

# **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

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## **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.
- Optional but recommended: Baldassarre, G. 2014. Ducks, Geese, and Swans of North America. A Wildlife Management Institute Book, Johns Hopkins University Press, Baltimore, MD, USA.

## **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:**

Lecture Midterm	100 pts (20%)
Lecture FINAL	100 pts (20%)
Lab Practical	100 pts (20%)
Lab Assignments	150 pts (20%)
<u>In-class Presentation &amp; Participation</u>	<u>150 pts (20%)</u>
<b>Total for students:</b>	<b>500 pts</b>

**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 27<sup>th</sup> (last day to withdraw)**

March 27<sup>st</sup> (Ceser Chavez – NO SCHOOL)

May 8<sup>th</sup> – DEAD DAY

## SCHEDULE

	Date	Day	Lecture/Lab Topic
WEEK 1	21-Jan	<i>Tues</i>	Introduction & Background Information
	23-Jan	Thurs	History of Waterfowl Management
	23-Jan	<b>Thurs (LAB)</b>	<b>NO LAB</b>
WEEK 2	28-Jan	<i>Tues</i>	Systematics & Biogeography
	30-Jan	Thurs	Evolution & Hybridization
	30-Jan	<b>Thurs (LAB)</b>	Introduction to the Lab & to Biological Collections
WEEK 3	4- Feb	<i>Tues</i>	<b>CLASS CANCELLED</b>
	6-Feb	Thurs	<b>CLASS CANCELLED</b>
	6-Feb	<b>Thurs (LAB)</b>	Waterfowl ID – swans through dabblers
WEEK 4	11-Feb	<i>Tues</i>	Annual Cycle & Molt
	13-Feb	Thurs	Migration Ecology
	13-Feb	<b>Thurs (LAB)</b>	Waterfowl ID – divers through sea ducks
WEEK 5	18-Feb	<i>Tues</i>	Cross-Over Effects, Habitat Selection & Territoriality
	20-Feb	Thurs	Reproduction, Nesting Ecology, & Post-Breeding Ecology
	20-Feb	<b>Thurs (LAB)</b>	Waterfowl ID Wrap-Up, Aging Ducklings & Wing Prep/Dissections
WEEK 6	25-Feb	<i>Tues</i>	Mating Systems, Display, & Alternative Breeding Strategies
	27-Feb	Thurs	Feeding Ecology
	27-Feb	<b>Thurs (LAB)</b>	Capture Methods Lecture & Netting on the Quad (+Build Traps I)
WEEK 7	3-March	<i>Tues</i>	Catch up & Student Presentation – Ecology & Evo.I
	5-March	Thurs	Student Presentation – Ecology & Evo.II
	5-March	<b>Thurs (LAB)</b>	Capture Methods – Build Traps II
WEEK 8	10-March	<i>Tues</i>	Student Presentation – Ecology & Evo.III & Review
	12-March	Thurs	<b>LECTURE – MIDTERM</b>
	12-March	<b>Thurs (LAB)</b>	Field Trip To Keystone Heritage Park <b>(**SPECIES ACCOUNT DUE)</b>
WEEK 9	17-March	<i>Tues</i>	<b>SPRING BREAK - NO CLASSES</b>
	19-March	Thurs	<b>SPRING BREAK - NO CLASSES</b>
	19-March	<b>Thurs (LAB)</b>	<b>SPRING BREAK - NO CLASSES</b>
WEEK 10	24-March	<i>Tues</i>	Climate Change & Waterfowl – Breeding Habitat
	26-March	Thurs	Climate Change & Waterfowl – Wintering Habitat
	26-March	<b>Thurs (LAB)</b>	Hen Houses
WEEK 11	31-March	<i>Tues</i>	Breeding Management – Habitat & Active
	2-April	Thurs	Mortality & Disease
	2-April	<b>Thurs (LAB)</b>	Agent-Based Modeling & Nesting Data Analysis

WEEK 12	7-April	<i>Tues</i>	Bio-Energetic Models
	9-April	Thurs	Harvest Theory
	9-April	<b>Thurs (LAB)</b>	Analysis Of Winter Survey Data
WEEK 13	14-April	<i>Tues</i>	NAWMP
	16-April	Thurs	Human Dimensions & Waterfowl Conservation
	16-April	<b>Thurs (LAB)</b>	Carrying Capacity Exercise
WEEK 14	21-April	<i>Tues</i>	USFWS & Waterfowl Management – <b>Dr. Dan Collins</b>
	23-April	Thurs	Wetland Management at Rio Bosque – <b>Dr. John Sproul</b>
	23-April	<b>Thurs (LAB)</b>	Telemetry Analysis Lab & Band Recovery Analysis
WEEK 15	28-April	<i>Tues</i>	Wrap-Up & Student Presentation – Management I
	30-April	Thurs	Student Presentation – Management II & Review
	30-April	<b>Thurs (LAB)</b>	Lab Review (**FIELD CATALOG DUE)
WEEK 16	5-May	<i>Tues</i>	<b>LECTURE – FINAL</b>
	7-May	Thurs	Student Presentation – Management III
	7-May	<b>Thurs (LAB)</b>	<b>LAB PRACTICAL</b>

### 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!**