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HIGH LOCALIZED BIRD MORTALITY AS A FUNCTION OF HIGH INSECT POPULATIONS

During the weeks of at least 28 April and 5 May 1968, extremely large numbers of Painted Lady Butterflies (*Vanessa cardui*) Linnaeus, were migrating north through the Salt Lake valley region. These butterflies were so numerous that estimations as to total population numbers would be a "gloriously wild guess" but the population was certainly in the several thousands at any one time in the valley proper. This migration was recorded at numerous localities throughout the state (Wm. H. Behle, pers. comm.). On 30 April, one of us had occasion to travel highway Interstate 80 south to Provo and north to Ogden, Utah. Again on 7 May, I.80 was traveled to Provo. Maimed and also freshly killed butterflies, both intact and mashed, littered the highways. Birds were repeatedly seen to dart in between passing cars, grab a butterfly and return to the shoulder of the road to eat the insect. Many birds would also merely hop around on the highway proper and pick up and eat the butterflies. Because of the high speeds at which the automobiles traveled, many birds were not fast enough to evade the cars and were killed. Many were mashed on the highways and others were laying on the shoulders of the roads. The following list indicates the numbers of dead birds counted on the 21 registered mile stretch of road to Provo and 15 registered mile stretch to Ogden on which butterflies occurred on 30 April and the 17 plus miles on which butterflies occurred on 7 May.

Salt Lake-Provo, 30 April, Brewer's Blackbird (*Euphagus cyanocephalus*), 27; Red-winged Blackbird (*Agelaius phoeniceus*), 12; House Sparrow (*Passer domesticus*), 9; Starling (*Sturnus vulgaris*), 9; unidentified species, 8; Sparrow Hawk (*Falco sparverius*), 1. This mortality averages 3.14 dead birds per measured mile. Salt Lake-Ogden, 30 April, Brewer's Blackbird, 19; House Sparrow, 19; Meadowlark (*Sternella neglecta*), 3; Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*), 3; Starling, 3; unidentified, 3. This mortality averages 3.20 dead birds per measured mile. Salt Lake-Provo, 7 May, Brewer's Blackbird, 8; Starling, 7; House Sparrow, 7; Red-winged Blackbird, 2; Meadowlark, 1; Western Tanager (*Piranga ludoviciana*), 1; Bullock's Oriole (*Icterus bullockii*), 1; Unidentified passerines, 7; Sparrow Hawk, 1 (may have been bird previously noted). This mortality averages 2.05 dead birds per measured mile. It would be impossible to guess how many birds went unnoticed and it is believed that none, except perhaps the Sparrow Hawk, was counted twice. If similar mortality occurred, in areas of reproducible conditions, throughout the total period and distance of the *Vanessa* migration, then bird mortality could conceivably be considerable. Likewise, after enough actual counts were made, it would be possible to calculate hypothetical bird mortality rates provided the route and extent of the *Vanessa* migration were determined.—Hal L. Black, Department of Zoology, University of New Mexico, Albuquerque, New Mexico, and Clayton M. White, Department of Zoology, University of Utah, Salt Lake City, Utah. (Present address, Section of Ecology and Systematics, Langmuir Laboratory, Cornell University, Ithaca, New York.)