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?

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/conservation 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
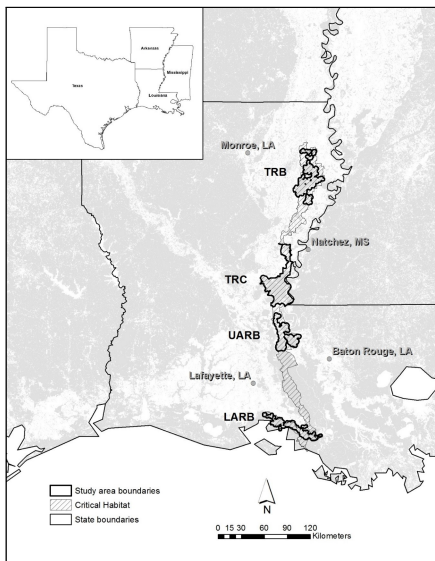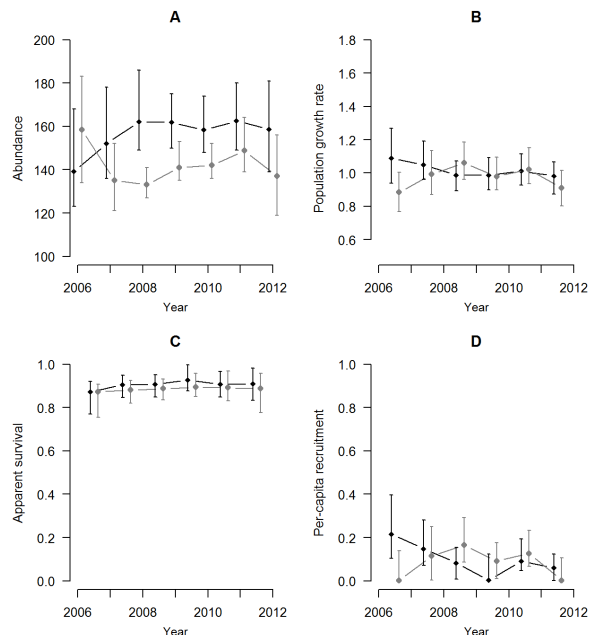

THEMES

Theory
- Population models

Practice (Application)
- Estimation
- Harvest management
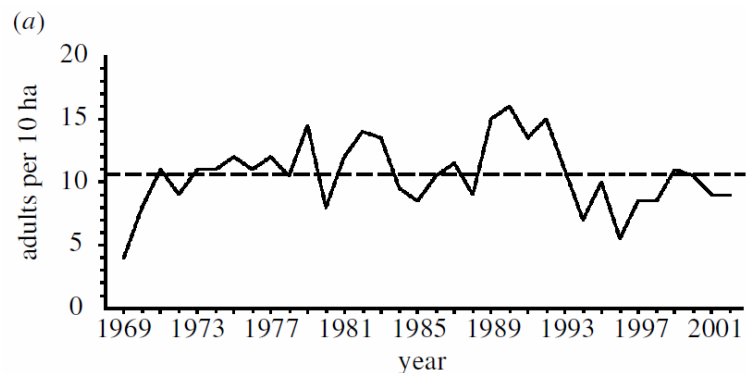- Small population management

Example I – Louisiana black bear

Estimated demographic parameters

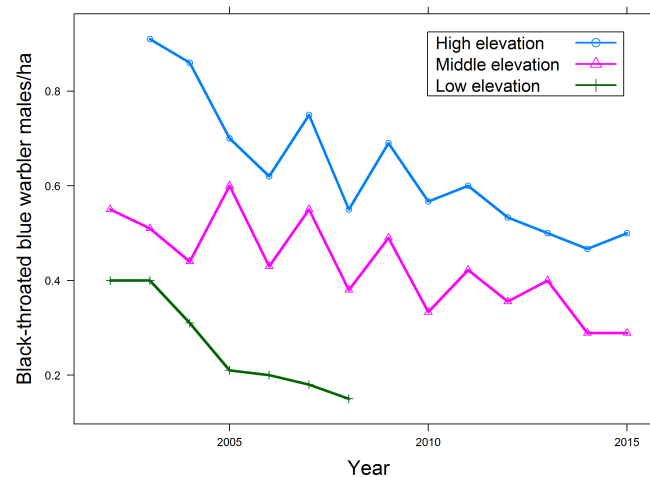# Example II – Black-throated blue warbler

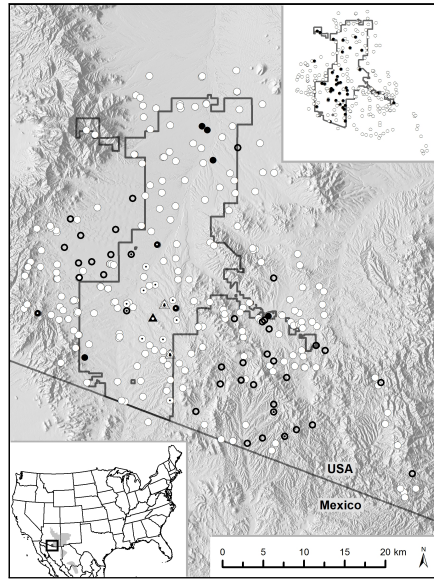What do these data tell us? What don't these data tell us?

