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NOTES ON THE SPHINGIDAE (LEPIDOPTERA) OF ARKANSAS*

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Between the years 1926 and 1937, the writer made a general study of the Lepidoptera of Arkansas, paying special attention to the *Sphingidae*. During the period thirty-two species in twenty-one genera were collected, and their relations studied.

Since nothing has been published on the *Sphingidae* of Arkansas or its neighboring states, collections were made widely over the state. Field notes on habits, food-relations, and other factors having an ecological bearing on each species were taken and the data tabulated. Most species were taken at night, between the hours of seven and nine. Collections on dark nights were made with the use of a carbide lamp equipped with a ten inch reflector. By the use of this light, the compound eyes of the moth were usually seen first, and frequently it was possible to collect specimens by hand in the glare of the lamp. Apparently, the light had little disturbing effect on the movements of the insects. On bright nights, the presence of the moths could be detected by movements of the flowers, even though the insects might not be visible, and a quick sweep of an insect net through the flower-bed would capture the specimen.

*The classification and catalogue numbers used are taken from "Check List of the Lepidoptera of Boreal America," by Wm. Barnes and J. McDonnough. All species included in this paper were collected by the writer and are in his collection. Determination of uncertain species was made by Mr. J. F. G. Clarke, United States National Museum, Washington, D. C. The writer is indebted to Professors E. P. Cheatum, S. W. Geiser and W. M. Longnecker of the Department of Biology, Southern Methodist University, for help with this paper.

Distributional data are presented in the body of the paper by county numbers, and graphically by the use of maps. The state-map, with counties numbered (Fig. 1) serves as a key for individual species-maps (Figs. 2, 3). Seasonal activities of the adult moth are indicated by Roman numerals, I-XII (January to December).

List of Species

662. *Herse cingulata* (Fabricius)

Occurrence—Counties 1, 2, 3, 10, 11, 12, 15, 16, 19, 24, 25, 26, 28, 29, 30, 32, 33, 34, 44, 45, 46, 47, 53, 54, 56, 61, 62, 72. The Pink-spotted Hawkmoth is of common occurrence over the state. VI 6 to X 22.

Habits—Moon-flowers *(Ipomoea bona-nox)* and *Petunia* are favored by this species in its crepuscular flight. On one warm, sultry night (IX 3, 1930), twenty-one specimens were collected on the Moon-flower, between seven and eight o'clock. On several occasions this species has been taken around bright lights during a rain.

Food-plant—Sweet-potato vines *(Ipomoea tuberosa)*.

664. *Protoparce sexta* (Johanssen)

Occurrence—Counties 1, 2, 3, 4, 5, 10, 11, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34, 35, 36, 37, 39, 41, 43, 44, 45, 46, 47, 53, 54, 55, 60, 61, 62, 70, 73, 74. V 25 to X 13. The Tomato Sphinx is a common sphingid throughout the state.

Habits—Like the preceding species, this large hawkmoth can sometimes be found abundantly around trumpet-shaped flowers of such plants as jimson weeds *(Datura)*, moon-flowers *(Ipomoea)*, and petunias *(Petunia)*. This species may often be caught with the naked hand while feeding.

Food-plant—Tomato, potato and other *Solanaceae*.

665. *Protoparce quinquemaculatus* (Haworth)

Occurrence—Counties 1, 2, 3, 4, 7, 8, 10, 14, 16, 17, 19, 22, 23, 25, 26, 27, 28, 30, 33, 35, 36, 37, 40, 44, 45, 46, 50, 52, 53, 54, 55, 56, 57, 59, 60, 61, 62, 63, 66, 67, 68, 69, 70, 74, 75. V 3 to X 16. The Five-spotted Hawkmoth is common over the entire state.

Habits—This species may visit as many as five or six different kinds of flowers in one night. It appears to be partial to *Canna*, phlox *(Phlox)*, petunias *(Petunia)*, moon-flowers *(Ipomoea)*, and four-o'clocks *(Mirabilis)*. It may frequently be captured by hand.

Food-plant—Tomato and tobacco plants constitute the chief diet.

666. *Protoparce rustica* (Fabricius)

Occurrence—Counties 26, 27, 28, 32, 33, 45, 46. VII 2 to X7. This southern species occurs commonly in the vicinity of Little Rock.

