

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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JUNCO PROJECT, 1994 - May 22.,1994

PRIMARY GOALS FOR 1994

1. Establish an experimental study area with T-males and C-males. and retain certain areas as control-control areas with unimplanted birds. Complete as of late May. For birds that returned., implant. status was retained from last year Study area runs from bend in the road on WVN to the hotel. Control-control areas are north of the bend in the road and on 714..
2. Continue to measure relative reproductive success of T- and C-males by collecting blood (DNA) samples from *all* adults in the population (even if they have been bled before) and all nestlings. Paternity and maternity will be determined using multi-locus DNA satellites (DNA fingerprinting).
3. Assist Tracey in obtaining sperm counts from T-males and C-males, throughout the season and at all stages of reproduction. In addition, attempt to get sperm samples from males on control-control areas and attempt to correlate sperm with other measures: T-levels, song rate, feeding of nestlings, etc. For any birds that die in handling, measure their gonads with calipers while they are fresh, and preserve them in fixative. For any eggs that do not hatch attempt to determine reason. Goal: occurrence of infertile eggs and whether T-males more likely to be mated to female with unhatched eggs than control females.
4. Continue to monitor demographics of population, including rates of return by sex and age classes, site fidelity by nestlings and juveniles, population density, predation rate, fledging success, growth rates of the young., etc.
5. Help Ray collect transmitter data on home ranges of T-males and C-males while their mates are fertile. This involves catching the birds to put the transmitters on and catching them again to remove them, as well as help he might ask for in monitoring their behavior.
6. Compare vocal behavior of T-males and C-males. In particular do the treatments differ in their dawn singing when their mates are fertile and when their neighbors' mates are fertile? How do males know when their neighbors' mates are fertile? Do males do anything to contain that information on their own territories?
7. Quantify begging calls of young in nests of T- and C-pairs. The tapes made by Juan Carlos in 1991 were analyzed by Marcie (though there is software available now that makes the job much easier). There are tapes made by Ellen in 1990 that have not been analyzed. But even with those two sets of tapes ,we have by no means documented natural variation in begging calls with age or with treatment of the male. Key variables will be loudness (sound pressure) and, possibly, variation in frequency (wavelengths) of calls. We also have already collected data on how males of

8. How do male of both treatments structure their time ?- Do they feed in bouts or don't they? This is a statistical/data analysis question and may also require collecting new data by doing nest watches.
9. Measure load size in males and females of both treatments? This seems very important to do and it will take someone's attention if we are to get it done.
10. Try to verify experimentally the effects of begging calls on males of both treatments and on females by bringing the begging call system under some kind of experimental control. What is the response of captive males, treated and untreated to begging calls played in Dave's mate choice aviary? What if they do and do not have nestlings? Would they become hyperactive? Would it vary with treatment?
11. Perfect methods for measuring coccidial oocysts and white blood cells? Measure hematocrit?
12. Facilitate Dave's work on the effect of age on mate choice and the effect of age and testosterone on tissues that are targets for testosterone - e.g., gonads, the syrinx, the higher vocal centers in the brain, etc. Perhaps extend Dave's mate choice work after he departs.