Waterfowl Ecology and Evolution, BIOL 4395
Spring Semester, 2020
Lecture: Tues & Thurs from 9:00 -10:20 am, Classroom Building C201
Lab: Thurs from 1:30-4:20 pm, Biology Building B206

Instructor: Dr. Philip Lavretsky
Office: Biological Sciences B318, (915) 747-6462; e-mail: plavretsky@utep.edu
Office hours: TBD or by appointment

Teaching Assistant: Marissa Kaminski
Office: Biological Sciences B310; e-mail: mkaminski @miners.utep.edu
Office hours: TBD or by appointment

COURSE DESCRIPTION AND GOALS
The goal of this course is to familiarize you with the ecology and management of North American waterfowl throughout their annual cycle by applying broad concepts from life history theory, behavioral and community ecology, and conservation biology. Each lecture, I will strive to provide basic background information on specific topics, and integrate this with new advances on the forefront of waterfowl research. Labs will focus on developing practical skills in applied waterfowl science, and field trips will familiarize you with waterfowl, their habitats, and methods in habitat management.

In addition to teaching you things about waterfowl and their habitats, this class seeks to develop:
- Broadly transferrable skills in data organization and analysis
- Critical thinking skills in applying basic ecological research to practical conservation problems
- Teamwork skills in completing group lab assignments
- Written and oral communications skills, especially developing a scientific voice and communicating with elegance and concision

READINGS
- As assigned on the schedule, provided on Blackboard.

CLASSROOM RESPECT
- Class will begin on time. Please show up on time.
- Do not use your cell phones in class, and stay focused.
- Field trips should be viewed as a privileged activity; show the utmost respect for the people and places we visit.

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
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<tbody>
<tr>
<td>Lecture Midterm</td>
<td>100 pts (20%)</td>
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<tr>
<td>Lecture FINAL</td>
<td>100 pts (20%)</td>
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<tr>
<td>Lab Practical</td>
<td>100 pts (20%)</td>
</tr>
<tr>
<td>Lab Assignments</td>
<td>150 pts (20%)</td>
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<tr>
<td>In-class Presentation &amp; Participation</td>
<td>150 pts (20%)</td>
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<tr>
<td><strong>Total for students:</strong></td>
<td><strong>500 pts</strong></td>
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Grades will be assigned as: 90+% = A, 80-89% = B, 70-79% = C, 60-69% = D, <60% = F.
Lecture Exam & Final (40%): There will be a 100-pt midterm exam and 100-pt Final. Exams will each consist of true/false, multiple choice, and short answer. You need to know the lecture material to complete this exam in the allotted time.

Lab Practical Exam (20%): There is 1 lab practical covering information surrounding any and all. Labs will cover taxonomy and morphological aspects of major clades. The practical will consist of true/false, multiple choice, and short answer. You need to know the lab material to complete this exam in the allotted time.

Lab Assignments (20%): Each lab will have assignments with questions regarding that days information, which will be due the following lab day. There are also two project assignments. One, students will need to pick one waterfowl species to write a species account page (details to follow). An individual field catalog will also be assigned, in which students are expected to go outside anywhere in the Chihuahuan Desert and keep an account of number and type of waterfowl observed. You may go in a group to help identify animals, but the catalog must be turned in individually, with your own photographs and/or drawings.

In-class Presentation &Participation (20%): There will be an in-class presentation done in groups of two on topics covering any and all aspects of waterfowl ecology, evolution, etc. In addition, you are expected to participate, especially during group discussions following student presentations. Additionally, students are expected to follow and complete computational lab protocols as we work through different programs.

Missed Due Date(s) Policy: If you miss quizzes or assignments due to illness or death of a family member or close friend, you must (1) notify me prior to the exam (in exceptional cases, I will wave this requirement) and (2) provide an official record of a visit to the doctor or an obituary. Otherwise, you will earn zero points for the missed quizzes/assignments.

Academic Integrity: Cheating or plagiarism will not be tolerated. The university gives students and faculty guidelines on how to deal with violations of academic integrity, which we expect you to follow and I will follow myself (you can read them at http://sa.utep.edu/osccr/academic-integrity/). This policy exists to level the playing field for all students and not give the few cheaters an unfair advantage over the vast majority of students, who are hard-working and honest. Copying from a peer is easy to detect and will be considered as plagiarism.

