because they are:
   a. lengthy and complicated.
   b. stated in unambiguous language.
   c. measurable and precise.
   d. related to wildlife population size.

49. A decision problem statement is complete when it answers the question:
   a. Why am I doing this?
   b. Who am I?
   c. How do I manage populations?
   d. Where is the problem?

50. Means objectives are an important part on decision analysis because:
   a. They help to define the problem.
   b. They identify important research needs.
   c. They require data collection and funding.
   d. They describe how an objective can be achieved.

51. The process of structured decision making leads to
   a. the correct answer in every case.
   b. smart decisions based on rewards and uncertainty.
   c. research for developing better models.
   d. a solution that everyone agrees on.

52. Smart choices and informed decisions result from
a. thinking clearly.
b. expensive research projects.
c. knowing your limits.
d. balancing uncertainty and potential rewards.

53. The consequences tables in structured decision making are useful because:
   a. they make it easy to find the best solution to a problem.
b. they involve modeling and statistics.
c. they allow biologists to determine how expensive management really is.
d. they compare the performance of management alternatives on each objective.

54. Why are tradeoffs important in making smart decisions?
   a. Some alternatives cannot be compared without them.
b. Tradeoffs allow comparisons of management techniques.
c. Smart decisions always lead to correct solutions.
d. When someone asks they are easy to explain.

d. They didn't work somewhere else.

55. Management alternatives should never be considered in a structured decision making process when:
   a. No one has ever tried them before.
b. They didn't work somewhere else.
c. Cost is a consideration.
d. Process becomes more important than results
   e. None of the above.

56. Monitoring is an integral part of adaptive management because:
   a. It gets me out of the office.
b. It involves measuring habitat structure and water levels.
c. It relies on complex statistical analysis.
d. It is important to measure progress towards solving a management problem.

57. When it comes to making management decisions, competing hypotheses:
   a. are too scientific to be used by managers.
b. are important to learn about for science.
c. result in alternative predictions about the response to management actions.
d. confuse landowners and are not necessary when making recommendations.

58. A good index for monitoring wildlife populations:
   a. is impossible to obtain.
b. is directly related to population size.
c. is collected using a standardized protocol.
d. is a complete census.

59. The uncertainty associated with making good wildlife management decisions
   a. can never be measured and is only important for research purposes.
   b. is estimated using conditional probabilities.
   c. is not worth considering unless the risk of making a bad decision is high.
   d. is also known as measurement error.

60. Monitoring and surveys are costly and can only be justified when
   a. it is important to be accountable for management actions.
   b. the benefits of management are great.
   c. endangered species are involved.
   d. economically important species are present.

(Questions 16-21): Beavers have flooded 20 acres along the creek on the south end of the 360
acre tract in Macon County managed by Ron Jacobs, a private consultant. The flooding makes
the roads impassable on the south side of the tract during December and January and it costs
the land owner several hundred dollars to get the road repaired almost every year. If he could
lower the water level by one foot it would reduce the size of the flooded area by 50% and the
road would remain dry nearly every year. The landowner’s husband is an avid bird watcher and
has seen Prothonotary Warblers nesting in the snags on the flooded area and regularly sees a
variety of wading birds there. He thinks if the wetland was much smaller many of his favorite
birds would not be found there. The landowner’s son enjoys waterfowl hunting and regularly
shoots a limit of Wood Ducks at the pond, but can only make the trip 4 or 5 times each year.
The son thinks enlarging the pond would be great and might attract more waterfowl from the
nearby river. The landowner’s grandchildren would make a considerable amount of money, and
deer and turkey hunting would be improved if Ron removed the dam completely and planted
the area in pines. However, the beavers would soon rebuild the dam and flood the area again.
Ron has to make some management recommendations to the landowner, but there are several
alternatives he can pursue, and each has different consequences.

61. When making a decision Ron should
   a. only recommend the alternative that provides the greatest potential for
economic benefit to the landowner.
   b. only consider the ecological consequences of his management
   recommendations.
   c. consider all of the landowners objectives and help her compare the expected
   results of several alternatives.
   d. plant longleaf pine because it is native to the area, there are landowner
   incentives available, and there isn’t much of it left in Macon County.

62. Increasing the size of the pond to attract other types of waterfowl is not a good
objective, because:
a. They have never used the pond before, and may never find it.
b. It would increase the amount of damage to the road.
c. The area is better suited for deer and turkeys.
d. None of the above. This is a reasonable objective.

63. In order to predict the outcome under each of the management alternatives, Ron must:
   a. Conduct research to estimate carrying capacity of the land.
   b. Have a some type of model to make predictions.
   c. Develop a precise statistical model and estimate confidence limits around his prediction.
   d. Have an advanced degree in wildlife management or forestry.

64. Installing a stand pipe and drain tile to control water levels behind the dam is:
   a. The way to solve all of the land owner’s problems.
   b. Too costly for most landowners.
   c. A good way to ensure that the landowner needs his services in the future.
   d. A reasonable management alternative.

65. Determining how much the landowner is willing to pay each year for road maintenance so that her son can hunt ducks 5 weekends each year is a good example of:
   a. Evaluating tradeoffs among objectives
   b. A good way to make her understand how ridiculous it is not to remove the beavers
   c. Predicting the consequences of management actions.
   d. Establishing measurable objectives.

66. When evaluating the consequences of each alternative management plan Ron develops, He should:
   a. Be absolutely certain of the results under each management scenario.
   b. Not consider the land owner’s desire to provide for her grandchildren.
   c. Incorporate uncertainty in his comparison of the alternatives.
   d. Tell the owner that no matter what he does the beavers will be back.
Appendix D

History, Law, and Policy Questions

67. What Era of Wildlife Conservation was the Lacey Act enacted?
   a. Era of Environmental Management
   b. Era of Protection
   c. Era of Abundance
   d. Era of Game Management

68. On average, where do state wildlife agencies get most of their revenue for wildlife conservation?
   a. Pittman-Robertson funding
   b. sales tax
   c. licenses & permits
   d. tax checkoffs

69. Mitigation is often used by developers to “compensate their impact by replacing or substituting resources” (like habitat). In mitigation, economic units are not dollars but habitat units. What process is used by the U.S. Fish & Wildlife Service to calculate habitat units?
   a. Wildlife Valuing Procedure (WVP)
   b. Benefit-Cost Ratio
   c. Habitat Evaluation Procedure (HEP)
   d. Mitigation Evaluation Procedure (MEP)

70. The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation uses which of the following methods to place a value on these activities?
   a. direct expenditures
   b. total benefit value
   c. maximum willingness to pay
   d. all of the above

71. What section of the Endangered Species Act is designed to ease restrictions on private landowners?
   a. Section 7
   b. Section 10
   c. Section 9
   d. Section 5

72. What private conservation organization publishes the Red List of Threatened Species?
   a. IUCN
   b. World Wildlife Fund
c. National Wildlife Federation
d. The Nature Conservancy

73. What piece of Endangered Species legislation distinguished between threatened and endangered species?
   b. Endangered Species Act (1973)
   c. Endangered Species Preservation Act (1966)

74. What event signaled the birth of professional wildlife conservation?
   a. Authorization of the Pittman-Robertson Act
   b. Publishing of “Game Management” by Aldo Leopold
   c. Authorization of the Endangered Species Act
   d. Approving the first National Wildlife Refuge at Pelican Island, FL.

75. On average, state wildlife agencies get what percentage of their operating revenue from federal aid sources like Pittman-Robertson and Dingell-Johnson?
   a. 50%
   b. 20%
   c. 90%
   d. 70%