

The Sphinx Moths (Lepidoptera: Sphingidae) of Oklahoma

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The family Sphingidae includes a group of the larger and sometimes very colorful moths found in Oklahoma. Though some species are relatively rare, others are very common and considered pests of economic importance. County records are not included because the collection data are too sparse to be of value. The areas of the fore wing are shown in Figure 1.

All illustrations are by Mrs. Neil (Barbara) Roach.

KEY TO THE ADULTS

1. Abdomen with round bright yellow lateral spots 2
Abdomen without round bright yellow lateral spots 4
2. Three lateral spots on abdomen *Protoparce rusticus*
Four or five lateral spots 3
3. Two middle black stripes on hind wing partially fused
..... *Protoparce sextus*
Three inner black stripes on hind wing all well separated, white
colored between *Protoparce quinque maculatus*
4. Fore wing scalloped, at least with strong teeth on R₁ and Cu₁ 5
Fore wing falcate or normal, at most with slight tooth on Cu₁ 11
5. Fore wing regularly scalloped 6
Fore wing with teeth on R₁, M₁, Cu₁, or two of these veins 9
6. Hind wing pink to red 7
Hind wing not pink to red 8
7. Hind wing with black "eyespot" superposed with blue in center;
small moth, wingspread 2-3 inches *Paonias excaecatus*
No distinct "eyespot" but with a triangular black spot on hind
wings usually bordered by a bluish gray; large moth, wing-
spread 4-5 inches *Pachysphinx modesta*
8. Fore wings dark brown with gray; hind wings bright orange;
palpi lacking *Erinnyis domingonis*
Fore wings light reddish brown to tawny, hind wings similar,
not orange; palpi prominent *Cressonia juglandis*
9. Hind wings pink with black "eyespot" usually with two super-
posed blue bands *Smerinthus geminatus*
Not as above 10
10. Basal portion of hind wings reddish-brown; one or two bright
yellow stripes across abdomen *Amphion nesusus*
Basal portion of hind wings yellow; no bright yellow stripes across
abdomen, although light colored stripes exist *Sphecodina abbotti*
11. Wings largely transparent *Haemorrhagia diffinis*
Wings fully scaled 12
12. Longitudinal black lines on abdomen, solid or broken 18
Longitudinal black lines on abdomen, absent 13
13. Front and hind wings with shades of pink, at least some veins
pink 14
Wings without pink 15

14. Basal three-fourths of hind wings pink; undersides of both wings not yellow *Pholus achemon*
 Basal three-fourths not pink; undersides of both wings yellow *Pholus satellitia*
15. Wide transverse bands on front wings 16
 Wide transverse bands on front wings wanting; longitudinal lines from inner margin to apex *Xylophanes tersa*
16. Dark transverse band in median area of front wing; basal three-fourths of hind wing ranging from a deep red to a bright yellow, the remainder contrastingly dark; fifth abdominal segment lighter in color and light dorsal patches on segments six and seven *Proserpinus juanita*
 Dark transverse band covering post median and submarginal areas of front wings with a narrow band or bands in the submedian area; hind wings almost concolorous; fifth segments of abdomen not lighter 17
17. Two curved transverse bands in submedian area of fore wings; darker parts of the fore wings and body a deep reddish brown; hind wings light pinkish-brown *Darapsa choerills*
 One curved transverse band in submedian of fore wings; darker parts of fore wings greenish tan to olive color; hind wings tawny *Darapsa myron*
18. Hind wings largely pink; fore wings with medial white band extending from base to apex *Celerio lineata*
 Fore and hind wings not as above 19
19. Disc of thorax, at least front part, black with white along tegula 20
 Disc of thorax gray to brown with dark stripes 21
20. Posterior basal scale tufts of front wings white to light gray; front wings brownish-black except for lighter areas along costal and outer margins *Sphinx drupiferarum*
 Posterior basal tufts of front wings brown; front wings largely light tan becoming somewhat darker toward inner margins, except for light areas along costal and outer margins *Sphinx vancouverensis*
21. Outer margin of fore wings concave at Cu. Pattern complex with shades of bright tan to black *Ceratonia amyntor*
 Outer margin of fore wings evenly curved 22
22. Hind wings with median flesh- or white-colored band; sides of abdomen with definite narrow, alternating pale and black spots *Sphinx cheris*
 Hind wings concolorous; no definite spots on abdomen 24
23. Terminal long spur of hind tibiae as long as the metatarsi; discal spot with stalk pointing toward outer margin *Atreides plebeus*
 Not as above 25
24. Fore wings dull brown, shaded with yellowish green, complexly marked *Isogramma hageni*
 No trace of green 23
25. Fore wings with clear black dashes between M₁ and Cu, post-medially *Ceratonia undulosa*
 Fore wings with black dashes toward apex, but none below middle of wing *Ceratonia catalpa*

