

STATUS ASSESSMENT UPDATE (2010)

Poweshiek Skipperling
Oarisma poweshiek (Parker)
(Lepidoptera: Hesperidae)

**Illinois, Indiana, Iowa, Michigan, Minnesota
North Dakota, South Dakota, Wisconsin**

Contract #301818M448

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This document is a compilation of biological data and a description of past, present, and likely future threats to Poweshiek skipperling (*Oarisma poweshiek*). It does not represent a decision by the U.S. Fish and Wildlife Service (Service) on whether this taxon should be designated as a candidate species for listing as threatened or endangered under the Federal Endangered Species Act. That decision will be made by the Service after reviewing this document; other relevant biological and threat data not included herein; and all relevant laws, regulations, and policies. The result of the decision will be posted on the Service's Region 3 Web site (refer to: <http://www.fws.gov/midwest/endangered/lists/concern.html>). If designated as a candidate species, the taxon will subsequently be added to the Service's candidate species list that is periodically published in the Federal Register and posted on the World Wide Web (refer to: <http://endangered.fws.gov/wildlife.html>). Even if the taxon does not warrant candidate status it should benefit from the conservation recommendations that are contained in this document.

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TABLE OF CONTENTS

Abstract	4
Introduction.....	5
Status Updates per State/Province	6
Iowa.....	6
Michigan	12
Minnesota.....	14
North Dakota.....	18
South Dakota.....	19
Wisconsin.....	22
Manitoba	23
Discussion.....	23
References.....	24
Table 1. Summary of survey results for Iowa Poweshiek skipperling sites with populations extant as recently as the 1990s.	8
Table 2. Summary of recent (2005-2009) survey results and last year observed for Michigan populations of Poweshiek skipperlings (Michigan Natural Heritage Program Data 2009).	13
Table 3. 2005 surveys at Minnesota sites with previously documented populations of selected target butterfly species and/or potential for them.....	16
Table 4. Western Minnesota butterfly surveys: site and county summary statistics for historic target species records and target species recorded during 2007 and 2008 surveys (targeted sites include optional sites surveyed in 2008).....	17
Table 5. Summary of 2005-2008 survey results for target species at South Dakota monitoring sites (Skadsen 2005, 2006, 2007, 2008).	20
Table 6. Summary of 2005-2008 survey results for target species at additional South Dakota sites (Skadsen 2005, 2006, 2007, 2008).	21

Abstract

This report provides an update to the status assessment and conservation guidelines for the Poweshiek skipperling (*Oarisma poweshiek*) prepared for the U.S. Fish and Wildlife Service (FWS) in 2005 by Gerald Selby (Selby 2005). At the time the original Poweshiek skipperling status assessment was being written, there was evidence for population declines throughout its range. Those declines were especially significant in Iowa and Minnesota, where it appeared that Poweshieks had disappeared from sites known to support healthy populations as recently as 2000 in Iowa and 2001 in Minnesota. Preliminary data from surveys in other states were also showing evidence for declines, suggesting the possibility that negative population trends were widespread throughout the Poweshiek's range. Recent data (2005-2009) confirm concerns about population trends throughout the range of the Poweshiek skipperling. More recent data were not available for North Dakota, where it was last seen in 2001. At the heart of its range in Iowa, Minnesota, and South Dakota, where it was most abundant and was thought to be most secure, it appears to have disappeared from the majority of sites. Long-term survival of the Poweshiek skipperling may now be dependent on the smaller, more isolated populations at the periphery of its range in Michigan and Wisconsin. Regular surveys have been conducted at many of the sites in those states and most of the populations have remained relatively stable with moderate to low numbers at a time when they have been declining and/or disappearing from the remainder of its range. These data suggest that the Poweshiek skipperling is critically imperiled throughout its range and conservation actions should be a top priority.

Introduction

This report provides an update to the status assessment and conservation guidelines for the Poweshiek skipperling (*Oarisma poweshiek*) prepared for the U.S. Fish and Wildlife Service (FWS) in 2005 by Gerald Selby (Selby 2005). Data summarizing population trends since that time (2005-2008) are presented for each state where populations were still extant at the time the assessment was written. Preliminary additional data for the 2009 field season are also included where available.

At the time the original Poweshiek skipperling status assessment was being written, there was evidence for population declines throughout its range. Those declines were especially significant in Iowa and Minnesota, where it appeared that Poweshieks had disappeared from sites known to support healthy populations as recently as 2000 in Iowa (Cayler Prairie State Preserve and Freda Haffner Kettlehole State Preserve, Dickinson County) and 2001 in Minnesota (Glacial Lakes State Park and surrounding area, Pope County). Preliminary data from surveys in other states were also showing evidence for declines, suggesting that the negative population trends might be widespread throughout the Poweshiek's range. More extensive surveys at Minnesota sites were conducted in 2005. Based on those surveys it appeared that populations were no longer present at sites in the central and northern portions of its range, but they were still present in moderate to low numbers in the southern portion of its range. Unfortunately, additional extensive and intensive surveys throughout most of the Poweshiek's range in Minnesota documented its apparent disappearance from the southern sites and confirmed its absence from the central and northern sites. More extensive surveys in Iowa also confirmed its decline and possible extirpation from the state. In South Dakota surveys have been focused on a smaller proportion of the sites. Six new sites have been documented since the status assessment was completed and numbers have been relatively good at some of those sites as recently as 2008, but throughout that time period populations have been declining and/or disappearing from the sites surveyed. In 2009, Poweshieks were not seen at any of the sites surveyed. North Dakota populations had already suffered significant declines at the time the original assessment was written. No populations have been documented since that time, although survey effort has also been very limited. In Wisconsin and Michigan, populations tend to be small, isolated, and disjunct from the heart of the Poweshiek's range in Iowa, Minnesota, and South Dakota. The long-term survival of these populations has been considered tenuous, but now it appears that the long-term survival of the species may depend on them. Regular surveys have been conducted at many of the sites in those states and the populations have remained relatively stable with moderate to low numbers at most of them.

Data from recent (2005-2009) surveys confirm concerns about population trends throughout the range of the Poweshiek skipperling. It appears to have disappeared from the majority of sites in the central portion of its range, where it was most abundant and was thought to be most secure. The long-term survival of the species may now depend on the smaller, more isolated populations at the periphery of its range in Michigan and Wisconsin.

