

HAWKS DELAYED BY WEATHER ON SPRING MIGRATION THROUGH PANAMA.—There are many published accounts of the effects of weather on the arrivals and departures of migrant birds in North America. But I am unaware of reports of migrants being delayed by bad weather along their Neotropical migratory routes. In six years of observing North American migrant birds in Panama, I have become impressed with the marked effects of local weather conditions, as well as general conditions such as hurricanes and strong prevailing winds, on movement of migrants. However, straight-forward examples of delay of migrants by weather are not easy to obtain. Thus, I think it of value to record the following observations in which a flock of hawks was apparently arrested on their migratory flight through Panama by unseasonal rains.

Chiriquicito is a cattle ranch set within a true rain forest in the northwest corner of Panama (Bocas del Toro Province). It lies on the edge of the Guarumo River valley and is some eight miles by narrow gauge rail from the coastal village of Chiriqui Grande on Chiriqui Lagoon. The Costa Rican border is only a few miles west, as the hawk flies; and this area is the site of regular large hawk and vulture migrations both in spring and autumn.

Dr. R. W. Yerger, Dr. R. K. Godfrey and I arrived at Chiriquicito on the evening of April 17, 1963, in the middle of an unexpected driving rain. This rain continued all night and through the following day. In mid-afternoon of that second day (April 18), during a lull in the rain, we observed some 200 obviously migrating hawks arrive from the southeast. (At that time we were unable to identify the hawks with certainty; however, subsequent experience in this area at this time of year has convinced me that most or all of them were Broadwinged Hawks (*Buteo platypterus*); further, when we returned to Almirante across the lagoon on April 21, many

Broadwings were in that area.) These hawks circled above the forest briefly, then settled in the tops of large jungle trees from which they could be seen in silhouette against the clouds. Shortly after they perched, the rains started again in earnest and continued almost without let-up through the night.

The hawks were still dimly visible on their jungle perches the following morning (April 19), and the rain persisted almost all that day, with only brief changes from downpour to drizzle. We did not see the birds on their perches that afternoon nor the following rainy morning (April 20); on the other hand, neither did we see them aloft at any time. However, in early afternoon of April 20, the skies lightened somewhat, and I spotted about the same number of hawks spiralling low over the perching area. These birds rapidly gained altitude, then struck out in a narrow line toward the coast and were soon out of sight. Shortly thereafter, the clouds disappeared and a scorching, bright sun emerged. (This respite lasted only about two hours, for the rains returned in full force for at least another day.)

I have little doubt that the hawks seen departing on the afternoon of April 20 were the same ones forced down by rain on April 18; if this is correct, these birds were delayed on their northward migration for two whole days. Even if these were two separate groups of birds, those which arrived on April 18 certainly did not depart until at least noon of the following day, thus losing a day's flight. The local people at Chiriquicito assured me that such long and heavy rains are not to be expected there at that season, but some two or three weeks later—a period after the normal northward hawk migration in spring is over.—Horace Loftin, FSU Center for Tropical Studies, Box 930, Albrook AFB, Canal Zone.

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