

2020 Karner Blue Butterfly Summer Survey Results

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Karner Population Surveys:

- 591 acres surveyed using distance sampling
 - Core Sampling Sites
 - 14 sites
 - 543 acres
 - 39,662m linear transect
 - 8 sites increased
 - 4 sites decreased
 - 2 sites did not have comparable data
 - Exterior Sampling Sites (volunteer properties)
 - 4 sites
 - 48 acres
 - 5,095m linear transect
 - 1 site increased
 - 3 sites decreased
- 30% overall population increase from 2019-2020
- 43% overall increase when 2 sites from Escarpment & Sandstone Plateau Recovery Unit are included from 2019-2020



There was an overall increase in population across the state (Table 2). All site decreases occurred in the Morainal Sands Recovery Unit (Table 1). This year DNR was able to contract distance sampling surveys in the Escarpment & Sandstone Plateau Recovery Unit. Crews aim to survey the same distance sites each year, with the addition of other sites when possible (Figure 1).



Table 1. Percent area represents the amount of area (acres) surveyed in each Recovery Unit that makes up the 591 acres of distance sampling sites in 2020. Percent population change represents the percent increase or decrease in population size from 2019 to 2020 in each recovery unit.

% Area	RU	% Pop Change
21%	GL	472%
31%	MS	-35%
13%	WCD	47%
16%	SO	278%
18%	ESP	NA

Table 2. Annual Karner population estimates based on distance data collected at each recovery property.

WI KBB Population Estimate by Recovery Property															
RU	Property	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
GL	Sandhill W.A.	12,065	10,185	22,799	11,057	7,771	3,839	-	57,852	76,347	53,971	12,692	3,159	18,066	
MS	Emmons Creek F.A.	4,089	1,921	4,395	3,452	5,597	4,733	697	1,335	3,002	4,781	1,629	4,173	3,933	
	Hartman Creek S.P.	420	381	407	454	-	409	371	-	380	-	-	-	-	
	Welch	706	1,207	1,417	2,497	2,842	2,611	-	6,239	10,856	4,773	3,183	10,154	5,361	
	Greenwood W.A.	-	-	-	-	771	-	366	-	-	-	-	-	-	-
	White River W.A.	2,171	2,225	2,583	7,175	7,994	5,264	4,384	5,197	7,748	1,756	1,987	6,124	1,560	
	Private Property 1	-	-	4,474	6,622	8,587	599	610	760	4,302	3,580	2,356	2,433	4,973	
	Private Property 2	-	-	-	-	-	3,710	3,281	1,729	5,674	4,431	1,860	3,889	1,487	
Private Property 3	-	-	-	-	-	-	-	-	-	-	386	1,030	1,677	1,093	
WCD	Black River S.F.	-	651	1,309	1,758	782	261	-	-	2,492	4,648	5,375	4,852	6,568	
	Bauer Brockway SNA	-	-	-	1,837	-	316	-	-	3,336	2,346	372	0	569	
SO	Crex Meadows W.A.	-	-	1,097	4,801	1,228	213	427	567	2,054	865	871	355	2,935	
	Fish Lake W.A.	-	518	2,042	5,617	2,421	-	1,043	626	1,691	1,690	1,186	1,216	3,006	
ESP	Canoe Landing Prairie SNA	-	-	-	-	-	-	-	-	-	-	-	-	2,203	
	Coon Fork Barrens SNA	-	-	-	-	-	-	-	-	-	-	-	-	2,816	
Total Core Population Estimate		19,120	17,088	35,882	37,221	28,063	14,678	6,922	71,816	107,906	74,830	27,295	30,033	47,017	
Total Population Estimate		19,451	17,088	40,523	45,270	37,993	21,955	11,179	74,305	117,882	83,227	32,541	38,032	54,570	