Status Updates per State and Province

United States of America

In the United States, there are historic records for the Poweshiek skipperling from eight states (Illinois, Indiana, Iowa, Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin) and one Canadian province (Manitoba). The only confirmed records for Illinois (Dodge 1872) and Indiana (Blatchley 1891) are very old and it is presumed extirpated in both of those states. Poweshiek skipperlings have been recently extant (e.g. since 2000) in each of the other states. For each of those states, data summarizing population trends within the past few years (2005-2008) are presented. Additional data for the 2009 field season are also included where available.

Iowa (S1). There are historical Poweshiek skipperling records from an estimated **38 sites in 13 counties** in Iowa (Nekola 1995; Saunders 1995; Iowa Natural Heritage Program Data 2005). Poweshieks were documented from **29 sites in 10 counties** in the early 1990s (Saunders 1995) and appeared to still be doing well at several of those sites in 2000 (Selby 2000). Since that time, however, it appears that they have disappeared from those same sites where they were abundant in 2000 and they have only been seen at a total of **six sites in three counties**. In 2007, during a comprehensive set of surveys at 30 sites in 10 counties, Poweshieks were only seen at **two sites in two counties** (Selby 2008). At one of those sites, they were still present in 2008 (Selby, pers. obs. 2008) but were not seen during several very thorough surveys in 2009 (Selby 2009b).

The original description for the Poweshiek skipperling was based on specimens collected June 21, 1870 at Grinnell, Iowa in Poweshiek County (Parker 1870). Parker stated that they were abundant on a prairie slope. Lindsey (1917, 1920) described the Poweshiek as rare, with records from Story, Dickinson, Poweshiek, and Woodbury Counties. Two additional county records are dubious. Berry (1914) described the Poweshiek as very common in Linn County, but some of his data have been questioned (D. Schlicht, Iowa Lepidoptera Project, pers. comm. 2004), and there are no other documented Linn County records. Opler et al. (2010) shows a confirmed county record for Page County in southwestern Iowa, but I have not found any additional documentation for that record and doubt that it is credible.

All more recent documentation for Poweshiek skipperlings in Iowa has been from the northern two or three tiers of counties. By the 1980's there were 12 known extant sites in six counties. Saunders (1995) documented populations of Poweshiek skipperlings at 26 sites in seven counties during extensive surveys he conducted in 1993 and 1994. He also cites three additional county records that were documented during that time period. Unfortunately, very few of those sites received follow-up surveys. Cayler Prairie and Freda Haffner Kettlehole State Preserves in Dickinson County have consistently supported healthy populations and they were still doing well in 2000 (Saunders 1995; Selby 2000). However, during thorough replicated surveys in 2004, 2005, and 2007, no Poweshieks were seen at either site (Selby 2004, 2006a, 2008). The only Poweshieks observed in Iowa since 2000 are from four sites along the Highway 60/Railroad prairie in Osceola County in 2003, 2004, and 2007 (J. Skibbe, Iowa State University, pers. comm. 2004; Selby 2008), from Hoffman Prairie state Preserve in Cerro Gordo County in 2005, 2007, and 2008 (F. Olsen, Iowa Lepidoptera Project, pers. comm. 2005; Selby, pers. obs. 2005,

2008; Selby 2008), and from Hayden Prairie State Preserve in Howard County in 2005 (F. Olsen, pers. comm. 2005).

In 2007, follow-up surveys were conducted by Olsen and Selby at 30 sites in 10 counties where Poweshiek skipperlings had been documented as recently as the 1990s (Selby 2008). Those surveys confirmed that the dramatic declines that had been observed at a few key sites were widespread throughout the state. Poweshieks were only found at two sites, the Highway 60/ Railroad Prairie in Osceola County and Hoffman Prairie State Preserve in Cerro Gordo County. Four Poweshieks were seen during a survey of Hoffman Prairie in 2008 (Selby, pers. obs. 2008). In 2009, several intensive surveys were conducted at the site but no Poweshieks were seen (Selby 2009). Surveys were also conducted further west in Hancock County at several sites along Highway 18, including the historic site, but none were found. Data from Saunders surveys in 1993-1994 (Saunders 1995) and from subsequent surveys at all known sites where populations were extant as recently as the early 1990s are summarized in **Table 1**. To assist in interpreting the results, data columns include surveyor(s), survey date, degree-days, survey time (minutes), number of Poweshiek observations, and other significant prairie/wetland butterfly observations. Repeated intensive surveys at sites where some of the largest historic Poweshiek populations occurred suggest that they are no longer present at those sites. More limited surveys at the remaining sites suggest that those populations may have suffered a similar fate. It appears that the Poweshiek skipperling may be or is on the verge of extinction in Iowa. Additional, more intensive surveys are needed at key historic sites throughout the state to make a more definitive determination of its status in Iowa.

Many of the Iowa sites are owned by state, county, and private conservation agencies or organizations. The recent declines of some the best Iowa populations on 'protected' sites emphasize the tenuous nature of their long-term survival. Habitat degradation, drift from aerial applications of insecticides, imprudent applications of fire management, and events beyond the control of land managers (e.g. disease or extreme weather events) that may have contributed to the widespread declines observed recently are all serious threats to remnant populations.

Table 1. Summary of survey results for Iowa Poweshiek skipperling sites with populations extant as recently as the 1990s.

Aa = *Atrytone arogos*; Eb = *Euphyes bimacula*; Ec = *Euphyes conspicua*; Ed = *Euphyes dion*; Op = *Oarisma poweshiek*; Pm = *Poanes massasoit*; Pv = *Poanes viator*; Si = *Speyeria idalia*