Special needs and circumstances: If you need any special accommodations please let me know at the beginning of the class and/or register with the Center for Accommodations and Support Services. Also, if you run into personal problems beyond your control, please let me know before missing a deadline etc. I will try to be accommodating and understanding. Letting me know about problems after you missed a deadline or failed an assignment usually suggests that you are making an excuse. For the official policies on academic integrity and scholastic dishonesty, please refer to Handbook of Operating Procedures.

Campus Carry: Persons holding a Concealed Handgun License can lawfully carry their handgun into a UTEP classroom as long as the gun remains concealed. Open carry remains prohibited on campus. In other words, none of us should see (or be able to tell that there is) a gun at UTEP. Call the University Police at 747-5611 or dial 911 if you see any individual on campus with a handgun or other type of weapon. For more information on campus carry, see [http://sa.utep.edu/campuscarry/]; for more information on overall campus safety, see [http://admin.utep.edu/emergency].
### Important School Dates:
- March 16-20: Spring Break
- **March 27th**: last day to withdraw
- March 27th: (Cesar Chavez – NO SCHOOL)
- May 8th: DEAD DAY

### SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Lecture/Lab Topic</th>
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<tbody>
<tr>
<td>21-Jan</td>
<td>Tues</td>
<td>Introduction &amp; Background Information</td>
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<tr>
<td>23-Jan</td>
<td>Thurs</td>
<td>History of Waterfowl Management</td>
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<tr>
<td>23-Jan</td>
<td>Thurs (LAB)</td>
<td>NO LAB</td>
</tr>
<tr>
<td>28-Jan</td>
<td>Tues</td>
<td>Systematics &amp; Biogeography</td>
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<tr>
<td>30-Jan</td>
<td>Thurs</td>
<td>Evolution &amp; Hybridization</td>
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<tr>
<td>30-Jan</td>
<td>Thurs (LAB)</td>
<td>Introduction to the Lab &amp; to Biological Collections</td>
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<tr>
<td>4-Feb</td>
<td>Tues</td>
<td>CLASS CANCELLED</td>
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<tr>
<td>6-Feb</td>
<td>Thurs</td>
<td>CLASS CANCELLED</td>
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<tr>
<td>6-Feb</td>
<td>Thurs (LAB)</td>
<td>Waterfowl ID – swans through dabblers</td>
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<tr>
<td>11-Feb</td>
<td>Tues</td>
<td>Annual Cycle &amp; Molt</td>
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<tr>
<td>13-Feb</td>
<td>Thurs</td>
<td>Migration Ecology</td>
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<tr>
<td>13-Feb</td>
<td>Thurs (LAB)</td>
<td>Waterfowl ID – divers through sea ducks</td>
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<tr>
<td>18-Feb</td>
<td>Tues</td>
<td>Cross-Over Effects, Habitat Selection &amp; Territoriality</td>
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<tr>
<td>20-Feb</td>
<td>Thurs</td>
<td>Reproduction, Nesting Ecology, &amp; Post-Breeding Ecology</td>
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<tr>
<td>20-Feb</td>
<td>Thurs (LAB)</td>
<td>Waterfowl ID Wrap-Up, Aging Ducklings &amp; Wing Prep/Dissections</td>
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<tr>
<td>25-Feb</td>
<td>Tues</td>
<td>Mating Systems, Display, &amp; Alternative Breeding Strategies</td>
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<tr>
<td>27-Feb</td>
<td>Thurs</td>
<td>Feeding Ecology</td>
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<tr>
<td>27-Feb</td>
<td>Thurs (LAB)</td>
<td>Capture Methods Lecture &amp; Netting on the Quad (+Build Traps I)</td>
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<tr>
<td>3-March</td>
<td>Tues</td>
<td>Catch up &amp; Student Presentation – Ecology &amp; Evo.I</td>
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<tr>
<td>5-March</td>
<td>Thurs</td>
<td>Student Presentation – Ecology &amp; Evo.II</td>
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<tr>
<td>5-March</td>
<td>Thurs (LAB)</td>
<td>Capture Methods – Build Traps II</td>
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<tr>
<td>10-March</td>
<td>Tues</td>
<td>Student Presentation – Ecology &amp; Evo.III &amp; Review</td>
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<tr>
<td>12-March</td>
<td>Thurs</td>
<td>LECTURE – MIDTERM</td>
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<tr>
<td>12-March</td>
<td>Thurs (LAB)</td>
<td>Field Trip To Keystone Heritage Park (**SPECIES ACCOUNT DUE)</td>
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<tr>
<td>17-March</td>
<td>Tues</td>
<td>SPRING BREAK - NO CLASSES</td>
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<tr>
<td>19-March</td>
<td>Thurs</td>
<td>SPRING BREAK - NO CLASSES</td>
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<tr>
<td>19-March</td>
<td>Thurs (LAB)</td>
<td>SPRING BREAK - NO CLASSES</td>
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<tr>
<td>24-March</td>
<td>Tues</td>
<td>Climate Change &amp; Waterfowl – Breeding Habitat</td>
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<tr>
<td>26-March</td>
<td>Thurs</td>
<td>Climate Change &amp; Waterfowl – Wintering Habitat</td>
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<tr>
<td>26-March</td>
<td>Thurs (LAB)</td>
<td>Hen Houses</td>
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<tr>
<td>31-March</td>
<td>Tues</td>
<td>Breeding Management – Habitat &amp; Active</td>
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<tr>
<td>2-April</td>
<td>Thurs</td>
<td>Mortality &amp; Disease</td>
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<tr>
<td>2-April</td>
<td>Thurs (LAB)</td>
<td>Agent-Based Modeling &amp; Nesting Data Analysis</td>
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SUGGESTED TOPICS FOR PAPER 1 (ECOLOGY & EVOLUTION):

