Ketterson / Nolan Research Group Collection

This document is part of a collection that serves two purposes. First it is a public archive for data and documents resulting from evolutionary, ecological, and behavioral research conducted by the Ketterson-Nolan research group. The focus of the research is an abundant North American songbird, the dark-eyed junco, *Junco hyemalis*, and the primary sources of support have been the National Science Foundation and Indiana University. The research was conducted in collaboration with numerous colleagues and students, and the objective of this site is to preserve not only the published products of the research, but also to document the organization and people that led to the published findings. Second it is a repository for the works of Val Nolan Jr., who studied songbirds in addition to the junco: in particular the prairie warbler, *Dendroica discolor*. This site was originally compiled and organized by Eric Snajdr, Nicole Gerlach, and Ellen Ketterson.

Context Statement
This document was generated as part of a long-term biological research project on a songbird, the dark-eyed junco, conducted by the Ketterson/Nolan research group at Indiana University. For more information, please see IUScholarWorks (https://scholarworks.iu.edu/dspace/handle/2022/7911).

GOALS 2002, April 28, 2002

Research conducted at MLBS in 2002 will address the effect of T on the behavior and physiology of females (the female project).

In the past (1989-2000), we saturated the study area with T- and C-males, observed behavior and physiology, and measured relative reproductive success and survival of males of both types. The task required that we census twice a year, map territories, find nests, bleed/band/weigh nestlings, and then remove implants at the end of summer and mark the years' new juveniles.

Beginning in 2001, we turned to implanting females and measuring the effect of T on their behavior, physiology, and fitness. Listed here are goals for the summer, of 2002.

1. **Implant females** by catching them at random at traditional net sites or by catching them off the nest. Measure and mark any males caught in the process.

2. **Map study area,** try to obtain an accurate reading of the all nest locations using GPS, as well as readings for all trap and net locations

3. **T and the female phenotype:** effect of T on **aggressive behavior** towards intruder males or females while incubating (need protocol)

4. **T and the female phenotype:** allocation to **parental effort** during incubation and when rearing nestlings, response to predator.

5. **T and the female phenotype:** assess effects of T on female response to immunization with PHA and sheep red blood cells (SRBC)? [lack to personnel to do this.]

6. **T and rates of EPFs**: bleed females and offspring for DNA in order to assess relatedness and determine whether T affects EPF frequency (usual techniques or bleed newly hatched young?).

7. **Egg steroids**: mark eggs during laying sample eggs (collect one per clutch?, last egg laid on the day it's laid?) in order to assess effect of T on yolk steroids (need protocol).

8. **Corticosteroid binding globulin (CBG) in free-living T- and C-females**: collect plasma at nest-leaving (need protocol)

9. **Nestling mouth color**: Ethan considering a project to relate nestling body temperature to nestling mouth colour.

For 2002-2003

- **Heritability, repeatability on captives:** assess whether to expect a response to selection on T in males or females by attempting to measure heritability . Transport siblings to Bloomington, compare for hormone levels, behavior, and other hormone-mediated traits, e.g., GnRH challenge (postpone until next year).

- **Maintain colony**: transport newly caught juncos to Bloomington in early spring (adult females) or late summer (juveniles) to help maintain the colony of juncos there.

Possible additional or alternative sub-projects for another year.

- Compare treatments for *flexibility* in their response to mating and parental opportunities by comparing their behavior at the nest when there is or is not a fertile female nearby or before and after their broods have been enhanced in size.

- Possibly compare the response (hyperactivity) of recently captured parental males and females to tapes of begging calls.

- Alter tail white with extra food in the nest?

- Assess importance of early condition to later fitness by obtaining plasma hormone samples from juveniles to see whether cort or T predicts which ones return. A good late summer project.

- Measure begging response of hand-reared young to simulated treatment-specific feeding schedules to see how nestlings "learn to beg." See if this would fit with already collected data comparing T- and C-males for the schedules on which they feed their young.

- Does experience with having been mated to a T-male affect whether a female finds T-males more attractive than C-males?

- Work up npublished data: Quantify comparisons of molt in males whose implants were not removed. Compare pox, condition, body mass, clo pro, fat class, etc. of T- and C-males, i.e., summarize already existing data.