

# Applied Population Dynamics

WILD 5700/7700

January 7, 2019



**(1)** What causes spatial and temporal variation in population size and structure?

**(2)** How do environmental change and human activities (including management actions) affect population dynamics?

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## LEARNING OBJECTIVES

**By the end of the semester, you should be able to:**

- (1)** Develop a population model that
  - ▶ Describes variation in demographic parameters over time
  - ▶ Predicts how the population will respond to management/conervation actions
- (2)** Design a study to collect the data necessary to estimate the demographic parameters of the model
- (3)** Use software (e.g., PRESENCE, DISTANCE, MARK) to estimate parameters from field data

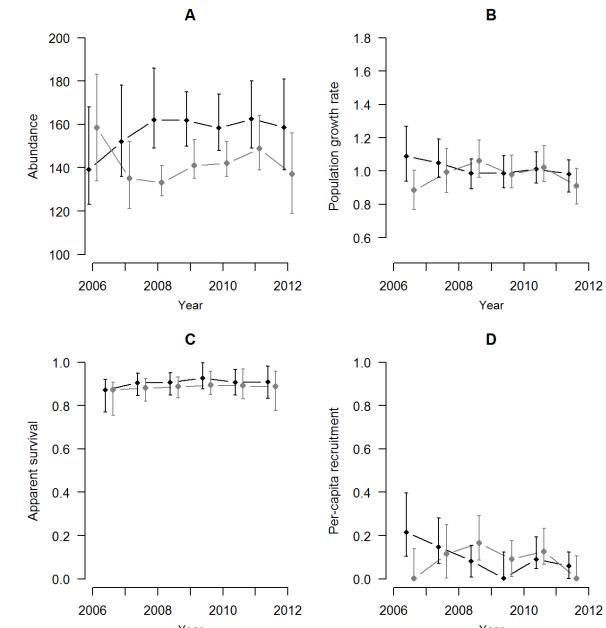
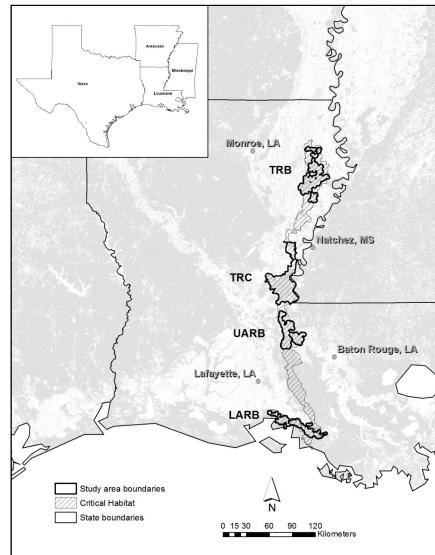
## THEMES

### Theory

- Population models

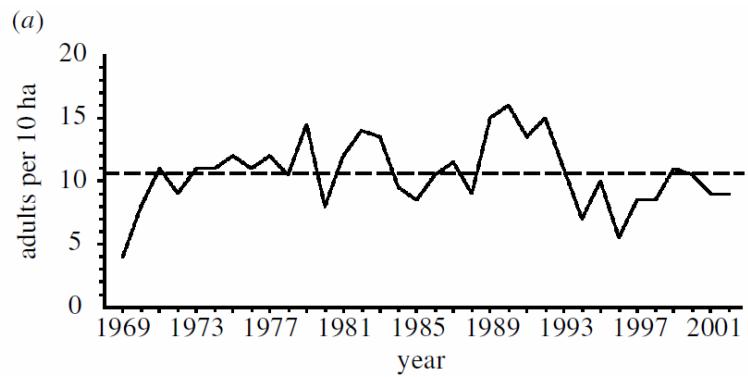
### Practice (Application)

