

## 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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MAY 29, 1992 REVISED VERSION OF:

### WHEN YOU FIND A NEST.....

First, congratulations!!!! Every nest is special and YOU found this one. Here's what to do for the next 40 days if you are lucky.

1. Note the stage - being built (moss, grass, deer hair); eggs (how many, are they developed, i.e., opaque, or do they look fresh, i.e., translucent?), young (how many, age as estimated by weighing them or noting size of tarsus or feather development?).

If you find a nest with young, you need to weigh and measure them. On day 6, the day we band and bleed, the birds have long sheathed feathers on their wings, but the barbs have barely begun to break through. At fledging, full-size young will have tails that are 15 mm long. If the young look old enough to pop (see below), then you may want to band them on the spot, so look at their tails. If they are shorter than 14 or 15 mm, you can probably wait or day.

2. Try very hard to identify the adults. The first thing we will have to decide is whether they have been bled and whether the male has been implanted. See if you can be certain that the adults you see are the "parents." Did either one carry, or better yet deliver, food, act defensive, whatever? Write it down.

3. Mark the nest with a flag on the opposite side of the trail or on the tree fall or wherever. Write a nest number on the flag with a magic marker. If you are not sure of the number, then be sure to write on the flag when you next go back to the nest. Articulate to yourself a description of how to get there. If it's a really hard one to find, make a trail of flags from a place where people will see it from the road or trail.

Be careful around nest sites so that we don't attract predators. Restore the vegetation, try not to trample, etc.

4. When you return to the lab make a nest log sheet, indicating what you found and how certain you are and the reasons underlying your level of certainty. Write a really good description of how to find the nest on the nest log. This is very important.

5. Enter the information on the blackboard so we know when to check the status, when to expect hatching, weighing, etc.

6. Determine whether the adults have been bled and whether the male has been implanted. If one of the adults is unbanded (and therefore unbled), add it to a list of adults that need to be caught, banded, and bled. If it's been banded but not bled, add it

to the list of birds that need to be bled.

## DAYS 0, 3, AND 6

1. We NEED TO KNOW the number of eggs laid, the percentage of nests that hatch young, and the number of young that hatch. This means that we must return to nests that were found during laying to see how many eggs are laid. If found during incubation, visit them at least every other day in order to determine when the eggs hatch.

Keep disturbance to a minimum. 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.

If the nest has failed, 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.

2. On hatching day (day 0), we need to weigh the young, measure their tarsi, and mark them with nail polish. For any eggs that have not hatched, return the next day to process those young. If there are still eggs that have not hatched, bring them back to the lab if it is obvious that they will never hatch (e.g., they are punctured and light weight; appear bicolored with large end lighter than small end; are out of balance so that when egg is on flat surface, one side keeps rolling toward direction of gravity). 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 young or bring the eggs back to the lab for processing (to determine whether the embryos developed and to preserve embryos for DNA).

3. Enter on nest log that young have been weighed. Fill out a nestling weight sheet. Nests should be aged by the age of the majority of nestlings in the nest. 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.

4. On day 3, renew the fingernail polish, weigh the young and measure their tarsi. Always be on the look out for definitive information about who the parents are. Bands seen? food in bill? close approach and chipping?

5. 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.***

6. On day 6, band and bleed the young. Be sure to use unique band

combinations (see Zig). Try to get three tubes of blood from each nestling. Store the first tube (the a tube) in Longmire's, the second tube (the b tube) in EDTA, and the third tube (the c tube) in Longmire's. After Samrrah arrives we will change this to Longmire's, Queens lysis buffer, and Longmire's in that order.

7. Return to lab to process blood samples. BE SURE TO KEEP STRAIGHT WHO IS WHO! This is simply essential. If for some ungodly 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. If necessary, plan to bleed the nestlings again at fledging.

8. Check the nest periodically between days 6 and 10 or 11 to determine whether it is still active (do parents chip?). Do not touch the young after day 7 or you may cause premature fledging!

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

#### FLEDGING DAY MINUS ONE (DAY 11)

1. Go on afternoon of day 10 or the morning of day 11 and count the young. If you are in doubt about the age of the young, be conservative and go on 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 and state in the nest log that there was no way to be certain without risking early fledging.

2. 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 early if you are to be successful?

