

Study of hybrids between *Colias eurytheme-philodice* complex and *C. interior* (Pieridae : Lepidoptera)¹

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The genus *Colias* to which about 57 species belong, is distributed widely over the world and the morphological differences among the species are relatively scant. The natural hybrids among the various species of this genus were described by several students. However only the hybrids between *eurytheme* and *philodice* have been studied in the laboratories.

The writer has been studying the hybrids between *eurytheme-philodice* complex and *interior*. *Eurytheme* and *philodice*, feeding on the *Fabaceae* (clover, vetch etc.), are common species which are distributed almost all over the United States, and the hybrids between these two species are commonly found in the field. They have more than one generation a year. *Interior* feeds on *Vaccinium* (blueberry) and is distributed along the border between the United States and Canada. This species has one generation a year.

The results which the writer obtained up to now are the following. One hybrid mating was obtained between a *eurytheme* orange female raised at Notre Dame, and a *interior* male collected in Cheboygan County, Michigan on July 9, 1954. Matings were carried on at the flying places of *interior*, using the usual insect cages. Over 150 females of *eurytheme-philodice* complex and about 100 wild males of *interior* were used for the matings during one week each in the beginning of July in 1954 and 1955, but only one was successful. The larvae from the eggs from the above mentioned female were raised in the green house and the growth room of Notre Dame, using white clover for food, and 46 males and 1 female hybrid butterflies emerged.

The ground coloration of the wings of hybrid males is intermediate between orange *eurytheme* and yellow *interior*. The hybrid larvae entered a non-feeding stage in the third instar under conditions of 75° F., 75% RH and 10 hours fluorescent light a day in the growth room. They began to feed again in the green house. Presumed females of the hybrids (except one female which emerged but failed to extend her wings) entered a non-feeding stage in the green house also and failed to survive the stage.

The hybrid males were partly fertile and progeny of both sexes were obtained by backcrossing to *eurytheme* females.

One female of *interior* emerged on September 12, 1955 from the eggs which a female, sent by Dr. A. E. Brower from Maine, laid at Notre Dame and which was raised in the growth room under conditions of 80° F., 65% RH and 15 hours fluorescent light a day. *Interior* goes into a diapause at the second instar to pass the winter, but this female matured without a diapause, while others entered diapause as usual. However this female would mate neither with *eurytheme* nor *philodice* which were collected at Notre Dame.

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