

## NEW STATUS FOR *EUMORPHA INTERMEDIA* (SPHINGIDAE)

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**ABSTRACT.** *Eumorpha intermedia* (Clark) is elevated to the status of a full species. Evidence based on differences in size, color, maculation and genital characteristics shows that it is not a subspecies or form of *E. satellitia* (Linnaeus) or *E. pandorus* (Hubner) as previously considered. *E. intermedia* is described, illustrated and compared with ten related species and subspecies.

In The Moths of America North of Mexico, Fascicle 21, Sphingoida, *Pholus satellitia intermedia* Clark, 1917 (Proc. New England Zoological Club, 6: 67. Type locality: Baton Rouge, Louisiana) was treated as synonymous with *Eumorpha pandorus* (Hubner). Hodges (1971: 123) stated "Clark described *intermedia* which was later treated as a subspecies of *satellitita*." In synonymizing the subspecies *E. satellitia ampelophaga* (Walker) and *E. satellitia intermedia* (Clark) with *E. pandorus* (Hubner), however, Hodges (1971: 124) did not fully cite Clark's original description, thus implying that *intermedia* was described as a species. Clark described *intermedia* as a subspecies of *E. satellitia* (L.).

### *Eumorpha intermedia* Clark, new status

Fig. 1

**Size differences.** Based on measurements of 65 specimens of *intermedia* from Louisiana and Mississippi and 309 *pandorus* from most of its range in North America, *intermedia* is ten percent smaller in size than *pandorus*. The average wing length for males of *intermedia* is 40 mm (range: 38-41 mm). The average wing length of females is 44 mm (range: 43-47 mm). Clark listed the wing length of the male as 38 mm and the female as 44 mm. *Intermedia* is the smallest species of *Eumorpha* in America north of Mexico.

**Types.** The designated types, one male and one female, were collected at Baton Rouge, East Baton Rouge Parish, Louisiana. One male from Greenville, Washington Co., Mississippi and one female from Brownsville, Cameron Co., Texas were listed as cotypes. The cotypes are in the U.S. National Museum.

**Wing pattern.** Of the species mentioned herein, the maculation of *intermedia* is nearest to that of *pandorus*, *satellitita satellitia* and *satellitita analis* (Rothschild & Jordan), but with distinct differences. Clark (1917) differentiated between *intermedia* and related species, namely: *E. licaon* (Cramer) (= *E. satellitia*, according to Hodges, 1971), *E. elisa* (Smyth) and *E. pandorus* by color and maculation. I have examined and compared the following similar species on the basis of color and maculation. All are distinguishable by these attributes. The species are: *E. elisa*—8 specimens, *E. satellitia satellitia*—342 specimens, *E. pandorus*—309 specimens, *E. satellitia analis*—28 specimens, *E. satellitia excessus* (Gehlen)—3 specimens, *E. satellitia posticatus* (Grote)—

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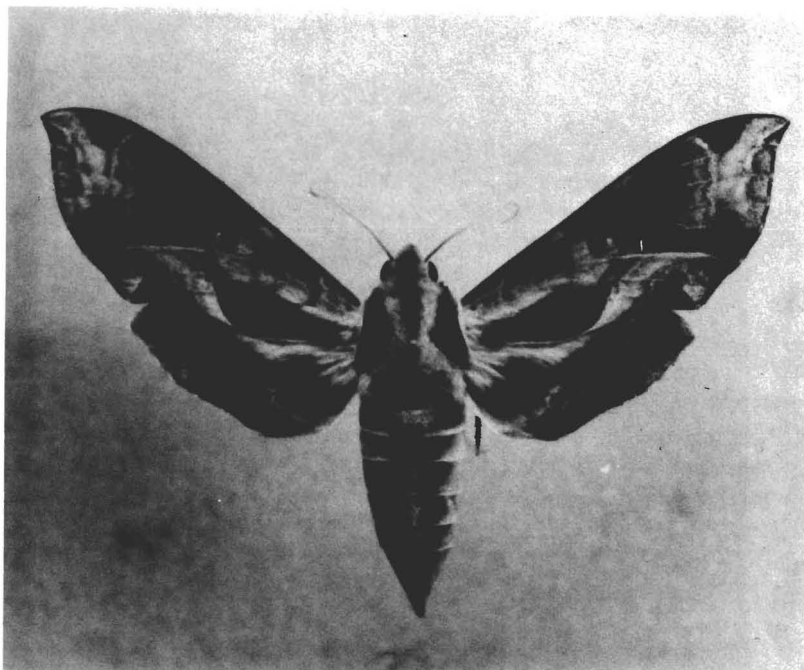


FIG. 1. *Eumorpha intermedia* ♀, 20 June 1979, Edgard, Louisiana.

