

NOTES ON THE MIGRATION OF *NYMPHALIS CALIFORNICA*

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Considerable study has been made on the migration of butterflies. The present knowledge is nevertheless so inadequate that continued reports and notes on any such insect phenomenon are desirable. It is for this reason that the following notes are offered.

In August of 1952 a vast migration of the California Tortoiseshell (*Nymphalis californica* Bdv.) occurred in Oregon. The heaviest flight of the migration was apparently near Bend where newspapers reported cars being stopped as radiators clogged up with these insects.

FENDER, August 9 and 10, observed large numbers of the insects as he crossed the state from the west slope of the Cascade Range until he approached Baker. Not knowing of the flight, he paid little attention until he was in the open country of eastern Oregon where a typical flight pattern was readily evident. The insects were flying in a north to northwesterly direction. The flight was rapid and the insects appeared to pay little attention to the east-west vehicular traffic. Time did not then permit any attempt at a count.

On August 13, Dr. C. P. ALEXANDER, Miss JUDY BAKER, and the authors studied an eastern fringe area of the flight. The sector was near the summit of the Elkhorn Range of the Blue Mountains, above Anthoney Lake (30 miles northwest of Baker) and at an elevation of about 7500 feet.

Four series of counts were made using three counters and a timer. During the first series FENDER acted as timer and the other three were timed by JUDY BAKER. The counters were separated by equal distances measured in paces. Each counted the butterflies passing between him and the next counter or a fixed object for a period of one minute.

Count	Counters					Separation	Time	Wind
	Alex.	Judy	B. Jim	B. Fender				
1	28	18		23		15 steps	12:00M	mild
2	8			11	11	10 steps	12:15PM	mild
3	23			16	16	15 paces	3:10PM	moderate
4	22			7	11	15 paces	3:15PM	brisk

The flight was from southeast to northwest and against a crosswind. It is unfortunate that more time, better facilities, and less primitive methods were unavailable. However it is hoped that the brief records will be of some import to some compiler of butterfly migration data.

Later, in the Wallowa Mountains to the east, additional specimens in moderate abundance were seen but with no visible indication of a flight pattern. The species has been more abundant than usual in the Willamette Valley to the west but once again with no apparent integrated flight. The migration apparently extended from about the summit of the Cascade Mountains to the Elkhorn Range of the Blue Mountains, a lateral expanse of some 180 air miles.

Route 3, McMinnville, Oregon, and Baker, Oregon, U. S. A.