

REVIEW OF THE NEW WORLD BAGISARINAE WITH  
DESCRIPTION OF TWO NEW SPECIES FROM THE  
SOUTHERN UNITED STATES (NOCTUIDAE)

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**ABSTRACT.** The Bagisarinae are discussed and characterized, including the Old World genus *Xanthodes* Guenée, 1852, which is considered to be congeneric, at least in part, with the New World *Bagisara* Walker, 1858. This possible synonymy is complicated by the type species of both genera being somewhat atypical. Described as new are *Bagisara praecelsa*, from Texas and northeastern Mexico, and *Bagisara brouana*, from Louisiana and Mississippi. An identification key is provided for the 19 described New World species, which occur mostly in North and Central America. Taxonomic changes include two new synonymies, one new combination, one revised status, and removal of the unrelated Central American *Xanthia patula* Druce from the genus *Bagisara*.

**Additional key words:** moths, taxonomy, *Bagisara*, *Xanthodes*, Malvaceae.

The 17 described species of the genus *Bagisara* Walker comprise the New World component of the subfamily Bagisarinae (Crumb 1956:76, Poole 1989 vol. 1:154, Kitching & Rawlins, 1997). Nine of these are listed as occurring north of the Mexican border (Franclemont & Todd 1983:134). Two new species described in this paper enlarge the genus to 19 species and increase to 11 the number of species recorded from the United States. Two or three additional species from the neotropics are unidentified and probably undescribed.

The Bagisarinae are a peculiar group with respect both to larval morphology and adult genitalia. Forbes (1954:170) treated them as one of his "isolated genera" within a broad concept of the Acontictinae. Franclemont and Todd (1983:134) regarded them as a tribe of the Acontinae, although Crumb (1956:4, 76) had earlier elevated the group to subfamily rank because of unusual larval features and proposed the name Bagisarinae. Poole (1989:154) followed Crumb and maintained subfamily rank for *Bagisara*, while keeping the closely related Old World genus *Xanthodes* Guenée in the subfamily Chloephorinae. Common (1990:457) also included *Xanthodes* in the subfamily Chloephorinae. Kitching and Rawlins (in press) include both *Xanthodes* and *Bagisara* in the Bagisarinae, a conclusion with which I agree.

The larva lacks prolegs on abdominal segments three and four, a condition not unusual in Noctuidae, including acontiines, and the uniordinal crochets on each of the remaining prolegs are appendiculate, each bearing a large, subapical tooth. However, some Acontiinae, including *Amyna* Guenée, also have the subapical tooth (Gardner 1946:65-68). The SV group has two setae instead of one on abdominal segment 7,

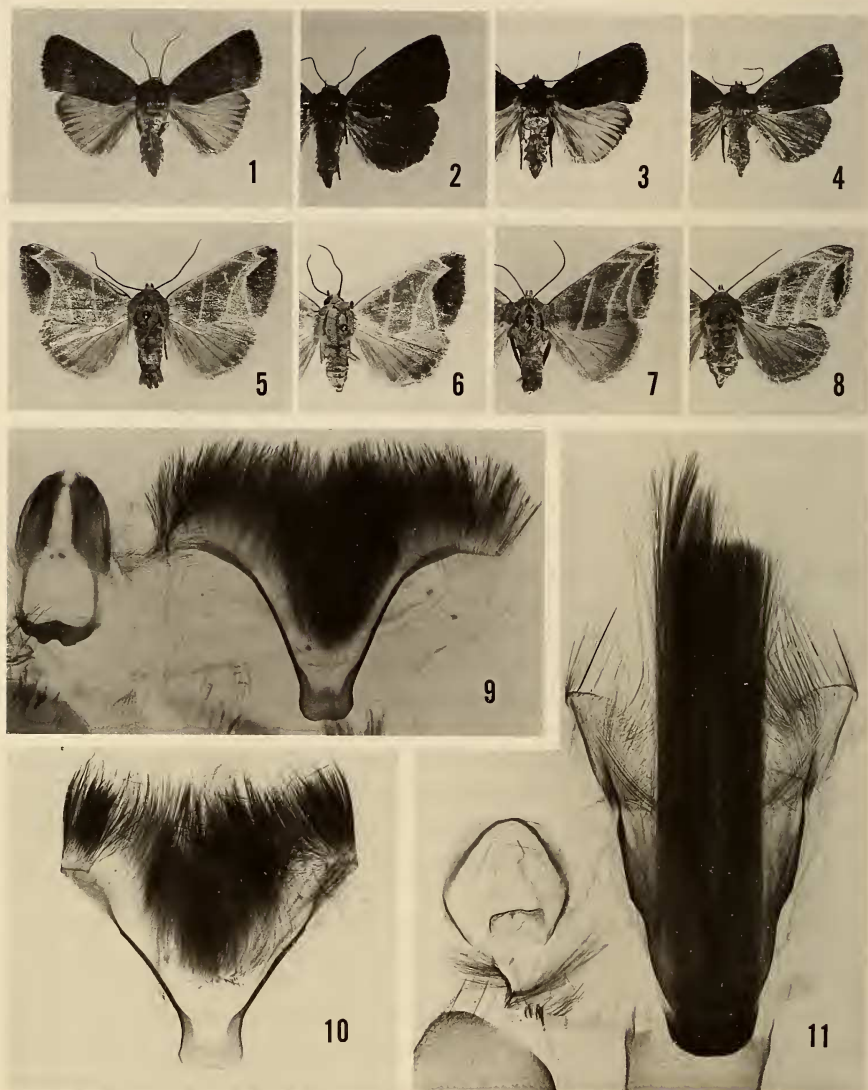
agreeing in this respect only with those of *Acronicta* Ochseneimer, *Rivula* Guenée, and the Agaristinae among known noctuid larvae (Crumb 1956:4, 76, pl. 4A, Godfrey 1987:550). The third segment of the labial palp in the larva is unusually long, at least three times as long as the basal segment. However, these morphological observations were based on few species. Crumb (1956) appears to have had larvae of only one species, *Bagisara rectifascia* (Gr.); and can we be sure that it was not the superficially similar, more common, but atypical *B. repanda* (F.)? I found no voucher specimens.

