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**A LIST OF THE BUTTERFLIES  
(LEPIDOPTERA: PAPILIONOIDEA) OF THE  
LA RUE-PINE HILLS ECOLOGICAL AREA**

R. W. Sites and J. E. McPherson<sup>1</sup>

ABSTRACT

A survey of the adult butterfly fauna of the La Rue-Pine Hills Ecological Area, Union County, Illinois, was conducted from March through July in 1979, and March through November in 1980. Forty nine species and subspecies were collected including all six papilionids known to occur in Illinois. Notes were taken on seasonal flight periods and butterfly-plant associations.

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The La Rue-Pine Hills Ecological Area (hereafter referred to as Pine Hills) is located about 18 miles northeast of Cape Girardeau, Missouri, in the northwest corner of Union County, Illinois, and is part of the Shawnee National Forest. Although it encompasses only about 3 miles<sup>2</sup>, it is an area well known for its plant and animal diversity (McPherson and Mohlenbrock 1976). Within Pine Hills are dry forests and hill prairies atop limestone bluffs, and moist forests at the base of these bluffs which surround La Rue Swamp and Winters Pond. The topography and vegetation of Pine Hills were discussed in detail by McPherson and Mohlenbrock (1976).

Irwin and Downey (1973) compiled an annotated checklist of the butterflies and skippers of Illinois and included several Pine Hills records. Of these records, the only butterflies listed were *Atlides halesus* (Cramer), *Celastrina argiolus pseudargiolus* (Boisduval & Le Conte) and *Lethe creola* (Skinner). Thus, no study has been conducted in which the Pine Hills butterflies have been extensively surveyed. Presented here is a list of the butterflies (exclusive of the skippers) of Pine Hills, flight periods, and butterfly-plant associations; no immature stages were included in the survey. Also presented is a list of the butterflies of possible occurrence in Pine Hills.

MATERIALS AND METHODS

Collecting trips were made at about one week intervals from March through July in 1979, and March through November in 1980. Trips were generally made on warm, sunny days to take advantage of increased flight activity. Since Pine Hills encompasses such a small geographical area, it was possible to thoroughly collect in several habitats (e.g., open fields, woodland margins, lake and swamp edges, woodland paths) during each trip.

Specimens collected during this study are deposited in the Southern Illinois University Entomology Collection, Zoology Research Museum (SIUEC). Records of their flight activity were supplemented with those obtained from Pine Hills specimens (i.e., collection dates) deposited in the SIUEC by other collectors. Samples of plants upon which butterflies were observed to land were returned to the laboratory for identification.

RESULTS AND DISCUSSION

Forty nine species and subspecies of butterflies were collected during this study (Table 1). To this total can be added *Atlides halesus* and *Lethe creola* reported by Irwin and Downey

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Table 1. Flight activity periods and plant associations of the butterfly taxa found during 1979–1980 in the La Rue-Pine Hills Ecological Area.

Taxon	Flight Activity Period	Butterfly-Plant Association <sup>a,b</sup>
PAPILIONIDAE		
<i>Battus philenor</i> (L.)	2 May–28 Sept.	1,7,16,20,29,36
<i>Eurytides marcellus</i> (Cramer)	14 April–19 Sept.	1,4,6,7,16,18,19,20,21,24
<i>Papilio cresphontes</i> Cramer	17 Aug.	
<i>Papilio glaucus</i> L.	16 April–19 Sept.	1,4,7,12,15,18,23,24,28,29,36
<i>Papilio polyxenes asterius</i> Stoll	27 April–9 Oct.	3,12,14,15,29,36
<i>Papilio troilus</i> L.	27 April–28 Sept.	1,7,12,15,16,17,20,24,29,36
PIERIDAE		
<i>Anthocharis midea</i> (Hübner)	14 April–5 May	2,4,19,35
<i>Artogeia rapae</i> (L.)	14 April–8 Nov.	
<i>Colias eurytheme</i> Boisduval	10 May–8 Nov.	1,3,7,8,11,17,22,26,27,28,29, 30,33,34,36
<i>Colias philodice</i> Godart	22 April–8 Nov.	1,3,7,26,27,28,29,34,36
<i>Eurema lisa</i> (Boisduval and Le Conte)	21 Aug.–8 Nov.	1,27,28
<i>Eurema nicippe</i> (Cramer)	28 Sept.–1 Nov.	34
<i>Nathalis iole</i> Boisduval	8 Nov.	
<i>Phoebis sennae eubule</i> (L.)	23 July–8 Nov.	1,3,10,12,13,17,22,29,34,36
<i>Pontia protodice</i> (Boisduval and Le Conte)	14 Sept.–8 Nov.	26,27
<i>Zerene cesonia</i> (Stoll)	4 May–28 Sept.	28,29,34
LYCAENIDAE		
<i>Atlides halesus</i> (Cramer) <sup>c</sup>	17 Sept. <sup>c</sup>	
<i>Celastrina argiolus pseudargiolus</i> (Boisduval and Le Conte)	2 April–14 Sept.	5
<i>Celastrina ebenina</i> Clench	14 April–5 May	
<i>Everes comyntas</i> (Godart)	2 May–8 Nov.	20,26,34
<i>Hylolycaena hyllus</i> (Cramer)	19 May–6 Sept.	
<i>Incisalia henrici</i> (Grote and Robinson)	20 April–5 May	19
<i>Lycaena phlaeas americana</i> Harris	2 June–8 Nov.	
<i>Mitoura gryneus</i> (Hübner)	5 May	
<i>Parrhasius m-album</i> (Boisduval and Le Conte)	2 May–19 Sept.	25
<i>Satyrium calanus falacer</i> (Godart)	9 June–4 Oct.	
<i>Strymon melinus humuli</i> (Harris)	16 June–8 Nov.	1,25,26,29,34,36
LIBYTHEIDAE		
<i>Libytheana bachmanii</i> (Kirtland)	2 July–9 Oct.	26,29
NYMPHALIDAE		
<i>Anaea andria</i> Scudder	2 April–9 Oct.	
<i>Asterocampa celtis</i> (Boisduval and Le Conte)	30 May–28 Sept.	
<i>Asterocampa clyton</i> (Boisduval and Le Conte)	1 June–16 Sept.	
<i>Basilarchia archippus</i> (Cramer)	1 June–9 Oct.	1,7,14,28,29,34
<i>Basilarchia arthemis astyanax</i> (Fabricius)	20 May–9 Oct.	7
<i>Charidryas nycteis</i> (Doubleday)	1 June–14 Sept.	7,9,28,32
<i>Euphydryas phaeton ozarkae</i> Masters	30 May–20 June	
<i>Euptoieta claudia</i> (Cramer)	6 Sept.–8 Nov.	36