County/Site	Surveyor	Date	D-Days	Time (min)	Op Obs	Other Obs
Cerro Gordo County						
<u>Hoffman Prairie</u>	Saunders	12 Jul 1993	561	10	1	
	Olsen	19 Jun 2007	543	55	2	
	Olsen	29 Jun 2007	664	60	1	Ec; Ed; Pv
	Selby	04 Jul 2008	574	155	4	Pv (3)
	Selby	02 Jul 2009	563	85	0	
	Selby	03 Jul 2009	573	220	0	Ed (2)
	Selby	06 Jul 2009	605	245	0	Ed (3); Pv (4)
	Selby	11 Jul 2009	658	325	0	Pv (24)
Cherokee County						
<u>Steele Prairie</u>	Fleckenstein	1990s			X	
	Saunders	20 Jul 1993	643	90	0	Si (2)
	Saunders	10 Jul 1994	689	110	0	Si (45)
	Selby	27 Jun 2005	547	315	0	Pm (1); Si (1)
	Selby	30 Jun 2005	582	145	0	
	Olsen	20 Jun 2007	555	155	0	Eb (1)
	Selby	20 Jun 2007	555	160	0	Eb (1)
	Dickinson County					
<u>Bergman/Becker Prairies</u>	Saunders	19 Jul 1993	663	30	3	
	Saunders	06 Jul 1994	654	75	6	
	Olsen	24 Jun 2007	605	30	0	
<u>Kattleson Hogback</u>	Saunders	18 Jul 1993	622	60	5	
	Saunders	11 Jul 1994	696	20	0	
	Olsen	24 Jun 2007	605	30	0	
<u>Cayler Prairie Addition NE</u>	Selby	03 Jul 2000	618	245	17	Si (5)
	Selby	05 Jul 2000	633	75	46	Si (17)
	Schlicht	08 Jul 2004	613	~72	0	Si (1)
	Selby	30 Jun 2005	582	145	0	
	Olsen/Selby	21 Jun 2007	568	45	0	
<u>Cayler Prairie Addition SE</u>	Selby	22 Jun 2000	499	220	3	Si (1)
	Selby	28 Jun 2000	560	105	7	Si (3)
	Selby	03 Jul 2000	618	150	34	Si (16)
	Selby	05 Jul 2000	633	275	16	Aa (3); Si (39)
	Olsen/Schlicht/Selby	29 Jun 2004	526	100	0	Si (5)
	Schlicht	08 Jul 2004	613	60	0	Si (1)
	Olsen	23 Jun 2007	594	135	0	Si (1)

Table 1 (cont.)

<u>County/Site</u>	<u>Surveyor</u>	<u>Date</u>	<u>D-Days</u>	<u>Time (min)</u>	<u>Op Obs</u>	<u>Other Obs</u>
Dickinson County (cont.)						
<u>Cayler Prairie Addition NW</u>	Selby	03 Jul 2000	618	130	10	Si (1)
	Selby	04 Jul 2000	633	75	2	Si (5)
	Olsen	23 Jun 2007	594	?	0	
<u>Cayler Prairie SP</u>	Saunders	13 Jul 1993	570	120	150+	Si (10+)
	Selby	22 Jun 2000	499	160	0	
	Selby	28 Jun 2000	560	105	16	Si (7)
	Selby	03 Jul 2000	618	95	2	Si (2)
	Selby	04 Jul 2000	633	275	56	Aa (7); Si (18)
	Olsen/Schlicht/Selby	29 Jun 2004	526	145	0	Si (2)
	Schlicht	08 Jul 2004	613	120	0	
	Selby	10 Jul 2004	640	150	0	Si (11)
	Selby	28 Jun 2005	560	225	1?	Si (8)
	Olsen	23 Jun 2007	594	135	0	Si (1)
	Selby	27 Jun 2007	640	100	0	Si (10)
<u>Dugout Creek</u>	Saunders	18 Jul 1993	622	10	2	
	Olsen	24 Jun 2007	605	10	0	
<u>Freda Haffner Kettlehole</u>	Saunders	2 Jul 1993	449	60	10+	
	Saunders	3 Jul 1993	460	120	4	
	Saunders	22 Jun 1994	508	50	100+	
	Selby	22 Jun 2000	499	115	4	
	Selby	28 Jun 2000	560	--	5	
	Olsen/Schlicht	29 Jun 2004	526	53	0	
	Schlicht	08 Jun 2004	613	40	0	Si (1)
	Selby	28 Jun 2005	577		0	Si (1)
	Selby	30 Jun 2005	603		0	
	Olsen/Selby	21 Jun 2007	568	150	0	
Selby	27 Jun 2007	640	40	0		
<u>Lakeville Prairie</u>	Saunders	18 Jul 1993	622	30	1	
	Olsen	24 Jun 2007	605	30	0	
<u>Little Sioux (S of Cayler)</u>						
	Selby	27 Jun 2007	640	100	0	
<u>Little Sioux (N of Cayler)</u>						
	Selby	27 Jun 2007	640	80	0	
<u>Wuedker Prairie</u>	Saunders	18 Jul 1993	622	30	10+	
	Olsen	24 Jun 2007	605	35	0	
<u>Yager Slough/Excelsior Fens</u>	Saunders	18 Jul 1993	622	15	2	
	Saunders	07 Jul 1994	667	150	2	
	Olsen	24 Jun 2007	605	125	0	

Table 1 (cont.)

County/Site	Surveyor	Date	D-Days	Time (min)	Op Obs	Other Obs
Dickinson County (cont.)						
<u>Floete Prairie</u>	Saunders None	05 Jul 1994 2007	639	25	6	
<u>Garlock Slough WMA</u>	Saunders Olsen	22 Jun 1994 25 Jun 2007	508 617	110 90	100+ 0	
<u>Watertower Prairie</u>	Saunders Olsen	07 July 1993 23 Jun 2007	509 594	20 35	3 0	
<u>Spring Run WMA</u>	Saunders Olsen	23 Jun 1994 22 Jun 2007	519 582	70 95	2 0	
<u>Little Swan Lake</u>	Saunders Olsen	19 Jul 1993 22 Jun 2007	663 582	45 45	25+ 0	
<u>Superior RR Prairie East</u>	Saunders Olsen	23 Jun 1994 22 Jun 2007	519 582	40 35	2 0	
Emmet County						
<u>Anderson Prairie</u>	Saunders Saunders Olsen/Schlicht Selby Selby Schlicht Olsen	18 Jul 1993 06 Jul 1994 28 Jun 2004 28 Jun 2004 05 Jul 2004 07 Jul 2004 26 Jun 2007	622 654 517 517 594 605 629	90 50 260 135 170 163 145	5 15 0 0 0 0 0	 Si (3) Si (3) Si (1) Si (5) Si (5)
Hancock County						
<u>Highway 18-RR Prairie</u>	Saunders Olsen Selby	13 Jul 1993 29 Jun 2007 06 Jul 2009	570 664 604	20 33 40	2 0 0	
Howard County						
<u>Crossman Prairie</u>	Saunders Saunders Olsen	25 Jul 1993 26 Jun 1994 28 Jun 2007	689 548 652	60 45 65	0 0 0	
<u>Florenceville Prairies</u>	Saunders Saunders Olsen	25 Jul 1993 26 Jun 1994 28 Jun 2007	689 548 652	45 30 65	0 25 0	
<u>Hayden Prairie</u>	Saunders Saunders Olsen Olsen	25 Jul 1993 4-5 Jul 1994 22 Jun 2005 28 Jun 2007	689 626-639 446 652	30 295 -- 120	1 ~100 1 0	 Si (1)

Table 1 (cont.)