The few recorded host plants are species of Malvaceae. The Old World species (of *Xanthodes*) also are reported to feed on Malvaceae, including cultivated cotton (*Gossypium*) and *Hibiscus*; and an Australian species, *Xanthodes congenita* (Hamp.), feeds on *Brachychiton paradoxum* Schott (Sterculiaceae) (Cacao family) (Common 1990:457).

The male genitalia (Figs. 12–17) have a distinctive configuration, with the valves usually fused together on the mesoventral (saccular) margin so that they cannot be spread apart in dissection without damage or distortion. The juxta is not recognizable. Each valve usually has 3–4 apices or preapical processes, these being the membranous apex, the rounded free distal end of an apparent costal sclerite, and one or two more slender, elongate processes that may represent the clasper or digitus. Not all processes are present in all species. Large, eversible coremata, opening laterally, reside in the bases of the valves of some species but are missing in *D. brouana* n. sp., *rectifascia*, and *repanda*. The eighth segment of the male abdomen has an elaborately modified, broom- or fan-shaped, usually heavily setose (hairy) sternite in the eighth sternum, as well as a ringlike or U-shaped eighth tergite (Figs. 9–11). The females have a conspicuous, characteristic bulla seminalis that may be delicately ornamented with encircling bands of fine, radiating, fanlike, sclerotic rods.

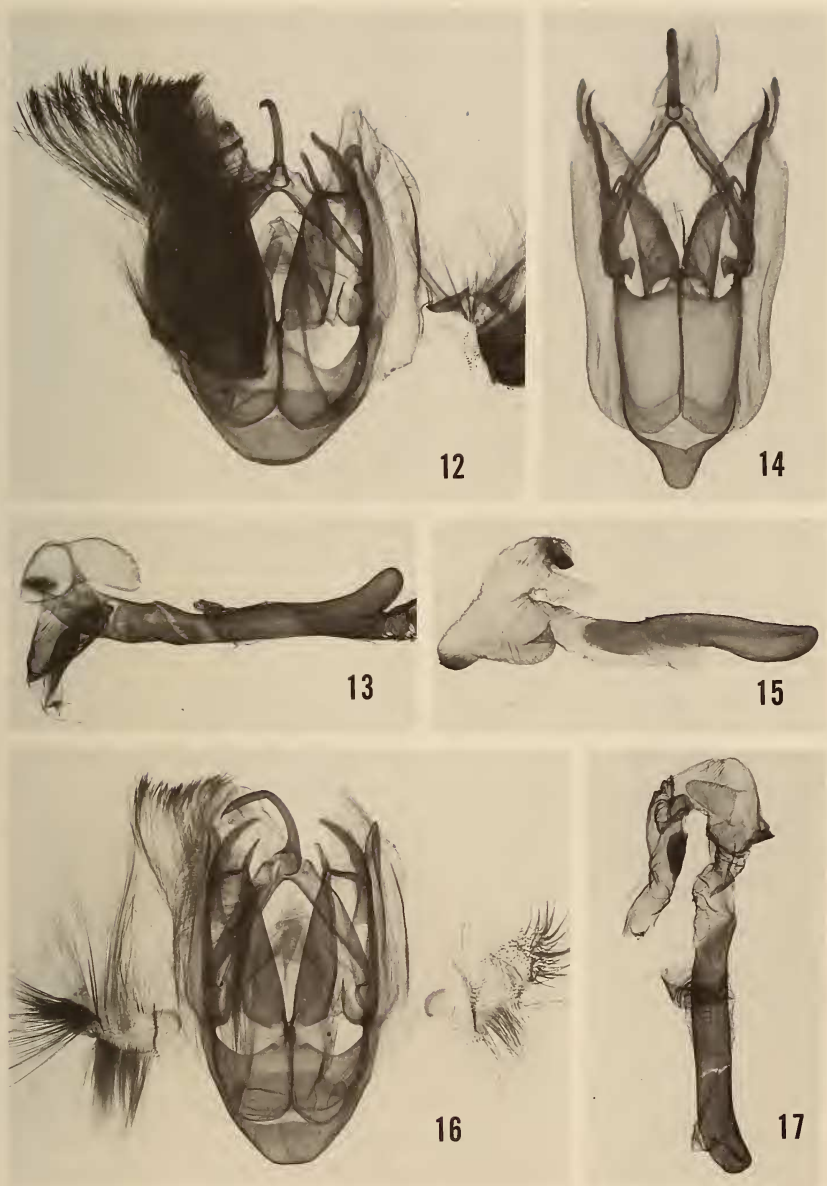
The moths have smooth, cylindrical, upturned palpi that exceed the upper margin of the front to about the level of the basal antennal segment. The antennae are simple, filiform, and minutely setose in both sexes. The legs have long, shaggy vestiture on the femora and tibiae in all species examined except *B. repanda*, in which the scaling is smooth. *Bagisara repanda* is also unusual in having a large, conspicuous patch of black-tipped scales on the front surface of the male foretibia.

