

**A Survey for Three Rare Butterflies  
In the Pembroke Savanna Region**

Presented to:

**The Nature Conservancy of Illinois**

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## Introduction

The Nature Conservancy and the States of Illinois and Indiana are presently engaged in a major effort to restore ecosystem functions and preserve/enhance biodiversity within the Kankakee Sands ecoregion, located in Illinois and Indiana along the Kankakee River. Pembroke Savanna, a relatively intact sand savanna/woodland occurs in Kankakee and Iroquois Counties in Illinois, and Newton County, Indiana. Many state-listed endangered and threatened species are known, or suspected, from Pembroke Savanna.

Three significant butterfly species may still occur within Pembroke Savanna: the Indiana Endangered, and Illinois Threatened, Regal Fritillary (*Speyeria idalia*); the Indiana Endangered, and Illinois Threatened, Ottoe Skipper (*Hesperia ottoe*); and the rare Indian Skipper (*Hesperia sassacus*). These three butterflies are collectively referred to as 'target species' in this document. The proposed survey of Pembroke Savanna will attempt to determine 1) the locations of the target species, 2) their habitat utilization, and 3) critical habitat areas for each species, should they be found.

## Location

The study area consists of protected natural areas in the Illinois portion of Pembroke Savanna Region (Fig. 1). Currently, there are approximately 15-20 protected natural areas (numbers are fluid as sites are being rapidly acquired at this time), with The Nature Conservancy (TNC) having approximately a dozen landholdings in Pembroke and Stane Townships in Kankakee County, Illinois. The State of Illinois' Department of Natural Resources (IDNR) and Iroquois County Conservation District also own land in this area and in Beaverville Township, Iroquois County, Illinois.

## Methodology

In the spring of 2002, I visited 6 of the most promising sites to inspect for hostplants and appropriate habitats for the three species. Violets (*Viola* species were noted, and degree of openness noted (Savanna needed for Ottoe Skipper and Regal Fritillary, open woodland for Indian Skipper). Closed canopies were deemed unsuitable for all three species. This narrowed the search down to nine sites for intensive surveying. Sites were surveyed from May 26<sup>th</sup> to July 7<sup>th</sup>, at which time the

Regal Fritillary populations were dispersing and declining in numbers and the flight times of the Indian Skipper and Ottoe Skippers were over or in decline. A total of eight visits (averaging one per 5.3 days) were made to the study area. Sites were canvassed with the goal of observing the target species. A net and camera were carried, with individuals netted, as needed, to determine species and sex. Representative photos of each species at each site were taken. All individuals were released. On each date, at each site, the number of individuals observed, their sex (when determinable), degree of wear, and behavior were noted.

Additionally, while traveling through Pembroke Savanna, unprotected lands with a high potential for harboring the target species were mapped. Casual observations for target species on unprotected land were also made.

### Results

Two populations of Regal Fritillary's were found, as well as six populations of Indian Skippers (Figure 1). These species usually occurred in anticipated habitats, with the exception of Pembroke Savanna Northwest, which did not support Indian Skippers. Regal Fritillary's were found only in large, very open savannas. The Ottoe Skipper was not found, although a misidentification, later corrected by examining photographs, led to a brief period of excitement regarding this species. The Ottoe Skipper was anticipated to occur in open savanna or prairie.

Indian Skippers were observed between June 7 – 28. The Indian Skipper was searched for between May 4<sup>th</sup> and July 7<sup>th</sup>. All populations were small and utilized a remarkably similar habitat. Indian Skippers were found in woodland openings typically less than 30 meters wide on the narrowest dimension. Sand Puccoon (*Lithospermum carolinensis*) was blooming in all occupied openings, and 6 of 7 nectaring observations were on sand puccoon. The male:female sex ratio was 1:1 (10:8 with 3 not identified to sex). Flight times occurred throughout the day (10:00 a.m. – 6:35 p.m.). Perching was the commonest activity (67%), and occurred below 4' in elevation, typically on short herbaceous plants.