County/Site	Surveyor	Date	D-Days	Time (min)	Op Obs	Other Obs
Kossuth County						
<u>Berneau Prairie</u>	Saunders	01 Jul 1994	599	105	1	
	Olsen	29 Jun 2007	664	80	0	Si (6)
<u>Stinson Prairie</u>	Saunders	25 Jul 1993	689	45	2	
	Olsen	29 Jun 2007	664	55	0	Si (3)
Osceola County						
<u>Fairview Prairie WMA</u>	Saunders	06 Jul 1994	654	20	4	
	Olsen	25 Jun 2007	617	50	0	
<u>Highway 60-RR Prairie</u>						
Fields (northernmost)	Skibbe	11 Jul 2003	659		6	
	Skibbe	11 Jul 2004	655		2	
	Selby	27 Jun 2007	640	19	0	
A (north-central)	Saunders	21 Jul 1993	652	~15	2	
	Olsen	25 Jun 2007	617	35	0	
	Selby	27 Jun 2007	640	18	1	
B (south-central)	Saunders	21 Jul 1993	652	~15	1	
	Skibbe	11 Jul 2004	655		4	
	Olsen	25 Jun 2007	617	20	0	
	Selby	27 Jun 2007	640	20	0	
Sibley (southernmost)	Saunders	21 Jul 1993	652	30	3	
	Skibbe	12 Jul 2003	668		1	
	Selby	27 Jun 2007	640	15	0	
<u>Wolters Prairie</u>	Saunders	21 Jul 1993	652	60	3	
	Saunders	11 Jul 1994	696	60	1	
	Olsen	25 Jun 2007	617	65	0	Aa (2)
Palo Alto County						
<u>Telford Prairie</u>	Harms	1990s			X	
	Saunders	23 Jun 1994	519	30	0	
	Olsen	26 Jun 2007	629	65	0	Pm (2); Si (1)
Pocahontas County						
<u>Kalsow Prairie</u>	Harms	1990s			X	
	Saunders	21 Jul 1993	652	30	0	
	Selby	29 Jun 2005	591		0	
	Olsen	20 Jun 2007	555	195	0	Eb (4); Si (1)

Michigan (S1S2/T). Michigan populations of Poweshiek skipperlings have been documented from **17 sites in 6 counties**. At the time the original status assessment was completed, they were thought to be recently extant at **11 sites in 5 counties**. From 2005-2009, Poweshieks were seen at 10 of 11 historic sites surveyed and at one new site in 2009 (D. Cuthrell, Michigan Natural Features Inventory, pers. comm. 2009; Michigan Natural Heritage Program Data 2009).

The first Poweshiek skipperling population was recorded in 1893 by Wolcott at Lamberton Lake near Grand Rapids in Kent County (Wolcott 1893; Holzman 1972) and a second colony was discovered at nearby Button Lake in 1944 (McAlpine 1972). These were the only known Michigan populations until 1970. They persisted until 1968 [documentation by Newcomb in 1930; McAlpine (1972) in 1937, 1938, 1939, 1944, 1948 and 1950; Nielsen (1970) in 1963 and 1964; Warczynski in 1968], but were not found during 1969, 1970, and 1971 surveys (Holzman 1972). The Michigan Natural Features Inventory (MNFI) also failed to find any Poweshieks at Lamberton Lake in surveys conducted in 1986, 1989, and 2004 (D. Cuthrell, pers. comm. 2005; Michigan Natural Heritage Program Data 2009). Undisturbed habitat in this area has been reduced by urbanization (Holzman 1972; Bess 1988) and encroachment by woody species such as the exotic glossy buckthorn (*Frangula alnus* = *Rhamnus frangula*) (D. Cuthrell, pers. comm. 2005). In a 2008 visit, it was determined that habitat was almost non-existent and that it was unlikely that these populations were extant (Michigan Natural Heritage Program Data 2009).

Fortunately, new populations were discovered much further east in Michigan. Two populations were discovered in 1970. Nielson discovered a population in Livingston County and Holzman discovered a population in Oakland County (Holzman 1972). In 1971, Holzman discovered one additional Livingston County population and two additional Oakland County populations. As of 1971, these five populations were the only known extant Michigan populations (Holzman 1972). Since that time, ten new populations have been found in four counties (Jackson = 2; Lenawee = 1; Oakland = 5; Washtenaw = 2). Two of the populations in Oakland County have not been seen since the 1970s (EO Rank = Historical) and two other populations have not been seen since the 1990s, bringing the number of recently extant populations to 11 in five counties (D. Cuthrell, pers. comm. 2009; Michigan Natural Heritage Program Data 2009).

Bess (1988) states that Liberty Fen in Jackson County is probably the largest undisturbed fen complex in Michigan – it probably has the largest Poweshiek population in the state. Shuey (1985) conducted surveys at Liberty Fen as part of a study of wetland butterfly habitat associations conducted from 1982-84; he discovered the Poweshiek population in 1983. He found that they were associated with the bog fen meadow and carr habitats at the site. Bess (1988) found isolated pockets of Poweshieks throughout the site in 1988. He saw about 200 Poweshieks from 5-12 July, and had a peak count of over 75 on 7 July. Summerville and Clampitt (1999) surveyed the site in 1997. They found that the Poweshieks were restricted to areas dominated by spike-rush and estimated that the population was over 100 individuals. More moderate numbers (2007 = dozens; 2008 = 25; 2009 = 24) were seen during more recent surveys (D. Cuthrell, pers. comm. 2009; Michigan Natural Heritage Program Data 2009). The Nature Conservancy owns most of this site and is applying a cautious burn program to maintain the habitat while minimizing negative impacts on the sensitive Poweshiek skipperling and Mitchell's satyr populations (D. Cuthrell, pers. comm. 2005). Other sites with high quality fens and fairly large Poweshiek populations include Long Lake Fen and Holly Fen in Oakland County.

