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LATE FALL MOVEMENTS OF TURKEY VULTURES AND HAWKS IN THE FLORIDA KEYS

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From 10 November to 14 December 1981, while at Coral Key Village, 18 km northeast of Marathon, Monroe County, Florida, I observed and followed movements of groups of 30 to 400 Turkey Vultures (*Cathartes aura*) and hawks along the Florida Keys. These birds moved by kettling, or spiraling to high altitude and then gliding. This behavior permits moving many kilometers with minimal wing action. Birds leave the top of a kettle in a sloping glide toward their next objective, in my observations an island (key). Forward speed is controlled by the glide angle, but altitude is always lost. In the Keys this loss is accelerated by birds coming in over water. Until this visit to the Keys, I had never before witnessed vultures and hawks kettling over the ocean.

Weather on the days of my observations was cool but clear. During this period, cold fronts crossing the Keys caused winds to come out of the northwest. With the passage of these fronts, winds shifted, coming from the north or northeast and decreased to 13-16 kph. Because such weather conditions created light thermals, particularly in the early morning, the birds I saw, in some cases, circled for as long as eight min, attaining altitude before moving from key to key. This situation aided my observations because I was able easily to maintain contact with the groups and also was assured that they would arrive over the next key at an altitude permitting relatively close observation.

OBSERVATIONS

In the late afternoon of 15 November 1981, I watched a group of vultures and hawks arrive at Grassy Key from the direction of the Lower Keys and go to roost in a stand of Australian pine trees (*Casuarina* sp.). The next day a group of 355 Turkey Vultures formed into four kettles and moved northeastward along the Keys. One adult and 33 immature Broad-winged Hawks (*Buteo platypterus*), 14 immature Swainson's Hawks (*Buteo swainsoni*) (five light, seven intermediate, and two dark), and eight Sharp-shinned Hawks (*Accipiter striatus*) were involved. I followed the birds by car to the northern end of Lower Matecumbe Key, approximately 32 km northeast. There each group changed course abruptly to the

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northwest and headed over Florida Bay in the direction of Flamingo, 36 km away. I assumed that these birds were returning from the Key West area where they had not attempted crossing the Florida Straits. It is not clear why they would strike out across Florida Bay, but they may have been retracing the course they followed moving to the Key West area in the first place.

On 20 November, I watched 3 kettles of vultures, also moving to the northeast, over Plantation Key. None crossed the Bay. These groups included 138 Turkey Vultures, three immature Swainson's Hawks, and eight immature Broad-winged Hawks. Although movements of Turkey Vultures continued at least until I left the Keys on 14 December, I did not see hawks in the Turkey Vulture kettles after 20 November.

On 11 December, a large, dry cold front passed through the Keys. The next day was clear with a 15 kph wind from the northeast and a temperature of 18 C in the early morning. Around 1000, I saw 310 Turkey Vultures, equally divided between two kettles 1.5 km apart, on the ocean side of the Keys between Duck Key and Grassy Key. When the birds started to leave the kettles they headed southwest, and I followed them by automobile to Key West, 98 km away. They remained on the ocean side until arriving at the lower end of Saddlebunch Keys, just outside Key West, where they crossed US highway 1 continuing their southwestward course. I lost contact with them at this point, but on the outskirts of Key West I found 82 vultures coming in from the northwest. Some began circling over the municipal golf course while others landed on television towers. Later that day I followed 190 Turkey Vultures in three kettles from Sugarloaf Key, again, to the lower end of Saddlebunch Keys. Here they continued on the same course as the first two groups. Twice during midday hours I searched Key West for large groups of vultures but found none. At 1500, between Marathon and Conch Key the movement was still going on, as I saw 387 Turkey Vultures in nine kettles (min. 30 birds, max. 54 birds, mean 43 birds), all on the ocean side moving southwest.

I believe that the majority of the 1000+ Turkey Vultures I observed on 12 December actually left Florida and that it was a major migration movement. The birds I saw in the Marathon-Conch Key area may have been an exception, because they may have arrived in Key West too late in the day for a successful water crossing. If the birds had not left the Keys, 600 to 700 vultures should have been sailing around over the Key West area in the early afternoon, but I could find no trace of birds in such numbers.

DISCUSSION

The very large numbers of Turkey Vultures moving up and down the Keys in late fall was far greater than the number of participating hawks. However, for neither group is it clear whether the birds were migrating or were involved in local movements. Similarly, at northern migration lookouts, such as Hawk Mountain in Pennsylvania, passing Turkey Vultures are not recorded because there is no way of separating migrants from local or wintering birds. Of interest is G. Menk's report of a "presumed late migration of Turkey Vultures just ahead of a cold front, near Tallahassee" on 9 December 1978 (Stevenson 1979).

