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
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Office Hours: Tuesday 2-3 pm or by appointment.

Mark Lindberg
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mslindberg@alaska.edu
Office Hours: TBD

Text:

Williams, Nichols, and Conroy 2001. Analysis and Management of Animal Populations. Analysis and Management of Animal Populations. Academic Press. ISBN 0-12-754406-2.

Caswell, H. 2000. Matrix Population Models: construction, analysis and interpretation. Sinauer. Associates. ISBN 978-0878930968

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 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.