- Estimation
- Harvest management
- Small population management



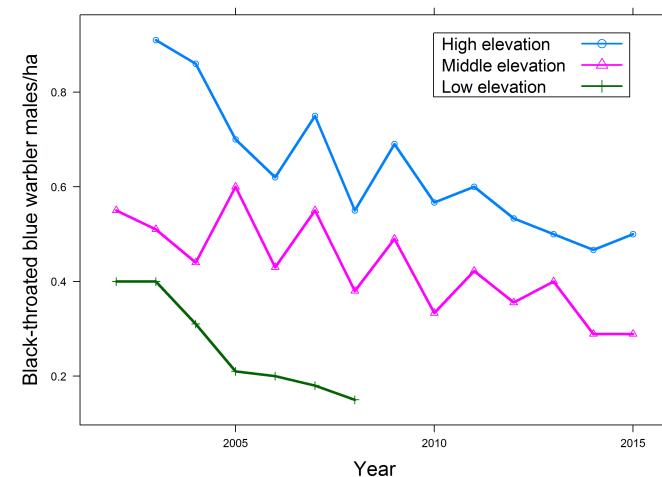
## EXAMPLE II – BLACK-THROATED BLUE WARBLER

What do these data tell us? What don't these data tell us?

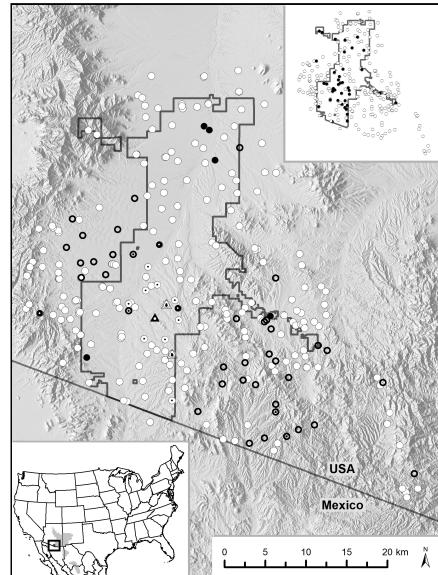


## EXAMPLE II – BLACK-THROATED BLUE WARBLER

Why are dynamics so different in the southern part of the range?



## EXAMPLE III – CHIRICAHUA LEOPARD FROG



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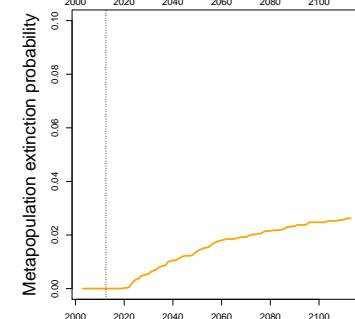
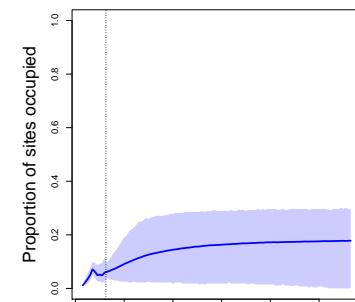
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## ESTIMATED EXTINCTION RISK

- We estimated extinction probability to be 2% by 2100
- What can be done about it?
  - Control predators
  - Increase hydroperiod in existing wetlands
  - Create new wetlands...
  - ... but where?



## COLONIZATION PROBABILITY MAPS

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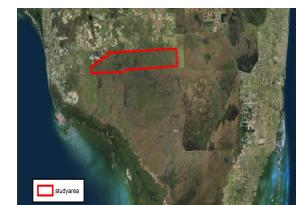
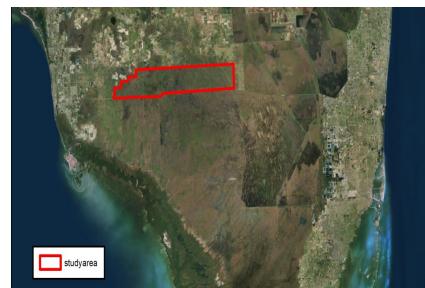
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## Objectives

