

further on this observation. The single specimen of the typical *C. relictata* was a positively identified sight record. Sargent (1976) mentions Kentucky as the southern limit of this species, however Mather (pers. comm.) informed me of a single record from Mississippi. All *C. illecta* (males) were captured between 0300 and 0400 hours and could suggest that this is an active late night species. The lone capture of *C. miranda* was made at 0400 hours. This species' rarity might be due in part to its being a late flyer. Sargent (1976) gives some Atlantic Coast states, with Pennsylvania, as the range of *C. miranda*, but besides this specimen, I have found another one from Tennessee in the Michigan State University collection at East Lansing, Michigan.

The only regional list of *Catocala* I could find for any area close to Clay Co. was from Mather (pers. comm.) for Mississippi. Mather did not include *habilis*, *judith*, *flebilis*, *subnata*, *cerogama*, *miranda*, or *coccinata*. Species with only one or two records include *serena*, *obscura*, *residua*, *sappho*, *palaeogama*, *relictata*, *gracilis*, *clintoni*, and *minuta*. According to the *Catocala* ranges given by Sargent (1976) and assessment of local foodplants, the following might be expected to occur in Clay Co., but have not been recorded: *C. consors* A. & S., *agrippina* Stkr., *marmorata* Edw., *junctura* Wlk., *sordida* Grt., *crataegi* Saund., *mira* Grt., *titania* Dodge, and *dulciola* Grt.

The diversity of *Catocala* species encountered in Clay Co. is remarkable for only two years of fairly concentrated collecting. I would greatly appreciate hearing from anyone who has collected this genus in the Tennessee or Kentucky area.

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#### APPARENT LONG-DISTANCE DISPERSAL BY *PIERIS OCCIDENTALIS* (PIERIDAE)

Colonizing ability and the turnover rate of local populations of animals depend to a considerable degree on vagility. Records of "stray" butterflies are common in the literature, although it is rarely possible to deduce the manner of dispersal or even a minimum distance traveled. Altitudinal displacements sometimes offer good opportunities of this sort (Shapiro, 1973, J. Res. Lep. 12: 231-235; 1974, Ibid. 13: 157-161). The western white (*Pieris occidentalis* Reakirt) and the checkered white (*P. protodice* Boisduval & LeConte) are a pair of sibling species which generally replace each other, occurring at high and low altitudes respectively through most of western North America. Both are believed to be colonizing species, with vigorously dispersing adults (Shapiro, 1975, Amer. Midl. Nat. 93: 424-433). *P. protodice* seems unable to overwinter in Donner Pass (Placer/Nevada cos., California) at 7000 feet, but regularly colonizes the area in summer. Records of downslope dispersal by *P. occidentalis*, which is not known to breed in the Sierra below 6000 feet, are much rarer. On 13 August 1975 a worn female was taken at 5000 feet in the South Yuba River Canyon, Nevada Co., and I considered this a noteworthy "low elevation" record for California (Shapiro, unpublished).

On 17 October 1976 I was collecting a sample of *P. protodice* at Rancho Cordova, Sacramento Co., California, elevation 65 feet, when I noticed a dark female vigorously rejecting a courting male. I collected the two, and was astonished to find that the

female was a worn *P. occidentalis* of the "calyce" phenotype. Her phenotype is quite unambiguous and easily told from the 24 female *protodice* collected the same afternoon, which represent a large range of variation from summer to "vernalis" phenotypes. The habitat is annual grassland and foothill woodland developed on dredge tailings, and is a classic locality for large populations of *P. protodice* breeding on the weedy mustard *Brassica geniculata*. No other *occidentalis* were observed alive, and no *occidentalis* tendency appeared in a sample of 76 *protodice* collected for study in an hour.

The nearest 6000-foot contours on the map are 50–70 miles from Rancho Cordova (USGS 1:250,000 "Sacramento" topographic sheet). *P. occidentalis* of similar phenotype and in mixed condition were still flying in Donner Pass at 7000 feet on 15 October 1976. Prevailing winds during the week prior to the record were very light northeasterly, i.e., downslope, and weather conditions were clear, warm, and dry. My trip was not pre-scheduled so there is no chance of a deliberate release having been made as a hoax by a student, and in the huge *protodice* population any deliberate release would probably not have been recognized. I see no alternative but to regard this as an extreme instance of individual long-range dispersal in a non-migratory species. The fact that it turned up in what is probably the best *protodice* habitat on the floor of the Sacramento Valley suggests habitat selection by the female once she did get down near sea level, since the ecologies of the two species are so similar. How many such individual dispersals actually occur? And what are the potential consequences, say for gene flow, of events which are so unlikely to come to our attention? Records indicating long-range dispersal, properly documented, are not trivial, and have considerably more scientific value than their traditional role as bizarre additions to local lists.

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#### THE BEHAVIOUR OF AN INEBRIATED *OPSIPHANES CASSIAE* (BRASSOLIDAE)

A female of *Opsiphanes cassiae* L., known in Costa Rica as "mariposa pacayera" or palm butterfly, drifted at dusk from the forest into a room where it flew and perched in places where light was subdued, until it arrived at a table where a bottle of a sound red wine (Rubion, Paul Masson, California, alcohol 12%/vol.) had been recently uncorked and left to breathe. The insect circled the bottle a few times before landing on the table surface and assuming a normal resting position. I then placed a drop of wine some 10 cm away from the butterfly which shyly retreated from my hand, remained motionless for a moment and then approached the drop, extended its proboscis and drank at its leisure. After some five minutes there were obvious changes in the behaviour of the insect.

First, some very slow up and down flapping of wings, followed by forewings being lowered and directed forward with brisk movements several times, hindwings remaining upright. With forewings in this position, the hindwings also moved forward, without lowering, until these were propped far ahead of their normal resting position. The abdomen remained motionless. Antennae were lowered until they touched the table and then shot backwards. Movement of fore-, hindwings and antennae were repeated several times in the same order of events.

After a brief period of inactivity, a hopping spastic side-walking took place alternating with wing and antennae motions as well as a tremulous and agitated moving of the legs. More wine was offered to the insect which sipped it directly from my fingertip after a somewhat hesitant uncoiling of proboscis. Another sequence