

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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ONCE A NEST HAS BEEN FOUND, HERE'S THE INFORMATION WE NEED TO GET FROM EACH ONE:

In general, you want to record on the nest log anything of interest that happens to the pair - a death, a visit from a neighboring male, a copulation, the fact that the nest was watched if it was. You also need to record the information in other logs, e.g., nestling weight sheets, but this is the place for odd ball events and the one we turn to in order to piece together what happened. **See sample nestlog prepared by Tracey Kast.**

1. Determining hatching date

For nests found during building and laying, we need to return daily to determine how many eggs are laid. Incubation ordinarily lasts 12 days, and the female ordinarily begins to incubate the night before the day the last egg is laid (sometimes sooner as the season progresses). So if egg four is laid on June 1st, we expect hatching on June 12th.

If a nest is found after incubation has begun, please visit it at least every other day in order to determine when the eggs hatch.

Beware: we need to keep disturbance to a minimum. We don't want females to start flushing too readily because our visits have been too frequent. If they do flush easily they for fear become high risk candidates for predation. So please don't flush female unless it's necessary (e.g., you walked a mile to the nest and it's about to pour rain). Rather, if she's on, come back in ten minutes and see what's up. We should use the sign-up sheets to be sure that nests don't get visited too often. If someone else signed up to check the status of a nest, then leave it alone. If you agreed to check the status, be sure that you do it.

2. Parasitism rate

We want to know the rate of parasitism and how it varies annually and seasonally. We also don't want to have cowbird hatchlings in our nests. If a nest found during laying has a cowbird egg in it, leave it until at least two days after the clutch is complete. If you were to remove it earlier, you might cause the female to desert. When the clutch is complete (3 or 4 or 5 eggs plus cowbirds), then remove cowbird eggs. If there is more than one, and it is not too inconvenient, Lori recommends removing them on successive days, also to decrease the risk or desertion. Make careful notes and be SURE to record in the nestlogs what you did.

3. Determining nest fates

If a nest has failed, please note the circumstances. Was the nest lining torn out? Any feces in the nest? Any feathers from the female? Any bits of shell, partly eaten babies or color bands? Look around to see what you can see. Look beyond the nest itself, under it if it is elevated. Keep thorough notes.

We would like to know more about who the predators are. If someone were interested in taking charge of the mechanics, we might put flour near the nests (for footprints) or place a post with sticky tape near the nest (to see what mammals pass by and leave their hairs behind). Even cameras are a possibility, although we have not done enough research on this.

4. **Weighing and measuring young**

Traditionally, we have weighed the nestlings and measured their tarsi on DAYS 0, 3, 6 and also on fledging day. We began to skip the day 3 weighings last year. As of now, I would like to continue monitoring the number of eggs, the number of young at hatching, and the number of young at day 3, day 6, and fledging day. I am going to postpone the decision as to whether to weigh young and measure tarsus length this year.

a. *Hatching day*

On hatching day (day 0), we need to weigh the young and measure their tarsi. Weighings and measurements are done after noon. Frequently, three eggs hatch one day, and one hatches on the next day. If any eggs remain unhatched, then please mark the *young* that have hatched and return the next day to process the young that have hatched in the meantime. Marking will let you tell them apart; nail polish applied lightly will last long enough.

If there are eggs that have still not hatched 24 hours after the first egg hatches, and it is obvious that they will never hatch, bring them back to the lab. Eggs that were punctured and are light in weight will never hatch. The same is true of eggs that are out of balance because they have dried out (such eggs roll in circles on a flat surface).

If there is still a chance they will hatch, then go back the next day (now day 2 for the earliest hatched young) and either process the last hatched young or bring the eggs back to the lab for processing (to determine whether the embryos developed so we can assess infertility and to preserve embryos for DNA). Note the return on any eggs to the lab on the nest-logs. We need someone to take responsibility for opening these eggs and deciding whether they show any signs of development.

Enter on nest log that young have been weighed. Fill out a nestling weight sheet. Nests should be aged according to the age of the majority of nestlings in the nest. If one hatches on Tuesday and three hatch on Wednesday, then Wednesday is day 0. If two hatch one day and two hatch the next, call it day 0 (for the nest) on the date that the first two hatched. Nests should be aged by their status in the P.M.

b. *Day 3*

On day 3, simply visit the nest and count the young. **Always** be on the look out for definitive information about who the parents are. Bands seen? food in bill? close approach and chipping?

c. *Day 6*

If by day 6, you are not sure who the parents are, *watch the nest until both adults have fed the young and their bands have been identified.*

On day 6, band and bleed the young. Be sure to use unique band combinations (see lists by Tracey). Collect two or three tubes of blood from each nestling. Store the blood on ice (**don't let it freeze!**) and be sure not to mix up any samples. If you are not SURE whose blood is in a particular microhematocrit tube, please do not guess. It would be MUCH better to bleed the bird again the next day.

