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A NEW SPECIES OF *AUTOMERIS* HÜBNER (SATURNIIDAE) FROM THE MISSISSIPPI RIVER DELTA

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ABSTRACT. A new species, closely related to *Automeris io* (F.), is described in both adult and larval stages. It is unusual in its loss of sexual and seasonal dimorphism, salt-marsh habitat, and brownish coloring, which appears to be a cryptic adaptation to the grassland environment.

On the open, treeless, salt marsh or cordgrass prairie of the outer Mississippi River delta there occurs a population of an *Automeris* species that differs markedly in coloring from *A. io* (F.) and from all other members of this complex. Although clearly derived from a recent *io* ancestor and probably indistinguishable structurally, the new taxon differs in reduction or near loss of sexual dimorphism, a characteristic of the *io* group. It has also lost the seasonal dimorphism of the contiguous *A. io lilith* (Strecker) of drier inland habitats. There appears to be an abrupt boundary between the two forms, with no sign of overlap or intergradation. Such evidence suggests that the delta form is a distinct species. The North American species of *Automeris* were comprehensively treated by the senior author (Ferguson, 1972) and by Lemaire (1971–74), but this taxon was at that time still uncollected.

Automeris louisiana Ferguson and Brou, **new species**

Figs. 2–6

Male (Figs. 2–4). Similar in basic pattern to *A. io lilith* (Fig. 1), but lines of upperside of forewing and underside of both wings usually evanescent. Antemedial line of forewing lacking entirely in about half the specimens; postmedial line and row of submarginal spots beyond it weak and diffuse. Upperside pattern of hindwing as in *io*. Underside with postmedial lines present but relatively weak. Discal spots normal. Most conspicuous distinguishing feature is the uniform, slightly olivaceous, light tan-brown coloring of the forewings, body, and entire underside. Coloring resembles that of *Automeris cecrops pamina* (Neumögen) of New Mexico and Arizona. Ground color of males of *lilith* from Louisiana (Fig. 1), above and beneath, is bright yellow, variably suffused with pinkish or deep reddish brown, especially toward base of forewing, and

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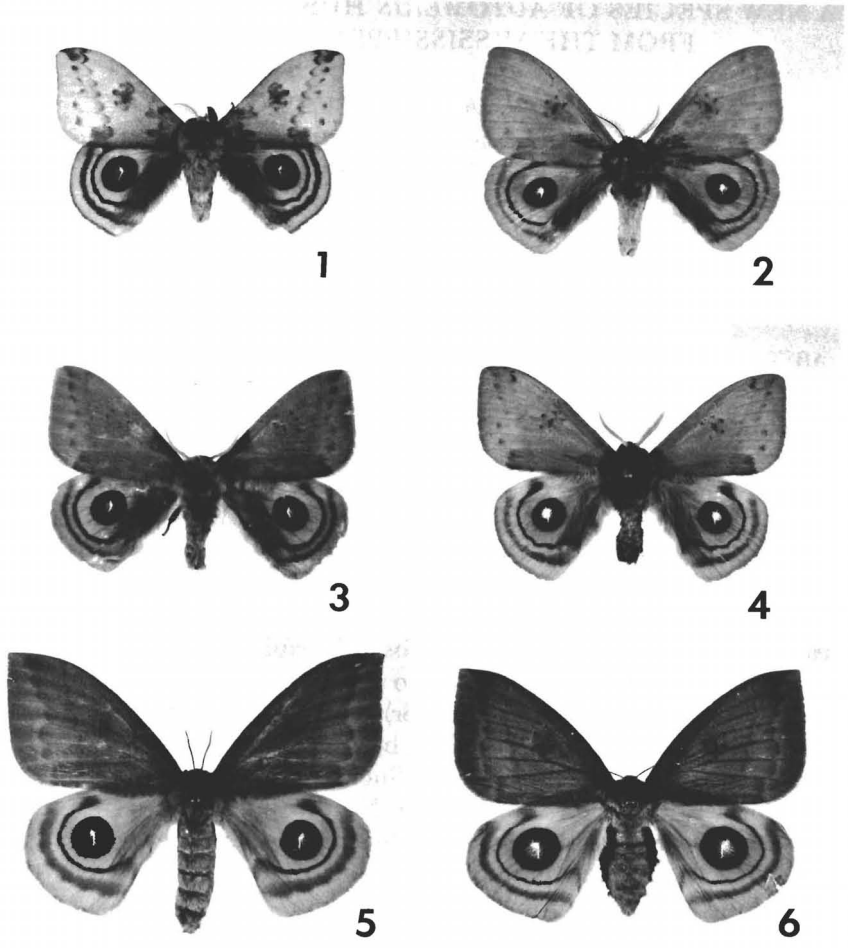

