

GENERAL NOTES

Anting of a captive Slate-colored Junco.—Although the peculiar behavior by which birds apply ants to their plumages is now well known through several excellent reviews (e.g., Ivor, 1956. *Nat. Geog.*, 110:105–119; Whitaker, 1957. *Wilson Bull.*, 69: 195–262), no actual description of “anting” by the Slate-colored Junco (*Junco hyemalis*) appears to have been published. On March 27, 1958, I observed one of my captive juncos anting, apparently with sawdust. I released the bird in a small empty room in the Harvard Biological Laboratories (Cambridge, Massachusetts) as part of a series of experiments on emberizine behavior. I watched the bird through an observation window as it explored the floor, which was covered with a layer of sawdust and wood shavings. As I was about to introduce another junco into the experimental room, the first individual began performing motions which I realized were those of anting.

The junco stood on the floor with legs rather spread, in contrast to its usual stance. It pecked several times into the sawdust, and then began quickly stroking the undersides of its primaries with its bill. Because I had not recognized the anting immediately, I did not note the sequence or exact morphology of these first motions. The bird pecked once more into the shavings and again touched the underwings and the flanks with something in its bill. Again, the motions were of a stroking type, as opposed to dabbing movements. The wings were spread only slightly while their distal ventral surfaces were stroked, and the tail was not touched. There was no tripping or other tumbling-like motion. The junco anted for about a minute and a half, after which it began hopping around the floor, continuing to investigate its new environment.

Because it was not possible to distinguish what had been in the bird's bill at the time of anting, I subsequently examined quite carefully the general area in which the bird had been standing and found nothing other than the wood shavings and dust. It is possible that a single ant or beetle was found and utilized by the junco, but I could find no evidence of it. Other juncos released in the room did not ant, and in subsequent experiments the bird referred to above never did so again.

Anting by the Slate-colored Junco was reported to occur by Ivor (1941. *Auk*, 58:416), and later mentioned by Ivor (1943. *Auk*, 60:54) and Bagg (1952. *Jour. Mamm.*, 33:243), but neither author gave a description of the behavior. Whitaker (*op. cit.*, 232) indicates that at least ten New World emberizine species are known to ant, and, as was stated above, the behavior in one form or another is widespread among birds.

The anting reported here was the “active” type, where the bird picks up material to rub on its plumage, as opposed to the “passive” type where ants are allowed to crawl over the bird (Whitaker, *op. cit.*). The motions used were of a stroking nature, differing from the dabbing motions of Whitaker's captive Orchard Oriole (*Icterus spurius*), but apparently similar to movements used by other species (Whitaker, *op. cit.*, 208). The tail area, usually a primary target of anting, was ignored by my junco. This fact, along with the short duration of the observation, and the lack of tumbling and extreme posturing, suggest that anting was of quite low intensity.

The purpose of anting has long been questioned by observers. Several authors have attempted to link anting with feeding, plumage care, or parasite removal, and Whitaker (*op. cit.*, 195) lists many other explanations which have been proposed. My junco neither fed nor preened after anting, nor was it visibly infested with ectoparasites (I examined the bird in the hand several times). The latest theory is probably that of Whitaker, who presents good evidence that ants (or substitutes) utilized give off a burning or “thermogenic” stimulus to the bird which is pleasurable to it in some manner. I have seen no record of sawdust being used by birds, nor does Whitaker mention its

use by any species. If the junco did use sawdust, and not just a passing isolated insect, it is interesting to suggest what possible thermogenic properties sawdust contains; or, if it is not thermogenic, what provoked the junco to ant with it. Whitaker (in letter) has speculated that the sawdust may have been treated with a burning stimulant, or might have contained tannic acid. Unfortunately, no analysis of the material was made at the time.

In her review, Whitaker (*op. cit.*, 237 ff.) devotes considerable space to a discussion of the type of stimulus the bird receives, and the "object" of anting. Her principal suggestion is that some kind of sexual stimulation may be derived from applying thermogenic material to the area of the vent, and this explains some of the display-like motions which often accompany anting. My junco gave no indications of performing any of the known sexual displays of the junco (Sabine, 1952. *Auk*, 69:313-314), and the bird's apparent lack of the usual overt expression of some kind of "pleasure" may have been due to the low intensity of the anting bout.

I am grateful to Professor E. O. Wilson and to W. J. Bock for making the experimental room available. I am especially indebted to Mrs. Lovie M. Whitaker for reading the original version of this note and supplying many interesting suggestions about the subject of anting.—JACK P. HAILMAN, 4401 Gladwyne Drive, Bethesda, Maryland, August 17, 1959.

Notes on feeding and fecal-sac disposal of sapsuckers.—On July 10, 1959, I observed a pair of Yellow-bellied ("Red-naped") Sapsuckers (*Sphyrapicus varius*) nesting in a grove of aspen at Grayling Creek, near West Yellowstone, Montana. Some aspects of their feeding behavior and their disposal of fecal sacs seem worth recording. Just 48 feet north of the nest tree, and facing it, was a dead bracket fungus on a tree trunk, about 16 feet from the ground. This fungus was used as a sort of "work-shelf" by the sapsuckers. To it they brought insects (mostly salmon-flies, Plecoptera) to be pounded before being fed to the young birds. Sometimes they flew directly to the nest and fed to the young the insects held in the forepart of their bills, then flew back to the fungus shelf to pound the remaining insects to the right consistency for feeding. Both parents used the shelf in this manner. One bird always flew north and east to catch insects, flycatcher-fashion, over Grayling Creek; the other always flew south.

Insects were sometimes left on the shelf to be collected later. One bird brought an oblong white object about an inch and a half long and placed it on the shelf, picked at it a couple of times, then flew away, leaving the object behind. After long study with binoculars, I could make nothing of it but a reptile egg, although I know of no turtles or egg-laying snakes in this area. The object was left on the shelf through several feedings of the young. I left the vicinity of the nest for about 45 minutes to get a ladder, but when I returned the object was gone.

When a fecal sac was removed from the nest (always done by the male), it was carried to the same fungus shelf. Here the sac itself was eaten by the bird, the fecal contents dropping to the ground. The area immediately below the shelf was well littered with excrement, some adhering to the edge of the shelf and to the tree below the shelf. During my period of observation no sacs were carried away from the nest and simply dropped as is the habit of many birds. The fecal sacs of all other birds I have watched are opaque, while that of the sapsucker is transparent.

I have watched sapsuckers use a common insect-killing and "sewage disposal" place at two other Montana localities, Upper Red Rock Lake and Madison River Canyon, in other years. In both cases these were farther away from the nest tree.—MARY WIBLE, Carter Camp, Pennsylvania, September 16, 1959.