Habits—The Rustic Sphinx may be collected on petunias and moon-flowers, exhibiting a "preference" for the latter. The writer has often found this beautiful moth resting on the bark of trees during the day thus resembling a large *Catocala* moth. Around eight o'clock in the evening this species is most abundant; specimens, however, have been taken around bright lights as late as eleven o'clock.

Food-plant—According to W. J. Holland, the larvae feed upon fringe-bush *(Chionanthus virginica)* and jasmine.

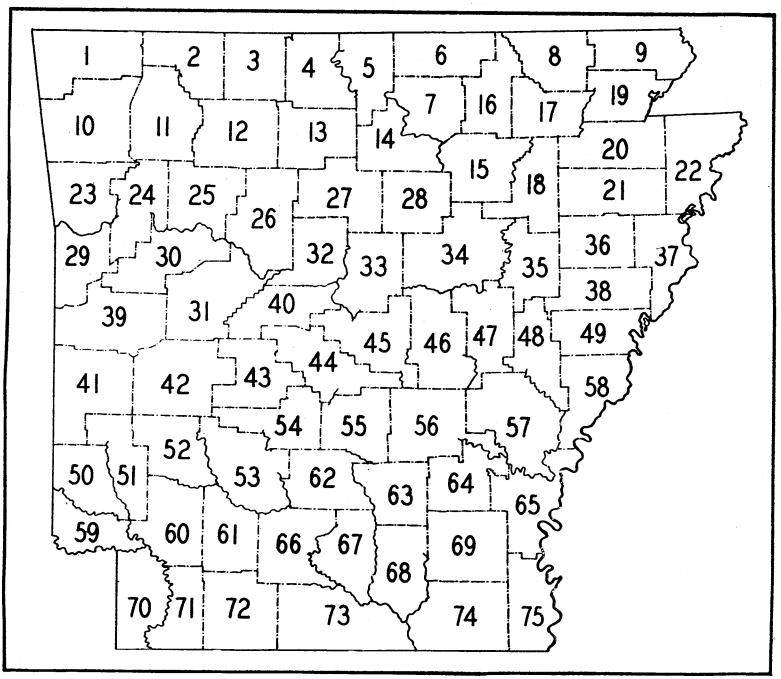

Fig. 1. Index map of the counties of Arkansas with numbers used in distribution data in this paper.

COUNTIES WITH THEIR CORRESPONDING NUMBERS

1. Benton
2. Carroll
3. Boone
4. Marion
5. Baxter
6. Fulton
7. Izard
8. Randolph
9. Clay
10. Washington
11. Madison
12. Newton
13. Searcy
14. Stone
15. Independence
16. Sharp
17. Lawrence
18. Jackson
19. Greene
20. Craighead
21. Poinsett
22. Mississippi
23. Crawford
24. Franklin
25. Johnson
26. Pope
27. Van Buren
28. Cleburne
29. Sebastian
30. Logan
31. Yell
32. Conway
33. Faulkner
34. White
35. Woodruff
36. Cross
37. Crittenden
38. St. Francis
39. Scott
40. Perry
41. Polk
42. Montgomery
43. Garland
44. Saline
45. Pulaski
46. Lonoke
47. Prairie
48. Monroe
49. Lee
50. Sevier
51. Howard
52. Pike
53. Clark
54. Hot Springs
55. Grant
56. Jefferson
57. Arkansas
58. Phillips
59. Little River
60. Hempstead
61. Nevada
62. Dallas
63. Cleveland
64. Lincoln
65. Desha
66. Ouachita
67. Calhoun
68. Bradley
69. Drew
70. Miller
71. Lafayette
72. Columbia
73. Union
74. Ashley
75. Chicot

670. *Chlaenogramma jasminearum* (Boisduval)

Occurrence—County 33. IX 13, 1930. The Ash Sphinx is rare in Arkansas; only one specimen has so far been taken. This one was found on a tree, in sparse woods whose predominant trees were oaks and hickories.

Habits—In regions where the species is more common, the moths favor petunias and phlox for their twilight feeding. The specimen collected by the writer was taken during the day while capturing *Catocala* moths.

Food-plant—Various species of Ash *(Fraxinus)*.

671. *Dolba hylaeus* (Drury)

Occurrence—Counties 10, 26, 28, 32, 33, 40, 44, 45, 46, 53, 61. VI 3 to X 19. The Papaw Sphinx occurs abundantly in counties 10, 33, and 45. It is restricted in its distribution to regions of the state in which papaw grows.

