

## WILDLIFE 478/510, ECOLOGY OF WILDLIFE POPULATIONS

Tentative Lecture Schedule, Fall 2001

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Office hrs. M 11-12, 2-4, W 11-12

Course home page: <http://www.humboldt.edu/~tlg2/w478/>

Week of	Topic	Reading
Aug	27 Introduction/overview	Caughley 1970
	Models/Stats review	White et al. Ch. 2
Sept	3 Population Parameters and Exponential Growth	Lecture notes Gotelli Ch. 1
	10 Logistic Growth, Time lags, Chaos	Gotelli Ch. 2
	17 Stochastic Variation and Comparisons with Field Data	Gotelli Ch. 1 & 2 " ", Coughenour and Singer 1996
	24 Life Tables	Gotelli Ch. 3
Oct	1 Age-structured Models	" ", Noon and Sauer 1992, Raphael et al. 1996
	5 <b>Exam I (IN LAB)</b>	
	8 Metapopulation models	Gotelli Ch. 4, Harrison 1991
	15 Source-sink Populations Guest lecture by Dr. Lamberson	Donovan et al. 1995, Donovan and Lamberson 2001
	Genetics of small populations	Lecture notes, Caughley 1994
	22 Population Viability Analysis Spotted Owl Models	Gotelli Ch. 1 & 2, McKelvey et al. 1992, Beissinger and Westphal 1998
	29 Hunting Management, Maximum Sustainable Yield, Economics of Resource Exploitation	McCullough 1984, Mangle et al. 1998
Nov	5 Additive vs Compensatory Mort. and Population Regulation	Nichols et al. 1984, Sinclair 1989
	9 <b>Hand out Exam II</b>	
	12 Interspecific Competition	Gotelli Ch. 5&6, Wiens 1977
	16 <b>Exam II DUE</b>	
	19 <b>THANKSGIVING BREAK</b>	
	26 Predator-Prey Models	Gotelli Ch. 6
Dec	3 Predator-prey Models	Gotelli Ch. 6, Messier 1991
	10 Population cycles and Conclusions	

Reading materials are on reserve in the library, or on the net (ONCORES). The text for the course is: **Gotelli, N. 2001. A primer of Ecology, 3rd Edition.** It is available in the bookstore.

## WILDLIFE 478/510, ECOLOGY OF WILDLIFE POPULATIONS

Tentative Lab Schedule, Fall 2001

<b>Date</b>	<b>Topic</b>	<b>Reading/Location</b>
Aug	31 Small mammal trapping	Mad River Slough (Meet by Forestry building. Bring a clipboard, plastic bag and rubber gloves.)
Sept	<b>4-8 Small mammal trapping</b>	<b>Mad River Slough</b>
	7 Mark-recapture estimators	White et al. Ch. 1,7
	14 Analysis of mark-recapture data	Krebs (Ecol. Meth.) Ch 2.1, 2.2, 2.4
	<b>14-15 Small mammal trapping</b>	<b>Mad River Slough</b>
	21 Analysis of mark-recapture data	
	<b>21-23 Weekend Field Trip</b>	Galbreath Property. Trap and Map K-rats.
	28 Exponential and logistic growth	<b>Lab exercise 1 due</b>
	<b>28-29 Small mammal trapping</b>	<b>Mad River Slough</b>
Oct	5 <b>EXAM I (LECTURE EXAM)</b>	
	12 Population projection, Metapopulation models	<b>Lab exercise 2 due</b>
	<b>12-13 Small mammal trapping</b>	<b>Mad River Slough</b>
	19 Jolly-Seber Analysis, Program JOLLY	Krebs (Ecol. Meth.) Ch. 2.3
	26 Raptor observations	Mad River Slough (Meet by Forestry building and bring a clipboard.)
		<b>Lab exercise 3 due</b>
Nov	2 Analysis of Jolly-Seber data, PVA models	McKelvey et al. 1992
	9 Analysis of Jolly-Seber data (optional)	<b>Lab exercise 4 due</b>
	16 No meeting	<b>Lab exercise 5 due</b>
	23 Thanksgiving break	
	30 Competition models	
Dec	7 Predator-prey models	<b>Lab exercise 6 due</b>
	14 No meeting	

For outdoor labs you will need a clipboard, rain gear, outdoor clothing, good boots, and a positive attitude in soggy conditions.

### Grading

Evaluation will be based on two midterm exams (100 pts. each), a final exam (150 pts), six lab exercises (25 pts each). Thus, grades will be based on a total of 500 points, lecture and lab points will be combined.

Please note the following policies:

ALL LABS WILL BE HELD RAIN OR SHINE.

LATE EXAMS WILL BE GIVEN A ZERO.

LATE LAB REPORTS WILL HAVE 10 POINTS DEDUCTED EACH DAY.

MISSING REPORTS WILL BE AVERAGED AS ZERO.

### **Trip to Galbreath Ranch**

The trip to the Galbreath Ranch is not mandatory but you will have an additional assignment if you do not go on the trip (see below). The objective of the trip is to mark animals as part of a long-term demographic study and map the metapopulation structure of the Merriam's kangaroo rat (*Dipodomys merriami*) population along Rancheria Creek. We will mark animals with Passive Integrated Transponder (PIT) tags for a long-term study of survival of individuals in the population. In addition, we will map the location and estimate the size of kangaroo rat populations along the creek. These data will be used to develop a metapopulation model for the population.

