

DICHROMATISM AND NEW SYNONYMIES OF *CARECTOCULTUS PERSTRIALIS* (LEPIDOPTERA: CRAMBIDAE: SCHOENOBIINAE)

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ABSTRACT.— Two very distinct forms of *Carectocultus* that have been described as separate Neotropical species, *C. perstitialis* Hübner and *C. repugnatalis* (Walker), are shown to be one species. A new synonymy is listed, and the genetic ratio and adaptive significance of the two forms are discussed.

KEY WORDS: Bahamas, Caribbean, Cuba, distribution, Florida, Neotropical, sexual dimorphism, taxonomy, USA, West Indies.

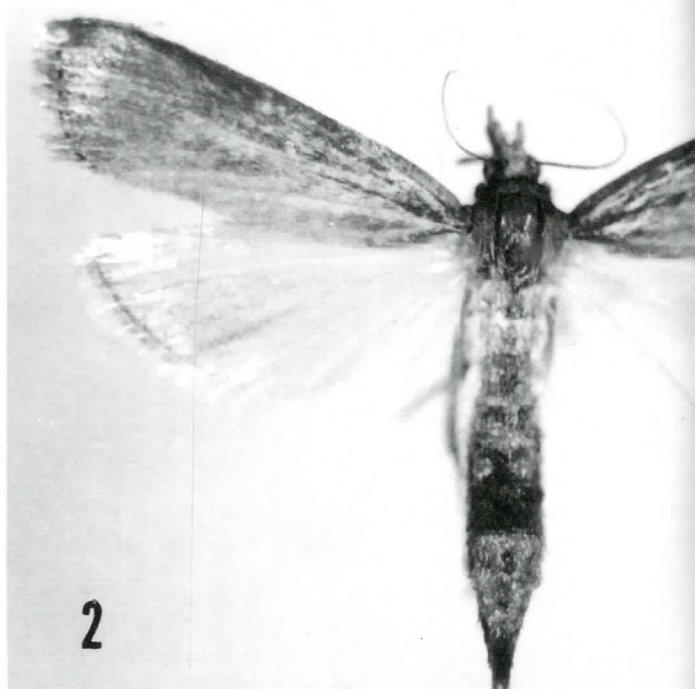
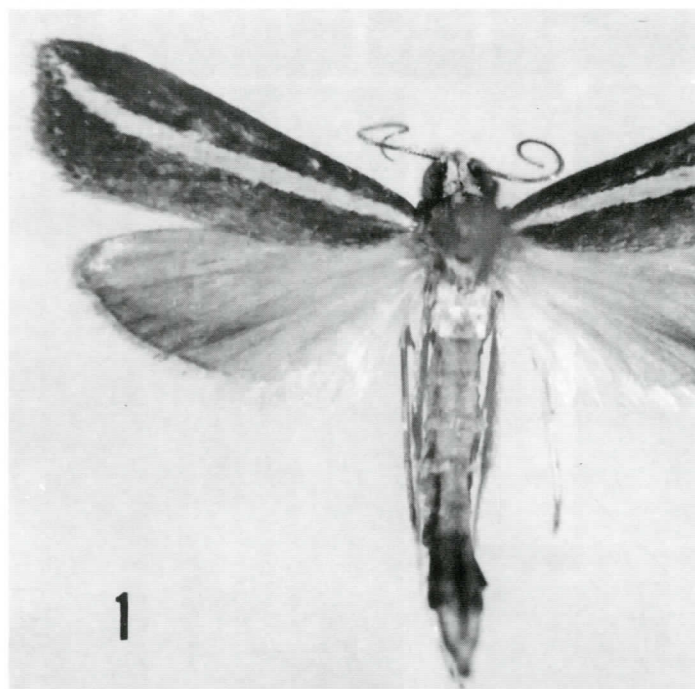


Fig. 1-2. Males of *Carectocultus* Hübner: 1) Form with white forewing fascia. 2) Form without fascia.

