

OCCASIONAL PAPERS OF THE MUSEUM OF
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

UNIVERSITY OF MICHIGAN PRESS

THE PLUMAGES AND MOLTS OF THE YOUNG
EASTERN WHIPPOORWILL*

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LITTLE has been published, apparently, concerning the plumages and molts of the young Eastern Whippoorwill, *Antrostomus vociferus vociferus* (Wilson). The "pale buffy or yellowish-brown" natal down is said to be "followed by" a juvenal plumage which is shed "beginning in July or August."¹ The first winter plumage, which replaces the juvenal plumage, is known to resemble closely the plumage of the adult. But the juvenal plumage has not been described in detail; the postnatal molt has not, so far as I am aware, been reported on at all specifically; and the extent to which natal, juvenal, and first winter plumages overlap, or coexist, certainly has not been made clear.

* Contribution from the Edwin S. George Reserve.

The author wishes to express his thanks to the following: Dr. Adolph Murie, for showing him a brood of young whippoorwills in the summer of 1934; Mr. and Mrs. Lawrence Camburn, for their assistance in many ways; Dr. Josselyn Van Tyne, for a critical reading of the manuscript and helpful suggestions; and the staff of the Museum of Comparative Zoology at Harvard College, for lending young whippoorwills. Acknowledgment is also made to the Board of Governors of the Horace H. Rackham School of Graduate Studies for the funds to publish the illustration.

¹ Edward H. Forbush, *Birds of Massachusetts and Other New England States* (Boston: Mass. Dept. Agr., 1927), Pt. II: 301.

The juvenal plumage is not, of course, a separate complete plumage, although many published descriptions would lead us to believe so. The juvenal rectrices and remiges are part of the first winter plumage also. The juvenal primary coverts, alula feathers, rictal bristles, and tertials probably are also of the first winter plumage, their development continuing while the feathers of the incomplete juvenal plumage—the scapulars, wing coverts, tail coverts, and feathers of the head, back, rump, and under parts—reach full development and are molted. In view of these facts, it is not surprising that Ridgway should describe the “young male” as “similar to the adult male in ‘pattern’ and coloration of lateral rectrices . . . primaries and primary coverts,”² for these very “lateral rectrices, primaries and primary coverts” which he describes are really part of the first winter plumage.

The natal down, as a separate and distinct plumage, exists for a very short time. Even as it is drying, while the newly hatched chick wriggles and stretches, slender blood-quills are sprouting on the wings. The first of these to emerge from the down are the primaries, secondaries, and primary coverts. They remain fully sheathed until they have attained considerable length. Several rows of covert and scapular blood-quills appear shortly after the remiges have emerged, the former being so long and slender as to give the wing the appearance of being studded with short, thick hairs. These covert-quills are of the incomplete juvenal plumage. To the tip of each of them clings a wisp of natal down.

The tips of all the above-named quills break open almost simultaneously, causing the chick to “feather out” with amazing rapidity. By the time the bird is ten days old the feathered-out tips of the primary coverts and remiges are from 5 to 12 mm. long; the silken, moth-soft, “deep brownish buff or clay color” scapulars, with their velvety black spots, look, at first glance, like fully developed feathers; and a row of blood-quills (some of them slightly feathered-out at the tip) is put-

² *Birds of North and Middle America, Bull. U. S. Nat. Mus., No. 50, Pt. VI (1914): 517.*

ting in its appearance along the mid-line of the crown from the base of the bill to the nape. At this plumage stage the primary coverts are almost as long as the primaries themselves; the most extensively unsheathed feathers of the wings are the greater coverts; and the rectrices are so almost wholly sheathed and so hidden by natal down that the bird appears to be tailless.

An 11-day-old female specimen (U.M.M.Z.³ No. 83528), collected on the George Reserve, in Livingston County, southeastern Michigan, August 5, 1936, is in about this plumage stage. The scapulars are definitely of two sorts—an outer row of black-tipped or black-cornered ones, whose spots form an irregular black line down each side of the back; and one or more inner rows of buffy brown ones with small, diamond-shaped black spots about 2 mm. from the tip. The two rows of middle coverts are much like these inner scapulars, save that the black spots on them tend to be saggitate rather than diamond-shaped. Several rows of lesser coverts (in a well-defined tract) are black, barred, and mottled with reddish brown, in sharp contrast with the buffy inner scapulars and middle coverts just described. A median line of short, incoming quills (some slightly feathered-out) divides the natal down of the head. The rectrices, though actually about 11 mm. long, are almost wholly sheathed and practically hidden by down. The barred juvenal plumage of the breast, sides, and flanks is well developed. Rictal bristles are not yet visible. The general appearance of the bird is fuzzy. This is because the natal down still is present over the entire body, the delicate tufts clinging to the tips of some of the largest feathers (notably the tertials, primary coverts, rectrices, scapulars, and wing coverts) and to all of the plumage of the under parts. These exceedingly soft neossoptiles are attached not in a bunch at the tip of the rachis, but along the whole tip of the feather. The juvenal breast feathers, for example, each bear from eight to twelve filaments about 9 mm. long.

