

MIGRATION OF *CATOPSILIA* BUTTERFLIES IN INDIA

by ERNEST M. SHULL

From September 19 - 24, 1946, I witnessed a southerly movement of butterflies, mostly of the genus *Catopsilia*, at Palghar, Thana District, Bombay Presidency, India. Palghar is located on the plains about five miles from the coast. India is, of course, a part of the Indo-Malayan faunal region, which covers the tropics of Asia and the islands lying south of that great continent, including Australia.

The movement of butterflies takes many different forms, but perhaps the most recorded is the movement of large swarms or "clouds" of butterflies which darken the sky. Some flights have been estimated to contain more than a thousand million individuals.¹ Such a sight is an event in the life of a naturalist. The flight I am reporting may be of some scientific interest.

On the morning of the nineteenth I saw a number of beautiful middle-sized yellow butterflies flying in a steady line. Soon I had caught sixteen of them. They all proved to be of one genus, *Catopsilia*. After papering the specimens, I watched the movement of butterflies more carefully. It soon became evident that this was not an ordinary flight but a migration.

According to PEILE, species of *Catopsilia* often migrate in swarms,² but this flight was of quite a different type. On this day and the five days following the Emigrants (*Catopsilia*) were not flying in swarms, but in three distinct lines across the mission compound, usually starting about 10:00 A. M. and continuing until 3:00 P. M. Each of the three lines was approximately one hundred yards from any other. This movement resembled a group of school children playing "follow-the-leader," except their course was straight and in a southerly direction. They had a swooping flight, closing their wings completely between strokes. When I stood in the direct path of the migration, they would not deflect their course to either side but instead increased their flying height (incidentally, just out of reach of the net). Only a very few stopped to rest, and then only for a few seconds on the undersides of a leaf. The red-flowered bush (*Hibiscus*), which was directly in the line of migration, temporarily attracted a few of the passersby. In order to net a resting specimen I stood near the bush with my net in readiness. One step forward and a quick swing was sometimes successful. The vast majority, however, of this migrating horde pressed relentlessly onward without faltering or yielding to wayside attractions.

Without any clocking device the speed of migration was roughly estimated to be between ten and fifteen miles per hour. In ordinary flight *Catopsilia* are rapid fliers, but in migration their flight is even faster.

At one point of observation some tabulations were made, counting the individuals in one line as they passed overhead. During the half-hour 150 were counted. Using this as an average, and taking into consideration that

¹See "Butterfly Travelers," by C. B. Williams, *National Geographic Magazine*, May, 1937. This article gives an excellent account of butterfly migration.

²H. D. Peile, *A Guide to Collecting Butterflies in India*, p. 59.

there were three lines of migrants for a five hour period, it was estimated that 3500 to 4500 individuals were in the first day's flight. At best this is only a rough estimate, because the hour between 10:00 and 11:00 A. M. was not as heavy with migrants as were the hours between 11:00 A. M. and 2:00 P. M. Also after 2:00 o'clock the flight began to taper off. Rechecking on subsequent days, however, verified the comparative accuracy of the above figure.

From this movement four species of the genus *Catopsilia* were collected; namely, *C. pomona* Fabr. (The Lemon Emigrant); *C. crocale crocale* Cram. (The Common Emigrant); *C. pyranthe minna* Herbst (The Mottled Emigrant); and *C. florella gnoma* Fabr. (The African Emigrant). Males and females were collected of these four species.

Although the migration continued for six days, the migrants were never so steady as on the first "heavy" day. Several members of the Family Hesperiiidae (The Skippers) and one species of the Subfamily Plebejinae (The Blues) were collected from the migrating group and sent to the American Museum of Natural History. On the first day from 11:00 A. M. until 2:00 P. M. the movement of Skippers was recorded, the estimation being 200 - 250 per hour or a total of 600 - 750 in the three hour period. During the first three days the Skippers and the Blues accompanied the migrating *Catopsilia*; however, their manner of flight was more varied and never in such regular lines. Occasionally small swarms of Skippers were seen, so it was difficult to estimate their number. The Blues were scattered among all the others and no count was taken. The Skippers flew even faster and higher than the *Catopsilia*, so capturing them was a real task. Even with a long-handled net I had to jump as high as possible and then swing at a flying target. So only a few were caught.

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MIGRATION OF THE MONARCH BUTTERFLY DURING THE WINTER

by GEOFFREY BEALL

The present note is a brief report on migration of the Monarch butterfly, *Danaus plexippus* Linné, during the winter (December 10 through May 5) in Florida. The data are of particular importance because they substantiate the suspicion that the Monarch is constantly in migration although only at certain seasons does this migration attract popular attention because of the number of butterflies involved.

The data were sent to the writer by Mr. & Mrs. KARL HODGES, as a response to his plea for information from local naturalists in *The Lepidopterists' News*, vol. 5: 37-40. The data are an example of the valuable information that can be collected by local naturalists.