

## 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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**MLBS Goals.2007**  
**5/17/07, post group meeting**

1. Impact of experimentally elevated T on female phenotype
  - a. Implant females, find nests, map nest sites (team)
  - b. Compare T- and C-females on measures of immune function when young day 6, also end of season, IgG, PHA, complement, and bactericidal killing capacity (Dawn, Tim, team)
  - c. Compare home range size/pre-nesting behavior of T- and C-females w/ radio transmitters (Dustin, team, e.g. Dawn and Sara offered help).
2. Impact of experimentally elevated T on female fitness
  - a. Survival: conduct early spring and late season census to compare relative rate of return/persistence of T- and C-females (team)
  - b. Mating success: compare relative frequency of EPFs in T- and C-females (Nicki. team) (totals to date, 56 C-families, 12 T-families, 5 C-C families, need more T- families)
  - c. Fecundity: compare T- and C-females for fecundity (# broods, clutch size, nest predation)(Dawn, team)
3. Impact of experimentally elevated T on offspring phenotype
  - a. Comparison of growth and symmetry (tarsus, wing, feather development, footprints), as well as PHA response in offspring of T- and C-females (Erin, Krystle, Kristal Nicki). Also compare innate immunity of nestlings (IgG, complement, bactericidal killing capacity)(Erin and Dawn)
4. Male response to GnRH and male phenotype
  - a. Mating phenotype: continue exploration of whether T measured in response to GnRH co-varies with the 'mating phenotype' in the same way that experimental elevation of T would predict (i.e., does the co-variation rise to the level of a syndrome?).
    - i. Co-variation of T in response to GnRH of *same* individuals also measured for aggression (response to male intruder) and courtship (response to caged female (Beth, Sara?, team)(ultimately compare MLBS to CA, and SoDa?)
    - ii. Include parental behavior as part of the syndrome (probably not sufficient time)
  - b. Survival phenotype: Is there also a 'survival phenotype' relating cort and immune function to self-maintenance (for another year?).
    - i. Corticosterone: Cort is higher in males treated with T; do pre-challenge, post-challenge, or rise in cort co-vary positively (or negatively) with pre-challenge, post-challenge or rise in T (would require sufficient plasma for cort/immune as well as T, pre-post GnRH)?
    - ii. Immune function: IgG and complement co-vary with pre-challenge T, and both IgG and T in response to GnRH vary seasonally. Do other measures of immune function co-vary with T response to GnRH (would require sufficient plasma)
    - iii. Body size in relation to GnRH challenges: Tail white and wing length are under correlational selection, tail white co-varies with response to GnRH, does body size? Would require making Careful measurements of body size (wing length, tarsus, tail length).
5. Female response to GnRH and female/offspring phenotype
  - a. Compare T in response to GnRH during golden week to yolk contents including steroids and immunoglobulins (Dawn and team) Also relate to offspring growth and symmetry in C-females to (team, Erin, Nicki for symmetry).