FIGS. 1–6. Louisiana specimens of *Automeris* species. **1.** *A. io lilith* ♂, Edgard, 23 Aug. 1973, V. A. Brou (normal Gulf Coast form of *io*). **2.** *A. louisiana*, n. sp., holotype. **3.** Same, paratype ♂, Golden Meadow, 26 Mar. 1975, V. A. Brou. **4.** Same, paratype ♂, Point au Fer Island, Terrebonne Parish, 22 June 1976, G. Adams. **5.** Same, allotype. **6.** Same, paratype ♀, Point au Fer Island, Terrebonne Parish, 18 Aug. 1975, G. Adams. All figures two-thirds actual size.

with body a lustrous, golden yellow. *A. louisiana* lacks all yellow coloring except that surrounding the ocellate discal spot on the hindwing, all other yellow being replaced by light tan that may or may not have a slightly olivaceous overlay. Discal spot of forewing (upperside) and the several dots surrounding it indicated in a darker shade, often diffuse; other markings of forewing usually indistinct. Hindwing with outer border brown instead of yellow (as it may also be in early spring specimens of *lilith*). Undersides of both wings same light-brown shade as upperside of forewing; discal spots normal; postmedial line of forewing reddish, of hindwing brown to purplish, both much weaker than those of *lilith*; forewing flushed with dull rose in median space

toward inner margin, but less extensively so than that of *lilith*. Fringes of both wings light brown, concolorous with wings, not contrastingly darker as is usually true of *io* subspecies. Length of forewing: holotype, 30 mm; other males, 26–31 mm. Average wing length 29.4 mm, about 7% greater than that of *io* from Louisiana.

Male genitalia probably indistinguishable from those of *io*. Three males dissected showed a tendency toward a simpler uncus, having two rather than the usual three transverse ribs, but no other consistent differences.

Female (Figs. 5, 6). Differs from that of *io* in having assumed nearly the same coloring as the male. Forewing light olivaceous brown, only slightly darker than that of the male, with usual markings indistinct or missing. Most prominent marking is the irregular, offset, submarginal line, showing as a line of contact between darker proximal and lighter distal zones. Hindwing and underside of both wings like those of male. The unicolorous dull brown of this species is in striking contrast to the deep purplish-red coloring of the forewings and thorax in females of *lilith*. Length of forewing: allotype, 41 mm; other females, 37–41 mm. Average wing length 39.1 mm, about 4.5% greater than that of *io* from Louisiana.

Types. Holotype ♂ (Fig. 2), Golden Meadow, Lafourche Parish, Louisiana, 20 June 1975, at light, V. A. Brou; Type No. 76,457, U.S. National Museum of Natural History. Allotype ♀ (Fig. 5), Venice, Plaquemines Parish, Louisiana, 30 March 1977, G. Adams. Paratypes: 5 ♂♂, Golden Meadow, Lafourche Parish, 28 February, 26 March, 1 May, and 18 June 1975, V. A. Brou; 8 ♂♂, 1 ♀, same locality, 14 March 1980, at UV light, V. A. Brou; 1 ♂, Cocodrie, Terrebonne Parish, 7 April 1975, G. Adams; 1 ♂, 1 ♀, Point au Fer Island, Terrebonne Parish, 18 August 1975, G. Adams; 1 ♂, 1 ♀, same locality and collector, 22 June 1976; 1 ♂, Leeville, Lafourche Parish, 26 March 1976, same collector; 2 ♂♂, Venice, Plaquemines Parish, 29 March 1977, same collector; 5 ♂♂, 1 ♀, same locality and collector, 30 March 1977. Added to the paratype series also are 50 ♂♂ and 50 ♀♀ reared in June 1980 from the female taken at Golden Meadow, 14 March 1980. All localities cited are in Louisiana. Holotype and allotype deposited in U.S. National Museum of Natural History; paratypes in U.S. National Museum of Natural History, American Museum of Natural History, Canadian National Collection, Los Angeles County Museum of Natural History, British Museum (Natural History), London, Muséum National d'Histoire Naturelle, Paris, and collections of Louisiana State University at Baton Rouge, V. A. Brou and G. G. Adams.

Early stages. Over 200 larvae of *A. louisiana* were reared by the junior author and by Gary Adams in the spring of 1980, mostly from a female collected at Golden Meadow on 14 March. A few larvae of *A. io* from a nearby locality in Louisiana were reared at the same time for comparison. Eggs of *louisiana* laid 15–18 March hatched in 2–2½ weeks; the larvae fed from about 1 April to 15 May, and adults emerged 14–16 days later. This is based on part of the brood reared (by Adams) at nearly normal outdoor conditions of temperature and humidity and is thought to closely approximate the natural developmental period. Others reared indoors in an air conditioned building took 2–3 weeks longer.

