

SEALY, S. G. 1965. Interspecific nesting associations of some Arctic birds. *Blue Jay*, 23(4): 168-169.

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Received January, 1966.

## GENERAL NOTES

**Observations on the behavior of Black and Turkey Vultures at traps and in captivity.**—As part of an immunological study using live vultures, the authors trapped, handled and maintained in captivity many dozens of specimens of the Black Vulture (*Coragyps atratus*) and Turkey Vulture (*Cathartes aura*), which provided opportunities to observe their behavior at traps and under constraint. These studies were made both in north Florida and in the Panama Canal Zone, with no differences of behavior noted in the two areas.

Several trapping methods were employed with varying results. Steel traps with padded jaws distributed about a bait were moderately successful for catching small numbers of birds, with little or no apparent harm to the vultures. Drugging bait with alpha-chloralose (carried out in cooperation with the Florida Game and Fresh Water Fish Commission) was tried, but this too often resulted in birds' taking fatal overdoses in the course of gorging themselves. A more sophisticated method of distributing drugs about a carcass should prove to be the most convenient and efficient manner to trap vultures if perfected. A cannon net was used with success on one occasion.

In Panama, fairly consistent success in trapping vultures was obtained by use of walk-in traps made simply by bending a 30-foot length of 1" x 2" mesh, 4' tall welded wire upon itself so that it formed two chambers (preferably of unequal size), with an opening between them large enough to permit the entrance of the birds; the top of the trap was covered with more wire mesh or cargo netting. Bait (perhaps a roadside-killed sloth or anteater) was placed in the larger chamber. Birds entering through the opening usually had considerable difficulty in finding their way out again, so that the traps needed to be attended only once or twice a day.

Both Black and Turkey Vultures were surprisingly wary of all the trapping devices we used, even the unobtrusive cannon net. At times, several days elapsed before the birds would enter a set. In Panama, most trapping was done at garbage dumps where Black Vultures congregate by the hundreds. We never observed Turkey Vultures with the Blacks at the dumps. Turkey Vultures were trapped in small numbers in more forested situations along the edge of roads.

When a walk-in trap was first placed at the Pedro Miguel (C. Z.) dump, it was soon surrounded by inquisitive Black Vultures which, nevertheless, did not enter it until the second day when at least 50 birds were taken at one time in the small enclosure. While birds were being removed by us at the opening, Blacks outside the cage but opposite us were greedily poking their heads through the wire mesh in an attempt to reach the bait. Such enthusiasm for the trap and bait soon waned as the trapping project continued. Of about 200 vultures banded and released at the dump, only three were recaptured in the trap, and these nearly six months after banding. Toward the end of our activities at Pedro Miguel, the vultures became so wary that they would fly away from the area when the green car we drove appeared at the dump. A short while later, the dump was practically abandoned by the vultures, perhaps in response to our continued presence. (They are quite fearless in the presence of the garbage men and dump attendants, who never molest them.)

The same trap was placed on the roof of the public market on the Panama City waterfront, where Black Vultures gather in great numbers. Meatscraps were thrown in and around the trap; and when we backed away the vultures swarmed in, consuming all the scraps outside the trap almost instantly without a

single bird entering the trap to get at the remaining meat. Brown Pelicans (*Pelecanus occidentalis*) competed with the vultures for the meat scraps and also for offal about the shore and marketplace. The pelicans appeared to be completely dominant over the vultures in this situation.

Typically, a trap had to be baited for about two days before Black Vultures could be enticed to enter. If a bait even the size of a large dog were placed near the opening of the trap, often the Blacks would pull it from the trap and devour it outside. This occurred with such regularity that we were often forced to stake down the bait. We thought at first that this removal of the bait was simply a chance result of their general pulling and tugging on it; continued observations, however, convinced us that this was done deliberately.

When approached at traps or under a net, Black Vultures generally flapped and struggled constantly in attempts to escape. When handled, they bit viciously, necessitating the use of heavy gloves. Even when inside burlap sacks they continued to thrash around violently. Handling of Black Vultures almost invariably resulted in their regurgitating, shaking their head from side to side while doing so, often to the great discomfiture of the handler.

The Turkey Vulture presented the opposite extreme of temperament from the Black Vulture. When approached closely in a trap, it would squat motionlessly with folded wings and head hanging, allowing itself to be picked up without the slightest show of resistance. Under the cannon net Turkey Vultures lay still, in sharp contrast to the anxious flurrying of the Blacks. Similar behavior was noted by Tyrrell (Bent, 1937, *U. S. N. M. Bull.* 167: 22) on approaching a Turkey Vulture at the nest. Almost invariably, Turkey Vultures vomited rather passively on first contact and afterwards left the bill gaping until they were released. They made no attempt to bite when first captured, even when offered an opportunity to do so. Some birds became a bit more aggressive in captivity but were never so vitriolic as the Blacks.

The different modes of life of these two species are reflected in their ability to withstand captive conditions. Turkey Vultures, with their long wings and short legs, fared much worse in cages than the more terrestrially adapted Black Vultures with short rounded wings and longer legs. The general odor of both Black and Turkey Vultures, while not that of the carrion they feed upon, is strongly musky and lingering though not especially obnoxious.

The two species differed somewhat in their manner of eating. Black Vultures seemed more adept at nibbling at their food, though admittedly they appeared wolfish when large numbers fed at a carcass. In captivity, Blacks nibbled at hamburger and at bones to get the last bit of meat. They were either at a loss to eat when presented with a whole dead mouse or frog, or else pulled it apart before eating. Turkey Vultures, on the other hand, ate whole mice and frogs at a single gulp and picked up hamburger in larger chunks to swallow it whole. Both species in captivity showed a decided preference for fresh over decaying meat.

Vultures are apparently placed under great stress if their bill is held shut for any appreciable length of time. We taped shut the bill of one particularly obnoxious Black, though leaving the nostrils exposed. This bird, apparently otherwise unharmed, died before it could be gotten to a holding cage, a matter of about an hour, whereas 20 other vultures of both species survived this same trip under the same conditions except their bills were not taped. The bird's death may have been due to simple asphyxiation; but we suggest it may have been caused by disruption of temperature regulation through the mouth, leading to death by overheating.

#### ACKNOWLEDGMENTS

We wish to thank Mr. Jimmie McDaniel of the Florida Game and Fresh Water Fish Commission for his assistance in baiting and trapping; and L. Cliff Chavez, Jr., who aided in obtaining and transporting vultures in Florida. In Panama, we received invaluable assistance from the Canal Zone Veterinary Department, Middle America Research Unit (NIH), and the U. S. Army Tropic Test Center. This investigation was supported in part by Department of the Army grant DA-MD-49-193-65-G173 and by PHS Research Grant AI 06072 from the National Institutes of Health. Storrs L. Olson, Dept. of Zoology, University of Florida, Gainesville; Horace Loftin, F. S. U. Canal Zone Program, Box 930, Albrook AFB, C. Z.; and John Wiese, Dept. of Biological Science, Florida State University, Tallahassee.