Most extant Poweshiek skipperling populations were doing well at the time the original status assessment was written (J. Shuey, The Nature Conservancy in Indiana, pers. comm. 2004) and most populations continue to do well, although the numbers were low to non-existent at a few sites (D. Cuthrell, pers. comm. 2009). Potential threats include loss of habitat to woody species such as glossy buckthorn, confounded by the potential threat of prescribed fire if it is applied too aggressively in an attempt to control the buckthorn (D. Cuthrell, pers. comm. 2005). There is a need for continued monitoring of known sites and surveys focused on additional sites with Poweshiek skipperling habitat to get a better assessment of its status in the state.

Table 2. Summary of recent (2005-2009) survey results and last year observed for Michigan populations of Poweshiek skipperlings (Michigan Natural Heritage Program Data 2009).

County/Site	Last Obs	2005		2006		2007		2008		2009	
		Surv	Obs								
<u>Recently extant (last observed 2005-2009)</u>											
Jackson											
Liberty Fen	2009	No	–	No	–	Yes	24+	Yes	25	Yes	24
Lenawee											
Goose Creek Grasslands	2009	No	–	No	–	Yes	11+	Yes	7-10	Yes	1
Livingston											
Bullard Lake	2007	No	–	No	–	Yes	1	Yes	0	Yes	0
Oakland											
Buckhorn Lake	2009	No	–	No	–	Yes	18	Yes	14	Yes	17
Call C Burr Preserve	2009	No	–	No	–	No	–	No	–	Yes	4
Halstead Lake Fen	2008	Yes	1	No	–	Yes	8-10	Yes	14	No	–
Holly Fen (Brandt Road)	2009	Yes	30-40	Yes	few	Yes	100s	No	–	Yes	59
Long Lake Fen	2009	Yes	15-20	No	–	Yes	35	No	–	Yes	190
Rattalee Lake Fen	2008	Yes	4	No	–	Yes	few	Yes	1	No	–
Washtenaw											
Park Lyndon	2009	No	–	No	–	Yes	11+	Yes	10	Yes	12
Snyder Lake	2007	No	–	No	–	Yes	1	No	–	No	–
<u>Relatively recently extant (last observed 1990s)</u>											
Jackson											
Liberty Bowl Fen	1996	No	–								
Livingston											
Whalen Lake	1998	No	–	No	–	Yes	0	Yes	0	Yes	0
<u>Historic (last observed before 1985)</u>											
Kent											
Button Lake	1960s	No	–								
Lamberton Lake	1968	No	–	No	–	No	–	Yes	0	No	–
Oakland											
Fenton Road	1973	No	–								
Rattalee Road	1970	No	–								

Minnesota (S3/SC). The Poweshiek skipperling has been described as Minnesota's "... most frequently encountered prairie-obligate skipper" (R. Dana, Minnesota Department of Natural Resources, pers. comm. 2004). At the time the previous status assessment was written it had been recorded from a total of **135 sites in 32 counties**, plus 1 additional dubious county record. Since that time, it has been recorded at one new site (Dana 2008a), bringing the total number of documented sites to **136 sites in 32 counties**. At the time the status assessment was completed there was evidence of significant declines in MN populations, but data from a more extensive representative data set were not available. Since that time, surveys by Robert Dana, and Gerald Selby (assisted by Frank Olsen, Dennis Schlicht, and Dennis Skadsen) at a representative sample of Poweshiek sites have confirmed both the extent and the severity of the declines.

The number of known Poweshiek skipperling sites increased dramatically during the 1980s and 1990s. In the 1980s, the number of sites increased from 24 sites in 19 counties to 71 sites in 28 counties. During the 1990s and early 2000s, surveys by Cuthrell (1991), Reiser (1997), Schlicht (1997a, 1997b, 2001), Schlicht and Saunders (1993, 1995), Selby (1991), Selby & Glenn-Lewin (1989, 1990), Skadsen (1999b, 2001a, 2001b), Swengel (1992b), and Swengel and Swengel (1999) greatly increased the knowledge base for Minnesota Poweshiek skipperling populations, adding 64 new sites and 4 new county records.

The large number of sites and relative abundance of the Poweshiek skipperling at those sites in Minnesota led to a false sense of its long-term security. The Glacial Lakes State Park area in Pope County had one of the highest concentrations of Poweshiek populations in the state, but those populations have experienced a dramatic decline since 2001. Skadsen (2001b) observed 95 Poweshieks during four days of surveys in the park in 2001. In 2003, Selby (2006b) saw only four individuals during 30 days of surveys throughout the flight in the park and on surrounding properties; no Poweshieks were seen in the same area during 23 days of surveys in 2004 and seven days of surveys in 2005. Declines during this time period were also reported from Iowa (Selby 2004), North Dakota (Spomer 2002; S. Spomer, University of Nebraska, pers. comm. 2005), South Dakota (D. Skadsen, Natural History Investigations, pers. comm. 2004), Wisconsin (S. Borkin, Milwaukee Public Museum, pers. comm. 2004), and Canada (COSEWIC 2003). Almost half of all recorded Poweshiek skipperling populations are in Minnesota, so the status of the Minnesota populations is critical to the long-term survival of the species. Therefore, at the time the original status assessment was completed there was a critical need to determine just how widespread the observed population declines in Minnesota were.

Extensive surveys have been conducted by Dana (2006-2009 field seasons) and Selby (2005 and 2007-2008 field seasons). Unfortunately, they confirmed both the extent and severity of the Poweshiek skipperling population decline. A small sample of historic populations was surveyed by the author in 2005 (Selby 2006b). One new population was documented in Pipestone County and populations were still extant at four of the nine Poweshiek sites in Lincoln, Murray, and Pipestone counties, but no Poweshieks were observed at the sites in Chippewa, Swift, Pope and Clay counties (**Table 3**). In 2007 and 2008, the author, assisted by Frank Olsen, Dennis Schlicht, and Dennis Skadsen, conducted extensive surveys at representative sites throughout most of the Poweshiek's range in Minnesota (Selby 2009a). Seventy sites in 15 counties, including 26 sites with previous Poweshiek records, were surveyed in 2007 and 58 sites in 13 counties, including 21 sites with previous Poweshiek records, were surveyed in 2008. Some

sites were surveyed both years, so the total number of Poweshiek sites surveyed was 34. In 2007, Poweshieks were only seen at three sites and there was just one confirmed observation per site. No Poweshieks were seen in 2008. Arogos skippers were only seen at one site in 2007, but some of the surveys may have been too early since they have a later flight. Dakota skippers were doing somewhat better. They were seen at eight sites in 2007 and at 10 sites in 2008. Regal fritillaries were seen at 31 sites in 2007 and at 29 sites in 2008. Summary statistics for the sites targeted for surveys, the sites surveyed, and the target species observed are presented in **Table 4**.