Figure 1. Occurrence of target species at each survey site, and their anticipated habitats.

Site	Habitat (Supported Species)		
	Savanna (Ottoe Skipper) (Regal Fritillary)	Woodland (Indian Skipper)	Closed Woods Not habitat for these species
Guiding Star Savanna	Regal Fritillary		
Hahn Savanna		Indian Skipper	
Hooper Branch Nature Preserve		Indian Skipper	
Iroquois County Conservation Area		Indian Skipper	
Pembroke Savanna East	Regal Fritillary		
Pembroke Savanna Northwest		X	
Pembroke Savanna Southwest		Indian Skipper	
Section 14 Woods		Indian Skipper	
Section 27 Woods		Indian Skipper	

Figure 2. Numbers of *Hesperia sassacus* per site and date.

Site	Location	Date (# Observed)		
Hahn Savanna	A	June 12 (3)		
Hooper Branch Nature Preserve	A Trailhead	June 7 (2)		
	B East Rdsde	June 7 (1)	June 16 (1)	
Iroquois County Conservation Area	A	June 16 (1)		
Pembroke Savanna Southwest	A	June 7 (3)	June 16 (3)	June 28 (1)
Section 14 Woods	A	June 7 (2)	June 16 B (1)	
Section 27 Woods	A First spot	June 9 (2)		
	B North	June 9 (1)		
	C Northernmost	June 9 (1)		

Figure 3. Indian Skipper observations

#	Site	Date	Wear	Sex	Activity		
					Nectaring	Perching	Flying
1	Hooper Branch (A)	6/7/02	1	M		POAPRA	
2	Hooper Branch (A)	6/7/02	?	?			X
3	Hooper Branch (B)	6/7/02	1	?		LOW FOL.	
4	Pembroke SW (A)	6/7/02	1	F		EUPCOR	
5	Pembroke SW (B)	6/7/02	1	F	LITCAR		
6	Pembroke SW (C)	6/7/02	1	F	LITCAR		
7	Section 14 Woods	6/7/02	1	M		HELRIg	
8	Section 14 Woods	6/7/02	1	F		ROSCAR	
9	Section 27 Woods (A)	6/9/02	1	M	LITCAR		
10	Section 27 Woods (B)	6/9/02	1	M	LITCAR		
11	Section 27 Woods (C)	6/9/02	1	M		CXPENN	
12	Section 27 Woods (D)	6/9/02	1	F		ANDSCO	
13	Sweetfern Savanna	6/12/02	1	?		LOW FOL.	
14	Sweetfern Savanna	6/12/02	1	M		QUEVEL	
15	Sweetfern Savanna	6/12/02	1	M		ROSCAR	
16	Iroquois County Cons. (A)	6/16/02	1	M		RUBFLA	
17	Hooper Branch (B)	6/16/02	1	F		AMOCAN	
18	Pembroke SE (A)	6/16/02	2	M	LITCAR		SWIRL
19	Pembroke SE (A)	6/16/02	3	F		QUEVEL	SWIRL
20	Section 14 (B)	6/16/02	1	M		AMOCAN	
21	Pembroke SE (A)	6/28/02	2	F	LITCAR ERISTR		

### Analysis

Precise locations and observational data for each species were entered into ArcView and overlain on a 1998 aerial photograph, along with a USGS topographic map. Data was examined for temporal distribution patterns, with the goal of determining larval emergence areas, dispersal patterns and adult foraging areas. Additionally, critical habitat will be indicated as a separate layer in ArcView.

### Final Product

The final product will be a written text presenting the data, including maps, photographic documentation of sites and target species, aerial photographs of site locations, observed locations of

target species, and critical habitat. Digitized materials will also be provided in ArcView and Microsoft formats.

### **Funding**

Funding is being requested from the IDNR Wildlife Preservation Fund and TNC Research Funds. Each organization is being requested to provide matching funds in the amount of \$1,000 each, for a total of \$2,000, with the remainder provided pro bono (Table 1).