1 specimen, *E. satellitia rosea* (Closs)—5 specimens, *E. eacus* (Cramer)—1 specimen, *E. anchemola* (Cramer)—50 specimens, *E. triangulum* (Rothschild & Jordan)—92 specimens.

*Intermedia* differs in color and maculation from the taxa with which it was compared as follows (Fig. 1): **Above**, fresh specimens are medium to dark olive-brown with darker shading and tinted with a deep olivaceous and pinkish hue. In worn or old specimens, the deep olive color fades. Dried specimens have a tendency to become lighter in color with age.

The **upper surface** of the **forewing** bears a dark, subapical, triangular patch on the costal margin, truncate inwardly at vein  $R_5$ . A similar triangular patch is located on the inner margin near the anal angle, the apex approaching vein  $Cu_1$ . The outer side of this patch is indented in cell  $Cu_2$  as in other species mentioned herein except *pandorus*. (Among the 309 *pandorus* studied, 3 ♂ specimens exhibited this indentation characteristic). Along the center of the inner margin is a very dark rhombiform median patch, extending to the base in a slightly lighter olive-brown shade. The distal edge of this patch curves strongly basad near the inner margin, where it is defined by whitish scales [as in *E. anchemola*, for example], unlike the other species being compared, where the edge of the patch is straight and meets the inner margin obliquely, and where the patch is not bounded along the inner margin by whitish scales. The end of the cell bears a conspicuous double stigma. A slightly darkened area extends distad of a line between middle of the costal margin and a point two-thirds the distance from the apex to the anal angle. The point at which the inner edge of this area intersects the costal margin is more basad than in *pandorus*. From the apex of the rhombiform patch, two roughly parallel median lines extend anteriorly and curve inwardly through this

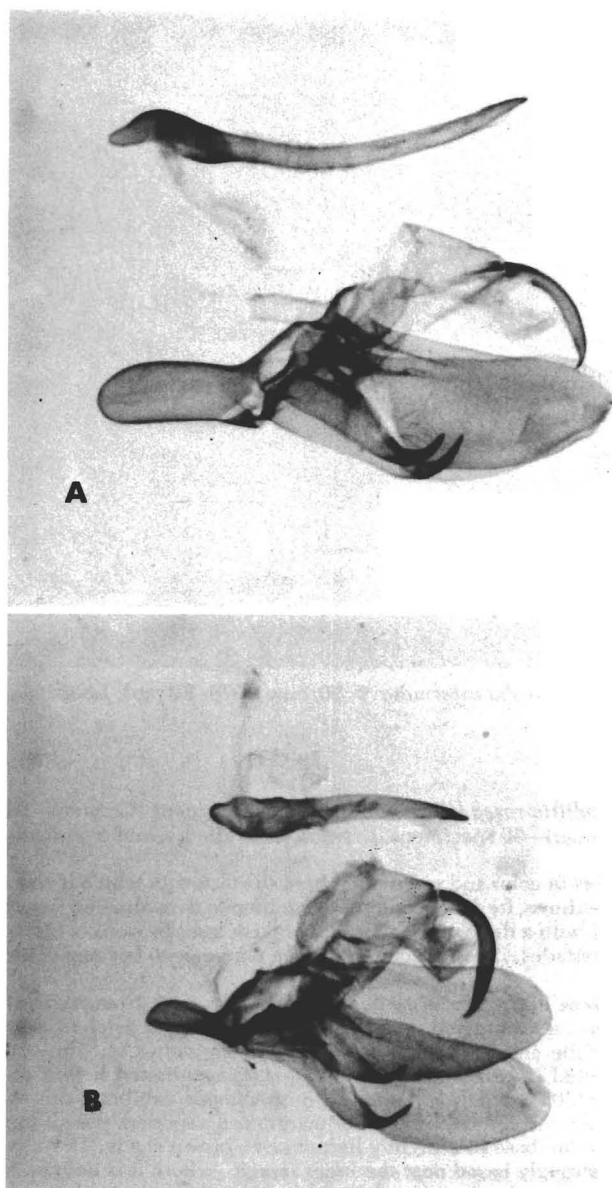


FIG. 2. **a**, *Eumorpha pandorus*, ♂ genitalia; **b**, *Eumorpha intermedia*, ♂ genitalia.