Habits—This rather small but beautiful sphinx moth can be found on petunias and several other of the small trumpet-shaped flowers, such as phlox and four-o'clocks. This moth makes its appearance usually around eight o'clock, remaining out for only about an hour.

Food-plant—Papaw *(Asimina triloba)*.

674. *Ceratomia amyntor* (Hubner)

Occurrence—Counties 1, 4, 5, 6, 7, 10, 11, 15, 18, 28, 32, 33, 34, 36, 41, 44, 45, 47, 50, 56, 59, 61, 63, 69, 70, 74. V 2 to X 23. A common species over the state.

Habits—The Four-horned Sphinx can be taken in abundance around lights during the summer months. Many times I saw this species resting on old fence rails during the day.

Food-plant—Elm *(Ulmus* sp.*)*.

675. *Ceratomia undulosa* (Walker)

Occurrence—Counties 10, 23, 24, 25, 26, 27, 28, 32, 33, 44, 45, 53, 54, 61, 62. V 1 to X 7. Another rather common species widely distributed over the state.

Habits—Very much like the preceding species. In flight it is more clumsy than the Four-horned Sphinx. This species is very easily taken around lights.

Food-plant—Privet (*Ligustrum* sp.) and ash (*Fraxinus* sp.).

676. *Ceratomia catalpae* (Boisduval)

Occurrence—Counties 10, 25, 26, 28, 32, 33, 45, 53, 54, 55, 57, 61, 65. IV 25 to X 3. The Catalpa Sphinx is abundant along the Arkansas River and has a general distribution over the entire State.

Habits—Attracted to lights. A small species whose movements are more rapid than 674 and 675.

Food-plant—The Catalpa *(Catalpa bignonioides)*; frequently defoliating trees.

677. *Isoparce cupressi* (Boisduval)

Occurrence—County 45. VIII 29, 1929, and VIII, 1930. This extremely rare species has been found on two occasions within the range covered by this paper. Up to now, this moth has been reported only from Georgia and Florida.

Habits—The two specimens in the writer's collection were taken around electric lights. One specimen (James McGowen, collector) was captured at North Little Rock at nine o'clock one warm, sultry night (VIII 29, 1929). The other specimen was found at the same locality about eleven o'clock on a rainy night, about a year later (VIII 20, 1930). One mile southeast of this site is a large group of cypress trees.

Food-plant—Unknown to the writer.