With the exception of certain members of the Falconidae, most migrating hawks seem reluctant to cross large bodies of water, if they can be avoided. For example at Cape May Point, New Jersey, thousands of hawks arrive in the fall and face a relatively short (about 32 km) crossing of Delaware Bay. Some birds move up the west side of the Point and cross at a narrower spot, but others move back down to the Point again, only to turn around and fly northward a second time. Wind direction and strength have been found to contribute to this reluctance to move on. Reconnoitering or milling about is most common among *Buteo* sp. and Sharp-shinned Hawks. I believe that the same situation may exist in the Keys during the migration period and late fall. Kennedy (1975) reported that on 12 November 1974 "hawks were observed (no mention of species or numbers) moving both southwest and northeast at the Audubon Society Research Station at Tavernier". At Cape May the birds must move on with little delay, whereas on the Keys, they can remain for the winter.

If the northward movement of hawks and vultures I observed on 16 November had occurred in September or early October, the hawks might have continued north, eventually to round the Gulf Coast to eastern Texas and there join the major fall flyway for southbound Broad-winged and Swainson's Hawks. Evidence of such reverse migration is well documented for both the east and west coasts of Florida. Simons (1977), Edscorn (1979), and Atherton (1981) mentioned nine such observations with Sharp-shinned Hawks making up 95% of the individuals reported. No buteos were mentioned in any of these reports, which is hardly surprising, because all observations were made on the coast where movements of buteos would be rare. Rather, where possible, I would expect buteos to occur inland where they can find better thermals for soaring, but

where coverage by observers is so difficult that sighting them would be fortuitous.

Another similarity between Cape May Point, New Jersey and the Keys is the migration of Broad-winged Hawks. Their usual flyway out of New England crosses through northern New Jersey, southwest into Pennsylvania and down through the Appalachian Mountains. Clay Sutton (pers. comm.) of the Cape May Bird Observatory has maintained that the large numbers of Broad-winged Hawks appearing each fall at Cape May Point, well south of the main flyway, have in a sense trapped themselves. Sutton (pers. comm.) points out that each year 90% of the Broad-winged Hawks there are immature birds. This could be interpreted to mean that as adults they apparently don't make the same mistake. In the Keys, Mrs. Frances Hames (pers. comm.) of Key West has informed me that the vast majority of Broad-winged Hawks passing through the Keys each fall also are immature birds and that the winter population is usually exclusively immatures (cf. Hundley and Hames (1960)).

What happens to the birds once they leave Key West is something of an enigma, many people do not believe they cross the Straits of Florida. On the other hand, Mrs. Hames (pers. comm.) has told me that she has watched Broad-winged Hawks fly out over the Straits and has stayed at her vantage point long enough to determine that they did not return. D. and K. MacVicar observed 200 Broad-winged Hawks on 26 October 1980 and 1000 on 8 November 1980 over Key West (Atherton 1981). Unfortunately, there was no information presented on the direction they were headed. A number of spring and fall observations of vultures and hawks have occurred in the Dry Tortugas (Sprunt 1962). Bond (1980) considered the Broad-winged Hawk to be rare and casual throughout the West Indies and the few records for Cuba, surprisingly, are from its eastern-most province, Oriente. Peterson (1973) stated that this species migrates through eastern and southern Mexico, except the Yucatan Peninsula. In my opinion neither of these statements would preclude a movement of vultures and hawks to a destination of Yucatan. From Key West the shortest distance to Cuba is 150 km and from the western tip of Cuba to the coast of Yucatan is 190 km. The actual course is speculative, but certainly the determining factors would be wind direction and strength. Broad-winged Hawks and possibly even a few Swainson's Hawks passing through the Keys each fall are definitely off the main south-bound flyway, and their numbers are minimal when contrasted with

those recorded over Panama for the same period. Since these birds will be in the air constantly and on the move, descending only in late afternoon to roost, or possibly when held up by weather, sightings over the water, western Cuba, or Yucatan, are most unlikely. High-flying, migrating hawks are easily overlooked. For example, the above observation by the MacVicars of 1000 Broad-winged Hawks over Key West. The Atherton (1981) report made no mention of other sightings for that day or prior days in the Keys, or for that matter, anywhere in the State. Nor were there any sightings of that magnitude reported after 8 November.

It will be quite an undertaking to determine the pattern of these large-scale vulture movements up and down the Keys. Hopefully observers reporting spring and fall migration or movements of vultures and hawks will include sufficient data to be of value to future consideration of this subject.

SUMMARY

From 10 November to 14 December 1981, I observed movements of Turkey Vultures and hawks along the Florida Keys, Monroe County. A majority of the 1000 Turkey Vultures appeared to have left Florida flying south. Others may have participated in a local movement. Additional information is needed to understand the nature of such movements.

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