Protoparce rusticus (Fabricius). The Rustic Sphinx; Six-spotted Sphinx. Abdomen with three pairs of round bright yellow lateral spots,

white ventrally with three or four brown spots along median line; fore and hind wings shades of brown, with white and bronze blended transverse band in fore wings; wingspread 4-5½ inches. Fig. 2.

Protoparce sextus (Johansson). Tobacco Hornworm; Carolina Sphinx. Abdomen with five pairs of round bright yellow lateral spots, first yellow spot almost free of white hairs, whitish brown beneath; wings shades of brown with darker lines, the two middle black stripes in hind wings partially fused; wingspread 3½-5½ inches. Fig. 3.

Protoparce quinquemaculatus (Haworth). The Tomato Hornworm; the Five-spotted Hawk Moth; the Five-spotted Sphinx. Abdomen with five pairs of round bright yellow lateral spots, the majority of the first spot overlaid with white hairs, whitish brown beneath; wings shades of brown with dark brown to black lines, three inner black stripes of hind wings all well separated, white between; wingspread 3-5½ inches. Fig. 4.

Paonias excaecatus (Smith & Abbot). The Blind Sphinx; Blind-eyed Sphinx. Fore wings regularly scalloped at margin, brown with black shading, and a pink basal half beneath; hind wings largely pink with dark "eyespot" overlaid with light blue in center; abdomen brown with narrow median dorsal black stripes; wingspread 2-3 inches. Fig. 5.

Pachysphinx modesta (Harris). The Big Poplar Sphinx. Fore wings with wide transverse median band, brownish olive color, basal portion of underside with triangular pink spot; hind wings largely red to pink with triangular black spot bordered by bluish gray; wingspread 4-5 inches.

Erinnyis domingonis (Butler). Fore wings brown with gray, an orange cast beneath; hind wings largely bright orange, bordered inconsistently by brown, largely orange beneath; body light brown with shades of black and gray; palpi lacking; wingspread 2-2½ inches.

Cressonia juglandis (J. E. Smith). The Walnut Sphinx. Fore and hind wings regularly scalloped, both with two or three transverse lines; fore wings light reddish brown to tawny; hind wings similar; palpi prominent; wingspread 2-3 inches.

Smerinthus geminatus (Say). The Twin-spotted Sphinx. Fore wings toothed on R, M, and Cu, light brown with patches and lines of darker brown, basally beneath pink; hind wings largely pink bordered by light brown, black "eyespot" prominent and usually superposed by two light blue bands; body tan to dark brown with a bell-shaped spot on disc of thorax; wingspread 2½-3 inches. Fig. 6.

Amphion nessus (Cramer). The Nessus Sphinx. Fore wings and thorax light brown to light orchid, fore wings with a reddish-brown subapical spot and a dark brown transverse median band; basal portion of hind wings brownish red, outer marginal fringe yellow; abdomen with one or two transverse median yellow lines, caudal brushes prominent; wingspread 1½-2 inches.