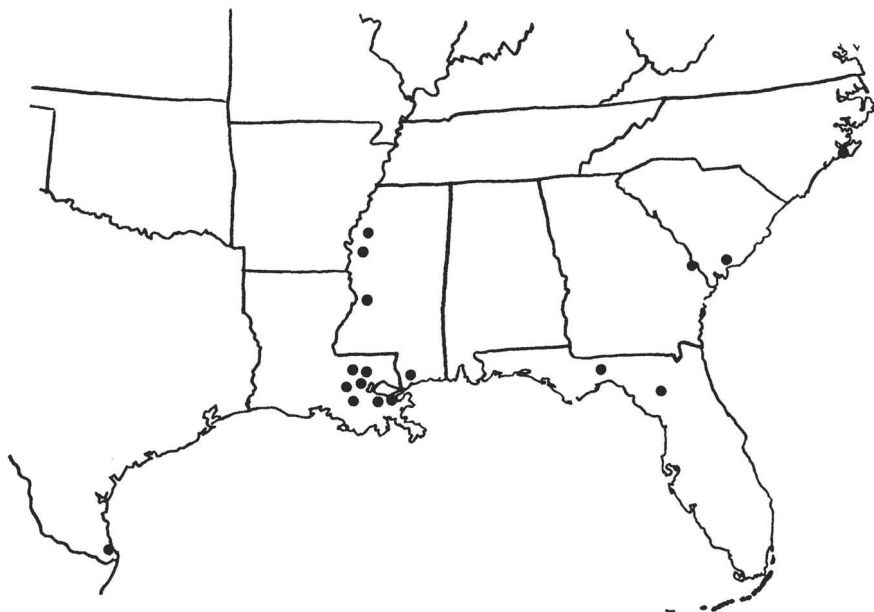


FIG. 3. Range of *Eumorpha intermedia* based on verified specimens.

dark area to the costal margin. The subterminal lines are distinctly scalloped near the apex of the forewing. In *pandorus*, these lines are slightly wavy approaching the apex. Veins  $Cu_1$  and  $Cu_2$  of *intermedia* are conspicuously pink, especially  $Cu_1$ , as in *pandorus*.

On the **upper surface of the hindwing**, there is a large median patch near the inner margin. It is bordered basally and anteriorly with light yellow-brown. A submarginal series of usually three or four very dark spots extends outward from near the anal angle and diffuses distally. The spots are much broader than in *pandorus*, more like those of *satellititia satellititia* and *satellititia analis*. A distinct pink line inwardly borders the submarginal spots and becomes obscure distally. The light outer margin band of *pandorus* is absent in *intermedia*. The anal angle is light pink, usually to an equal or greater degree than in *pandorus* or *satellititia satellititia*, but never the deep red color of *satellititia analis* or *satellititia posticatus*.

**Below**, *intermedia* is reddish-brown. In fresh specimens, rosy coloration is dominant on the wings and ventral portion of the abdomen. In worn and faded specimens, this rosy cast can be faint to non-existent. The **underside of the forewing** has a gray band along the distal margin. Somewhat parallel to the distal margin, the median and post-median lines curve inward to meet the costal margin. The **underside of the hindwing** has a similar gray band along the distal margin and parallel lines turning basally as on the forewing.

**Genitalia.** In comparing the genitalia of a series of Louisiana and Mississippi specimens of *intermedia* and *pandorus*, there are consistent differences (Figs. 2a, 2b). In the male genitalia of *intermedia*, the uncus is curved more than in *pandorus* and is 3 mm in length. The aedeagus is 5.5 mm, one-third shorter in length than that of *pandorus*. The saccus is drastically reduced, 1.5 mm in length, four-tenths the size of that of *pandorus*.

In the female genitalia, the corpus bursae of *intermedia* is smooth on the outer surface, rather than ribbed as in *pandorus*. It is twenty percent smaller in size than that of *pandorus*. The apophyses posteriores are shorter in *intermedia* by thirty percent.

**Range.** In A. Seitz, M. Draudt (1931) indicates the range of *intermedia* to be "Gulf States, west to New Mexico." The following records of verified specimens exhibit the currently known range and flight periods of *intermedia* (Fig. 3). North Carolina: 1 specimen, Carteret Co., August. South Carolina: 3 specimens, Charleston Co., August. Georgia: 1 specimen, Screven Co., August. Florida: 2 specimens, Gadsden and Alachua Counties, July. Mississippi: 19 specimens, Bolivar, Warren and Hancock Counties, June through September. Louisiana: 60 specimens, Ascension, East Baton Rouge, East Feliciana, Iberville, Orleans, St. Charles, St. John the Baptist and West Feliciana Parishes, April through October. Texas: 11 specimens, Brownsville, Cameron Co., April, May, June, July and October.

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Note added in proof: The range of *Eumorpha intermedia*, based on verified specimens, has been extended westward to include Webster Parish in northwestern Louisiana.