While American members of this complex have continued to be treated as a single genus in the Bagisarinae or Bagisarini, their similar Old World relatives have been referred in recent years to the Chloephorinae (e.g., Poole 1989, vol. 2:991, Common 1990:457). My observations during preparation of this paper convinced me that the Bagisarinae and at least part of the species in the Old World genus *Xanthodes* belong not only to the same subfamily, but to the same genus.



FIGS. 1-8. *Bagisara* species. 1, *B. brouana*, holotype. 2, *B. brouana*, ♀ paratype, 4.2 mi. NE of Abita Springs, St. Tammany Parish, Louisiana, 7 June 1984, V. A. Brou. 3, *B. brouana*, ♂ paratype, Lizana, Harrison Co., Mississippi, 1 July 1991, R. Kergosien. 4, *B. brouana*, ♀ paratype, same data as for Fig. 3 but collected 19 July 1991. 5, *B. praecelsa*, holotype. 6, *B. praecelsa*, ♀ paratype, Mt. View Acres, San Antonio, Texas, 9 September 1971, A. & M. E. Blanchard. 7, *B. gulfare* ♂, Ames, Iowa, 4 July 1964, W. S. Craig. 8, *B. gulfare* ♀, Lacon, Illinois, 10 July 1967.

FIGS. 9-11. *Bagisara* species, ♂ abdominal structures. 9, *B. praecelsa*. 8th abdominal segment: tergite (left), sternite (right). 10, *B. gulfare*, sternite of segment A8. 11, *B. brouana*. 8th abdominal segment: tergite (left), sternite (right).



FIGS. 12-17. *Bagisara* species, ♂ genitalia. 12, *B. gulfare*. 13, aedeagus of same specimen. 14, *B. brouana*. 15, aedeagus of same specimen. 16, *B. praecelsa*. 17, aedeagus of same specimen.

Similarity of larval characters was first noted by Crumb, based on comparison of his observations with those of Gardner (1946, 1948) in India. However, the unique genitalia appear to have been neglected. *Xanthodes transversa* Guenée, a colorful, well-known tropical Asian and Indo-Australian species that ranges north to Japan, is similar to *Bagisara* species in all essential details, including the complex genitalia of both sexes. The moths have the same kind of wing pattern, and the larvae of *Xanthodes* and *Bagisara* species have related food plants: mainly species of Malvaceae.

I do not synonymize *Bagisara* to *Xanthodes* in this paper because more revisionary work is needed, especially on the Old World species. Indeed, the type species of both *Bagisara* and *Xanthodes* are somewhat atypical, leaving doubts as to what the limits of the genus or genera should be. The type species of *Xanthodes* Guenée, 1852, is *Phalaena malvae* Esper [1796], now known as *Xanthodes albago* (Fabricius 1794), of the Old World tropics to the Palearctic, including southern Europe. In *X. albago* the valves are not fused together along their outer saccular margins, although closely approximate, and the distinctive sclerites (tergite and sternite) as shown in Figs. 9, 10, are not developed. The 12 Old World species of *Xanthodes*, as listed by Poole (1989), appear more diverse than their American counterparts.

The type species of *Bagisara* Walker, 1858, is *B. incidens* Walker, which is a junior synonym of *Bagisara repanda* (Fabricius 1793), a widespread and generally abundant neotropical species that reaches the southeastern USA. It differs from other American species in its smooth vestiture, somewhat different genitalia (e.g., no long processes on valve), slightly angulate outer margin on the forewing, and in having a patch of specialized black scales on the foretibia.

The following key should help in the identification of all species currently assigned to *Bagisara*. One new combination and four changes in synonymy are made in the key, and *Xanthia patula* Druce (1898:486, pl. 94, fig. 14), from southern Mexico, Guatemala, and Costa Rica, is removed from *Bagisara*, where it was placed by earlier authors. Its genitalia are very different from those of the Bagisarinae and of a more conventional type. I could not place it to genus, but am sure that the species belongs somewhere in the large assemblage long known as the Amphipyrinae but now probably within the expanded concept of the Hadeninae of recent authors (e.g., Kitching & Rawlins, in press). It has a rich golden orange-brown forewing with darker brown markings and two white spots in the reniform. Otherwise all species and their synonymy remain as listed by Poole (1989), and the reader is referred to that work for nomenclatural detail that is not repeated here. Poole's catalogue also provides references to illustrations for about 12 of the 19



FIGS. 18–21. *Bagisara* species, ♀ genitalia. 18, *B. praecelsa*, with modified scale patches of seventh sternum removed. 19, *B. praecelsa*, with modified scale patches in place. 20, *B. gulfare*. 21, *B. brouana*.

species plus *Xanthia patula* Druce (although the figure cited for *B. demura* is misidentified, as mentioned later). To these may be added the colored illustrations of *B. gulfare* and *B. rectifascia* by Rings et al. (1992, pl. 13, figs. 20, 25). Most species are easily identified by differences in size, color, wing pattern, and other features as used in the key.