2020 Wisconsin Karner Surveys

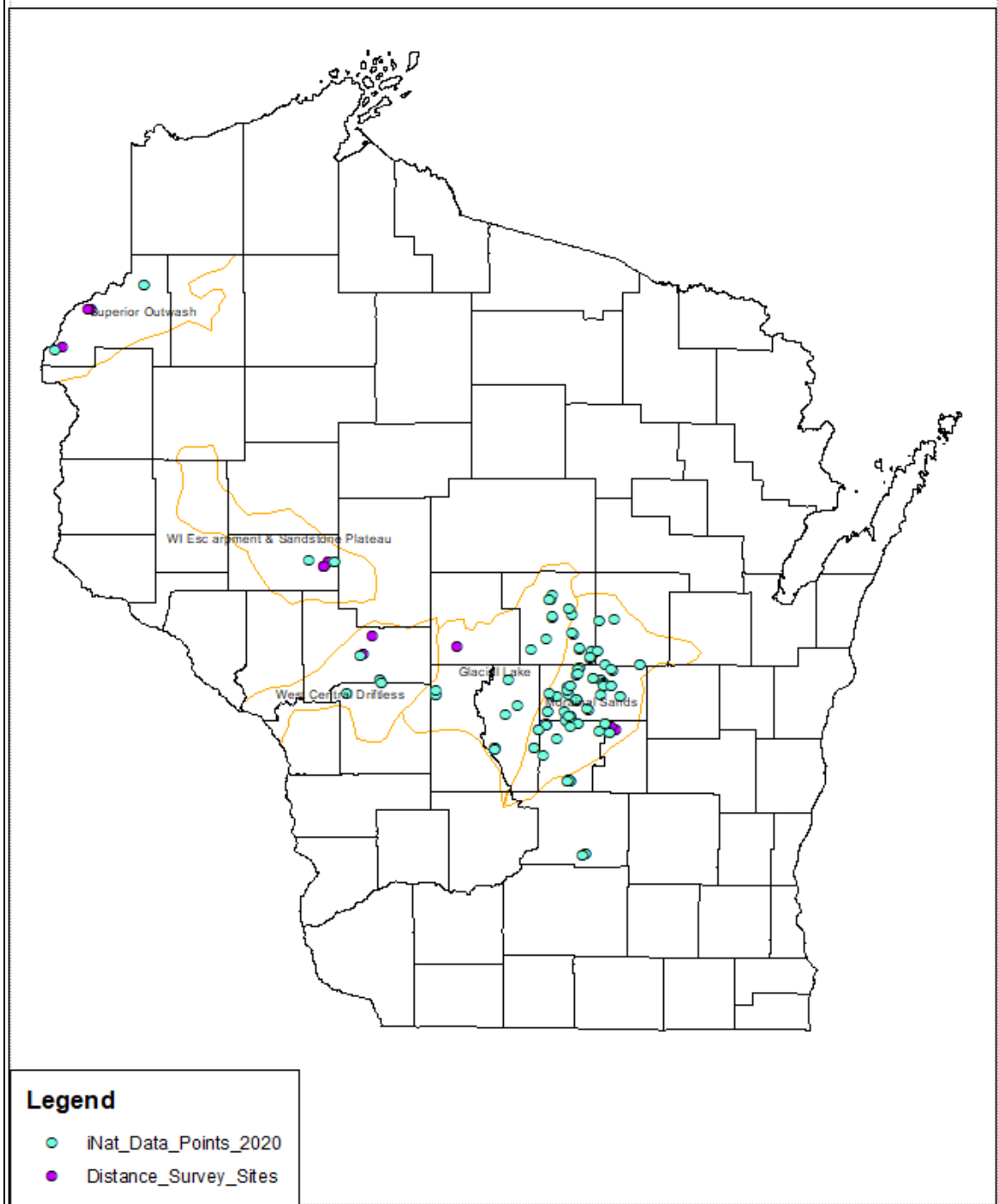


Figure 1. Locations of 2020 Karner surveys in Wisconsin within Recovery Units. Distance sampling occurred at 18 sites (purple) and occupancy surveys occurred at 76 sites (blue).

