IS THE BLACK VULTURE MIGRATORY?

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ON a recent visit to Panama, while engaged in other studies, I observed during many days in November 1962, groups of Black Vultures (*Coragyps atratus*) moving eastward, seemingly toward South America. These movements occurred both morning and late afternoon in the same direction, and the manner of flight was that characteristic of migrating raptors—high soaring in upward spirals alternating with long glides. I have failed to find any published report of observed group migration in this species. In most of the current literature the Black Vulture is stated, without qualification, to be "resident" within its vast breeding range from southern United States to Argentina and Chile (1957. A.O.U. Check-list of North American Birds; 1950. Friedmann et al., *Pac. Coast Avif.*, 29:47). This is in contrast to the Turkey Vulture (*Cathartes aura*), which, although much less gregarious than the Black Vulture during the breeding season, is known to migrate in large flocks.

C. W. Townsend (*in* Bent, 1937. U.S. Natl. Mus. Bull. 167:28) characterized the Black Vulture as "a resident throughout its breeding range, except in the extreme northern parts," adding that "a marked spring migration does not occur." This might seem to imply autumnal migration, but the account failed to include any information as to migration, fall or spring. Most publications relating to eastern United States near the northern limit of the breeding range indicate that Black Vultures are present all the year, e.g., Maryland (Stewart and Robbins, 1958. *N. Amer. Fauna*, 62:106–107), Ohio (Thomas, 1928. Ohio St. Mus., *Sci. Bull.*, 1(1):29–35). However, in the southwest, Black Vultures are reported to disappear in winter from the northern sector of the breeding territory, e.g., northern Texas (Wolfe, 1956. "Check-list of the birds of Texas," p. 18), and northern Oklahoma (Nice, 1931. *Publ. Univ. Okla. Biol. Surv.*, 3(1):67); but group migration seems not to have been reported Perhaps in the arid southwest winters cause a relatively greater reduction in vulture food, necessitating withdrawal.

Even Turkey Vultures are said to be usually out of New Mexico by mid-October (Ligon, 1961. "New Mexico birds and where to find them," p. 57). Yet farther north, Turkey Vultures, although at least partially migratory, are present in winter at or near the northern limit of most of their breeding range, e.g., Connecticut (Mackenzie, 1961. "Birds of Guilford, Connecticut," p. 38), New Jersey (Fables, 1955. "Annotated list of New Jersey birds," p. 25), California (Grinnell and Miller, 1944. *Pac. Coast Avif.*, 27:94).

OBSERVATIONS IN PANAMA

The vulture observations were made in or near Panama city, where the twist of the isthmus places the Pacific Ocean immediately to the south, and

South America toward the east. The observation site (unless otherwise indicated below) was the garden of my brother's home in an eastern suburb located about a half mile north of Panama Bay and roughly midway between two favorite feeding places of the vultures, the fishermen's harbor of Panama to the west, and a garbage dump at Old Panama, some three miles to the east. This is mentioned because I considered the possibility that the vultures might be moving between these places, until I found that the movement was eastward and well north of the dump. My site was in level, open country, formerly savanna, with hills rising to the north; in all directions it afforded a sky view, which was practically unobstructed toward the east and northeast.

I arrived in Panama on 3 November and left on 20 December, but was away from the observation area during part of November and almost all of December. Shortly after my arrival I noticed groups of Black Vultures overhead. At first I gave no attention to them, for I assumed that they were engaged in ordinary gregarious soaring. Such soaring I had often noted in Panama, at all seasons during sunny middle hours of the day, especially between 10:30 AM and 2 PM. The "normal" circling flocks may include frequently one or more Magnificent Frigatebirds (*Fregata magnificens*), an occasional Turkey Vulture, and, during the northern hemisphere winter, very rarely a northern *Buteo* or two.

Differences in the November situation soon attracted my attention. The vulture flocks often included *Buteo* hawks, apparently of migratory North American species. The manner of flight, high upward circling alternating with long glides in a distinctly eastward direction, seemed unlike ordinary soaring. The unidirectional character of the movement, both morning and late afternoon, was highly suggestive of migration. The flight direction did not correspond with wind direction, so far as I could determine. November is a comparatively windless month in Panama. On two occasions I tested the slight breeze at ground level and found it was from the south to southeast, while vultures were moving (high above, to be sure) essentially toward the east, with a northeast inclination.

The flight route of the vultures agreed generally with that taken by Barn Swallows (*Hirundo rustica erythrogaster*) migrating in numbers through the area during the entire month of November. These swallows flew much lower, tended to follow the coastline more closely, and began and ended their flights earlier in the day. The general direction was also that taken earlier in the season by the larger migrating flocks of Turkey Vultures and Swainson's and Broad-winged Hawks (*Buteo swainsoni* and *B. platypterus*), except that these migrants often use the updrafts along the mountain ridges, so that along the Pacific slope flights usually are somewhat more inland. On the eastern

Caribbean slope, where ridges approach the sea, vast October flights of migrant raptors occur over the coast.