KEY TO NEARCTIC AND NEOTROPICAL SPECIES OF *BAGISARA* BASED ON SUPERFICIAL FEATURES

- 1. Postmedial line of forewing sharply or abruptly angled on R<sub>5</sub> or M<sub>1</sub> . . . . . 2
  - 1'. Postmedial line with a more rounded curve, not abruptly angled . . . . . 11
  - 2. Forewing greenish, olivaceous, or brownish gray; transverse lines whitish or at least paler than ground color (if forewing brown, transverse lines bicolored whitish and orange); forewing with or without darkened patch having pronounced brassy sheen in subterminal area of forewing . . . . . 3
  - 2'. Forewing reddish brown to gray brown, or pale with brown markings; transverse lines darker than ground color; forewing never with darkened patch with brassy sheen in subterminal area . . . . . 6
  - 3. Forewing greenish or olivaceous; transverse lines pale, not bicolored; forewing with transversely elongate patch in subterminal area that is darker than rest of wing and has brassy sheen; hindwing grayish (an unidentified species from Paraguay, probably undescribed, would key to couplet 4 except that it lacks the darkened subterminal area with brassy sheen) . . . . . 4
  - 3'. Forewing usually reddish brown with transverse lines plain or bicolored; forewing without darkened patch with brassy sheen in subterminal area; hindwing reddish brown, although paler than forewing . . . . . 5
  - 4. Angle of subterminal line reaching outer margin, antemedial line angled before costa; dark zone with brassy sheen between subterminal line and outer margin of forewing not strongly contrasting with rest of wing. Wing length 15–18 mm. Midwestern U.S. . . . . *gulfare* (Stkr.)
  - 4'. Angle of subterminal line not reaching outer margin, antemedial line straight or only slightly bent upon approaching costa; dark zone with brassy scales between subterminal line and outer margin of forewing strongly contrasting with paler color of rest of wing (as in *B. albicosta*). Wing length 14–17 mm. Texas, Mexico . . . . . *praecelsa*, n. sp.
  - 5. Transverse lines of forewing bicolored, orange brown on proximal side, whitish or gray white on distal side. Wing length 16–19 mm. Central Mexico to Honduras . . . . . *laverna* (Druce)
  - 5'. Transverse lines of forewing plain, not bicolored. (Similar to *B. laverna* or more grayish, paler hindwing). Wing length 15 mm. Cuernavaca, Morelos, Mexico . . . . . *malacha* (Druce)
- (Note: Two species are figured in the literature as *B. malacha*, and I assume that the original one (Druce 1889, pl. 28, fig. 14) is correct, although I have not seen specimens. The species shown by Draudt (1926, pl. 44, row a) is *B. oula*. Druce (*ibid.*, p. 305) described the forewing as having “three narrow dark brown lines,” but his figure shows the usual pale lines of this group, perhaps with only a thin, dark edging. *B. malacha* appears close to *B. laverna* but smaller, and it is without the feature of the orange-brown margin on the transverse lines, which I describe as bicolored).
- 6. Male forefemur with large tuft of long, reddish-brown scales, and male forewing with squarish black spot on costa between base and antemedial line (often reduced, missing, or rubbed off); forewing otherwise pale with reddish-brown markings and a characteristic double longitudinal streak through angles in post-medial and subterminal lines. Wing length 12–13 mm. Texas and Arizona to Argentina . . . . . *tristicta* (Hamp.)

- 6'. Male forefemur without large scale tuft, and male forewing without black costal spot; forewing reddish brown to yellowish or gray brown, without a double or usually any streak through angle of postmedial and antemedial lines (except *graphicomas*, which has one dark streak) ..... 7
- 7. Forewing dark reddish brown or dusted with brown scales against a paler background; angle of postmedial line less than 90°; forewing with dark longitudinal streak through angles of postmedial and subterminal lines; hindwing light reddish brown with thin, darker brown postmedial and subterminal lines, the former angled to mimic that of forewing (the only species with such a pattern on hindwing).  
Wing length 15–17 mm. Guerrero, Mexico ..... *graphicomas* (Dyar)
- 7'. Wings reddish brown to gray brown or yellowish; angle of postmedial line acute or obtuse; forewing without dark longitudinal streak through angles of postmedial and subterminal lines; hindwing without markings. Wing length variable.  
Widespread ..... 8
- 8. Both wings bright reddish brown, hindwings paler but almost uniformly colored; forewing with well-marked, clearly defined, regular, dark-brown, transverse lines; angle in postmedial line of forewing usually 90° or less (acute) ..... 9
- 8'. Forewing light violaceous gray brown to yellowish brown; hindwing whitish, progressively shading to pale brownish distally; forewing with thin, delicate, regular, brown transverse lines; postmedial line acutely or obtusely angled ..... 10
- 9. Wing length 18–19 mm. Orizaba, Veracruz ..... *ochracea* (Schaus)
- 9'. Wing length 15 mm. SW U.S. to Mizantla and Guadalajara, Mexico .. *demura* Dyar  
(Note: *B. ochracea* and *B. demura* appear exactly alike except for size, but only females were available during preparation of key. *Bagisara ochracea* (Schaus 1906) is a **new combination**. It was described as *Trileuca ochracea* Schaus and referred to the genus *Schinia* by Poole (1989). *Bagisara xan* Dyar, 1913, is a junior synonym of *Trileuca ochracea* Schaus, and this is a **new synonymy**. These changes are based on reexamination of the types in the U.S. National Museum of Natural History. Draudt's figure (1926, pl. 44, row b) of *B. demura* is not that species but is *B. anotla*; and his figure of *anotla* (1926, pl. 44, row b) is *B. ochracea*. An unidentified species similar to *B. ochracea*, but with more oblique lines, will key out here. It has been taken in southern Minas Gerais, Brasil (USNM)).
- 10. Forewing light gray brown with faint violaceous tint; angle of postmedial line often less than 90°; antemedial line usually angled before costa. SW U.S., Mexico ..... *oula* Dyar
- 10'. Forewing light yellowish brown; angle of postmedial line about 90°; antemedial line usually bent but not angled before costa. SW U.S., Mexico ..... *buxea* (Grt.)
- 11. Transverse lines of forewing whitish, or at least paler than ground color ..... 12
- 11'. Transverse lines of forewing brown to blackish, darker than ground color, sometimes not entirely distinct ..... 16
- 12. Male foretibia and forefemur with large, dense, black-tipped scale tufts; outer margin of forewing slightly angulate; small, wing length 10–12 mm. SE U.S., West Indies and Mexico to Paraguay ..... *repanda* (F.)
- 12'. Male foretibia and forefemur without large scale tufts; outer margin of forewing not angulate. Wing length variable ..... 13
- 13. Antemedial line of forewing farther from base at costa than at inner margin. SW U.S. to Venezuela ..... *albicosta* Schaus  
Note: *B. albicosta* is the only species in which antemedial line of forewing is slanted in reverse direction from what is usual. Coloring of forewing closely similar to that of *B. praeclsa*, including even the dark subterminal area with brassy sheen, but course of lines is different).
- 13'. All transverse lines of forewing approximately erect from inner margin and sub-parallel, if visible ..... 14
- 14. Wings dark brown; lines pale but faint. Small, wing length 11 mm. Guyana, Costa Rica ..... *obscura* Hamp.  
(Note: *B. obscura* has the appearance of a very dark-suffused *B. repanda*, but the outer margin of the forewing is evenly rounded, not angulate. The wing shape and pattern, although indistinct, appear much as in *B. rectifascia*).