We will leave campus at 12:00 on Friday and return late Sunday afternoon. You will need to bring your own camping gear (including cooking gear) and food for breakfast and lunch on Saturday and Sunday and dinner on Saturday night. We will stop for food on our way down on Friday. Water will be provided.

Those who do not participate must obtain data from the literature to build a metapopulation model. The minimum amount of information you will need is: the number of subpopulations, the distance between subpopulations, an estimate of movement rate between subpopulations, and the size of each subpopulation. You must include a citation and a copy of the paper that you used to obtain your parameters with your assignment. You will use these data to complete homework assignment 4.

### **Reading list for Ecology of Wildlife Populations**

The following readings are on reserve at the library, or are on electronic reserve (ONCORES). See the lecture schedule for dates that readings are assigned. Please read material before coming to class.

- Beissinger, S. R. and M. I. Westphal. 1998. On the use of demographic models of population viability in endangered species management. *Journal of Wildlife Management*, 62: 821-841.
- Caughley, G. 1970. Eruption of ungulate populations, with emphasis on Himalayan thar in New Zealand. *Ecology* 51:53-73.
- Caughley, G. 1994. Directions in conservation biology. *J. Anim. Ecol.* 63:215-244.
- Coughenour, M. B. and F. J. Singer. 1996. Elk population in Yellowstone National Park under the policy of natural regulation. *Ecological Applications* 6:573-593.
- Donovan, T. M., F. R. Thompson, III, J. Faaborg, and J. R. Probst. 1995. Reproductive success of migratory birds in habitat sources and sinks. *Conservation Biology* 9:1380-1395.
- Donovan, T. M., R. H. Lamberson. 2001. Area-sensitive distributions counteract negative effects of habitat fragmentation on breeding birds. *Ecology* 82:1170-1179.
- Harrison, S. 1991. Local extinction in a metapopulation context: an empirical evaluation. Pages 73-88. *in*. M. Gilpin and I. Hanski, eds. *Metapopulation dynamics: Empirical and theoretical investigations*. Academic Press, San Diego.
- Mangel, M., A. Mulch, A. Mullan, W. Staub, E. Yasukochi. 1998. A generally accessible derivation of the golden rule of bioeconomics. *Bulletin Ecological Society of America* 79:145-148.
- McCullough, D. R. 1984. Lessons from the George Reserve, Michigan. Pages 211-242. *in*. Hall, L. K., ed. *White-tailed deer ecology and management*. Stackpole books.
- McKelvey, K, B. R. Noon, and R. H. Lamberson. 1992. Conservation planning for species occupying fragmented landscapes: the case of the northern spotted owl. Pages 424-450 *in*. Kareiva, P. M., J. G. Kingsolver, and R. B. Huey. eds. *Interaction and Global Change*. Sinauer Assoc., Sunderland, MA. (on reserve)
- Messier, F. 1991. The significance of limiting and regulating factors on the demography of moose and white-tailed deer. *J. Anim. Ecol.* 60:377-393.
- Nichols, J. D., M. J. Conroy, D. R. Anderson, and K. P. Burnham. 1984. Compensatory mortality in waterfowl populations: a review of the evidence and implications for research and management. *Trans. North Amer. Wildl. Nat. Resour. Conf.* 49:535-554.

Noon, B. R. and J. R. Sauer. 1992. Population models for passerine birds: structure, parameterization, and analysis. Pages 441-464. *in*. McCullough, D. R., and R. H. Barrett, eds. *Wildlife 2001: populations*. Elsevier Applied Science, New York, NY.

Raphael, M. G., R. G. Anthony, S. DeStefano, E. D. Forsman, A. B. Franklin, R. Holthausen, C. E. Meslow, and B. R. Noon. 1996. Use, interpretation, and implications of demographic analyses in Northern Spotted Owl populations. *Studies in Avian Biology* 17: 102-112.

Sinclair, A. R. E. 1989. Population regulation in animals. Pages 197-242. *in*. Cherrett, J. M., ed. *Ecological concepts*. Blackwell Scientific, London. (on reserve)

White, G. C., D. R. Anderson, K. P. Burnham, and D. L. Otis. 1982. Capture-recapture and removal methods for sampling closed populations. Los Alamos National Laboratory Publication LA-8787-NERP. Glossary, Chapters 1-2, 7.

Wiens, J. A. 1977. On competition and variable environments. *Amer. Sci.* 65:590-597.

### **Course homepage**

The homepage for the class included the lecture and lab syllabi, the list of reading materials and access to articles online. The homepage address is: <http://www.humboldt.edu/~tlg2/w478/>

### **Accessing articles on ONCORES**

Most of the articles are available on the ONCORES database on the internet. To access these articles, look for the selection on the course homepage (see below for username and password) or use the following directions.

From the Library homepage (<http://library.humboldt.edu>)

Click on the ONCORES hypertext

When prompted, enter the following information

Username: oncores

Password: (This will be provided in class)

Choose Search and go to the location for W478.