As the inference of Black Vultures migration is admittedly based on inconclusive data, the evidence is given from my notes in some detail (including mention of Turkey Vulture migration to the extent noted during the same period). It is hoped that information from other students may be elicited.

On any days not mentioned below I either was absent from Panama city or, if present, made no observations on Black Vultures. For completeness the brief observations of 5, 6, and 8 November and of 4 and 20 December are included, although I failed to determine the direction (if any) of flight. The birds seen circling on 6 November, in the late morning of 20 November, and during December may well have been engaged in ordinary soaring.

5 November. Late afternoon, circling Black Vulture groups (direction of movement, if any, not noted).

6 November. 11 AM, high circling flock of Black Vultures including two immature frigatebirds (direction of movement, if any, not noted).

8 November. Late afternoon. High circling Black Vulture group (direction of movement, if any, not noted).

9 November. 9:30–10 AM, several high spiraling flocks of 40–50 Black Vultures glided in an eastward, somewhat northeastward, direction. The first flock, seemingly migrating, included six *Buteo* hawks, the second two, some of which showed the distinct tail banding of Broad-winged Hawks.

4:35–5 PM, three flocks of migrating Turkey Vultures, each of about 50 (including one or two Black Vultures and two or three *Buteo*), spiraling high and gliding eastward and somewhat northeastward.

20 November. 10:15–10:30 AM, two flocks, each of about 100 Black Vultures, each including one *Buteo*, spiraled very high and then glided eastward. At the same time a Turkey Vulture (not a member of the flock) was sailing much lower, tending to go westward. Later in the morning, groups of 10–30 Black Vultures (including one frigatebird) soared high, seeming to drift westward not eastward, not suggesting migration.

5:30–6 PM. From 5:40–5:58, two Black Vulture flocks (20–30 in each) spiraled high then glided eastward, followed at same altitude and direction by four laggard birds. During the same period some Black Vultures (seemingly local birds) were flying well below these flocks and drifting westward. At 6 PM, a single Black Vulture cruised low in no particular direction.

21 November. Chepo (about 30 miles east of Panama city); midmorning: group of 15–20 Turkey Vultures traveling eastward very high with two *Buteo* hawks, seemingly *B. swainsoni*. At the same time two undoubtedly adult, light phase, Swainson's Hawks were cruising very low (one had a hanging foot) and also perched. Black Vultures seen in area were not traveling.

22 November. 4–6 PM. From 4:15–5:35, flocks of 12–30 Black Vultures spiraled and glided eastward, the two flocks before 5 PM, flying high, included one or two *Buteo* hawks seemingly *swainsoni*, and also one very big raptor, mainly dusky with white on lower underparts, larger than the Black Vultures and having a greater wingspread than a Turkey Vulture, with oblong flat wings and short head and tail (probably an immature King Vulture, *Sarcoramphus papa*). There were no Turkey Vultures in these flocks, but one or two individuals cruised below them until shortly after 5 PM.

29 November. At Old Panama (observations at the shore); 9–10 AM. Between 9:15–

9:50, several Black Vulture flocks spiraled in from the west and sailed northeastward. The flocks included several *Buteo* hawks. One *Buteo* had the conspicuous tail banding of a Broad-winged Hawk, and four, with all white underparts (except tips of flight feathers), lacking evident banding on the short tail and having half the bulk of a Black Vulture, suggested the light phase of the Short-tailed Hawk (*B. brachyurus*). Independently, flying high (not soaring) eastward, somewhat farther inland, was a flock of nine Wood Ibis (*Mycteria americana*).

Between 5–5:45 PM, at the usual suburban observation point in Panama city, several groups (averaging about 20) of Black Vultures were observed spiraling high and sailing eastward.

30 November. 9–9:30 AM, several groups of Black Vultures spiraling high and gliding eastward. One group included five *Buteo* hawks, most of which suggested Swainson's Hawks; at least one bird apparently melanistic; another like a light-phase Short-tailed Hawk.

4–6 PM, many successive groups of Black Vultures (10–40 in a group), between 4:15–5:50 PM, spiraling and gliding eastward. For the afternoon alone my estimate of migrating Black Vultures exceeded 250. One to three Turkey Vultures drifted low over the area but in no distinct direction.

4 December. Old Panama; 9–11 AM. At about 10 AM (while observing other birds) noticed a soaring flock of Black Vultures, including one Osprey (*Pandion haliaetus*) over seashore, but failed to note whether there was directional movement. The Osprey was one of two wintering individuals.

17 December. 4:30–5:35 PM; clear afternoon. Watched especially for Black Vultures. No spiraling or gliding eastward observed. The only Black Vulture flock seen consisted of 20, at 5:20 PM, noticed at a distance circling over Old Panama, apparently over the garbage dump. This flock broke up and the individuals drifted westward, flying rather low—presumably going to roost.

20 December. Old Panama; 9–11AM, while at the seashore, noticed, at about 10 AM, a circling flock of Black Vultures, but observation of other birds prevented me from determining whether the vultures were moving in any particular direction.