- 14'. Wings light brown with distinct, pale (or partly pale, partly darker) transverse lines. Wing length 12–14 mm . . . . . 15
15. Forewing with inner margin straight or slightly convex; outer margins evenly rounded, tornus rounded; hindwing normal, not appearing produced or unusually triangular. U.S. to Nicaragua and Costa Rica (may not all be same species) . . . . . *rectifascia* (Grt.)
- 15'. Forewing with slightly concave inner margin and relatively sharply angled tornus; outer margins of both wings not entirely rounded but with places where they are straight or very slightly concave; hindwing appearing more triangular, with anal angle about 90° and not or hardly rounded. SW U.S. to Costa Rica . . . *pacifica* Schaus
16. General wing coloring very dark, blackish, lines present but obscure. Wing length 13–15 mm. Louisiana, Mississippi . . . . . *brouana*, n. sp.
- 16'. Much paler, pale brown to reddish brown. Wing length 13–17 mm. Neotropical . . . . . 17
17. Very pale brown with thin, regular, erect, subparallel darker brown lines on forewing. Wing length 12–15 mm. Panama, Brasil, Venezuela . . . *paulensis* (Schaus)
- 17'. Light reddish-brown moths with smudgy markings and lines often indistinct. Guatemala to Panama . . . . . 18
18. Deep reddish-brown suffusion across much of forewing except costal area, and patch of blackish to dark-gray scales in median space near inner margin; hindwing whitish toward base, shading to yellowish brown distally. Small, wing length 13–15 mm. Guatemala, Panama . . . . . *avangareza* Schaus
- 18'. Forewing without dark shades except some deep reddish brown near outer margin; hindwing bright orange brown, not or hardly paler toward base. Larger, wing length 16–17 mm. Mexico, Guatemala, Panama . . . . . *anotla* Dyar  
(Note: *Bagisara luhua* Schaus, 1921 is a junior synonym of *B. anotla* Dyar, 1914, **new synonymy**, and the latter is a separate species, **revised status**, not a synonym of *B. demura* Dyar, 1913, as indicated by Poole (1989:154). This is based on a reexamination of the Schaus and Dyar types in the U. S. National Museum, but few specimens are available and most are females. The figure of *B. luhua* by Draudt (1926, pl. 44, row b) is a good likeness of *B. anotla*).

### *Bagisara praeclsa* Ferguson, new species

(Figs. 5, 6, 9, 16, 17, 18, 19)

**Diagnosis.** This species resembles *Bagisara gulfare* (Strecker) and was misidentified as that species in collections. However, the two apparently are not sympatric, as the true *B. gulfare* is known from Ohio, Michigan, Illinois and Iowa, whereas *B. praeclsa* occurs in Texas and northern Mexico. They are easily distinguished by differences in the forewing pattern. The antemedial line is straight or only slightly incurved near the costa in *praeclsa*, sharply angled near the costa in *gulfare*. Also, in *praeclsa*, the angles in the postmedial and subterminal lines are offset relative to each other; the outermost point of the postmedial is no farther out than the point at which the subterminal meets the costa, and the outermost point of the subterminal usually stops short of the outer margin. In *gulfare*, the angulate part of the postmedial fits within that of the subterminal with almost perfect symmetry, the point of the postmedial surpasses the point where the subterminal meets the costa, and the outermost point of the subterminal reaches the outer margin. In *praeclsa*, the contrasting zone of metallic scales between the submarginal band and the outer margin is larger as a result of the submarginal band being more deeply incurved, and it is deep metallic red brown rather than gold colored. Although males of both species differ from all other U.S. *Bagisara* in having a distinct patch of erect scales on the hindwing between the second and third anal veins about a third of the way out from the base, these scales are yellow in *praeclsa* and light grayish brown in *gulfare*. The complicated genitalia of *praeclsa* are similar to those of *gulfare* in both sexes, but differ in the shape and proportions of many parts.

