**Waterfowl Ecology and Management**

**RNR 4012/7012 (4 cr.): Spring 2021**

**Lecture: Mon/Wed/Fri 12:30-1:20, RNR 142**

**Lab: Wednesday 1:30-4:20, RNR 206**

**Zoom:** <https://lsu.zoom.us/j/4355331566>

**INSTRUCTOR Dr. Kevin Ringelman**

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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 moodle.
* 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.

**COVID-19 POLICIES**

* *This class will meet face-to-face unless otherwise specified*. You are expected to attend in-person unless you have a valid excuse.
* Face coverings or masks that completely cover the mouth and nose are mandatory in the classroom. Face covers or masks will not be provided by LSU. Students are responsible for providing their own face covers or masks. Students who do not follow the mandatory face cover or mask requirement will not be permitted to enter the classroom, resulting in an unexcused absence and 0 for any in-class assignments.
* Students in self-isolation due to COVID-19 exposure prior to test results or who test positive and are so-called asymptomatic are expected to inform the faculty, participate in Zoom activities, participate in assignments, and meet all due dates. Students testing positive and experiencing symptoms are expected to inform faculty and will receive excuses or other accommodations per PS-22 and PS-44 and Faculty Senate resolution 12-3.

**GRADING:**

**A+ (97­.00–100); A (93.00–96.99); A- (90.00–92.99); B+ (87.00–89.99); B (83.00–86.99);**

**B- (80.00–82.99); C+ (77.00–79.99); C (73.00–76.99); C- (70.00–72.99); D+ (67.00-69.99);**

**D (63.00–66.99); D- (60.00–62.99); F (<60.00)**

 100 Lecture midterm

 50 Lab ID exam

 ~50 Exotic species accounts

 100 Paper 1 (ecology)

 100 Paper 2 (management)

 50 Final presentation (either paper topic)

 150 Final lecture exam

 100 Final lab exam

 50 Participation in class and on field trips

~100 Homework and workshop assignments

 800 *(may vary slightly)*

**RNR 7012 (graduate students)**

Graduate students must choose topics unrelated to their graduate research project. Graduate students are also required to produce an addendum to both papers: a brief research proposal designed to address knowledge gaps in the relevant topics. Each will be worth 50 points.

**SUGGESTED TOPICS FOR PAPER 1 (BIOLOGY/ECOLOGY):**

Waterfowl Ecology

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

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!**

**Format**

2000–3000 words, double-spaced, Times New Roman 12 point font with 1” margins

Citations follow Journal of Wildlife Management (*enforced*)

Length requirement *excludes* citations, headers, tables, figures, etc.

Turning in an incomplete paper will result in a lower baseline grade (e.g., 1500 word first draft = max grade of 75%)

**UNIVERSITY POLICY STATEMENTS**

**Attendance:** LSU policy statements 22 and 24 and Faculty Senate resolution 12-3 state that individual faculty determine excuse and unexcused absences, and that attendance can be graded by randomly taking attendance during 12 randomly selected lectures. An unexcused absence during any graded activity will result in a 0 for the activity. Excused absences and make-up opportunities will be granted for university-approved off-campus activities, religious holidays, professional development activities, job interviews, and severe illnesses. Please contact me before course activities if possible to schedule a make-up.
 **COVID-19 update:** I understand that this policy will need to be more flexible than usual.

**Academic integrity:** Cheating and plagiarism will not be tolerated in any form; it damages the integrity of the student, the department, and university, and can far-reaching effects into the future (e.g. “I don’t hire RNR grads anymore because I had one who cheated his (her) way through and was an awful employee”). We use plagiarism detection software. Students violating the Academic Dishonesty policy of the LSU Code of Student Conduct will be referred to Student Advocacy & Accountability.

**Disability statement:** Louisiana State University is committed to providing reasonable accommodations for all persons with disabilities. The syllabus is available in alternate formats upon request. If you have a disability that may have some impact on your work in this class and for which you may require accommodations, please see a staff member in Disability Services (115 Johnston Hall) so that such accommodations can be considered. Students that receive accommodation letters, please meet with me to discuss the provisions of those accommodations as soon as possible.