In 2006, Dana (2006) conducted general surveys at 38 Minnesota sites in eight counties with previously documented populations of or potential for Arogos skippers, Dakota skippers, Ottoo skippers, Poweshiek skipperlings, and regal fritillaries. Eleven of those sites had previous Poweshiek records and an additional 19 sites had potential for them. He found Poweshieks at one new site in Pipestone County but did not find them at any of the sites with previous records. For the 2007 and 2008 field seasons, Dana conducted more intensive replicated monitoring surveys at a smaller subset of the sites where Poweshieks have been known to occur, including some of the best sites (e.g. Hole-in-the-Mountain in Lincoln County and Prairie Coteau SNA in Pipestone County) for Poweshieks and other rare prairie butterflies (Dana 2007, 2008). In 2007, he conducted surveys at eight sites in three counties (Lincoln County = 3; Murray County = 3; Pipestone County = 2). In 2008, he did even more intensive monitoring surveys at two sites in Lincoln County and one site in Pipestone County. During those two years of surveys Dana did not encounter Poweshieks at any of the sites. In 2009, he did additional general surveys at sites in Clay, Kittson, and Pipestone counties. He saw some Dakota skippers and regal fritillaries, but he did not see any Poweshieks (R. Dana, pers. comm. 2009).

Table 3. 2005 surveys at Minnesota sites with previously documented populations of selected target butterfly species and/or potential for them.

	Historic Records (X) and Maximum Obs/Hr				
	Op	Aa	Hd	Ho	Si
Chippewa/Swift Counties					
<u>Chippewa Prairie</u>					
Chippewa Prairie (TNC)	X 0.0	X 0.0	X 0.0	0.0	X 14.0
Lac Qui Parle WMA	X 0.0	X 0.0	X 0.0	0.0	X 26.5
Clay County					
<u>Felton Prairie SNA</u>					
NE-Blazingstar Unit (TNC)	X 0.0	0.0	X 0.8	0.0	X 3.8
SW-Bicentennial Unit (Co)	X 0.0	X 0.0	X 16.8	0.0	X 4.8
SE-Felton Unit (DNR)	0.0	0.0	0.0	0.0	0.5
Douglas/Otter Tail Counties					
Alexandria Moraine (central)					
Elmer Prairie	0.0	0.0	0.0	0.0	6.0
Wallace Prairie	0.0	0.0	0.0	0.0	1.9
Lincoln County					
<u>Hole-in-the-Mountain</u>					
Original purchase (S)	X 1.0	X 0.0	X 5.4	X 0.0	X 4.0
Newer additions (N)	X 0.0	X 0.0	X 0.0	0.0	X 39.2
Murray County					
<u>Chanarambie Creek</u>					
Carney Prairie	X 2.1	0.0	X 1.8	0.0	X 5.3
Sankey Prairie	X 0.9	0.4	X 3.0	0.0	X 2.6
Otter Tail Counties					
Alexandria Moraine (north)					
Rengstorf Prairie (WPA)	0.0	0.0	0.0	0.0	2.3
Pipestone County					
<u>Prairie Coteau SNA</u>	X 2.7	X 6.9	X 6.4	X 0.0	X 27.2
<u>Altona WMA</u>	- 0.7	0.0	8.0	0.0	7.0
Yellow Medicine County					
<u>Mound Springs</u>					
Mound Springs SNA (N)	0.0	0.0	0.0	0.0	0.4
Mound Springs SNA (S)	0.0	0.0	0.0	0.0	15.4
Sites with Previous Records	9	6	9	2	9
Other Sites Surveyed	7	10	7	12	7
Total Sites Surveyed	16	16	16	16	16
Historic Site Observations	4	2	6	0	9
New Site Observations	1	1	1	0	7
Total Site Observations	5	3	7	0	16

Table 4. Western Minnesota butterfly surveys: site and county summary statistics for historic target species records and target species recorded during 2007 and 2008 surveys (targeted sites include optional sites surveyed in 2008). [adapted from Selby (2009a)]

Site Categories per Species	2007 Surveys		2008 Surveys	
	Sites	Counties	Sites	Counties
All Targeted Survey Sites	105	16	61	13
All Targeted Sites Surveyed	70	15	58	13
<u>Arogos skipper</u>				
Historic Sites Targeted:	13	10	8	6
Historic Sites Surveyed:	11	7	8	6
Historic Sites with Targets:	1	1	0	0
New Sites with Targets:	0	0	0	0
Total Sites with Targets:	1	1	0	0
<u>Dakota skipper</u>				
Historic Sites Targeted:	26	9	20	8
Historic Sites Surveyed:	17	8	19	8
Historic Sites with Targets:	7	5	9	4
New Sites with Targets:	1	1	1	1
Total Sites with Targets:	8	5	10	5
<u>Ottoe skipper</u>				
Historic Sites Targeted:	5	4	3	2
Historic Sites Surveyed:	4	4	3	2
Historic Sites with Targets:	0	0	0	0
New Sites with Targets:	0	0	0	0
Total Sites with Targets:	0	0	0	0
<u>Poweshiek skipperling</u>				
Historic Sites Targeted:	37	13	21	9
Historic Sites Surveyed:	26	11	21	9
Historic Sites with Targets:	3	3	0	0
New Sites with Targets:	0	0	0	0
Total Sites with Targets:	3	3	0	0
<u>Regal fritillary</u>				
Historic Sites Targeted:	44	13	32	12
Historic Sites Surveyed:	35	13	31	12
Historic Sites with Targets:	25	11	17	9
New Sites with Targets:	6	5	12	8
Total Sites with Targets:	31	14	29	12

North Dakota (SNR). There are historic records from a total of **16 sites in seven North Dakota counties**. Six of the counties are concentrated in the southeastern corner of the state and the seventh is further north along the eastern border. At the time the Poweshiek skipperling status assessment was written, they appeared to have been extirpated from most of the known sites, and possibly from the state. The most recent observation was in 2001 at a new site discovered by Spomer (2001). Unfortunately, he did not find any Poweshieks at that site in 2002 or 2003 (Spomer 2002; S. Spomer, pers. comm. 2005) and he has not done more recent surveys in that area (S. Spomer, pers. comm. 2009). Ronald Royer (Minot State University, pers. comm. 2009) is not aware of any surveys for or observations of Poweshieks since that time.