The larva is similar to that of *io* but appears to differ in two obvious features, the width and length of the bicolored lateral stripe, and the general body coloring of the fourth instar. A comparison of colored photographs of *louisiana* larvae with about 16 preserved, sufficiently unfaded, last-instar examples of *io* (including one from New Orleans) in the U.S. National Museum revealed that in the new species the red spiracular band is much wider than the white subspiracular band, nearly encroaching upon the bases of the dorsolateral tubercles. Consequently the spiracles, instead of being situated at the upper edge of the red band as is usual in *io*, are in the middle of it. The white subspiracular stripe tends to be about twice as wide as in *io*. Another difference is that the red and white lateral bands begin on the third thoracic segment in *A. louisiana*, on the first abdominal segment in *io*. With respect to the general coloring of the larvae, it was noted (by Brou) that this changes from brown to green an instar later in *louisiana*. Fourth instar larvae of *io* are green while those of *louisiana* are still brown, or yellowish brown. The larval spines, like those of *io*, can cause a severe stinging sensation if touched.

The larvae accepted and did well on live oak (*Quercus virginiana* P. Mill.), wild black cherry (*Prunus serotina* Ehrh.), and a species of plum (*Prunus* sp.) and were reared mainly on the black cherry. Newly hatched larvae fed on eastern cottonwood (*Populus deltoides* Bartr.) but only poorly; later instars refused it. Of these plants, only a low, stunted, shrubby form of live oak grows in the marshland habitat where it could be a natural host. Other oaks may be present but this has not been established. The food plant of *A. louisiana* in nature remains unknown. The ability to adapt to herbaceous plants or even grasses has not been uncommon in the Hemileucinae, and *H. io* is known to feed on a wide variety of such plants, including cultivated cotton and corn. *Pseudautomeris grammivora* (Jones) is a grass feeder on *Rottboellia compressa* L. in Argentina (Bourquin, 1945: 22). Inasmuch as live oak occurs widely in adjacent areas of the Gulf States where *A. louisiana* is not found, it would seem that this moth may have some special marsh food plant that has not yet been identified.

Habitat. The marshland habitat of *A. louisiana* is classified by Küchler (1964: legend item 78) as Southern Cordgrass Prairie. About 3500 square miles (5600 square kilometers) of the Mississippi River delta are occupied by this wet grassland. It continues westward along the Louisiana coast and as a narrower, more interrupted band all the way along the Texas coast to the Mexican border. The dominant plant is smooth cordgrass, *Spartina alterniflora* Loisel. Other main components of the vegetation are *Carex* spp., *Distichlis spicata* (L.) Greene, *Juncus effusus* L., *J. roemerianus* Scheele, *Mariscus* sp., *Panicum* spp., *Phragmites communis* Trin., *Sagittaria* spp., *Scirpus* spp., other *Spartina* spp., *Typha domingensis* Pers., and *Zizaniopsis miliacea* (Michx.) Doell & Aschers (Küchler, 1964).

REMARKS

This curious and unexpected species, although obviously a close relative of *Automeris io*, is unusual in having nearly lost the sexual dimorphism characteristic of its group. *A. io* and its Mexican relatives that have been available for examination, namely *hebe* (Walker), *melmon* Dyar, *dandemon* Dyar, *colenon* Dyar, and *thyreon* Dyar, are consistent in maintaining highly developed color differences between males and females. Only *A. eogena* (C. & R. Felder), also from Mexico, agrees in having lost the dimorphism, but the genitalia (figured by Lemaire, 1973: fig. 199) show it to be a distinct species. *A. louisiana* also lacks the seasonal polymorphism characteristic of the geographically adjacent taxon, *A. io lilith*; adults of *louisiana* flying in February and March are similar to those of the second brood in June or of the third brood in August. *A. io* subspecies *lilith* and *neomexicana* Barnes & Benjamin may have brownish males in the spring brood, but the females, with their deep purplish-red forewings, are always extremely different. *A. louisiana* averages 2–3 mm larger in wing length than *io* from nearby areas, measured against specimens from seasonally corresponding generations. As in so many marsh and grassland Lepidoptera, the coloring appears to be a cryptic adaptation related to habitat, the species having assumed the color of dead grass on all surfaces normally exposed in a resting posture.

Some information on the hours of flight is available but probably not enough to be used to show whether the new species differs from *io* in this respect. Notes kept by Adams indicate that the peak flight

activity may occur one to one and one-half hours before sunrise, based on 47 males and 6 females observed in one night at an offshore oil rig near Venice, Plaquemines Parish in March 1977. In March 1980, the junior author collected 3 females within one hour after sunset and 10 males between 1 and 2 hours after sunset, but lights were not operated after midnight.

Automeris louisiana was discovered in 1975 when the junior author collected several specimens at the lights of a food processing plant at the town of Golden Meadow, on Bayou Lafourche. Golden Meadow is on a narrow strip of land surrounded by salt marshes. Other specimens were collected that same year and in 1977 by Gary G. Adams at oil rig lights in the marshes in Lafourche, Plaquemines and Terrebonne Parishes, some of these sites being accessible only by boat or air and situated several miles from the nearest trees.

ACKNOWLEDGMENTS

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