

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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Additional notes on processing, May 3, 1996

This instruction sheet is to accompany the one entitled, *PROCESSING BIRDS IN EARLY SPRING*. Now that most of the birds we catch are banded and implanted there is a little more time to be attentive to clo pros, fat class, and condition.

1. Cloacal protuberance

This is the area around the opening to the cloaca (the vent) that becomes swollen in male birds in the breeding season and serves as a storage site for sperm. In some species, the size of the cloacal protuberance corresponds to the size of the sperm reserve.

The CP is dome shaped in juncos (rather like a tower) and the posterior end is more swollen than the anterior. It has feathers on the tip, making its height difficult to estimate.

Hold the bird in your left hand and use your thumb and forefinger to hold the feet (toes) together and up and away from the clo pro. You will need to blow on the feathers to see and perhaps use your little finger to hold the tail still. The calipers should be set so as to glide up and down the side of the CP - not so loose as to be misleading, not so tight as to squeeze.

Use your calipers to determine the width (side-to-side dimension), and the depth (or length)(anterior to posterior, also known as front to back, head to tail, cranial to caudal) and height. Then please use your mm rule on the anterior side of the cp to measure its height. Make your best attempt to get the height of the tissue, not the feathers.

Also please use your drafting tool to determine a blend of width and depth. I would like to see how well that measurement corresponds with the three different ones. It seems to me that it is easier and more reliable (repeatable) and may be more informative.

Record these measurements in mm on your banding sheets under Comments, and in the order width, depth, and height, e.g. CP = 4.5 x 5.5 x 6.0.

2. Fat class:

Birds store fat as fuel in various regions of the body, most predictably in the furculum and the abdomen. When fat class is carefully recorded it corresponds closely to body mass, and in conjunction with body mass, it can be used to say whether birds have large or small energy stores.

Please see the notebook labelled 'Instructions' for a description of how to classify fat class in juncos. The categories are 0 to 5. This time of year, many to most birds are 1s and 2s. They are fattest in winter, least fat in summer. Females are sometimes hard to classify this time of year because their abdominal regions are filling with yolk. Still it is important to attempt to quantify fat.

Look to the furculum and see if it is entirely unlined with fat (0) has a little fat (1), has fat that makes the depression shallow (2), fills the furculum so as to be level or flush with the surrounding bone and muscle (3). The abdomen should correspond to the furculum, because these two areas of the body tend to deposit fat in tandem. No fat on the abdomen so that it is dark and almost sunken (0), a little fat so that you see streaks of cream-colored fat and the appearance is not truly sunken (1), fat covering most of the abdomen, but not to the point that it is flush with the base of the rib cage or the pectoral muscle (2), abdominal region covered with sufficient fat to make that region flush with the pectoral muscle. Record this measure in the column entitled body mass as follows, e.g., FC = 2

3. Condition

This measure is an effort to quantify the degree of development of the pectoral (breast) muscle and is thought to be a measure of physical fitness. It is used at banding stations in Europe a lot, but less frequently in North America.

The idea is to attempt to picture the shape of the muscle in cross section. Is it highly developed so as to be rounded and protruding and thus convex in profile, or does it slope steeply from the keel in a straight line, or is it even wasted so that the appearance is concave? These are the extremes, and variation among individuals may not be large, particularly at this time of year. Most males, at least, are probably rounded and convex. But it only takes a second to look and decide. Later in the season females may take on a straight sided appearance.

So please record under comments under C or 'cond' as convex and protruding with a dent only for the keel (3), round but no indentation for the keel (2), flat sided (1), concave (0).