Royer and Marrone (1992) listed **seven sites in six counties**. Four of the sites, including the only known records for Dickey, Grand Forks, and La Moure counties, are old records with incomplete or ambiguous locality data. Two of the three remaining sites had historically high numbers, but appeared to have disappeared by 1991. McCabe and Post (1977) described an abundance of Poweshieks at McLeod Prairie in Ransom County, but the area was converted to a cattle-loading area and no Poweshieks were observed in six years of monitoring by Royer from 1986-1991. Observations at West Prairie Church in Cass/Richland Counties went from hundreds in 1986 to four in 1990 to absent in 1991. The third site, McCleod East in Richland County, had a single record from 1991.

At the time the Poweshiek skipperling status assessment was written, R. Royer (pers. comm. 2004) had not seen Poweshieks in the state in over a decade. All recent observations were from new populations discovered by Orwig in 1995-1997, Swengel in 1996, and Spomer in 2001. Orwig discovered eight new populations (six in Richland County and two in Sargent County) during three years of surveys in southeast North Dakota (Orwig 1995, 1996, 1997). However, during the third year (1997) he only found Poweshieks at one new and one previous site in Richland County. Spomer discovered a new Ransom County population in 2001, but did not find Poweshieks at that site during surveys in 2002 or 2003 (Spomer 2001, 2002; S. Spomer, pers. comm. 2005). He mentioned that Ann and Scott Swengel had also discovered a new Richland County population in 1996. The discovery of new populations from 1995-2001, suggests the possibility that more populations could be discovered in North Dakota, but these surveys also illustrate the precarious state of the North Dakota populations. Thorough surveys need to be conducted at each of the known locations for the Poweshiek skipperling in North Dakota to confirm its current status at those sites. Additional habitat in eastern North Dakota should also be targeted for surveys.

South Dakota (S2). South Dakota has had the second highest concentration of Poweshiek skipperlings. Royer and Marrone (1992) listed a total of **19 sites in eight counties**, including **14 sites in seven counties** with extant populations and **five sites in five counties** with incomplete or ambiguous locality data. The number of counties and sites where Poweshiek populations had been documented increased dramatically from 1997-2004 as a result of extensive surveys by Dennis Skadsen for the South Dakota Department of Game, Fish and Parks (Skadsen 1997, 1998, 1999a, 2002, 2003, 2004). Skadsen documented an additional **44 sites in eight counties** (including **three county records**), bringing the total number of documented populations to **64 sites in 11 counties**. An additional **six new sites in four counties** were documented from 2005-2009, bringing the total number of known populations to **70 sites in 11 counties** (Skadsen 2005, 2006; S. Spomer, pers. comm. 2009; Selby, pers. obs. 2008). Unfortunately, there were at least six of sixteen historic sites surveyed where they were no longer found on the final survey and at one of the new sites where they were abundant in 2008, they were not found in 2009.

Recent survey results have suggested population declines in South Dakota that are similar to those observed elsewhere (Skadsen 2005, 2006, 2007, 2008; D. Skadsen, pers. comm. 2004, 2009). Those surveys have been focused on establishing regular monitoring at about five sites (**Table 3**) and general surveys at selected additional sites (**Table 4**) each year. Poweshieks were seen at five of six historic sites and three new sites in 2005, seven of 12 historic sites and one new site in 2006, one of six sites historic sites in 2007, and two of five historic sites in 2008. No Poweshieks were seen at any of the sites he surveyed in 2009 (Skadsen 2009). One additional new site was documented in 2006 by Steve Spomer (pers. comm. 2009) at South Dakota State University's Oak Lake Field Lab in Deuel County (30+ Poweshieks; 4-5 Dakotas). Another new site was documented in Deuel County by Selby in 2008 (Selby, pers. obs. 2008). Thirty-seven Poweshieks and 86 regal fritillaries were observed but no Dakota skippers were seen. In 2009 the same site was surveyed several times. Two Dakota skippers and 185 regal fritillaries were seen during the first survey but no Poweshieks were seen during any of the surveys (Selby, pers. obs. 2008).

Skadsen (2009) states: "Since the Poweshiek Skipperling only occurs in northeast South Dakota where these declines have been observed, this species may now be the most endangered prairie-dependent butterfly in the state." More extensive surveys are needed to determine if the declines observed at the sites surveyed have also occurred at other sites. Sites should also be resurveyed to confirm the status of Poweshiek populations where they appear to have disappeared.

Table 5. Summary of 2005-2008 survey results for target species at South Dakota monitoring sites (Skadsen 2005, 2006, 2007, 2008, 2009).

County/Site	Year	Poweshiek	Arogos	Dakota	Regal
Day County					
<u>Pickerel Lake State Rec. Area</u>	2005	No	No	No	No
Last Poweshiek = 2004	2006	No	No	No	1
Last Arogos = 2004	2007	No	No	No	1
	2008	No	No	3	2
	2009	No	No	No	4
<u>Scarlet Fawn Prairie</u>	2005	Yes	No	Yes	Yes
	2006	52	1	7	15
	2007	14	No	20	15
	2008	25	No	48	1
	2009	No	No	16	6
<u>Wattier Pasture</u>	2005	No	No	No	Yes
Last Dakota = 2004	2006	No	No	No	119
	2007	No	No	No	78
	2008 & 2009	(not surveyed)			
Marshall County					
<u>Jensen WPA</u>	2005	Yes	No	Yes	Yes
	2006- 2009	(not surveyed)			
Roberts County					
<u>Hartford Beach State Park</u>	2005	No	No	Yes	Yes
	2006	No	No	2	2
	2007	No	2	22	1
	2008	No	No	11	4
	2009	No	No	14	1
<u>Wike WPA</u>	2005	(not surveyed)			
	2006	11	No	6	5
	2007	No	No	2	2
	2008	No	No	No	No
	2009	No	No	No	No

Table 6. Summary of 2005-2008 survey results for target species at additional South Dakota sites (Skadsen 2005, 2006, 2007, 2008, 2009).