These strands of natal down continue to cling to the tips

³ U.M.M.Z. = University of Michigan Museum of Zoology.

of the developing feathers for some time. An approximately twenty-day-old female (U.M.M.Z. No. 75075), taken at the George Reserve on July 7, 1934, is not "fuzzy" on the back (though bits of down still cling to some of the middle coverts), but the underplumage is almost as downy as that of the eleven-day-old bird described above. In this second specimen we find represented, therefore, three distinct plumages: (a) natal down, thickly set all over the middle of the belly (in the region of the adult bird's ventral apterium), tibial region, and proximal two-thirds of the tarsus; less thickly set at either side of the crown, in the superciliary region; here and there all over the breast, sides, and flanks, and on the upper and under tail coverts attached to juvenal feathers; (b) juvenal plumage, notably the buffy-brown scapulars and wing coverts; loose, barred upper tail coverts, and unbarred, plumulaceous under tail coverts; and feathers of the crown, neck, back, rump, and under parts; and (c) first winter plumage—the remiges and rectrices, primary coverts, alula feathers, partly grown rictal bristles (the longest about 7 mm. long), and perhaps the black and reddish brown lesser coverts mentioned above, which are so unlike the buffy lesser coverts near them (in texture as well as in color) as to suggest their belonging to a wholly different plumage.

A beautiful three-week-old male specimen in the collection of the Museum of Comparative Zoology at Cambridge (No. 210050) is virtually free of natal down on the upper parts, though wisps cling to the tips of the juvenal feathers here and there throughout the under parts. It was collected fifty-five years ago (in July, 1885, at Saugus, Massachusetts) and the fact that its back and wings have been subjected to handling may account for the absence of neossoptiles there. It shows the juvenal plumage very well—the tawny scapulars (which look like back feathers), middle and greater coverts, and tertials; the gray crown with its black spotting; and the indistinctly barred under parts. The stubby rectrices are well feathered at the tip but do not protrude beyond the folded wings. Nowhere is there evidence of postjuvenal molt; the

bird is therefore just coming into what may be called its "full" juvenal plumage.

That natal down continues to cover the middle of the belly, tibial region, and proximal two-thirds of the tarsi in the strongly flying, month-old bird is apparent from a fourth specimen (U.M.M.Z. No. 106502) taken by the author at the George Reserve on July 30, 1940. Here again we find three distinct plumages: (a) natal down, on the belly and tibial region, as well as here and there through the under parts, clinging to the juvenal feathers; (b) juvenal plumage—scapulars, wing coverts, crown, back, breast and belly feathers, and upper and under tail coverts; and (c) first winter plumage—remiges and rectrices, primary coverts, alula feathers, lesser coverts (possibly), and rictal bristles (now almost full grown). Our illustration is of this bird, which may be said to be in about as "full" a juvenal plumage as the species ever wears.

It would appear, then, that a good deal of natal down continues to cling to the juvenal feathers until they are molted. The postnatal molt is not, therefore, an actual losing of the natal down, but rather a shifting of its position, the natal and juvenal being to some extent one and the same plumage, and the consummation of the postnatal molt actually that of the postjuvenal molt. How long the down of the middle of the belly and legs is retained it is not possible at present to say.

SUMMARY

1. The whippoorwill's postnatal molt is very gradual, requiring several weeks. The down on the middle of the belly and legs is retained at least until the flight feathers of the first winter plumage are fully developed, perhaps longer. Wisps of down cling to feathers all over the body (particularly on the under parts) until the postjuvenal molt. The postnatal molt is therefore not really consummated until the postjuvenal molt is finished.

2. The plumage which replaces the natal down, the juvenal, is sometimes spoken of as if it were a separate, complete plumage. It is incomplete, for its remiges and rectrices, and other

important feather tracts, are also a part of the first winter plumage.

3. During the first four weeks of its life (and perhaps for a longer time) the young Eastern Whippoorwill is clothed simultaneously in three more or less distinct plumages: the natal, a little of which drops off from time to time; the juvenal, bearing wisps of natal down on its tips; and the first winter, which also may bear wisps of natal down for a considerable time.

PLATE I

Drawing in water color by the author.

Portrait (from freshly killed specimen) of a young Eastern Whippoorwill. Age, approximately one month. Some natal down, the incomplete juvenal plumage, and many feathers of the first winter plumage (including the rectrices and remiges) are present in this bird's plumage. Edwin S. George Reserve, Livingston County, Michigan, July 30, 1940.

THE YOUNG EASTERN WHIPPOORWILL

PLATE I