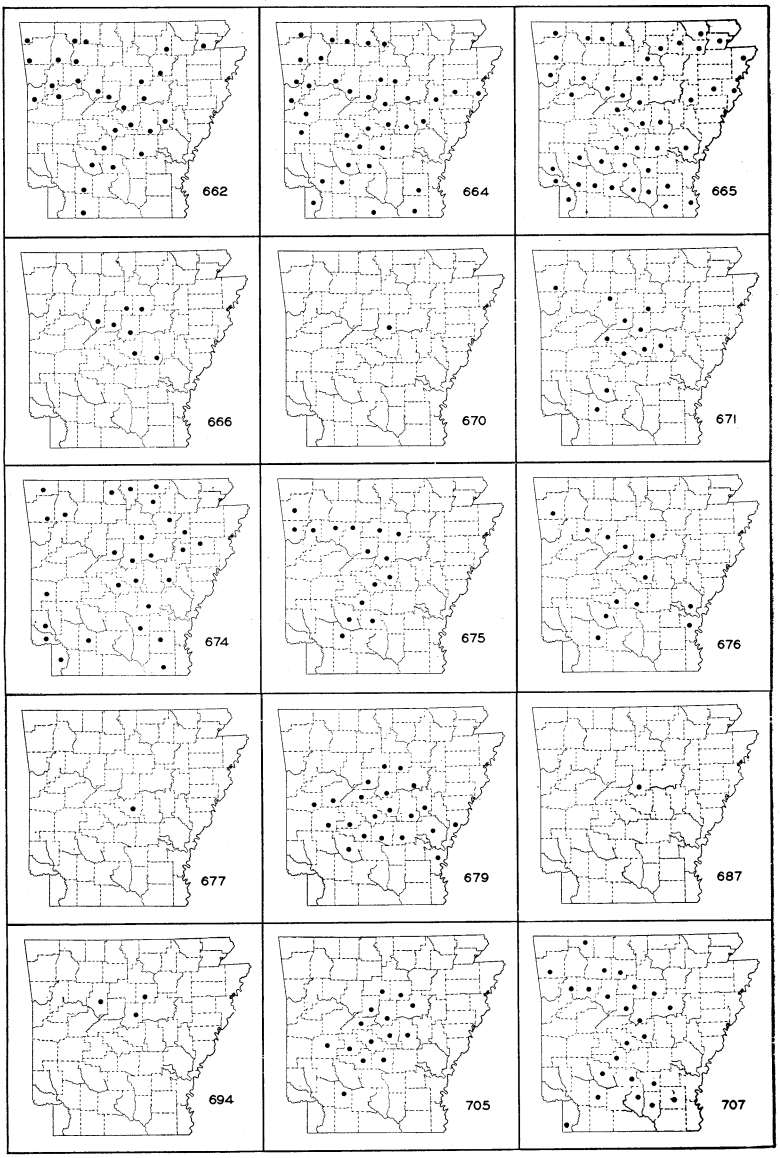

Fig. 2. Some Arkansas Sphingids whose geographical distribution is more completely known. Numbers on the maps correspond with those given in the body of the paper.

679. *Atreus plebeia* (Fabricius)

Occurrence—Counties 27, 28, 31, 32, 33, 34, 39, 40, 42, 43, 44, 45, 46, 47, 53, 54, 55, 56, 57, 58, 65. VI 4 to X 13. This is a very common species, especially in the central and southern parts of the state. It is one of the most common species in Pulaski County.

Habits—During the months of August and September, the Plebeian Sphinx is usually abundant around beds of Phlox, Petunia, and four-o'clocks. It feeds early, frequenting flowers from six to eight o'clock p.m.

Food-plant—Trumpet-vine *(Tecoma stans)*.

687. *Sphinx chersis* (Harris)

Occurrence—County 33. VI 6 to IX 20. This species appears to be rare in Arkansas.

Habits—My specimens were taken around lights.

Food-plant—Ash (*Fraxinus* sp.), wild-cherry (*Prunus* sp.), and allied plants.

694. *Sphinx gordius* (Cramer)

Occurrence—Counties 26, 28, 33. VI 12 to IX 3. The Gordian Sphinx is not common in Arkansas. Its distribution is apparently restricted to the north-central part of the state.

Habits—The writer has collected this drab-colored hawkmoth on phlox and petunias. The most favorable time for collecting this species is about dusk, during their feeding time.

Food-plant—Wild rose (*Rosa carolina*) and crab-apple (*Pyrus iowensis*).

705. *Smerinthus jamaicensis* (Drury)

f. norm. *geminatus* (Say)

Occurrence—Counties 27, 28, 32, 33, 34, 40, 42, 43, 44, 45, 46, 54, 55, 61. V 13 to X 2. This lovely hawkmoth has a wide range over the state, but usually occurs in small numbers.

Habits—The best place to collect the Twin-spot Sphinx is around lights. Observations in North Little Rock (Pulaski County) revealed this species active between the hours of 12:30 a.m. and 4:00 a.m.

Food-plant—Willows (*Salix*) and various species of wild-cherry (*Prunus*).

707. *Paonias exaecata* (Smith & Abbot)

Occurrence—Counties 2, 10, 12, 13, 24, 25, 26, 27, 28, 32, 33, 34, 44, 45, 53, 54, 61, 62, 63, 67, 68, 69, 70. VI 10 to X 14. The Blinded Sphinx, a beautiful species, is of common occurrence throughout the state.

Habits—Attracted to lights; easily taken after the moth has entered the circle of light.

Food-plant—Feeds upon various plants of the family *Rosaceae,* according to W. J. Holland.

708. *Paonias myops* (Smith & Abbot)

Occurrence—Counties 10, 26, 28, 32, 33, 45. Not nearly so common as the preceding species.

Habits—Similar to *P. excaecata;* usually makes its appearance around nine o'clock at night and again at three or four in the morning.

Food-plant—Like *P. excaecata* (Smith & Abbot) the larvae of this species feeds upon plants of the family *Rosaceae.*

710. *Cressonia juglandis* (Smith & Abbot)

Occurrence—Counties 1, 2, 10, 11, 14, 23, 25, 26, 27, 28, 31, 33, 43, 44, 45, 55, 61, 62, IV 28 to X 16. The Walnut Sphinx is found over the entire state, but is more abundant in the northern part.

Habits—This variable species is strongly attracted to lights. During the day, it may be found resting on old logs.

Food-plant—Black Walnut *(Juglans nigra)*.