Sphecodina abboti (Swainson). Abbot's Sphinx. Fore wings with shades of brown and black, lines oblique on inner half, then zigzag to costal margin; basal portion of hind wing bright yellow; abdomen dark brown with two or three light transverse lines; wingspread 2¾ inches.

This species has not been reported in Oklahoma, however, it occurs in Arkansas and probably occurs here.

Haemorrhagia diffinis (Bolsduval). The Snowberry Clearwing; Bum-blebee Moth. Fore wings largely transparent except the basal area and along outer margins; hind wings largely transparent except the basal area and the outer and inner margins; thorax yellow; two middle segments of abdomen black, the remainder primarily yellow; wingspread 1½-2 inches.

Pholus achemon (Drury). The Achemon Sphinx. Fore wings light brown and may show a pink tint in fresh or well preserved specimens, a dark brown to black spot at apical area, a square spot at middle of inner margins and a triangular one near the outer margins; hind wings pink with brown outer margins and a dark line near the anal angles; wingspread approximately $3\frac{1}{4}$ inches. Fig. 7.

Pholus satellitia (Hubner). The Satellite Sphinx. In fresh specimens the entire insect displays light and dark shades of olive green; hind wings flesh colored basally, a large black spot between base and anal angle, pink along veins in fore wings.

Older specimens may change in color, the darker greens and blacks to dark brown and the lighter greens to light brown. A hint of green or yellowish-green may remain. Wingspread is about 4 inches. Fig. 8.

Xylophanes tersa (Linnaeus). The Texas Sphinx. The fore wings with shades of brown, lines from inner margin converging at extreme tip of wing; basal portion of hind wings black, bordered by a series of yellow triangular spots; dorsum of thorax, abdomen dark orange overlaid with shades of brown to olive; wingspread $2\frac{3}{4}$ inches. Fig. 9.

Proserpinus juanita (Strecker). Fore wings with shades of light brown to dark gray; wide dark transverse band in median area; basal portions of hind wings ranging from deep red to bright yellow with dark borders on outer margins; abdomen concolorous except for light colored fifth segment, light dorsal patches on segments six and seven; wingspread 2 inches. Fig. 10.

Darapsa choerilis (Cramer). The Azalea Sphinx. Fore wings with reddish-brown transverse band covering postmedian and submarginal areas, two similar but less distinct bands in submedian area; hind wings light pinkish-brown with dark pink tint near base; wingspread $2\frac{1}{2}$ inches. Fig. 12.

Darapsa myron (Cramer). The Hog Sphinx; Green Grape-vine Sphinx. Greenish tan to olive submarginal band and one similar band in submedian area of fore wings; hind wings largely tawny or burnt orange with dull spots at anal angles; wingspread $2\frac{1}{2}$ inches. Fig. 11.

Celerio lineata (Fabricius). The Lined Sphinx; White-lined sphinx. Fore wings brown to olive with a light medial band extending from the base to apex, several veins lined with white, outer margins evenly bordered by light brown; hind wings with wide pink stripe bordered brown; dorsum of thorax with longitudinal white stripes; abdomen with alternating black and white spots; wingspread $2\frac{1}{2}$ -4 inches. Fig. 13.

Sphinx drupiferarum (Smith & Abbot). The Wild Cherry Sphinx; Plum Tree Sphinx. Fore wings largely dark brown to black except for lighter areas along costal and outer margins, posterior basal scale tufts of fore wings white to light gray; usually light lateral spots on abdomen bordered by black, a black dorsal longitudinal line; wingspread $3\frac{1}{2}$ -4 inches. Fig. 14.

Sphinx vancouverensis (Edwards). Fore wings largely light tan becoming darker toward inner margin, lighter bands along costal and outer margins, posterior basal scale tufts of fore wings brown; light lateral spots on abdomen bordered by black, a black dorsal longitudinal line; wingspread 3 inches. Fig. 15.

