FWF 410
Test #1 Review

Global Positioning System

1. Know which U.S. Department is responsible for maintaining GPS, and which branch of the Armed Services is responsible for operating GPS.
2. Know the 3 components of GPS.
3. Know how often GPS satellites orbit Earth and how many are currently in orbit.
4. Be able to describe how satellite trilateration is used to pinpoint a location on Earth, and how many satellites are necessary. Know the importance of the 4th satellite.
5. Be able to describe how satellite geometry influences the accuracy of a location, and the ideal numerical range of PDOP.
6. Be able to look at a skyview or PDOP chart and determine when would be the most ideal time to sample or the best time to avoid.
7. Know how distance is estimated accurately from a location on Earth to satellites, which is necessary for trilateration (#4).
8. Know the 2 primary factors that influence the magnitude of ephemeris.
9. Know how ionospheric and tropospheric errors are removed.
10. Be able to describe multi-path and possible causes.
11. Know what selective availability is and that it is no longer used.
12. Be able to describe the concept and process of post-processing differential GPS.

What is Habitat?

1. Be able to define habitat according to Hall et al. (1997) and give examples of correct uses as discussed in class.
2. Know the 3 general components of habitat (biotic factors, abiotic factors, and spatial structure of habitat patches).
3. Be able to explain why “habitat type” terminology should not be used.
4. Be able to define habitat selection and how it relates to habitat preference.
5. Know the difference between macro- and micro-habitat.
6. Habitat quality for an organism is often classified as low, moderate, or high. To make this determination, what parameters should be measured?
7. Be able to explain the relationship between habitat (or food) abundance and availability.
8. Be able to explain why “habitat suitability” terminology should not be used.

Landscape Ecology:

1. Be able to define landscape.
2. Know the 2 most important components of landscape structure.
3. Know the basic goal of landscape analyses.
4. Be able to describe landscape-scale dependency as it relates to the perception of an organism and its ability to move through a disturbed landscape.
5. Know what 2 guidelines are commonly used to define the effective landscape size for an organism.
6. Be able to define a metapopulation (don’t forget—local populations must “blink on and off”).
7. Be able to describe 3 reasons why organisms may disperse.
8. Know the difference between source and sink populations and how they relate to habitat quality.
9. Be able to discuss and reproduce graphs associated with the equilibrium model of Island Biogeography conceived by Drs. Robert MacArthur and E. O. Wilson. In particular, understand the predictions that can be made regarding patch size and isolation and species richness.
10. Know what government agency has low-elevation color photos (slides) that can be borrowed gratis in areas where farming occurs (see slide 17).
Wildlife Habitat Evaluation

1. Know the goal of a wildlife habitat evaluation.
2. Be able to define response variable.
3. Know the 8 steps of a wildlife habitat analysis.
4. Know the 3 categories of problem statements common for managers and researchers.
5. Be able to describe why it is important to perform a literature review, especially if you are unfamiliar with the biology of a species.
6. Be able to list a few important abiotic, biotic, and spatial response variables for a particular species of your choice.
7. Know the criteria (hgt & dbh) that we discussed in class and used in lab to separate understory, midstory, and overstory forest vegetation.
8. Know the goal of using an objective sampling design (see sampling design lecture also).
9. Know the 3 critical points to collecting accurate habitat data.
10. Be able to describe the difference between biological and statistical significance, and the significance level ($\alpha$) commonly used for each.
11. Know when speculation is allowed and not allowed in a wildlife habitat analysis.

HSI Models

1. Know what HEP stands for and be able to explain its goal.
2. Know the assumptions of HEP.
3. Know what HSI stands for and understand the goal of HSI models (i.e., measure habitat quality).
4. Know that HSI models take 3 forms: words, graphs and equations.
5. Be able to interpret the output value of a HSI model in the context of habitat quality and species carrying capacity.
6. Be able to estimate the suitability index for a habitat variable given a suitability graph.
7. Be able to calculate the suitability index for a habitat variable given a suitability equation.
8. Know the 3 common mathematical ways that suitability indices are combined to calculate a HSI. In particular, know which ones are used when a suitability index variable is considered necessary for survival and reproduction.
9. Given suitability values for 2 variables measured in a habitat patch for a species, be able to calculate the habitat suitability index given the HSI model. Also, be able to think of a logical management approach to increase the HSI for a habitat patch given the suitability variables.
10. Given the HSI value and area of a habitat patch, be able calculate the habitat units for the patch, and interpret this value with other habitat units from different patches.

Sampling Designs

1. Know and be able to describe the 3 measures of data reliability.
2. Be able to compare and contrast simple random vs. stratified random sampling.
3. Be able to compare and contrast cluster vs. multi-stage sampling.
4. Be able to give an example of cluster sampling.
5. Know the criteria used to determine whether data from minor plots should be averaged or can be used as independent samples in a multi-stage design.
6. Be able to describe a systematic sampling scenario.
7. Know the assumption of population distribution pattern for random, stratified, and systematic sampling.
8. Be able to describe adaptive sampling and know when it can be useful.
9. Be able to describe paired sampling and know how an independent response variable can be created from non-independent paired data.
10. Be able to describe double sampling (assigned reading).
11. Given a sampling scenario be able to identify which type of sampling design you would use to sample a particular response variable.
Labs

1. Be able to list the major components of bobwhite quail habitat.
2. Be able to describe why a managed early successional grassland with native warm-season grasses is better than a fescue field for bobwhite quail.
3. Be able to list some techniques that Bill Smith and John Gruchy discussed to maintain warm-season grasslands in an ideal stage of succession.
4. Know the 3 plot sizes used to measure understory, midstory and overstory woody vegetation.
5. Know the names of the instruments used to measure vertical structure of vegetation, canopy cover and tree height.
6. Know what a MAPS station is and the importance of it in monitoring migratory songbird populations. See: http://www.birdpop.org/maps.htm
7. Know that the standard for aging tadpoles is the Gosner stage.
8. Given a very good photograph, be able to distinguish between a green frog and bullfrog tadpole.

Required Readings:

Unless otherwise indicated, the text is: Techniques for Wildlife Investigations and Management, 6th ed. (2005).

1) Chap 15 (pp. 421-433).
3) Chap 24 (638-645)
4) Chap 17 (470-476) and Chap 18 (489-494)
5) Chap 18 (495-497)
6) Chap 3 (54-63) and 2 handouts

Yes, there will be questions. Focus on bulleted topics listed at the beginning of each lecture presentation.