

some of the type material, comparing it to known species, and providing the comments that appear above.

We are also grateful to the Texas Parks and Wildlife Department for their continued interest and cooperation, and to the manager and his associates at the Engeling Wildlife Management Area, near Tennessee Colony, Texas, for their assistance and hospitality during our collecting trips there.

GENERAL NOTE

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LONGEVITY ESTIMATES OF FOUR INDIVIDUAL BUTTERFLIES

It has been stated that little is known about how long butterflies live (Howe, 1975, *The Butterflies of N. Amer.*, Doubleday and Co., Inc., N.Y.). As a by-product of tagging and marking for Professor Urquhart's migration studies, longevity estimates of four common California butterflies were obtained. The alar tags with Urquhart's address and a serial number were used in some cases, and in others, alar tags with my phone number were used. Also, colored spots and bars made with a felt tipped marker on the wings were used. All butterflies tagged and marked were wild and of unknown age when caught and released.

Three butterfly species were marked and tagged in a suburban Citrus Heights, California yard and adjacent acre-sized pasture. It was mostly *Plantago lanceolata*, *Trifolium repens*, and a variety of unknown grasses. The yard was mixed unknown grasses. The trees were *Quercus wislizenii*, *Catalpa speciosa*, *Juglans hindsii*, and *Fraxinus velutina*. There were various flowering shrubs.

A *Precis coenia* (Huber) (Nymphalidae) was marked 27 August 1977 and recaptured 14 days later on 10 September 1977 in the pasture. There is hesitancy in reporting such a short period of time, since it migrates, and therefore, it must live for several months. However, after three years tagging and marking 1947 individuals and recapturing 147, 14 days was the longest period obtained for this species. A female *Pieris rapae* (Linnaeus) (Pieridae) was marked 27 May 1977 and recaptured 39 days later on 5 July 1977 in the yard. Two hundred and forty-two were recaptured out of 1494 marked over a ten year period. A *Papilio rutulus* (Lucas) (Papilionidae) was tagged 15 April 1971 and recaptured 39 days later 24 May 1971. Ninety-four were recaptured out of 957 tagged in 11 years.

In a woodland in the Sierra Nevada foothills about three miles southeast of Loomis, Placer County, California, dominated by *Q. wislizenii*, *Baccharis pilularis* and a variety of unknown annual grasses, a *Battus philenor* (Linnaeus) (Papilionidae) was tagged 3 April 1971 and recaptured 44 days later on 13 June 1971. One hundred and thirty-eight were recaptured out of 636 marked and tagged in four months.

The tagged and marked butterflies recaptured and cited here were apparently in good shape; consequently, there is no telling how long they lived. For this reason these results are given as longevity estimates.

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