Evolutionary history/systematics
Hybridization
Waterfowl biology/ecology of taxa found on other continents
Variation among life-history traits in breeding waterfowl
Population dynamics of waterfowl
Consequences of feral birds on wild populations
Proximate drivers of populations
Decline and recovery of (taxa)
Density dependence at various spatial and temporal scales
Inter- and/or intra-specific competition for breeding/wintering resources
Disease ecology (botulism, cholera, flu, etc.)
Courtship, pair-bonding
Cues, signaling and behavior (vocalizations, plumage, etc.)
Territoriality and home range of (taxa) during the breeding or wintering season
Nest site selection
Brood parasitism
Incubation rhythms
Estimates of nest success and causes of mortality (lots here…)
Estimates of brood survival and causes of mortality
Migration ecology (proximate and ultimate drivers, shortstopping, etc.)
Full annual-cycle modeling
Analytical and agent-based models of waterfowl ecology
Arctic geese and ecosystem ecology
Movements and foraging of wintering waterfowl
Nutrient dynamics of breeding or wintering waterfowl
Bioenergetics, metabolism
Time budgets of breeding/wintering waterfowl
Influence of agriculture on waterfowl
Cross-seasonal effects
Impact of lead poisoning/pollutants on waterfowl mortality and populations

**Potential influences of climate change on breeding waterfowl (many topics here…)**

**SUGGESTED TOPICS FOR PAPER 2 (MANAGEMENT, ETC.)**

Species of conservation concern
The effectiveness of various intensive management practices for breeding waterfowl
An evaluation of the effectiveness of artificial nesting structures
Predator impacts and management for breeding waterfowl
Moist-soil management for food production for wintering waterfowl
Agricultural management for food production for migrating and wintering waterfowl
Management of wetland complexes for wintering waterfowl
Carrying capacity modeling (many aspects to consider here…)
Pen-raised/released mallard programs
The impact of hunting on (specific taxa) populations
Waterfowl banding for harvest analysis and management
Adaptive Harvest Management
The Harvest Information Program
The influence of decoys on waterfowl harvest, potential research biases
The influence of hunting pressure on daily movement and foraging of wintering waterfowl
The Migratory Bird Conservation Act of 1929
The Federal Aid in Wildlife Restoration Act of 1937
The North American Waterfowl Management Plan
The Conservation Reserve Program
The Wetland Reserve Program
Alternative Land Use Services (ALUS) in Canada
The use of conservation easements for preservation of waterfowl habitat
Ducks Unlimited, Inc.
Delta Waterfowl Foundation
Participation and the economic impact of waterfowl hunting in the United States
Hunter recruitment and retention – a review of options for increasing hunter participation
Waterfowl hunter satisfaction

I’m happy to approve other relevant topics (for either paper) as well!