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 97, February 19, 1997

Each year we prepare and monitor the study area by creating T- and C-males, and then we follow 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 on components of fitness (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 take a hand at the daily list.

Each year we also pursue sub-projecst that often lead to publishable papers or at least lay the groundwork for future studies.

In 1997, we will continue to quantify phenotypic effects of testosterone and to relate them to fitness. Objectives for this year include comparisons of T-males and C-males for deposition of steroids in egg yolks by their mates (team?), for hippocampal volume (Smulders), and for their response to nestling vocalizations from hungry and satiated young. In addition we shall assess cross-corrleation of natural levels of T at various stages of reproduction in unimplanted males (Van Roo?).

We shall also initiate similar studies of Solitary Vireos (Van Roo) anbd ask female juncos whether they prefer members of their own subspecies over males of the other sub-species (Jones). Schoech will attempt to disrupt parental behavior with an antibody to prolactin.

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

(1) Evening nest watches, all day nest-watches

(2) Repeatability of T-levels within and across conditions

(2) Document the link between T- and C-males and offspring by measuring respnse to calls of young that are hungry and not hungry, both in captivity and in the field.

(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).

(7) Indirect effects of treatment of male on physiology of female. egg steroids

II. Susceptibility to disease and survival:

(1) Compare treatments for corticosteroid response to handling stress by collecting blood at capture, 10 min, 30 min, and one hour (whole group, Schoech).

(2) Compare return rates of T- and C-males treated over time (Ellen and Val)

(3) response to immunoglobulin challenge?

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.

IV. Data

(1) complete nestlogs 94
(2) keep up with USFWS banding schedules as we go and fitness correlates sheets, and enter fitness correlates for 96

V. Carolina and Northern choices