**Further description.** Antenna simple in both sexes; male palp brushlike, tufted with stiff, hairlike scales on ventromesial surface; alula-like structure (posterior to base of hindwing on each side) bearing an expandable tuft of long, yellow-brown scales matching in

color the erect scales on hindwing and transverse dorsal intersegmental bands on abdominal segments 5–8; tegula short compared to that of at least some other species of *Bagisara*, not reaching base of abdomen; all forewing features common to *gulgare* and *praeceles*, except that sex scales in *praeceles* are bright-yellow instead of gray-brown. Forewing light, lustrous, olivaceous gray, finely dusted with white scales, traversed by three thin, clearly defined transverse lines, and with a submarginal, lunate, metallic, dark coppery-brown patch about as wide as minimal distance between antemedial and postmedial lines (narrower in *gulgare*). Other forewing markings as described in diagnosis. Hindwing gray brown, often slightly darker toward outer margin, and with a terminal series of vague whitish dots or wedges between vein endings (rather than the continuous, slightly sinuous, whitish terminal band apparent in fresh specimens of *gulgare*). Length of forewing: holotype, 16 mm; other ♂♂, 14–17 mm (n = 25); ♀♀, 16–17 mm (n = 7).

**Male genitalia** (Figs. 9, 16, 17). Differing from those of *Bagisara gulgare* (Figs. 10, 12, 13) most obviously as follows: overall shape of valve and its everted corema more slender, and corema with hair tufts only half the size of those in *gulgare* (cut off in Fig. 12); valve with rounded end of costal lobe produced beyond end of most mesial of the slender, blade-like, preapical, valvular processes; vesica with two sclerites of nearly equal size (unequal in *gulgare*), and a diverticulum smaller than that of *gulgare*. Sclerites of eighth tergum and sternum also differ, as illustrated.

**Female genitalia** (Figs. 18, 19). Similar to those of *Bagisara gulgare* (Fig. 20) in most respects, but easily distinguished by the smaller, less persistent, paired scale tufts on sternum 7. These tufts are large, dark colored, and difficult to remove in *gulgare* (Fig. 20); smaller, paler, and more nearly deciduous in *praeceles*. Also, in *praeceles*, posterior margin of sternum 7 relatively shallowly emarginate at ostium; outer two of four needlelike sclerites arising from ostium being one-third to four-fifths as long as middle pair; corpus bursae at juncture with ductus bursae bearing a relatively prominent sclerite marked with a fanlike, radiating pattern of ridges.

**Types.** Holotype ♂, Fort Davis, Jeff Davis Co., Texas, 11 July 1969, A. and M. E. Blanchard. Paratypes: 6 ♂♂, same locality and collectors, 30 July 1964, 25 June 1965, 11 June 1969, 28 August 1970; 1 ♀, same locality, 19 August 1984, E. Knudson; 2 ♂♂, Mount Locke, 6700', Davis Mountains, Texas, 10 June 1969, A. and M. E. Blanchard; 4 ♂♂, 1 ♀, Alpine, Brewster Co., Texas, 10 June 1969, 2 August 1964, 6 Sept. 1964, 10 September 1963, same collectors; 1 ♂, Bear Canyon, Guadalupe Mountains, Texas, 4 September 1969, same collectors; 2 ♂♂, McKittrick Canyon, Guadalupe Mountains, Texas, 29 August 1967, same collectors; 1 ♀, Sierra Diablo Wildlife Management Area, 6000', Culberson Co., Texas, 5 June 1969, same collectors; 2 ♂♂, Junction, Kimble Co., Texas, 24 August 1973, same collectors; 3 ♂♂, 1 ♀, Mt. View Acres, San Antonio, Texas, 30 August 1973, 9 Sept. 1971, same collectors; 1 ♀, Kerrville, Texas, June 1919; 1 ♂, San Benito, Texas, 16–23 March [incorrect date?]; 1 ♂, Bentsen-Rio Grande Valley State Park, Hidalgo Co., Texas, 27 May 1982, E. C. Knudson; 6 ♂♂, 2 ♀♀, Limpia Canyon, Davis Mountains, Jeff Davis County, Texas, 4920', 30° 17.4' N, 103° 36.6' W, 9 August 1991, E. H. Metzler; 1 ♀, 3 mi. E Galeana, 5000', Nuevo Leon, Mexico, 7–9 August 1963, [W. D.] Duckworth and [D. R.] Davis. Holotype and most paratypes in collection of U. S. National Museum of Natural History; some paratypes returned to E. C. Knudson, E. H. Metzler, and deposited in other museum collections; namely, the Canadian National Collection, Ottawa; American Museum of Natural History, New York; Carnegie Museum, Pittsburgh; Cornell University, Ithaca, New York, and The Natural History Museum, London.

**Distribution.** This species has a wide distribution within Texas, as the above listed localities indicate. Otherwise, I have seen it only from Mexico, where the one paratype was collected about 95 km south of Monterrey and 240 km from the U.S. border.