Table 1. (Continued)

Taxon	Flight Activity Period	Butterfly-Plant Association <sup>a,b</sup>
<i>Nymphalis antiopa</i> (L.)	16 March–2 July	
<i>Phyciodes tharos</i> (Drury)	27 April–8 Nov.	1,3,10,26,27,28,29,34,36
<i>Polygonia comma</i> (Harris)	2 April–9 Oct.	
<i>Polygonia interrogationis</i> (Fabricius)	16 April–9 Oct.	
<i>Polygonia progne</i> (Cramer)	16 March	
<i>Precis coenia</i> (Hübner)	2 June–8 Nov.	1,26,28,34,36
<i>Speyeria cybele</i> (Fabricius)	1 June–28 Sept.	1,7,12,16,20,25,29,36
<i>Vanessa atalanta rubria</i> (Fruhstorfer)	2 April–19 Sept.	1,2,7
<i>Vanessa cardui</i> (L.)	7 April–14 Sept.	
<i>Vanessa virginiensis</i> (Drury)	20 April–25 Oct.	36
DANAIDAE		
<i>Danaus plexippus</i> (L.)	20 April–9 Oct.	7,12,15,25,26,28,29,31,34,36
SATYRIDAE		
<i>Cyllopsis gemma</i> (Hübner)	23 April–6 Aug.	
<i>Lethe anthedon</i> (Clark)	10 June–23 July	
<i>Lethe creola</i> (Skinner) <sup>c</sup>	1 Sept. <sup>c</sup>	
<i>Megisto cymela</i> (Cramer)	1 June–2 July	

<sup>a</sup>Involves only adult butterflies.

<sup>b</sup>Numbers correspond to plant numbers in Table 2.

<sup>c</sup>Irwin and Downey (1973).

(1973) for Pine Hills but not found during the present study. This total represents about 53% of the total number of butterfly taxa known to occur in Illinois (Irwin and Downey 1973, Sites and McPherson 1980). Of the 51, *Atliades halesus*, *Incisalia henrici* (Grote and Robinson) and *Cyllopsis gemma* (Hübner) occur primarily in southern Illinois, and *Anthocharis midea* (Hübner), *Phoebis sennae eubule* (L.), *Celastrina ebenina* Clench, *Euphydryas phaeton ozarkae* Masters and *Lethe creola* occur primarily in the southern half of the state; the remaining 43 occur statewide.

Twenty nine of the 49 butterfly taxa (Table 1) were found on 36 plant species in bloom (Table 2). Since it was difficult to approach the butterflies without disturbing them, it was usually impossible to determine whether or not they were actually feeding on the plants. Thus, we have chosen to use "butterfly-plant association" rather than "host plant" (Table 1).

Table 2. List of the plant species on which butterflies were found during 1979–1980 in the La Rue-Pine Hills Ecological Area. Each plant number corresponds to the same number in Table 1 under the Butterfly-Plant Association heading.

