

## 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:**

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.

The junco project is also ideal for generating sub projects that individuals can take a special interest in. We like to work on a "subproject per interested person" basis, asking those people who wish to take responsibility for a subproject. Sometimes these turn into publishable studies, other times they lay the ground work for future studies. They do increase the pressure in a way, because it's frowned upon to start projects that you don't finish. If you prefer to remain unattached, we all benefit from people who enjoy free lancing and helping others.

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. Also we may venture into a new species. As I commonly do, I have outlined more projects here than we will have time to do. Your input will be helpful in narrowing the list.

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

- (1) 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).
- (2) Document the link between T- and C-males and offspring by recording 'hunger' and vocalizations of nestlings to see how they might differ according to treatment of male (preliminary data available, ??) and comparing responsiveness to begging calls of T- and C-males held captive temporarily.
- (3) Compare treatment males for flexibility in their feeding behavior and physiology by comparing the effect on both of (a) the creation of fertile, estrogenized females on neighboring territories, and (b) hugely enhanced brood size (need pilot data, ??)
- (4) Do sperm reserves refill more rapidly in captive T- and C-juncos? Are T-males more likely to mount a stuffed female in the field (??).
- (5) Compare T and C-males for density of brain receptors for T and prolactin during nestling stage (Steve Schoech).
- (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, ??).
- (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 5 males as T, 5 as C, and do nest watches to determine whether T interferes with incubation and sample nestlings to see whether rate of EPFs is affected on second broods in males implanted on first brood.