THE POSTJUVENAL MOLT OF THE MALE BROWN-HEADED COWBIRD (Molothrus ater)

(Excerpts from an Article in the October Issue of Bird-Banding)

By James Baird

The differentiation of sex and age groups is of vital interest to banders, life history workers, and others who have to deal with living birds. Some species of birds are characteristically plumaged whether male or female, adult or immature, or any combination of the above. However, the majority have one or more stages in their plumage development which cause difficulty in identifying with certainty the age and sex of an individual. In the Brown-headed Cowbird, Molothrus ater, this difficultyis evident in several stages of the plumage development: 1) the natal down presents obvious difficulties; 2) the juvenal plumage, in which both sexes are colored alike, and where the only distinction is that of size; and 3) upon completion of the postjuvenal molt (1st winter plumage), where there is sexual dimorphism, but where the adults and immatures are nearly alike in color. It is this last-mentioned problem that is under discussion, for I believe that there are differences which allow the immature male and the adult male to be separated.

The well-known propensity of a few immature male cowbirds to retain a number of juvenal feathers, including even retricies and remiges, in the 1st winter plumage has been commented upon by a number of authors (Dwight, 1900; Forbush, 1927; Friedmann, 1929). These birds were generally dismissed as anomalies or as individuals that were not in the best of health. My own interest in the subject arose from just such individuals, and the matter was investigated in my search for a further refinement of data on cowbird weights. Over 1,200 cowbirds, more than half of which were males, were weighed and banded at the Norman Bird Sanctuary, Middletown, Newport County, Rhode Island. These were all examined closely and notes were made on the plumage. The majority were captured during the winter and spring of 1957 and in the winter of 1958. Random sampling, by collecting, of a migrating flock composed largely of molting immature birds on September 22, 1957, resulted in the accumulation of additional data on seven males that were in active molt. An important standard of reference for known adults was provided by the returning of males banded in previous years.

A brief review of some of the cowbird molts and plumages is in order: Male and female cowbirds are identically olive-brown in the juvenal plumage. In the early fall, males and females alike undergo a postjuvenal molt into the 1st winter plumage, thus allowing the first separation of the sexes by plumage. Dwight (ibid.) says of the male in this plumage: "Unlike the previous plumage, chiefly black instead of brown, young birds becoming practically indistinguishable from adults." He states further that the "Adult Winter Plumage (is) acquired by a complete postnuptial molt in September. Adults are not distinguishable, as a rule, from young birds in first winter dress."

Friedman (ibid.) quotes Dwight in full and further elaborates on certain aspects of the plumage coloration. He also contributes a discussion of the order of molt in the immature male. However, he agreed with Dwight that immature cowbirds (M. ater) could not be distinguished from adults, although in the section dealing with the Shiny Cowbird (M. bonariensis) he commented on the fact that 9 out of 10 immature males retained enough of the juvenal plumage to be identified as such in the field.

Bent (1958) again relies on Dwight's description of the plumages and molts, but he errs (p. 442) when he refers to the "postnuptial molt . . . producing a first winter plumage which is indistinguishable from that of the adult" (postnuptial obviously should read postjuvenal).

Unfortunately, I was unable to examine birds that were in the early stages of molt, and therefore cannot comment on or contribute further to this aspect as discussed by Friedmann (ibid.) My information concerns some of the features of the middle and late stages of the molt, particularly with respect to molt progress within each feather tract.

As noted by Friedmann (ibid.), in the course of the postjuvenal molt of the male cowbird the molt proceeds in a set pattern which varies little between individuals. However, as the molt period closes, the peripheral areas of the various feather tracts (the areas that are molted last) may not complete the molt, and this varies considerably among individuals. Thus, the back feathers are molted from the center outward (posteriorly and laterally), and in those individuals in which the molting has stopped before the back molt is completed, the brown feathers of the juvenal plumage are to be found along the outer edges of the back. But it should be noted that the retention of juvenal feathers follows an orderly progression, with one area succeeding another. Retention of juvenal feathers on the back invariably means that juvenal feathers will also be found in the scapulars and underwing coverts. The degree of molt completion varies considerably and may possibly be related to the time of hatching; birds hatched in the early summer may more nearly complete their molt than birds hatched during the late summer.

The underwing coverts are subject to a great deal of variation in completeness of molt. All or most of the underwing coverts were of the juvenal plumage in 71% of the immature males examined. All had the outermost row of the inverted undercoverts juvenal, although some had a scattering of feathers of the 1st winter plumage. Recognition of these juvenal feathers is always essential in determining the age of an immature which has almost completed the postjuvenal molt -- the feathers of the juvenal plumage are light brown with a dull sheen, while the feathers of the 1st winter plumage and subsequent adult plumages are a silvery gray with a strong black edging to each feather.

In the early stages of this study, I felt that the main difficulty lay in determining whether birds which had no trace of the brown juvenal feathers were immatures which had actually completed their molt, or were adults. This still remains a question to be considered, but I now believe that the ageing of male cowbirds can be done with a high degree of accuracy, since apparently the postjuvenal molt of the male is not complete but is arrested at one or another stage of completion. There may be exceptions, but consideration of the proportion of adults to immatures banded indicated that there are few. In 1957 of 585 males banded, 189 (32.3%) were adults, while 396 (67.7%) were immatures. In 1958 (to date) of 166 males banded, 30 (19%) were adults, while 136 (81%) were immatures.

It seems quite likely that the postjuvenal molt of the female cowbird may also be arrested at one or another stage of completion, and the ageing of a few individuals may be accomplished by virtue of the retention of a large number of the juvenal feathers. However, in dealing with birds which have nearly completed their molt, the similarity in the color of the juvenal and the 1st winter plumage renders detection of vestiges of the juvenal plumage exceedingly difficult.

Brief Conclusions for the Bander

1. At any season, a male Brown-headed Cowbird which shows no olive-brown feathers mixed with the black (on close examination) can be termed an adult with reasonable safety.
2. Male Brown-headed Cowbirds which do show olive-brown feathers mixed with the black are definitely immature (for a period of roughly one year, from postjuvenal molt to first postnuptial molt).

Summary

1. Evidence is presented that the postjuvenal molt of the male Brown-headed Cowbird is not complete.
2. The areas of the body which most frequently retain vestiges of the juvenal plumage are those parts of the various feather tracts that are molted last. In decreasing order of frequency they are:
   - Outermost row of the inverted undercoverts of the underwing.
   - The last two feathers of the scapulars (humeral tract).
   - One-quarter to all of the underwing coverts.
   - The outer edges of the back (spinal tract).
   - The mid-line of the belly (inner edges of the ventral tracts).
   - The orbital area of the head.
   - Other areas: primaries, secondaries, flanks, etc.
3. There is a progression in the degree of molt completion that follows the order given above.

Norman Bird Sanctuary, Third Beach Road, Middletown, R.I. ★ ★ ★