Family	No.	Species
Polygonaceae	1	<i>Polygonum pensylvanicum</i> L.
Portulacaceae	2	<i>Claytonia virginica</i> L.
Caryophyllaceae	3	<i>Saponaria officinalis</i> L.
Ranunculaceae	4	<i>Delphinium tricorne</i> Michaux
Papaveraceae	5	<i>Dicentra cucullaria</i> (L.)
Rosaceae	6	<i>Rubus occidentalis</i> L.
Leguminosae	7	<i>Desmanthus illinoensis</i> (Michaux)
	8	<i>Desmodium canescens</i> (L.)
	9	<i>Trifolium pratense</i> L.

Table 2. (Continued)

Family	No.	Species
Balsaminaceae	10	<i>Impatiens biflora</i> Walter
Malvaceae	11	<i>Sida spinosa</i> L.
Lythraceae	12	<i>Decodon verticillatus</i> (L.)
Onagraceae	13	<i>Oenothera biennis</i> L.
Umbelliferae	14	<i>Daucus carota</i> L.
Asclepiadaceae	15	<i>Asclepias syriaca</i> L.
	16	<i>Asclepias tuberosa</i> L.
Convolvulaceae	17	<i>Ipomoea pandurata</i> (L.)
Polemoniaceae	18	<i>Phlox divaricata</i> L.
Hydrophyllaceae	19	<i>Phacelia purshii</i> Buckley
Labiatae	20	<i>Monarda fistulosa</i> L.
	21	<i>Prunella vulgaris</i> L.
Bignoniaceae	22	<i>Campsis radicans</i> (L.)
Rubiaceae	23	<i>Cephalanthus occidentalis</i> L.
Campanulaceae	24	<i>Campanula americana</i> L.
Compositae	25	<i>Actinomeris alternifolia</i> (L.)
	26	<i>Aster ericoides</i> L.
	27	<i>Aster praealtus</i> Poiret
	28	<i>Bidens aristosa</i> (Michaux)
	29	<i>Cirsium discolor</i> (Muhlenberg)
	30	<i>Helianthus strumosus</i> L.
	31	<i>Lactuca floridana</i> (L.)
	32	<i>Rudbeckia serotina</i> Nuttall
	33	<i>Rudbeckia subtomentosa</i> Pursh
	34	<i>Solidago altissima</i> L.
	35	<i>Taraxacum officinale</i> Weber
	36	<i>Vernonia missurica</i> Rafinesque-Schmaltz

Table 3. List of the butterflies occurring in southern Illinois which may occur in the La Rue-Pine Hills Ecological Area.

Taxon	Southern Illinois County Records
<b>LYCAENIDAE</b>	
<i>Calycopis cecrops</i> (Fabricius)	Jackson <sup>a</sup> , Pope <sup>a</sup> , Union <sup>a</sup> , Williamson <sup>a</sup>
<i>Euristrymon ontario</i> (Edwards)	Jackson <sup>a</sup>
<i>Harkenclenus titus</i> (Fabricius)	Jackson <sup>a</sup> , Pope <sup>a,b</sup> , Williamson <sup>a</sup>
<i>Incisalia niphon</i> (Hübner)	Jackson <sup>a</sup> , Pope <sup>a</sup>
<i>Satyrium caryaevorus</i> (McDunnough)	Jackson <sup>a</sup>
<i>Satyrium liparops strigosa</i> (Harris)	Hardin <sup>a</sup> , Jackson <sup>a</sup>
<b>LIPHYRIDAE</b>	
<i>Feniseca tarquinius</i> (Fabricius)	Jackson <sup>a,b</sup> , Johnson <sup>a</sup> , Pope <sup>a</sup> , Union <sup>a</sup>
<b>NYMPHALIDAE</b>	
<i>Clossiana bellona</i> (Fabricius)	Jackson <sup>b</sup>
<b>HELICONIIDAE</b>	
<i>Agraulis vanillae nigrior</i> Michener	Hardin <sup>a</sup> , Jackson <sup>a</sup>
<b>SATYRIDAE</b>	
<i>Cercyonis pegala olympus</i> (Edwards)	Gallatin <sup>a</sup> , Jackson <sup>a,b</sup> , Williamson <sup>b</sup>

<sup>a</sup>Irwin and Downey (1973).<sup>b</sup>Data from specimens deposited in the SIUEC.

Ten butterfly taxa that occur in southern Illinois have not, as yet, been recorded from Pine Hills (Table 3). The southern Illinois distribution records of these butterflies are given in Table 3 and are based on Irwin and Downey's 1973 checklist and on specimens housed in the SIUEC. Since these taxa have been collected in Union County and/or nearby counties, their eventual discovery in Pine Hills is a strong possibility.

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#### *Note added in proof:*

The following early 1981 capture records extend the corresponding 1979-1980 flight activity periods listed in Table 1:

#### PAPILIONIDAE

*B. philenor*. 12 April

#### PIERIDAE

*A. midea*. 27 March

*E. lisa*. 17 April

*E. nicippe*. 17 April

#### LYCAENIDAE

*E. comyntas*. 17 April

*M. gryneus*. 17 April

*S. melinus humuli*, 17 April