DISCUSSION

The manner of flight of the Black Vultures and their eastward direction, both morning and afternoon during November, strongly suggested migration. It may seem puzzling that movements of this sort have not been reported previously if they are regular. However, Panama in November does not attract ornithological observers, for much rain falls and few birds are breeding. Students give little attention to Black Vultures, and their habit of soaring in groups all year makes it easy to overlook migrating flocks. To distinguish between gregarious soaring and migratory spiraling would usually require an extensive sky view, which is hard to get in wooded areas. It is possible, of course, although I think it unlikely, that what I saw was a local movement. Certainly Black Vultures were commonly present throughout Panama during my entire stay. Some were probably even breeding in November.

This is inferred because C. Koford (in litt.) found two "nearly fledged young" in a cave at Portobelo, Panama, on 9 February 1957, and in this species the period between laying and fledging is reported to require well over three months (Bent, op. cit.:33–34).

Nevertheless, part of a population may be breeding while another part may be traveling. (This seems true of the Turkey Vulture in the United States, where the peak of egg laying is in April [Bent, op. cit.:28], when flocks, presumably of northern birds, are still migrating through Panama. Although most migrating flocks in Panama are noted in March, extreme dates run from 24 February to 30 April.)

The numbers of Black Vultures passing through Panama in November suggest that they originated much farther north, possibly in a region that becomes more arid during the northern winter. This is not inconsistent with "permanent residence" of the species as such. Adults might well remain on or near the breeding grounds while juvenals might be migratory. The return migration in the spring might be less conspicuous, involving fewer individuals, if young birds remained near winter quarters for a year or more, until they approached breeding age. I have found no published information as to the age at which Black Vultures first breed, but the scant data available as to certain other Cathartidae (Koford, 1953. "The California Condor," p. 80) suggest that breeding would probably not occur until they are several years old. Immatures of a number of North American birds that do not breed the first year are known to remain in the tropics for at least a year; this is certainly true of the Osprey and of many gulls, terns, and shorebirds (see Eisenmann, 1951. *Wilson Bull.*, 63:181–185). Moreover, in a number of nonpasserine species birds of the year regularly migrate much farther than adults. The presence of a species in an area throughout the year may create a deceptive impression as to the extent of migration. For example, the Herring Gull (*Larus argentatus*) as a species may seem a permanent resident on the Atlantic coast of northeastern United States; yet banding data show that young birds migrate long distances, even to tropical waters, and that adults may move about (Gross, 1940. *Bird-Banding*, 11:129–155).

Additional observational information would be useful, but definite confirmation of Black Vulture migration will probably require collecting—not too easy with birds flying high. Determining *exact* place of origin is not practicable except through recovery of marked individuals. Distinguishing northern migrants from the tropical natives may be feasible by specimen examination. Recently Wetmore (1961. *Smith. Misc. Coll.*, 145(1):1–4) reported that northern Black Vultures (from the United States and northern Mexico) can be separated by size and color from those breeding in the tropics. Whether these distinctions hold for first-year birds is not expressly stated. However, juvenal specimens can be distinguished from older birds, and if evidence were obtained that the flocks moving in the direction of South America consisted mainly of first-year birds, that would itself be strongly indicative of migration.

SUMMARY

The Black Vulture is generally stated to be a resident species; published information seems lacking as to any group migration. Observations made in Panama during November 1962 of groups of Black Vultures moving eastward (apparently in the direction of South America), often accompanied by migratory *Buteo* hawks, suggest that this species may be partially migratory.

The possibility is advanced that younger birds may be migratory, while breeding individuals may be essentially sedentary.

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NEW LIFE MEMBER

M. Graham Netting, of Pittsburgh, Pennsylvania, an active member of the Wilson Ornithological Society since 1941, is a new Life Member. Dr. Netting received his B.S. degree from the University of Pittsburgh, his M.A. degree from The University of Michigan, and his Sc.D. degree from Waynesburg College. Since 1922 he has been associated continuously with the Carnegie Museum, rising through the position of Curator of Herpetology to his present post, Director of the museum. In addition, he is Associate Professor of Geography at the University of Pittsburgh. His ornithological interests include ecology and conservation.

Dr. Netting, a photographer, is widely known as a museologist, herpetologist, and conservationist. Scores of his scientific papers and other articles have appeared in scientific journals, magazines, and newspapers. Some of the organizations to which he belongs are: Sigma Xi, Phi Beta Kappa, Phi Sigma, American Society of Ichthyologists and Herpetologists (former secretary and past president), Association of Science Museum Directors (past chairman), National Parks Association (trustee), Nature Conservancy (governor and life member), Soil Conservation Society of America (past president of Keystone Chapter), Pittsburgh Zoological Society (director), Recreation, Conservation, and Park Council of Allegheny Conference on Community Development (chairman), and Western Pennsylvania Conservancy (director and secretary). Also, he is past chairman of the United Smoke Council of the Allegheny Conference, the citizen's group instrumental in promoting the smoke control program in Pittsburgh and Allegheny County.