Analyses:

Using distance sampling data, Karner populations and trends can be estimated. Using the calculated population estimates divided by the number of acres surveyed, the data are standardized as butterflies per acre. This allows for direct comparison regardless of the amount of area surveyed. In 2020, the total number of butterflies per acre increased by 16% (Figure 2). Removing the Sandhill outlier, the data still show an increasing trend, though the number of butterflies per acre decreased below the 2019 level (Figure 3). This is not surprising as Sandhill made up 33% of the total population in 2020. The data can be further broken down by Recovery Unit. The GL and WCD Recovery Units showed 2020 increases as well as continued upward trends (Figures 4 & 6). The MS Recovery Unit saw a decline in 2020 but still trends upward (Figure 5). The ESP Recovery Unit does not have comparable data. Finally, the SO Recovery Unit trends downward but saw a significant increase in butterflies per acre in 2020. This year was the second highest year in the SO Recovery Unit (Figure 7).

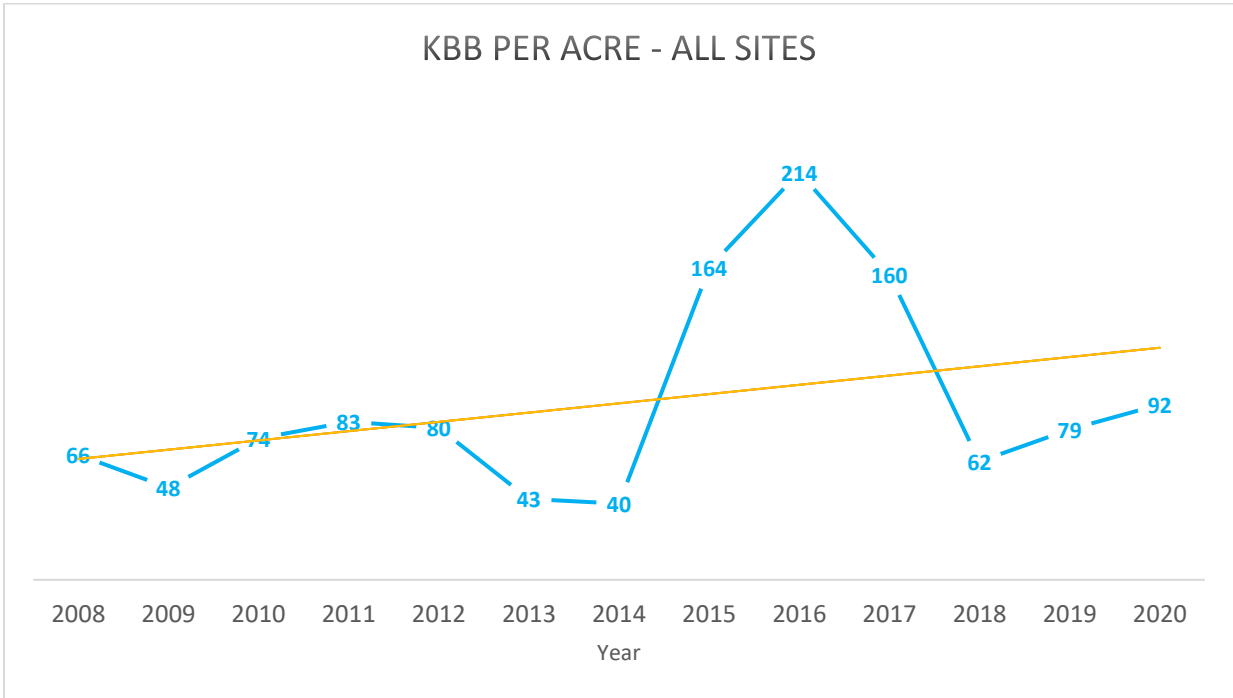


Figure 2. Annual number of Karner butterflies per acre at all sites surveyed. Orange line represents linear trend.

