

## 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>).

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## **GOALS 96, May 10, 1996, revised May 24, 1996:**

Each year we prepare and monitor the study area by creating T- and C-males and following their relative reproductive success and survival. This work, done by the group as a whole, allows us to monitor annual variation in the impact of testosterone (EPF rates, predation rates, survival, mass of nestlings at fledging, etc.). To this end, we all implant birds, map territories, find nests, bleed band and weigh nestlings, enter data into the computer, and as you gain experience, take a hand at the daily list.

In 1996, we will continue to quantify phenotypic effects of testosterone and relate them to fitness. Objectives for this year include comparisons of T-males and C-males for balance of mating effort and parental effort and for correlates of survival.

### **I. Balance of mating effort and parental effort and reproductive fitness:**

- (1) Document the link between T- and C-males and their offspring by recording 'hunger' and vocalizations of nestlings to see how they might differ according to treatment of male (Kennedy? Bentz?)
- (2) Do sperm reserves refill more rapidly in captive T- and C-juncos (Kast, Stoehr?).
- (3) Compare T and C-males for density of brain receptors for T and prolactin during nestling stage (Schoech).
- (4) Obtain more detailed information regarding parental behavior at the nest, especially (a) load sizes brought to offspring of T- and C-males and (b) any differences in time-structuring (whole group, Steve Schoech).
- (5) Obtain behavioral and hormonal data on males as a function of treatment and time of day. Does the circadian rhythm in (hyper) activity and song covary with T, cort, or both? (Lynn?).
- (6) Analyze return rates of nestlings of T and C-males and of mate fidelity of females mated to males given same treatment over time. (Ellen and Val).

### **II. Susceptibility to disease and survival:**

- (1) Compare treatments for presence/absence of coccidial oocysts in feces (Steve Hudman).
- (2) Compare treatments for corticosteroid response to handling stress by collecting blood at capture, 10 min, 30 min, and one hour (whole group, Schoech).
- (3) Compare treatments for cellular components of blood, e.g., are lymphocytes more common in T-males suggesting an activated immune system or are they less common suggesting that they are disease-free or have exhausted their immunity (early season slides already collected, will collect slides again in the late season)(Bentz?).
- (4) Compare return rates of T- and C-males treated over time (Ellen and Val)

### **III. Solitary vireos (??)**

- (1) Make a start using the T-implant approach with a passerine bird in which males incubate, Solitary Vireos. Implant 2 males as T, 2 as C, and do nest watches to determine whether T interferes with incubation.