711. *Pachysphinx modesta* (Harris)

Occurrence—Counties 26, 33, 40, 43, 44, 45, 46, 53, 54, 55, 56, 57, 61, 62, 63, 64, 65, 67, 68, 69, 74, 75. VI 11 to IX 20. This beautiful hawkmoth is found abundantly along the Arkansas River. It is especially numerous near Little Rock and also at the vicinity of the junction of the Arkansas River with the Mississippi.

Habits—The Big Poplar Sphinx is easily taken on the wing as its flight is clumsy and slow compared with the flight of most sphingids. Bright lights near poplar or willow groves are favorite locations for these moths at night. On several occasions, the writer has seen this species resting on the under side of willow branches with their bodies and wings hanging downward; when disturbed they will fall to the ground as if dead.

Food-plant—Willows (*Salix* sp.) and various species of the poplar genus *(Populus)*.

715. *Erinnyis ello* (Linnaeus)

Occurrence—Counties 33, 44, 45, 56. VIII 26 to X 17. Rather abundant in the late summer, especially in the vicinity of Little Rock.

Habits—*Petunia* and *Mirabilis* are the flowers most favored by the Ello Sphinx. The moths make their appearance around seven in the evening and remain out for about an hour.

Food-plant—Not known to the writer.

718. *Erinnyis obscura* (Fabricius)

Occurrence—County 45. X 10, 1928 to I 21, 1928, and I 2, 1929 to XI 17, 1929. This species, a straggler from the American tropics, appeared rather common during the years 1928 and 1929 along the Arkansas River at Little Rock.

Habits—The Obscure Sphinx shows a preference for *Phlox* and *Mirabilis*. The moths make their visit to the flowers around seven o'clock in the evening; and usually feed for about an hour.

730. *Aellopos titan* (Cramer)

Occurrence—County 45. This tropical American species appears only rarely in Arkansas. To the writer's knowledge only three specimens have been taken. All of these were caught at Little Rock on *Phlox,* (two IX 13, 1930, and the other one X 6, 1931).

Habits—The White-banded Day Sphinx has the nervous flight typical of the diurnal Sphingids; on the wing it resembles a very small humming-bird. Specimens observed by the writer were taken around four o'clock in the afternoon.

Food-plant—Apparently unknown.

732. *Haemorrhagia thysbe* (Fabricius)

Occurrence—Counties 1, 2, 6, 7, 8, 9, 10, 11, 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 40, 43, 44, 45, 46, 47, 52, 53, 54, 55, 56, 57, 60, 61, 62, 66, 67, 70, 71, 72, 74. V 3 to IX 22. This is the largest and most common species of the genus; found over the state, and is especially abundant in the Ozark Mountains.

Habits—This Sphingid is often found in company with bumble-bees (Bombidae). They are taken easily while feeding; when disturbed, their flight is very rapid. This species is attracted to snowberry *(Symphorocarpos* sp.), and it is no uncommon sight to see specimens feeding on the white blossoms of this plant during the morning (nine to eleven o'clock), and late in the afternoon.

Food-plant—According to W. J. Holland, the larvae feed upon arrow-wood *(Viburnum* sp.) and allied plants.

735. *Haemorrhagia diffinis* (Boisduval)

Occurrence—Counties 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 20, 21, 22 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 39, 40, 41, 42, 43, 44, 45, 46, 50, 51, 52, 53, 54, 55, 56, 60, 61, 62, 63, 67, 70. IV 18 to X 4.

f. vern. *tenuis* (Grote)

Occurrence—This variety is not so common as the summer form *H. axillaris* (Grote & Robinson). It is found only in the early spring, and consequently may be overlooked by the casual observer.

f. aest. *axillaris* (Grote & Robinson)

Occurrence—This typical summer variety is found abundantly over the state, and is especially numerous in the foothills of the Ozark Mountains.

Habits—The feeding time is very much like the preceding species. Bush Honeysuckle *(Lonicera* sp.) is a favorite plant for this species.

Food-plant—According to W. J. Holland, the caterpillar feeds upon snowberry (*Symphorocarpos* sp), and the honeysuckle (*Lonicera* sp.) and Weigela (*Diervilla* sp.)

737. *Pholus satellita* (Drury)

var. *pandorus* (Hubner)

Occurrence—Counties 1, 10, 23, 26, 28, 33, 45, 53, 54, 56, 61. VI 14 to X 27. Common occurrence throughout the state.

