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Checklist of the Sphinx Moths of Arkansas

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Mountain, Barkshed Recreation Area, and the Upper Buffalo Wilderness Area are in the Ozark National Forest. Also listed on the Registry are Turkey Ridge in the St. Francis National Forest and Roaring Branch and Crystal Mountain in the Ouachita National Forest. Sugarberry Research Natural Area in the White River National Wildlife Refuge, Burdette Heronry held by the Arkansas Game and Fish Commission, Southern Bluff held by Bradley County, Perritt Ravine held by the Arkadelphia Public School District, and two Arkansas Highway Department roadcuts, one on U.S. Highway 65 south of Marshall and one at Interstate-430 and Cantrell Road in Little Rock, are listed on the Registry. Crater of Diamonds State Park is recognized in the Registry for its unique geological features.

Among the areas in private ownership which have been registered by the Commission are Alexander Cave; Brushy Creek; Rice Prairie; Stump Prairie; Hendrix Bog; International Paper Company's Grant County Redcockaded Woodpecker Sanctuary; Georgia-Pacific's Levi-Wilcoxon Forest; Warren Prairie (owned by Potlatch and Georgia-Pacific); and the Auersperg, Downs, Kocourek, Halijan, Webber, Fairmount and Beem Prairies - all in the Grand Prairie region.

But the Commission's potential is far from fulfilled. The Commission has approved a Master Operations Plan to supplement the *Arkansas Natural Area Plan*. The master plan projects a single goal which guides all Commission activity, and that goal is to include in the System at least one example of each distinctive natural community and natural feature and thus to provide a living record of the State's natural history. The Master Operations Plan defines vegetation types, special species, critical habitat, and hydrological, geological, archaeological, and scenic features of each natural division and subdivision of the State.

Though only small, isolated portions of the Delta and of the Coastal Plain have survived logging, farming, road construction, and other intrusions, Arkansas is in the fortunate position of still having available many significant examples of our richly diverse natural heritage, and it is the purpose of the Commission to locate the best of these areas and to include them in the Natural Areas System.

Natural area preservation is a citizen movement that is growing in Arkansas at a remarkable rate. The success of the movement depends on the efforts of many more people than the small Natural Heritage Commission staff. The Commission offers focus and provides a channel for promoting the cause. Its staff can even carry out a great deal of the field work. But there are only six staff members running an all-or-nothing race against time over a track that covers the entire State. There are specific ways in which the scientific community of Arkansas can help:

1. The new Geologic Map of Arkansas recently completed by the Arkansas Geological Commission and the U.S. Geological Survey is one of the natural area program's most useful tools. A similar map showing vegetation patterns in Arkansas that can be used in conjunction with the geologic map is needed desperately.
2. There is an equally serious need for a complete catalog of the State's biota. Publications that treat comprehensively the mammals, birds, reptiles, amphibians, and flora of Arkansas will provide a much needed supplement to the Commission's information, and it is hoped that a popular wildflower guide for Arkansas similar to those available for Missouri, Oklahoma, and Louisiana will be produced. Daily requests for source material are received; at present the best that can be done is to refer inquirers to those who are expert in the pertinent fields.
3. The geologic map leads one to expect certain features in specific areas, but there is little information on the exact location of the most outstanding geological features of the State. Especially needed are the locations of outstanding fossil beds and a comprehensive cave survey.
4. Also needed are leads to aquatic habitats of special quality and locations of the nesting sites of colonial birds.

If the Commission is provided with the locations of favorite research and demonstration areas, and if these areas meet System criteria and can be purchased at fair market value, an effort will be made to acquire them and to offer title and custody to the most appropriate state university.

The Natural Heritage Commission has no stronger link with any group than that with the academic community. The Commission depends on this community almost totally for identifications and for verification of element priorities. It recognizes that this is the most dependable source of leads to high-quality natural areas.

There are also other areas of possible cooperation between the professional academic community and the Commission.

1. In the next few months the Commission may have additional Comprehensive Employment Training Act (CETA) funds assigned to it for staff support, and chances are good that the CETA program will continue to function for at least two years. The Commission will be looking to the academic community for recommendations on candidates for the new staff positions.
2. Gradually the Commission will function more efficiently as a clearing house for information about the natural areas of the State and about special species. It can identify and suggest research problems and offer endorsement to applications for research grants.