**Credit expectations:** For each earned credit, students must spend a minimum of 1 hour per week in lecture class or 3 hours per week in lab, and a minimum of 2-3 hours per week of studying/homework outside of class. **That means, for this class, expect between 8-12 hours of homework and studying each week.**

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|  | **Date** | **Topic** | **Readings/Assignments** |
| Week 1 | 1/11 | 1 – Introduction |  |
| 1/11 lab | Waterfowl ID through dabblers | Carney 1992 |
| 1/13 | 2 – History of waterfowl management |  |
| 1/15 | 3 – Zoom – Mike Anderson – NAWMP  | Skim NAWMP 1986 and 2012 |
| Week 2 | 1/18 | NO CLASS – MLK DAY |  |
| 1/18 lab |
| 1/20 | 4 – Early evolution and systematics |  |
| 1/22 | 5 – Biogeography | Lynch 1952 |
| Week 3 | 1/25 | 6 – Zoom – Phil Lavretsky – evolution  | Lavretsky et al. 2019 |
| 1/25 lab | 6 lab – Waterfowl ID through sea ducks  | Carney 1992 |
| 1/27 | 7 – Zoom – Phil Lavretsky – hybridization |  |
| 1/29 | 8 – Annual cycle, mating systems, pairing |  |
| Week 4 | 2/1 | Field trip to Sherburne WMA |  |
| 2/1 lab |
| 2/3 | 9 – Habitat selection and territoriality | Clark & Shutler 1999 |
| 2/5 |  | **Exotic species accounts due** |
|  | 2/5-2/7 | FULL WEEKEND IN SHREVEPORT LEAVE FRIDAY AFTERNOON  |
| Week 5 | 2/8 | Lab ID review  |  |
| 2/8 lab |
| 2/10 | 10 – Reproduction |  |
| 2/12 | 11 – Nesting ecology | Hoekman et al. 2002 |
| Week 6 | 2/15 | **Icepocalypse 2021** |  |
| 2/15 lab |
| 2/17 | **Icepocalypse 2021** |  |
| 2/19 |  |  |
| Week 7 | 2/22 | 12 – Alternative breeding strategies | Pöysa et al. 2014 |
| 2/22 lab | **\*\*\* LAB ID EXAM \*\*\*** |  |
| 2/24 | 13 – Zoom – Scott Stevens – DUC prairie |  |
| 2/26 | 14 – Breeding management – active |  |
| Week 8 | 3/1 | 15 – Zoom – Fritz Reid – boreal programs |  |
| 3/1 lab | Nest data analysis workshop |  |
| 3/3 | 16 – climate change in PPR |  |
| 3/5 | 17 – Climate change in boreal and arctic |  |
| Week 9 | 3/8 | **Field trip to Sherburne – wood ducks** | **\*\*\* Paper 1 due \*\*\*** |
| 3/8 |
| 3/10 | 18 – Post-breeding ecology |  |
| 3/12 | NO CLASS – MID-SEMESTER BREAK |  |
| Week 10 | 3/15 | **\*\*\* Mid-term exam \*\*\*** |  |
| 3/15 |  |
| 3/17 | Zoom – Auriel Fournier – migration |  |
| 3/19 | 20 – Feeding ecology |  |
| Week 11 | 3/22 | 21 – Bioenergetic models |  |
| 3/22 | Carrying capacity exercise |  |
| 3/24 | 22 – Zoom – Joe Lancaster – GCJV |  |
| 3/26 | NO CLASS – MARCH BREAK |  |
| Week 12 | 3/29 | 23 – Mortality and disease |  |
| 3/29 | Winter survey data analysis |  |
| 3/31 | 24 – Larry Reynolds |  |
| 4/2 | NO CLASS – GOOD FRIDAY |  |
| Week 13 | 4/5 | 25 – Mortality – harvest and AHM |  |
| 4/5 | Band-recovery exercise |  |
| 4/7 | 26.1 – Climate change – wintering grounds  |  |
| 4/9 | 26.2 – Climate change – wintering grounds |  |
| Week 14 | 4/12 | \*\*\* FINAL LAB EXAM \*\*\* |  |
| 4/12 |
| 4/14 | Q&A with Emma Reid – In the Blind | Asynchronous – In the Blind |
| 4/16 | Human dimensions and ecological services |  |
| Week 15 | 4/19 | Student presentations | **\*\*\* Paper 2 due \*\*\*** |
| 4/19 | Student presentations |  |
| 4/21 | Student presentations | Memes due 4/22 at midnight |
| 4/23 | Student presentations/review | DU Podcast due; Presentation upload due |
|  | 4/29 | \*\*\* FINAL EXAM \*\*\* 7:30-9:30 |  |