Carectocultus perstitialis (Hübner) has forewings with a fuscous background and a bold, white fascia along the longitudinal axis of the forewing from base to apex (Fig. 1). *C. repugnatalis* (Walker) has fuscous forewings without a white fascia (Fig. 2). Specimens of both forms with different species names have been collected sympatrically, ranging from Hispaniola through Cuba and southeastern United States, south to Venezuela. For example, at The Natural History Museum, London, England (BMNH), specimens from the Bahamas collected by Yates include three specimens identified as *C. perstitialis* and two specimens as *C. repugnatalis*, and from those collected by Carter, two specimens are identified as *C. perstitialis* and one specimen as *C. repugnatalis*.

On the night of 18 August 1990, the second author collected, with a 250W MV light, a long series of both forms at Cienaga de Zapata, Matanzas, Cuba. While spreading the specimens agreeing with the description of the fuscous species (= *C. repugnatalis*), they showed traces of the fascia present in *C. perstitialis*. This suggested

that the two forms could be the same species and it was confirmed by close examination of the forewing with a stereomicroscope and genitalia dissections. We observed that specimens agreeing with the description of *C. repugnatalis* have varying amounts of white scales scattered along the same area of the fascia as in specimens of *C. perstitialis* and the genitalia were identical. Hence, *C. repugnatalis* and *C. perstitialis* are really forms of the same species and should be considered synonyms.

The adaptive significance of the dorsal wing pattern in this species is not known, but dorsal patterns in Lepidoptera are known to have functional significance in sexual signaling, crypsis, thermoregulation, aposematism, and mimicry. Nijhout (1991) has noted: "Dorsal patterns have a clear signaling function, such as those involved in aposematism and mimicry, and the many presumptive sexual signals of male butterflies, are almost invariably composed of large patches or bars of color without an easily definable shape and often without a sharp outline."

It is also interesting to note that the series collected on 18 August is represented by 65 specimens, 34 males (18 with and 16 without a definite white fascia) and 31 females (16 with and 15 without a definite white fascia). Despite being collected randomly, the ratio between the sexes, between color, and between color in each sex is 1:1. Because both forms can occur sympatrically in equal numbers, it appears that neither form is deleterious and not sex-linked. The ratio cannot be explained under the classical models of segregation for a single pair of alleles, because if this character is controlled by a single pair of alleles and one form is dominant, the ratio should be 3:1 in favor of the dominant form. In the case of partial dominance, the ratio would be 1:2:1 with an intermediate form twice as abundant as the other forms. But the 1:1 ratio can be explained under the classical models of segregation for population gene frequencies. Although we do not know whether the presence of the white fascia is dominant or recessive, a dominant allele with a gene frequency of one minus the square root of one-half (from $p=1-q$) would give the observed phenotype ratio of 1:1.

Blanchard's placement (1975) of *perstitialis* in *Carectocultus* was verified by Becker and Solis (1990). This is a common species, although not often collected in a large series, and both forms have been described three times each (Becker and Solis, 1990; Munroe, 1995). We examined the type material of all the names involved, except the type material of *perstitialis*. Hübner's material is presumably lost, but the form with the fascia (*C. perstitialis*) matches his illustration very well and his material was collected in "Georgia" (in Hübner's time, this locality included Florida) within the current range of the species. The types of *C. repugnatalis*, the oldest name applied to the fuscous form at The Natural History Museum, London, England, and all the dark form populations, are currently known from the area of distribution. As a result, *C. perstitialis* currently has five synonyms: *serriradiellus* (Walker, 1863) and *macrinellus* (Zeller, 1866) which are names applied to the form with fascia and *repugnatalis* (Walker, 1863), *syn. n.*, *funerellus* (Hampson, 1901), *syn. n.*, and *consortalis* (Dyar, 1909), *syn. n.*, which are names applied to the form without fascia.

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