Habits—This species can be captured during the late summer as it feeds on *Phlox, Canna* and *Petunia;* however, a preference is shown for petunias. The best time for collecting is near eight o'clock in the evening.

Food-plant—Virginia creeper (*Parthenocissus quinquefolia*) and grape (*Vitis* sp.). I have reared green and brown forms of the larvae on both plants.

738. *Pholus achemon* (Drury)

Occurrence—Counties 25, 26, 27, 28, 32, 33, 45. VI 16 to IX 19. This species is more abundant in the north-central part of the state than in the southern since more grapes are raised in that section and Virginia creeper is more abundant.

Habits—The Achemon Sphinx has the habit of feeding later at night (nine to ten o'clock) than most crepuscular sphingids; it is also attracted to lights.

Food-plant—Like the preceding species, the caterpillar of this moth feeds upon certain vines. Near my home in Faulkner County, many of the pink larvae have been found dead under Virginia creeper vines, apparently killed by a hard, driving rain.

741. *Pholus fasciatus* (Sulzer)

Occurrence—Counties 33, 45, 61. VII 13 to X 24. The Lesser Vine Sphinx appears commonly during the months of August and September in the vicinity of Little Rock, but is rare in other sections of the state.

Habits—Phlox and *Petunia* are the flowers visited most often by this sub-tropical species. This species begins to feed at sundown, and remains on the wing, feeding, for two or three hours.

Food-plant—Various species of *Vitaceae.*

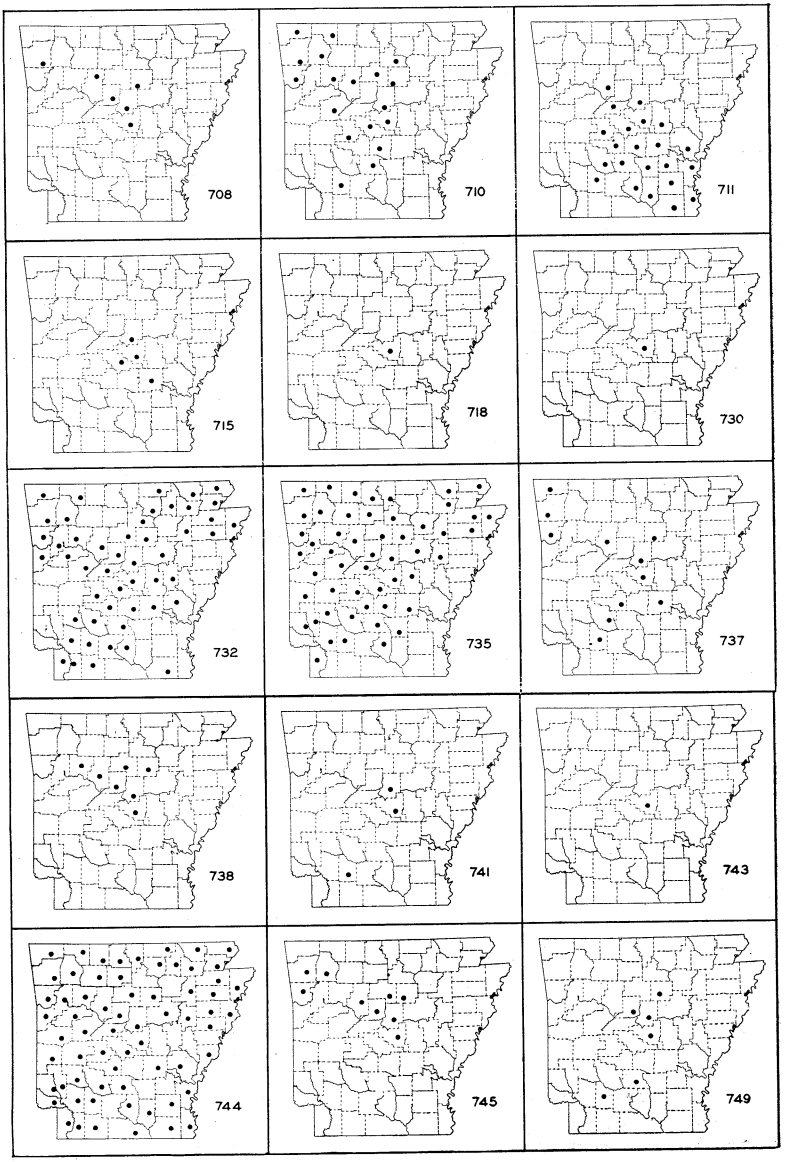

Fig. 3. Some Arkansas Sphingids whose geographical distribution is more completely known. Numbers on the maps correspond with those given in the body of the paper.