Rodenhouse et al. (2003, Proceedings of the Royle Society)

Example II – Black-throated blue warbler

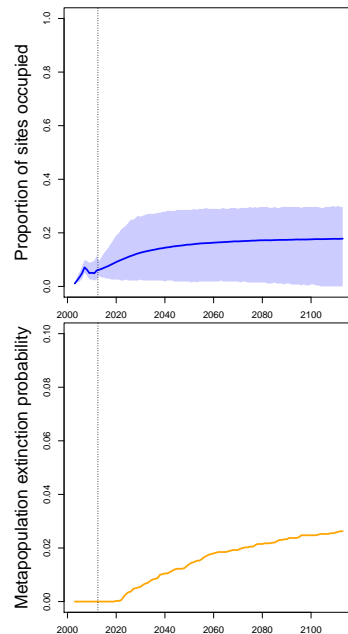Why are dynamics so different in the southern part of the range?
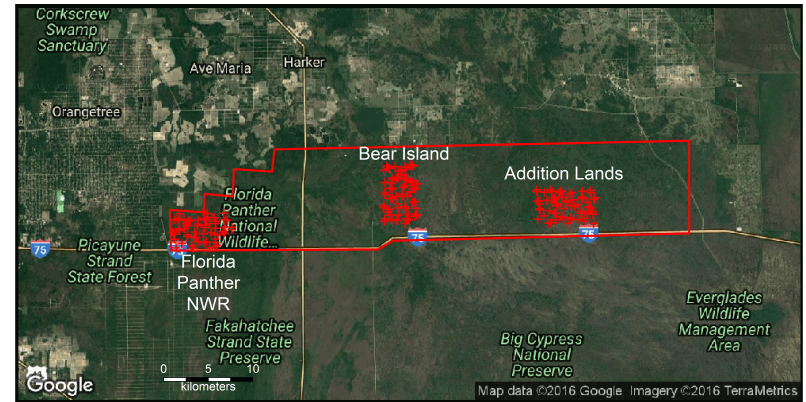

Data courtesy of Dr. RJ Cooper

Example III – Chiricahua Leopard Frog

Recovery Plan

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?

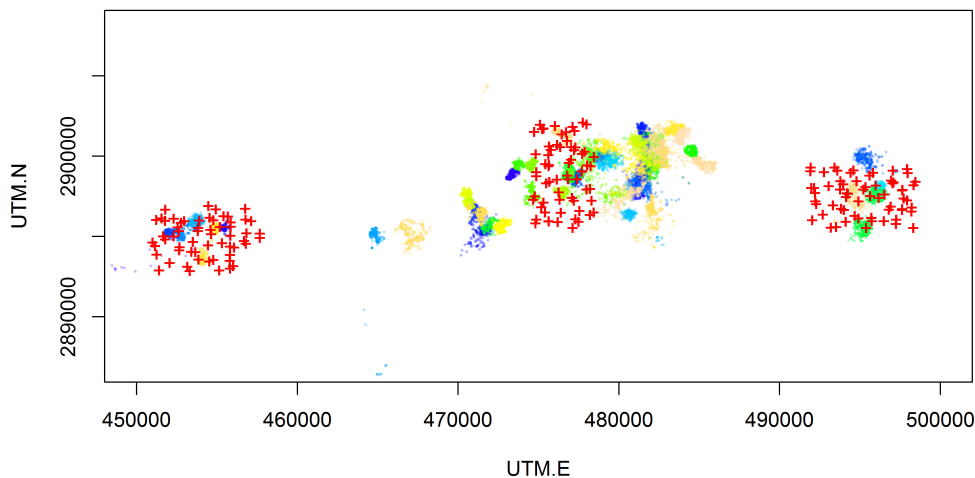# Colonization Probability Maps

Example IV – South Florida Deer Study

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

Camera study

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

Telemetry data

>250 deer collared since January 2015

Syllabus

Assignment

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

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

https://goo.gl/forms/OpmugP5lmMrrXTIY2