The Department of Natural and Cultural Heritage is working to build a large, informed, enthusiastic and effective cadre of citizens to defend our heritage. Active participation by Arkansas' scientists is essential to the effort's success.

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A CHECKLIST OF THE SPHINX MOTHS OF ARKANSAS

This checklist of the sphinx moths of Arkansas brings together information contained in two major reports on the state's sphingids as well as the author's records gleaned from over twenty years of collecting in Washington County. The first report was by Avery Freeman (1938) who collected over the whole state, and the second was by Selman and Barton (1971) who reported their findings for northeast Arkansas, mainly Craighead County. The present list contains several additions to the aforementioned reports and makes note of the species taken in Washington County. The state total now stands at forty-three species. Of those on the list, all but three species are among the author's records for Washington County. These three are *Isoparce cupressi*, *Sphinx gordius*, and *Aellopos titan*. Selman and Barton (1971) recorded that *A. titan* was collected in Washington County by Richard Heitzman. Thus, only two species on the list have not been taken in Washington County. Except for the daytime fliers, collections in Washington County were almost exclusively made at street lights, lighted buildings, and some by light traps. The state list is expected to swell as more stray species, such as *Eumorpha labruscae* (Linnaeus), are likely to fly into the state, mainly from the south. Concerted collecting in the southern part of the state should also be productive of new species for the list.

The names on the list and the order of presentation are according to Hodges (1971).

I am greatly indebted for many collections made by the late Otis Hite and Dr. Maxine Hite Manley. I am also indebted for the help and interest shown by Richard Brown, Ed Gage, J. R. Heitzman, Bryant Mather, E. Phil Rouse, to my children who accompanied me on nightly collecting trips, and to my wife for her patience and forbearance.

CHECKLIST OF THE SPHINX MOTHS OF ARKANSAS

SPHINGINAE			
SPHINGINI			
Agrius cingulata (Fabricius)	Pink Spotted Hawkmoth	*Manduca rustica* (Fabricius)	Rustic Sphinx
Manduca sexta (Linnaeus)	Tobacco Hornworm	*Manduca jasminearum* (Guerin)	Ash Sphinx
Manduca quinquemaculata (Haworth)	Tomato Hornworm	*Dolba hyloeus* (Drury)	Pawpaw Sphinx
		Ceratomia amyntor (Geyer)	Four-horned Sphinx
		Ceratomia undulosa (Walker)	Waved Sphinx
		Ceratomia catalpae (Boisduval)	Catalpa Sphinx

General Notes

Ceratomia hageni Grote	Hagen's Sphinx
Isoparce cupressi (Boisduval)	Cypress Sphinx
Paratrea plebeja (Fabricius)	Plebeian Sphinx
Sphinx eremitus (Hübner)	Hermit Sphinx
Sphinx cherais (Hübner)	Cherais Sphinx
Sphinx canadensis Boisduval	Canadian Sphinx
Sphinx kalmiae J. E. Smith	Laurel Sphinx
Sphinx gordius Cramer	Gordian Sphinx
Sphinx drupiferarum J. E. Smith	Wild-cherry Sphinx
SMERINTHINI	
Smerinthus jamaicensis (Drury)	Twin-spotted Sphinx
Paonias excaecatus (J. E. Smith)	Blinded Sphinx
Paonias myops (J. E. Smith)	Small-eyed Sphinx
Cressonia juglandis (J. E. Smith)	Walnut Sphinx
Pachysphinx modesta (Harris)	Big Poplar Sphinx
MACROGLOSSINAE	
DILOPHONOTINI	
Pseudosphinx tetrio (Linnaeus)	Giant Gray Sphinx
Erinnyis alope (Drury)	Alope Sphinx
Erinnyis ello (Linnaeus)	Ello Sphinx
Erinnyis obscura (Fabricius)	Obscure Sphinx
Aellopos titan (Cramer)	White-banded Day Sphinx
Aellopos fadus (Cramer)	Fadus Day Sphinx
Hemaris thysbe (Fabricius)	Hummingbird Clearwing
Hemaris diffinis (Boisduval)	Snowberry Clearwing
PHILAMPELINI	
Eumorpha pandorus (Hübner)	Pandorus Sphinx
Eumorpha achemon (Drury)	Achemon Sphinx
Eumorpha fasciata (Sulzer)	Lesser Vine Sphinx
MACROGLOSSINI	
Sphecodina abbottii (Swainson)	Abbot's Sphinx
Deidamia inscripta (Harris)	Lettered Sphinx
Amphion nessus (Cramer)	Nessus Sphinx
Proserpinus juanita (Strecker)	Strecker's Day Sphinx
Darapsa versicolor (Harris)	Hydrangea Sphinx
Darapsa myron (Cramer)	Hog Sphinx
Darapsa pholus (Cramer)	Azalea Sphinx
Xylophanes tersa (Linnaeus)	Tersa Sphinx
Hyles lineata (Fabricius)	White-lined Sphinx