743. *Ampeloeca versicolor* (Harris)

Occurrence—County 45. VII 4, 1929. This species has been reported only once in the past eleven years. One specimen was caught at Little Rock, July 4, 1929, at 8:45 p.m., on jimson weed *(Datura stramonium)*.

Food-plant—Wild hydrangea *(Hydrangea arborescens)*.

744. *Ampeloeca myron* (Cramer)

Occurrence—Counties 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 50, 51, 52, 53, 54, 56, 57, 58, 59,60, 61, 62, 65, 67, 68, 69, 70, 71, 72, 73, 74, 75 . V 7 to X 3. This very common species is found over the entire state and would probably become a vineyard pest if not held in check by ichneumon wasps.

form *cnotus* (Hubner)

One specimen of this lighter form was collected at Little Rock. It was found, one morning IX 9, 1929, resting by a light that had been burning all night.

Habits—The Hog Sphinx is found, most commonly, around bright lights in the early part of the night. The writer has observed this moth sipping a mixture of brown sugar and vinegar prepared for noctuids.

Food plant—The larvae feed upon Virginia creeper (*Parthenocissus quinquefolia*), also wild and cultivated grapes *(Vitis)*.

745. *Darapsa pholus* (Cramer)

Occurrence—Counties 10, 11, 23, 26, 27, 28, 32, 33, 45. V 10 to X 3. The Azalea Sphinx is found throughout the state.

Habits—This species is attracted by bright lights, making their appearance usually between the hours of eight and eleven at night.

Food-plant—Azalea (*Rhododendron* sp.) and arrow-wood (*Viburnum* sp.).

749. *Amphion nessus* (Cramer)

Occurrence—Counties 28, 32, 33, 45, 61, 62. VII 19 to X 21. The Nessus Sphinx is frequently abundant along the Arkansas River near Little Rock.

Habits—The flight of this moth is rapid, although not as nervous as the flight of some of the other day flying hawkmoths. The writer has seen several congregated around overripe watermelon; they are also attracted to *Phlox*. As a general rule, this moth is more active on cloudy rather than sunshiny days.

Food-plant—Wild-grape (*Vitis* sp.).

760. *Xylophanes tersa* (Linnaeus)

Occurrence—Counties 2, 4, 6, 10, 11, 14, 15, 18, 21, 25, 26, 27, 28, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 5545, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75. VI 17 to X 22. The Tersa Sphinx is common over the state. During the latter part of summer, the writer has seen as many as thirty-three visit a bed of phlox and petunias in one night between the hours of seven and nine.

Habits—Phlox, Petunia, Mirabilis, and *Datura* are the flowers most frequented by this common species. Being early feeders, they come out before the last rays of the sun have left the sky and remain out for about two hours. On warm, sultry nights, during July and August, many of these moths can be seen flying around the street lights of Little Rock, Pine Bluff, and Fort Smith.

Food-plant—According to W. J. Holland, the madders, (*Manettia* sp., *Bouvardia* sp., and *Spermacoce glabra*).

762. *Celerio lineata* (Fabricius)

Occurrence—Counties 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17, 18, 19, 20, 22, 26, 28, 32, 33, 34, 43, 44, 45, 46, 52, 56, 57, 61, 62. V 2 to X 20. The Striped Morning Sphinx is probably the commonest of all North American sphingids. It is found abundantly over the state.

Habits—Although this species may feed during the day, it usually feeds at twilight. Petunias seem to be favored by this moth at night, and morning-glories *(Ipomoea purpurea)* during the early morning hours.

Food-plant—Purslane *(Portulaca oleracea)*.

LITERATURE

Barnes, W. and McDonnough, J., (1917). *Check List of the Lepidoptera of Boreal America.* Decatur, Ill.

Comstock, J. H., (1895). *A Manual for the Study of Insects.* Ithaca, N. Y.

Denton, S. F., (1898). *Moths and Butterflies of the United States East of the Rocky Mountains.* Boston, Mass.

Dyar, H. G., (1903). *A List of the North American Lepidoptera.* Bulletin No. 52 of the U.S. National Museum.

Holland, W. J., (1903). *The Moth Book.* Garden City, N. Y.