Ceratonia amyntor (Hubner). The Four-horned Sphinx; Elm Sphinx. Outer margin of fore wings concave at Cu₁, a complex pattern of browns and tans with dashes of black; basal portion of hind wings light tan with an outer submarginal band of dark brown and a lighter outer marginal band; wingspread approximately $4\frac{1}{2}$ inches.

Sphinx chersis (Hubner). The Pen-marked Sphinx; Great Ash Sphinx. Fore wings light gray to brown with distinct black dashes; hind wings with a median flesh- or white-colored band bordered by dark brown bands; one and a partial second narrow oblique black line separating thoracic disc from tegula and almost converging at base of head; wingspread 3-4½ inches.

Atreides plebeius (Fabricius). Fore wings complexly marked with shades of brown, discal spots with stalk pointing toward outer margin; hind wings basically concolorous with dark brown; terminal long spur of hind tibiae as long as the metatarsus; wingspread approximately 2¾ inches.

Isogramma hageni (Grote). Fore wings complexly marked with brown, shaded with yellow-green; hind wings concolorous with dark brown. Fig. 16.

Ceratomia catalpae and *C. undulosa* resemble this species so strongly that it becomes difficult to separate the three adult forms. Because of this and the fact that a large series of specimens was not available at the time this paper was written, Forbes (1948) has been followed closely in the key as well as the descriptions.

Forbes states that in *C. undulosa* the fore wings are mixed dark brown and white, appearing pale gray. Head and thorax similar, with black central bars on collar and tegulae, fore wings with white discal dot, double basal, ante- and postmedial and subterminal brown lines, usually all distinct, and a wavy apical black streak; hind wings dull brown with a vague dark border or subterminal shade, and two transverse bands; postmedian line beneath well defined and wavy; fringes of fore wing about half white.

Forbes also states that *C. catalpae* is dull brown, usually light and grayish, the markings all diffuse except the apical streak. Markings beneath diffuse.

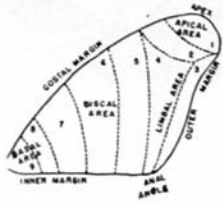
Isogramma hageni (Grote) differs in the green-shaded wings and spined fore tibia.

Ceratomia undulosa (Walker). The Waved Sphinx. See *Isogramma hageni* above. Fig. 18.

Ceratomia catalpae (Boisduval). The Catalpa Sphinx. See *Isogramma hageni* above. Fig. 17.

LITERATURE CITED

- Forbes, William T. M. 1948. Lepidoptera of New York and Neighboring States, Part II. Cornell Univ. Agric. Exp. Sta. Mem. 274: 176-202.



- 1 APICAL
- 2 SUBAPICAL
- 3 MARGINAL
- 4 SUBMARGINAL
- 5 POSTMEDIAN
- 6 MEDIAN
- 7 SUBMEDIAN
- 8 POSTBASAL
- 9 BASAL

FIG. 1



FIG. 5



FIG. 2



FIG. 6



FIG. 3



FIG. 7



FIG. 4



FIG. 8

Figure 1. Areas of the fore wing.
 Figure 2. *Protoparce rusticus*
 Figure 3. *Protoparce sextus*
 Figure 4. *Protoparce quinquemaculatus*

Figure 5. *Paonias excaecatus*
 Figure 6. *Smerinthus geminatus*
 Figure 7. *Pholus achemon*
 Figure 8. *Pholus satellitia*



FIG. 9



FIG. 14



FIG. 10



FIG. 15



FIG. 11



FIG. 16



FIG. 12



FIG. 17



FIG. 13



FIG. 18

Figure 9. *Xylophanes tersa*
 Figure 10. *Proserpinus juanita*
 Figure 11. *Darapsa myron*
 Figure 12. *Darapsa choerilis*
 Figure 13. *Celeria lineata*

Figure 14. *Sphinx drupiferarum*
 Figure 15. *Sphinx vancouverensis*
 Figure 16. *Isogramma hageni*
 Figure 17. *Ceratomia catalpae*
 Figure 18. *Ceratomia undulosa*