Return to lab to process blood samples. AGAIN, BE SURE TO KEEP STRAIGHT WHO IS WHO! This is simply essential. If for **any** reason, you are not sure, please do not forge ahead. Write a LONG note about what went wrong and the basis for your best guess as to what is correct. As before, plan to bleed the nestlings again the next day or at fledging, if necessary.

d. *Between day 6 and fledging day*

Check the nest periodically between days 6 and 10 or 11 to determine whether it is still active (do parents chip?). Remember, do not touch the young or go too close to the nest after day 7 or you may cause premature fledging! Simply peek in. Don't harass the adults.

For nests that will permit long watches from a car, we may organize some daylong nest watches. We will want to structure these, so talk to Eric, Val, or me about this. We would like to do six of these on nests from each treatment group over the course of the summer. (It's going to be lots of fun!)

e. *Fledging day minus one (DAY 11)*

On the afternoon of day 11, go to the nest and attempt to count the young. If you are in doubt about the age of the young, please be conservative and go on what you think is day 10. **Do not touch the young.** If it is a nest where you simply cannot see (way back in the roots of a treefall, but sometimes a flashlight helps), then simply note whether the nest is active (e.g., parent with food chipping at you) and state in the nest log that there was no way to be certain of the number of nestlings without risking early fledging.

Assess the situation for catching the young and the adults the next day. Set up a net; if possible, do it in a way that will intercept the adults as they go to the nest to feed the young. Consider the light (i.e., visibility of the net to the parents) in the early morning and make a decision about the best time to return the next day to do the catching. In other words, is this one where you need to get there at dawn if you are to be successful?

f. *Fledging day* (not before DAY 12, later in the year this will be moved up to day 11)

(1) When to go and what to take:

Go in the morning and take the following items:

bird bucket; net, poles, stakes, and hammer (if net is not already set up); fledgling scream tape and tape recorder; and a potter trap;

thermos with ice; stopwatch and bleeding equipment (needles, microhematocrit, clay sealant, critocaps, cotton); optivisor (for mature biologists);

balance, calipers, bands, if necessary, and data sheets.

(2) Begin by catching the adults.

VERY IMPORTANT: When you catch the male and before you do anything else, **CHECK HIS IMPLANT STATUS!!!!** Can you find the implants, how did they appear? Do it **fast**, because the next step is to bleed the birds and we need to do this ASAP.

If at all possible, catch the adults in a way that makes their plasma suitable for hormones, i.e. as they approach or leave the nest with food, rather than after disturbance by you. Bleed them as rapidly as possible and with as little disturbance as possible. Use a stop watch. Keep track of the time of first disturbance, time when they are caught, time when bleeding begins, and time when bleeding is complete. If you catch the birds quickly and can get them bled in 5 minutes, then we can use the blood for hormones. Even two full tubes will allow us to assay for corticosterone, and longer bleeding times are acceptable for T under certain circumstances (Steve Schoech will lecture us on this). Seal tubes with clay sealant, not with critocaps.

If you are bleeding the bird for CBP (because, e.g., it was quite slow to be caught, so you know it is not useful for hormones), then take your time and get as much blood as possible. Bleeding itself might take 10 minutes, and you might need to prick both wings. Try to get 5 full tubes. Keep notes on the time required for the various steps, even if you are bleeding for CBP. We are interested in both sexes for these assays.

If you simply do not have time to catch the adults this way, they still need to be caught (to be weighed and to check their implant status). To catch them, grab the young (see below) and use them and (perhaps) a tape of fledgling screams to get the adults in a net. This is a less sure-fire method of catching both adults, and the blood may not be good for hormones, unless you catch them immediately, **so this is the less preferred method.**

If the adults have not been bled before, then we must get their blood for DNA as well as hormones or CBP, but ideally this would have been done before fledging day.

Finally, weigh the adults.

(3) Now take the young

THE COUNT OF THE YOUNG IS EXTREMELY IMPORTANT. You also need to weigh them and measure their tarsi. Be extremely alert when you go for the young, or some will

slip past you and you will spend lots of time tracking them down. Have a container ready. Approach the nest slowly with your hands in front of you. Extend one or both slowly until you are in a position to strike at the nest (as before, the way a snake strikes its prey). When ready, strike with your open hand and cover the nest cavity so that no young can get out. Close your hands over the young and nest. In other words, grab the young and the nest as a unit. Have a back-up person if possible. Put all the young in the same bird bucket (with their parents if you have already caught the parents because parents remain calmer if they are with the young).

After the young are processed, ordinarily you put them back in or near the nest. They won't stay, but the parents will know where to look for them.

If you still need to catch the adults, then put the bucket with young beneath the net. The young will call and the adults should fly into the net immediately. Treat adults as above. If you don't catch them right away, try using the tape. Keep track of time and conditions.

If the adults finally prove too wary to be caught, then process the young. If after having processed them, you still need to capture the adults, you can use the young to catch the adults by putting them in one cell of a potter trap and placing vegetation around it so the only way the parents can get to the young is by entering the trap. Put the trap near the net. Hope.

Congratulations to you and to the juncos - they are launched!