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PREFACE TO REPRINTS

ON ECOGENOTYPICAL COLOR VARIATION IN BUTTERFLIES BY WILLIAM HOVANITZ

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TWO OF WILLIAM HOVANITZ'S CLASSIC PAPERS on ecogenotypical color variation are reprinted herein, with permission of the editors of *Ecology:* "Parallel ecogenotypical color variation in butterflies" (1941) and "Ecological color variation in a butterfly and the problem of 'protective coloration'" (1940). Not only did these papers lay the foundation for much of his own subsequent research, but in them Dr. Hovanitz synthesized ecological concepts in a way seldom seen among lepidopterists at that time. In the mid-1960s he was planning to reprint both papers, but did not, as he wanted to expand these lines of research and publish a more thorough study. However, several of the illustrations were reproduced individually in color in this journal. At the time of his sudden and untimely death 14 September 1977, he was enthusiastically preparing to resume research, long delayed by other matters, on color variation in butterflies. Thus, it seems appropriate to reprint the papers now, with this new preface. The text of the papers is unchanged except for correction of typographic errors. When possible, the photographs have been reproduced from the original color transparencies, so they vary slightly from the 1940 and 1941 figures. The 1941 maps (figure 1) were redrawn from the originals by Jamie Calhoun.

The 1941 paper presents the basic concept of parallel ecogenotypical color variation as it applies to Lepidoptera. A number of taxonomic changes have occurred since 1941 (dos Passos, 1964 and 1969). The species referred to *Melitaea* are now known as *Euphydryas chalcedona* (Doubleday), *E. editha* (Boisduval), *Thessalia leanira* (Felder & Felder), *Chlosyne palla* (Boisduval), and *C. hoffmanni* (Behr). *Argynnis monticola* Behr is now a junior synonym of *A. zerene* Boisduval, *A. montivaga* Behr is a junior synonym of *A. egleis* Behr, and *A.* (*Brenthis*) *aphirape* (Hübner) is a junior synonym of *Boloria eunomia* (Esper).

North American *Argynnis* species are often placed in the genus *Speyeria*, but in the interest of a stable and practical classification, retention in *Argynnis* seems more reasonable (Hovanitz, 1962, 1963, and unpublished). The species referred to *Coenonympha tiphon* (Rottemberg) is *C. california* (Westwood). Shapiro (1977) and Evans (1975) have reviewed the infraspecific names applicable to *Pieris napi* (Linnaeus) and *Anthocharis sara* Lucas, respectively.

The 1940 paper discusses the relationships of the subspecies *Oeneis chryxus ivallda* Mead and *O. chryxus stanislaus* Hovanitz in terms of ecological color variation. Also included is a discussion of the misuse of the "protective coloration" theory. Dos Passos (1948) raised *O. ivallda* to specific status due to the presence of anthoxanthin wing pigments (see Ford, 1941), which were absent in other subspecies of *O. chryxus* including *O. c. stanislaus*. However, the specific status of *ivallda* is a subjective matter, and some subsequent authors consider *ivallda* a subspecies of *O. chryxus* (i.e. Tilden, 1959 and Hovanitz, 1964).

Many papers relevant to ecogenotypical color variation have been published since 1941. Additional information on the species used for examples in these reprints may be found through Field *et al.* (1974) and Beattie (1971). Dr. Hovanitz's subsequent publications on ecogenotypical color variation, especially in the genera *Colias* and *Argynnis*, appear in his publication list elsewhere in this issue. Other useful bibliographies include Petersen (1947), Shapiro (1976) and Shields (1975).

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