County/Site	Year	Poweshiek	Arogos	Dakota	Regal
Day County					
Ausland Ranch	2008	No	No	No	Yes
Chekapa Creek Ridge	2006	Yes	No	No	No
East Blue Dog Prairie	2006	Yes	No	Yes	Yes
North Enemy Swim	2006	No	No	Yes	Yes
Peckham Ranch	2007	No	No	Yes	Yes
Peckham Ranch	2008	No	No	Yes	No
Townsend's	2007	No	No	Yes	Yes
Wadkidmanwin Prairie	2006	No	No	No	Yes
Deuel County					
7-mile Fen (TNC)	2005	No	No	No	No
Jacobson Fen (TNC)	2005	Yes	No	No	Yes
Grant County					
Waddell Pasture	2009	No	No	No	Yes
Marshall County					
North Lamee WPA	2005	Yes	No	No	Yes
South Lamee WPA	2005	Yes	No	No	Yes
North Red Iron WPA	2005	Yes	No	Yes	No
Rolstad WPA	2005	No	No	No	No
Sica Hollow State Park	2007	No	No	No	Yes
	2008	Yes	No	Yes	Yes
Roberts County					
Agency Village Prairie	2006	No	No	No	Yes
Good Boy Prairie	2006	No	No	Yes	No
	2009	No	No	Yes	Yes
Hayes Prairie	2006	Yes	No	Yes	Yes
	2009	No	No	Yes	Yes
Oak Island Prairie	2006	Yes	No	Yes	Yes
	2009	No	No	Yes	No
Owl Lake Prairie	2006	Yes	No	Yes	Yes
White Prairie – North	2006	Yes	No	Yes	Yes
White Prairie – South	2006	No	No	Yes	No

Wisconsin (S1/E).

Wisconsin (S1/E). Hoy (1883) described the Garita skipperling, probably confused for Poweshiek, as common on the prairies near Racine (Racine County). Rauterberg (1900) described the Poweshiek skipperling as common in the Milwaukee vicinity (Milwaukee County), but the only documentation for these observations is a 1900 specimen in the Milwaukee Public Museum with incomplete data (Ebner 1970).

There are currently three extant populations of Poweshiek skipperling known in Wisconsin. Two (Scuppernong Prairie and 'Wilton Road') are about 0.5 km apart in the Southern Unit Kettle Moraine State Forest in Waukesha County; the third (Puchyan Prairie) is about 100 km northwest in Green Lake County. Borkin (pers. comm. 8 Oct 2009) recorded about 40 ps during the peak of the flight at Scuppernong Prairie in 2009, but only about three at the Wilton Road site and only 3-6 at Puchyan Prairie (Borkin, pers. comm. 12 Apr 2009).

Managers are planning to remove woody vegetation that currently separates Scuppernong Prairie, Wilton Road, and a third site nearby from which ps was recently extirpated - Kettle Moraine Low Prairie (Borkin, pers. comm. 10 July 2009). This may threaten the persistence of the population at the Wilton Road site if a significant proportion of the ps there react by dispersing into the newly opened habitat. ps densities and roads, which may act as barriers to movement, may help to buffer the population at Scuppernong Prairie from a similar effect (S. Borkin, pers. comm. 12 Apr 2010), but managers are also planning to reintroduce fire management at Scuppernong Prairie (S. Borkin, pers. comm. 8 Oct 2009).

Canada

Manitoba (S2/T). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recently completed an assessment and status report for the Poweshiek skipperling in Canada (COSEWIC 2003; author Webster, R.P.) and designated it as “Threatened” in November 2003. Poweshiek skipperlings were first recorded in the country in 1985 (Catling and LaFontaine 1986) when they were found at each of seven prairies surveyed near Vita, Manitoba. The Nature Conservancy’s Tall Grass Prairie Preserve near Vita remains the only location in Canada inhabited by the species (Westwood 2010).

In 2008 and 2009 Jaimee Dupont (Nature Conservancy of Canada, pers. comm. 2010) recorded 281 and 79 adults, respectively on the Tall Grass Prairie Preserve. Abundance declined sharply in 2010 after a 1600-acre wildfire burned much of the species’ habitat – “including areas with potentially the largest and densest population” – in fall 2009 (Westwood 2010). During surveys that were comparable in effort to those conducted in 2008 and 2009, Westwood (2010) recorded only 13 Poweshiek skipperlings on the preserve. In his final report, Westwood (2010, p. 5) provided detailed recommendations aimed at facilitating the species’ recovery on the preserve.

Discussion

Data from recent surveys (2005-2009) confirm concerns about the status of the Poweshiek skipperling based on limited survey data at the time the original status assessment was written. Dramatic declines that were observed at a few sites in Iowa, Minnesota, and South Dakota have been shown to be widespread in those states. Even at sites where they were extant and relatively abundant during the early portion of this survey period, they disappeared during the final years. Based on the limited data available, it appears that central and northern Minnesota populations had declined significantly and/or disappeared by the time surveys were done in 2005. Southern Minnesota populations were still extant with moderate to low numbers in 2005, but they declined quickly in subsequent years and have not been seen since 2007. The decline of the South Dakota populations seemed to be delayed by a couple years but they had also appeared to disappear by 2009. Iowa populations had disappeared from some of the largest sites by 2004 and the declines were shown to be widespread throughout the state by 2007. In 2008, Poweshieks were still extant at one of the two sites where they were seen in 2007, but in 2009 they were not found at that site. The last North Dakota observation was in 2001. It is likely that there are no extant populations left in the state, but more surveys are needed to confirm this. At this time, Michigan and Wisconsin populations may be the last hope for the Poweshiek skipperling. Populations in those states have experience some fluctuations, but they have remained relatively stable through the time period when populations in other states were literally dropping out of site. Any sites with extant or even recently extant populations should be managed carefully to maximize survival probabilities and minimize negative impacts from the management. These sites also need to be monitored closely.

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