



# Field research and undergraduate training in the Ordway Lab on Northern Mockingbirds

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## Overview

The Northern Mockingbird (*Mimus polyglottos*) is distributed throughout North America. It is relatively abundant throughout its range, however it has declined in Florida by 1.7% per year since 1966, despite being considered as an urban adapter (Hanauer *et al.* 2010\*). Mockingbirds seem to be able to take advantage of the environmental modification caused by development, urban encroachment, and rising human population size: they use habitats with dense shrubbery, low bushes and hedges for nesting, and short grass for foraging, they may take advantage of artificial light sources for night foraging (Wynn 2010\*).



We have been working on the University of Florida campus during the breeding season since 2006. The campus is ideal mockingbird habitat, providing a semi-urban setting with large expanses of well maintained grass, lots of green areas with trees and shrubs, and abundant food sources. Northern Cardinals and Brown Thrashers share this habitat with mockingbirds among other species.



Campus mockingbird territories



Team 2010



Team 2011



Mistnetting

## Field and Lab Work

We systematically search for nests and monitor nest success. We record nest height, plant species, and location, and check active nests every other day. Data include egg weights and dimensions, chick body mass, feather development, tarsus and wing chord lengths. Nestling were banded with a USGS aluminum band at 6-7 days of age when we also collect a blood sample.

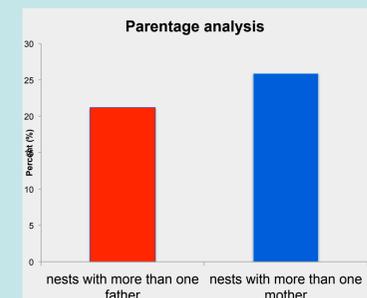


We also catch adults using mist nets. We collect morphological data, blood samples, and also band them with a unique color combination in addition to the metal band. To date, **we have banded 700 mockingbirds on campus.**



Nests are collected post-fledging or if preyed upon and dissected in the lab. The data included are nest materials, weight of different components, origin of materials, and presence of parasites.

Blood samples are used for molecular analyses in the lab. Students learn to perform DNA extractions and PCR to evaluate the prevalence of extra pair paternity in the population and the sex ratio of nestlings. Preliminary analyses (Shaw 2010\*) show that mockingbirds while socially monogamous engage in both extra-pair paternity and egg-dumping (females laying eggs in other females' nests).



## Results and Summary

The data collected from 2006-2013 has led to several publications and honors thesis projects all of which involved undergraduate researcher (marked by \* in text).

Molly Phillips, 2007: Natural history of the Northern Mockingbird (*Mimus polyglottos*): How much do we know about females?

Judit Ungvari-Martin, 2007: Growing up with siblings: The effects of brood size on nestling growth

Monique R. Hiersoux, 2008: Why do birds eat fecal sacs?

Jessica Maciel, 2008: Bridging the gap between classroom teachers and university researchers

Levey *et al.* 2009: Urban mockingbirds quickly learn to identify individual humans. Published in PNAS 106:8959-8962.

Puja Patel, 2009: Do Northern Mockingbirds change their songs to compensate for urban noise?

Randall Anderson, 2009: Incorporating current scientific research in the high school classroom

Jane Bauer, 2009: Are urban mockingbirds more aggressive nest defenders than non-urban mockingbirds? A predator presentation experiment

Rachel E. Hanauer, 2010: Why has an urban adapter, the Northern Mockingbird (*Mimus polyglottos*), declined in Florida? Published in Florida Field Naturalist 38(4):135-145.

Brady A Wynn, 2010: The effects of light pollution on Northern Mockingbird foraging and feeding behavior. in review at Wilson Journal of Ornithology

Michelle Feole, 2010: How do Northern Mockingbirds adjust their song to overcome urban noise?

Kim Marshall, 2010: Does light pollution cause urban mockingbirds to breed earlier than non-urban mockingbirds?

Ariane Le Gros, 2011: Associations between Northern Mockingbirds and the parasite *Philornis porteri* in relation to urbanization. Published in The Wilson Journal of Ornithology 123(4):788-796

### Current research:

- **Offspring sex-ratio** (Daisy Renteria, Erin Rawls and Alison Flanders)

We are investigating nestling sex-ratios comparing the campus population to two other populations (Ohio and North Carolina, Schrand *et al.* 2011), where skewed sex-ratios were found.

- **Extra-pair paternity** (initiated by Daphna Shaw, 2010)

Extra-pair young have a genetically different parent than the social father. This study investigates the prevalence of EPP on campus in relation to mockingbird density.

- **Nest materials and parasites** (initiated by Molly Phillips, 2007 – continued by Daisy Renteria, 2013)

We dissect all the nests to quantify different materials the mockingbirds use and also look for parasite prevalence in the nests.

Urban mockingbirds quickly learn to identify individual humans

Effects of temperature and food on incubation behaviour of the northern mockingbird, *Mimus polyglottos*

ASSOCIATIONS BETWEEN NORTHERN MOCKINGBIRDS AND THE PARASITE *PHILORNIS PORTERI* IN RELATION TO URBANIZATION