#### FLEDGING DAY (DAY 12)

1. Go in the morning. Take the following items: bucket, ice; net, poles, stakes (if net is not already set up), *and* a potter trap, stopwatch; bleeding equipment (needles, microhematocrit, sealant, critocaps, cotton); optivisor (for mature biologists); balance, calipers, bands, if necessary, and data sheets; fledgling scream tape and tape recorder.

2. Catch both adults. If they have not been bled before, then we must get their

blood for DNA, but ideally you would have gotten this done before fledging day.

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. 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 can get them bled in 5'30" from initial disturbance, and get 5-8 tubes, then we can certainly use the blood for hormones. Even three full tubes will allow us to assay for corticosterone.

If you simply do not have time to catch the adults this way, then you can grab the young and use them and a tape of fledgling screams to get the adults. 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*. However, the blood may be good for hormones if you catch them immediately, and it will be good for CBP. We are interested in both sexes for these assays.

If you are bleeding the bird for CPB (because you know it is not useful for hormones), then take your time and get as much blood as possible. Bleeding itself may take 7-9 minutes, and you may need to prick both wings. Try to get 8 tubes. Keep notes on the time required for the various steps, even if you are bleeding for CBP.

3. Before you do anything else, when you have the male in your hand, 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.

4. Bleed the adults. If you catch them both simultaneously, bleed the male before you bleed the female.

4. Weigh the adults.

5. We want to be opportunistic about lavaging on fledging day. If Ellen is available and the nest is reasonably close to a road so we can get him to the lab and back expeditiously (in 45 min or less), then hold the male so you can take him back to the lab and have Ellen lavage him.

6. Take the young from the nest and count and weigh them and measure their tarsi. THE COUNT OF THE YOUNG IS EXTREMELY IMPORTANT. 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 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. Put them in the bag, bucket, whatever. In other words. grab the young and

the nest as a unit. Have a back-up person if possible.

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

7. At some nests we will put the young in open-top containers for a few days and attempt to quantify the feeding behavior of the adults toward their young, according to sex and treatment group. This is a pilot year on this subject, and we don't have the details worked out. Advice is welcome. We have tried paper cartons and hardware cloth. The hardware cloth is not good because the adults try to feed the young through it and the feedings are difficult to count. If we use it we need to put some baffle around the bottom so the parents cannot see the young.

8. Return to the lab to lavage the male. Take the male back to his territory and release him near his young.

9. Process the blood samples. For hormones and CBP, the blood should have been sealed with clay sealant. Spin the microhematocrit tubes in the clinical centrifuge at a setting of 6 for five minutes. **IF YOU ARE DOING MORE THAN ONE SAMPLE BE SURE NOT TO GET THE TUBES MIXED UP.** Write down the arm of the clinical centrifuge that each sample went in to. Draw off the plasma a rinsed and dried Hamilton syringe. Measure the volume. Store the plasma in well labelled 0.5ml eppendorf tubes. Be sure that the caps are tightly sealed. Freeze the plasma samples. Fill out a bleeding sheet in great detail and indicate on it whether you think the plasma is appropriate for hormones or CBP.

## AFTER FLEDGING

1. For the nests where we don't observe adult post-fledging behavior, we need to determine fledgling survival. We always try for survivorship curves (# alive 1 day after fledging, 2 days after fledging, 3 days after fledging, 6 days after fledging, 9 days after fledging, 14 days after fledging). However this is nearly impossible to do. The families move around a lot and you may not find them one day and then find them the next.

2. The day-14 measure is the most important, but you have to visit the territories all along in order to know where the likely places to look are on day 14. So follow Zig's sheets for recording fledgling sightings. Be sure to record what you saw ASAP, so other will not duplicate your efforts.

3. If on day 14 you find all the fledglings that you think are alive, then you can quit looking. If you have not seen one or more of them, keep going to the territories even after day 14, until you are CONVINCED that certain young are not alive. On day 21 you may quit in any case.

Use all your senses. Sound, etc. Go prepared with information about band colors, so you know what leg and colors to look for. You will get only a few seconds, so preparation will make you much more effective.

4. Return to the lab and record your findings on the fledgling survival sheets. Note where you looked, how much time you spent, how sure you are of your observations, etc.

5. Be on the look out for signs of renesting. Is the female still around the fledglings? Did you see her feed young or just the male? I think that the earliest turn around is a case in which a female laid a second brood egg 8 days after the first brood fledged. But 12 to 15 days is probably more common.