**Early stages.** Undescribed. The larva of *B. gulgare* feeds on foliage of glade mallow, *Napaea dioica* L. (Malvaceae). One specimen was reared from a larva found on this plant in remnant wet prairie in Pickaway County, Ohio by E. Metzler, and the moth is regarded as an endangered species in Ohio (Rings et al. 1992:71). The larva is green with a vague, yellowish lateral stripe.

**Remarks.** *Bagisara laverna* (Druce), of Mexico and Central America, is the species most similar to *B. gulgare* and *B. praeceles* in size, color, and pattern. *Bagisara albicosta*

Schaus, although nearly identical to *B. praecelsa* in size and especially coloring, has different transverse lines (see key). If the apparent allopatry of *praecelsa* and *gulfare* proves to be real, then these two species may be distinguished by locality label. I examined specimens of *B. gulfare* from four states, as follows: OHIO: 30 mi. S of Columbus (emerged 12 Aug. 1989, 1 specimen in Metzler coll.). MICHIGAN: Berrien County (26 June–14 July, 3 specimens, J. H. Newman, in Metzler coll.). ILLINOIS: Champaign; Elgin; Lacon; Peoria; Putnam Co.; Quincy; Urbana (9 June–1 Sept., 73 specimens in Illinois Natural History Survey collection and U. S. National Museum of Natural History). IOWA: Ames; Milford; Soldier (4 June–2 Sept., 8 specimens in U.S. National Museum of Natural History). *Bagisara gulfare* has also been recorded from Pennsylvania (Tietz [1952]:83; Forbes 1954:264), but this needs verification. Neither *gulfare* nor *praecelsa* appears to have been identified or recorded in the literature from any of the intervening states such as Missouri, Mississippi, Arkansas, Kansas, and Oklahoma, although doubtless there are records that I have not seen.

### *Bagisara brouana* Ferguson, new species

(Figs. 1–4, 11, 14, 15, 21)

**Diagnosis.** A large, distinctive, dark-brown species known only from St. Tammany and Tangipahoa Parishes, Louisiana, where many have been collected over a period of years by the collector for whom it is named, and from Hancock and Harrison counties, Mississippi, where it was collected by R. Kergosien. The forewing pattern of three narrow, subparallel, transverse bands is generally similar to those of *B. rectifascia* and *B. repanda*, but the bands are largely blackish on a dark-brown background, not pale on a light-brown background as in those species. The bands are often inconspicuous because of the overall dark suffusion. *Bagisara brouana* is unique in being sexually dichromatic with respect to wing color, the males being distinctly lighter on both fore- and hindwings. In our fauna it is most closely related to *B. rectifascia*, and, like that species, has unmodified vestiture on the male foreleg and an evenly convex outer margin on the forewing. *Bagisara repanda* differs in having a conspicuous patch of long black scales on the male front femur and a somewhat angulate outer margin on the forewing.

**Further description.** Male foreleg unmodified, without unusually long or specialized scales, and without a femoral tuft of black scales. Antennae and other external structures as in related species. Forewing of both sexes with outer margin evenly convex, not angulate near middle as in *B. repanda*, dark reddish brown (blackish) with a violet iridescence in fresh specimens; discal spot transversely oblong, blackish, diffuse; the three transverse bands narrow, blackish (sometimes partly shadowed by a pale shade), almost erect relative to inner margin, and in nearly the same positions as the pale bands of *B. rectifascia*; antemedial band straight or slightly concave, about one-third of the way out from base; postmedial band just beyond discal spot, slightly concave except toward costa, where it curves basad; subterminal band meeting inner margin at or near tornal angle in *B. brouana* and *B. rectifascia* (midway between postmedial band and tornal angle in *B. repanda*); an incomplete terminal row of small black dots usually present; males often with space between postmedial and subterminal bands occupied by a slightly paler, violaceous-brown shade that may form an almost complete pale band (as in holotype) or be confined to a patch near inner margin; fringe concolorous with wing or darker. Hindwing sexually dimorphic in shape and coloring; that of male with outer margin often nearly straight between  $M_1$  and first anal fold; light yellowish brown, glossy, with dusky shading near inner margin and, in most fresh males, with gray, elongate, wedge-shaped rays toward outer margin and between veins; female hindwing with outer margin evenly and roundly convex, and the color uniformly dusky brown, nearly as dark as forewing; discal spot wanting in male, nearly so in female; fringes concolorous. Scales of thorax concolorous with forewing, of abdomen concolorous with hindwing. Underside pale, dusted with darker gray-brown scales, with discal spots developed on both wings, and with rounded, evenly convex, parallel, dark-brown postmedial bands variably developed on both wings, poorly so in males, often half-developed on forewing and fully developed on hindwing in females. Length of forewing: holotype, 13.5 mm; other ♂♂, 13–15 mm ( $n = 18$ ); ♀♀, 12–15 mm ( $n = 57$ ).