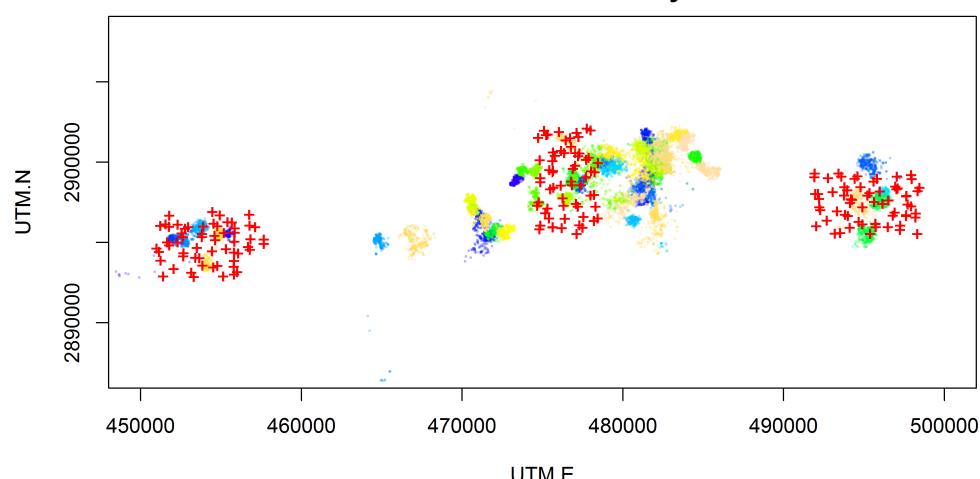
- (1) Understand effects of hydrology, hunting, and predation on deer population dynamics
- (2) Develop a camera trapping study for large-scale investigation and monitoring of deer populations



- 180 cameras
- Operated since January 2015
- Spanning hunting and hydrology gradients

## TELEMETRY DATA

>250 deer collared since January 2015



## SYLLABUS

### APPLIED POPULATION DYNAMICS

WILD 5700/5700L 7700/7700L  
Lecture: Mon, Wed 9:05-9:55 AM; Room 4-517  
Lab A: Mon 1:25-4:25; Room 1-201 Lab B: Fri 9:05-12:05; Room 1-201

#### Instructor

Dr. Richard Chandler  
Office: 4-517  
Phone: 706-542-5818  
email: rchandler@wsmail.uga.edu  
Office hours: Thurs/Fri 2:00-3:00

#### Teaching Assistant

Brianna Williams  
Office: Wildlife Health building, room 112A  
email: williams.brianna.m@gmail.com  
Office hours: Wed 2:00-3:00

#### Course Description

This course will present the theory necessary for understanding wildlife population dynamics, and it will explain how to use theory and data to inform management and conservation efforts.

#### Course Objectives and Learning Outcomes

By the end of the course, students should know how to develop models to forecast the impacts of environmental change and management actions on wildlife populations. Students will learn how to design studies, collect data, and estimate parameters such as abundance, survival, and recruitment.

#### Textbook

Carey, M.J. and J.P. Carroll. 2009. Quantitative Conservation of Vertebrates. Wiley-Blackwell.  
You do not need to buy a hard copy. Digital copies are available for free through the UGA library:  
<http://primo.library.gsu.edu/login?url=http://california.library.wiley.com/book/10/1002/9781444303105>

#### Grading

	Quantity	Grade percentage
Quizzes	10	20%
Lab assignments*	12	20%
Written assignment**	1	20%
Exams	3	30%
Class participation	5	5%

\*Grade assignments will be finalized 5% off.

\*\*Graduate students will analyze a real dataset and summarize the results in their final paper.

#### Academic Honesty

As a University of Georgia student, you have agreed to abide by the University's academic honesty policy, which can be found in "A Culture of Honesty," and the Student Honor Code. All academic work must meet the standards described in "A Culture of Honesty" found at: <https://honesty.uga.edu/Academic-Honesty-Policy/>. Lack of knowledge of the academic honesty policy is not a reasonable excuse for academic dishonesty. Academic dishonesty related to course assignments and the academic honesty policy should be directed to the instructor.

#### Cell Phones and Laptops

Cell phones are not allowed during class unless explicit permission is granted. Laptop computers should be brought to class for quizzes and exercises.

(1) Read Chapters 1 and 2 of Conroy and Carroll

(2) Complete the introductory "quiz" found here:

<https://goo.gl/forms/0pmugP5lmMrrXTIY2>