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MARE BASALT THICKNESS IN SINUS AESTUUM AND SINUS MEDII

An isopach map (Fig. 1) of the mare basalts in Sinus Aestuum and Sinus Medii (16°N to 6°S; 16°W to 4°E) has been constructed from measurements of the exposed external rim height of partially buried craters (De Hon, R.A. and J.D. Waskom. 1976. Geologic Structure of Eastern Mare Basins. Proc. Lunar Sci. Conf. 7th, p. 2729-2746). Earth-based and Orbiter IV photographs were used for crater selection, and elevations were derived from LAC topographic sheets. The total volume of basalts under study is approximately 41,000 km³ covering an area of 189,000 km².

Sinus Aestuum (16°N to 6°S; 16°W to 3°W), south of Mare Imbrium and west of Mare Vaporum and Sinus Medii, is a very old, irregularly shaped basin approximately 530 km N-S by 275 km E-W with a deeply flooded northern region between 7°N to 12°N; 8°W to 16°W. The basin configuration in the northern region of Sinus Aestuum has been greatly distorted by the superposition of the younger Imbrium basin as evident by the southward extent of the Imbrium rim. The pre-Imbrian basin is cut by the Imbrium radial structure and blanketed by Imbrium ejecta which is overlain by the younger mare material. The deeply flooded northern region of Sinus Aestuum is presumably the site of an impact due to a mascon, producing a gravity anomaly of 40 to 60 milligals (Sjogren, W.L. 1974. Apollo Gravity Results. Proc. Lunar Sci. Conf. 5th. V. 1, Plate 1) which exists in association with the increase in thickness. Craters used for depth measurements in the region of the mascon are almost totally obscured. Consequently, accurate depth measurements in this area are limited. However, the crater stadius located 10°N; 14°W on the western edge of the mascon indicates a probable thickness of basalts in this immediate area of 1250 m.

Widespread shallow flooding in the southern region of Sinus Aestuum is separated from the deeply flooded northern region by a mare ridge complex. Shallow flodding is evident by the relatively large number of partially buried craters which are preserved. These partially buried craters exhibit significant degradation, leaving some crater rims existing only as incomplete arcs. Severely degraded craters were used for depth measurements in areas where no other data is available. The error involved is unknown, but the data seems sufficient to reflect the general mare basalt thickness trend from approximately 1250 m in the northern part of the basin to approximately 250 m in the southern part.

Data compiled from partially buried craters in Sinus Aestuum indicate a thickness of approximately 1250 m in the deeply flooded northern region, but an overall average thickness of only 192.5 m. Total volume of mare basalts in Sinus Aestuum is calculated to be approximately 32,000 km³ covering an area of 167,678 km².

Sinus Medii (4°N to 2°S; 3°W to 4°E) is a very small irregular basin which is, as Sinus Aestuum, a pre-Imbrian structure. The basin and interior craters have been significantly degraded by ejecta bombardment from surrounding impact structures prior to mare emplacement. Evidence of crater degradation is provided by the incomplete arc of the crater Oppolzer located on the south-central edge of Medii visible on Orbiter IV photographs. A small mascon with center at approximately 2°N; 1°E, correlates with the thickness increase in the central region of Medii. Flooding in Sinus Medii is of considerable extent with the greatest thickness located in the central interior. Buried craters inside the Medii basin are almost totally obscured by the mare basalts; however, the use of earth-based photographs with a wide range of sun angles revealed craters that were otherwise obscured.

Buried craters in Sinus Medii suggest that the basin formation is caused by a series of overlapping impact structures with the deepest point calculated to be approximately 1233 m, with an overall average thickness of 429 m. Total volume of basalts in Sinus Medii is approximately 9,000 km³ covering an area of 21,471 km².