**Male genitalia** (Figs. 14, 15). Similar to those of other species of *Bagisara* examined inasmuch as the ventral margins of the valves are fused together so that the valves cannot be spread apart without damage and distortion. Genitalia most closely resemble those of *B. rectifascia*, but are greatly elongated to 1.5 times length from saccus to uncus, with all components proportionately elongated, including aedeagus. The complex eighth sternite (Fig. 11) similar in form but also elongated, its posterolateral apices not flared outwardly as much or as abruptly as those of *B. rectifascia*. Male genitalia differ in shape of virtually all parts from those of *B. repanda* and *B. buxea*. Eighth sternite and tergite are both complex in this genus, but in *B. brouana* and *B. rectifascia* are especially conspicuous; eighth sternum of these species bears a partly sclerotized structure (sternite) forming an elongated, funnel-shaped structure with a large, medial, posteriorly directed tuft, probably the corema associated with a scent gland; eighth sternite of *B. repanda* with a similarly situated but smaller tuft, comprised mainly of long, spatulate scales. *Bagisara brouana*, *rectifascia*, and *repanda* all lack the coremata arising from the bases of the valves in *B. buxea*, which clearly is not a closely related species.

**Female genitalia** (Fig. 21). As illustrated.

**Types.** Holotype ♂, 4.2 mi. NE of Abita Springs, Sec. 24, T6 SR12E, St. Tammany Parish, Louisiana, 8 August 1983, V. A. Brou. Paratypes: 17 ♂♂, same locality and collector, 4, 11, May, 6, 11, 18, 19, 23 June, 2, 7, 27 July, 8, 9, 11, 13 August, 2 September 1983; 17 ♂♂, same locality and collector, 5, 7, 14, 22, 29, 30 May, 7, 9, 10, 14, 21, 18 June, 21, 22 July, 8, 30 August, 1 September 1984; 10 ♀♀, same locality and collector, 22 May, 6, 9, June, 1, 16, 26 July, 1, 8, 14, 20 August 1984; 15 ♀♀, same locality and collector, 26, 29 April, 13, 22, 28 May, 3, 6, 7, 20, 22 June, 18, 19 July, 1 August 1984; 2 ♀♀, Fluker, Tangipahoa Parish, Louisiana, 12 May 1978, V. A. Brou; 30 ♂♂, 10 ♀♀, Lizana, Harrison County, Mississippi, 16 June–17 August 1991, R. Kergosien; 6 ♂♂, 7 ♀♀, Long Beach, Harrison County, Mississippi, 30 June–20 August 1991, R. Kergosien; 1 ♂, Blk. Crk. near George-Jac[kson] Co. line, Jackson County, Mississippi, 1 August 1991, R. Kergosien; 1 ♀, Pass Christian, Harrison County, Mississippi, 19 July 1979, R. Kergosien; 1 ♀, Bay St. Louis, Hancock County, Mississippi, 16 July 1979, R. Kergosien. The Louisiana specimens were all collected in light traps using mercury vapor lamps and ultraviolet fluorescent tubes. Holotype and some paratypes in collection of U.S. National Museum of Natural History; remaining paratypes mostly in collection of V. A. Brou, Bryant Mather, and R. Kergosien, but some will be distributed to other collections as mentioned under *B. praeclsa*. Fifteen additional specimens from the type locality were examined but not labelled as paratypes because of their poor condition.

**Distribution.** Known only from the Louisiana and Mississippi localities listed above.

**Early stages.** Unknown. *Bagisara rectifascia* has a slender green semilooper larva, with the first two pairs of prolegs missing, reported on *Hibiscus lasiocarpus* Cav. and *Malvaviscus drummondii* T. & G. (both Malvaceae) in Texas (Crumb 1956:77). Larva of *B. buxea* reported on a species of *Sphaeralcea*, also in the Malvaceae (Comstock & Dammers 1935:138).

**Remarks.** A curious feature of this species is its restricted distribution. Intensive collecting in the southern States in recent years has failed to reveal its presence anywhere outside of the three coastal counties of Mississippi and two nearby parishes of Louisiana, as far as I am aware. However, nearly 200 specimens collected by Brou in two seasons at the type locality indicate a large and thriving local population. It may be a specialized feeder on one genus or even one species of plant that also has a limited distribution. The closely related *B. rectifascia* has a wide distribution in the eastern U.S. but is not common in collections. *Bagisara repanda* is sometimes abundant in the Southeast, particularly in Florida, and throughout the Caribbean Region and much of the American tropics. The only other species of *Bagisara* regularly present in the U.S. east of Texas and the Great Plains is *gulfare* (Strecker) (Figs. 7, 8), a similarly large but conspicuously different species with an olive-green forewing having a brassy sheen and oblique, silvery-white bands. It was further discussed above under *B. praeclsa*. *Bagisara buxea* has been reported as far north as Wisconsin (type of *delicia* (Dyar), a junior synonym of *buxea*), perhaps as a vagrant from the South or with a false locality label. *Bagisara gulfare* and *B. rectifascia* were illustrated in color by Rings et al. (1992, pl. 13, figs. 20, 25), and *Bagisara repanda* (as

*Aethmia subusta* Hbn.) and *B. rectifascia* were illustrated (although not very well) by Holland (1903, pl. 27, figs. 4, 5).

A summary of Louisiana *Bagisara* records to the end of 1995 sent by V. A. Brou shows an almost continuous flight period for *B. brouana* from about 6 April to 19 September, with major peaks in early and late June, lesser peaks in late May, late July, and early to mid August, and an abrupt decline in September. This would seem to reveal three or more extended, overlapping generations. Comparable data for *Bagisara rectifascia*, but with far fewer records, show a similar pattern. In contrast, the many records for *B. repanda* are mostly clustered late in the season, from late August into November, with the greatest number in September. This is the classic pattern of a seasonal immigrant from the tropics that may not overwinter in the United States.

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