WLF F625 Population Dynamics of Vertebrates
4 credits, Offered Spring Odd-numbered Years, CRN 37002

Sampling vertebrate populations, modeling vertebrate population dynamics, and the implications for wildlife management. Focus will be on study design, model assumptions, estimation of population parameters, and population modeling. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data. Prerequisites: BIOL 271, STAT 401. (Cross-listed with FISH F625). (3+3)

Meeting place/time:
Lecture TR for 1.5 hour each, place and time TBD, lab Irving I, room 303, R 2:15-5:15 pm

Instructors:
Christine Hunter
Office: 415A Irving I, 907.474.6743
Christine.hunter@alaska.edu
Office Hours: Tuesday 2-3 pm or by appointment.

Mark Lindberg
Office 411 Irving I, 907.474.6598
mslindberg@alaska.edu
Office Hours: TBD

Text:

Additional readings from the primary literature will be assigned throughout the semester.

Course goals and learning outcomes:
Provide students with broad exposure to the theory and concepts for modeling the dynamics of vertebrate populations. By the end of the course, students will have an extensive understanding of approaches available for modeling population ecology, they will be able to use tools necessary to complete analysis, and they will have sufficient knowledge to appropriate interpret results. This course will provide skills essential for completing population assessments required in many professional job appointments.

Instructional Methods
Instructional methods will include lectures, guest speakers, student presentations, small group discussions and class discussion of assigned readings. Students will be required to write short responses to assigned readings. Students will apply the techniques learned in lectures to analysis
of real or simulated data sets in the lab sessions. Material relevant to lectures and labs will be posted on blackboard or the www.

**Course Calendar**

Week 1: Fundamentals of Population Ecology  
Week 2: Sampling and Probability Theory/ Maximum Likelihood Estimation  
Week 3: Survey of Approaches for Capture-Mark-Recapture Studies  
Week 4: Generalized Linear Models/Information Theory  
Week 5: Abundance Estimation  
Week 6: Survival and Movement  
Week 7: Occupancy Modeling  
Week 8: Unstructured Population Models  
Week 9: Age and Stage based Population Models  
Week 10: Perturbation Analyses  
Week 11: Environmental Stochasticity  
Week 12: Demographic Stochasticity  
Week 13: Density Dependence  
Week 14: Metapopulation Models  
Lecture and lab sessions will address the same topics each week.

**Evaluation:**

Laboratory assignments - 40%  
Exams (4) - 50%  
Participation 10%

Grades will be based on a straight percentage >89% A, >79% B, >69% C, and >59% D.

**Policies:**

Students are expected to attend all scheduled class and lab sessions, to come to class prepared, and to participate in all class discussions. You will lose 25% of the possible points for each day an assignment is late. Make-up exams will only be provided if prior arrangements are made.

UAF students are subject to the Student Code of Conduct (see the UAF academic catalog for details). Plagiarism (see [www.uaf.edu/library/instruction/handouts/Plagiarism.html](http://www.uaf.edu/library/instruction/handouts/Plagiarism.html) for details) or cheating are serious violations of the Code and will not be tolerated. Academic dishonesty will lead to a failing grade in the course and possibly further disciplinary action.

**Support Services:**

The Office of Disabilities Services implements the Americans with Disabilities Act (ADA) to insure that UAF students have equal access to the campus and course materials. The instructors will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodations to students with disabilities.