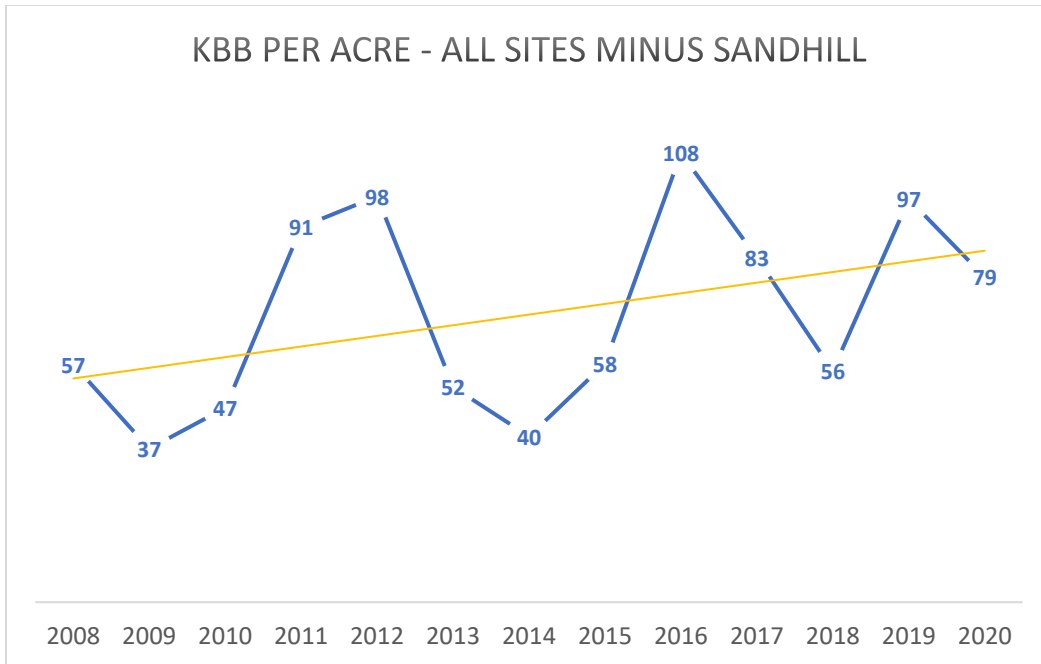


Figure 3. Annual number of Karner butterflies per acre at all sites surveyed with the Sandhill outlier removed. Orange line represents linear trend.

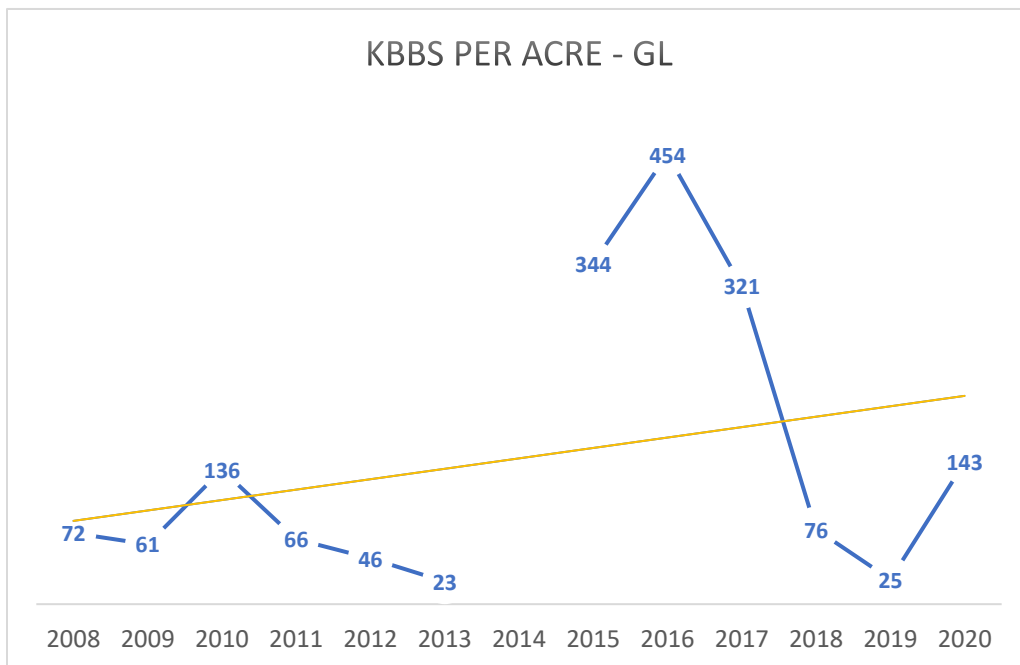


Figure 4. Annual number of Karner butterflies per acre at all sites surveyed in the Glacial Lake Recovery Unit. Orange line represents linear trend.

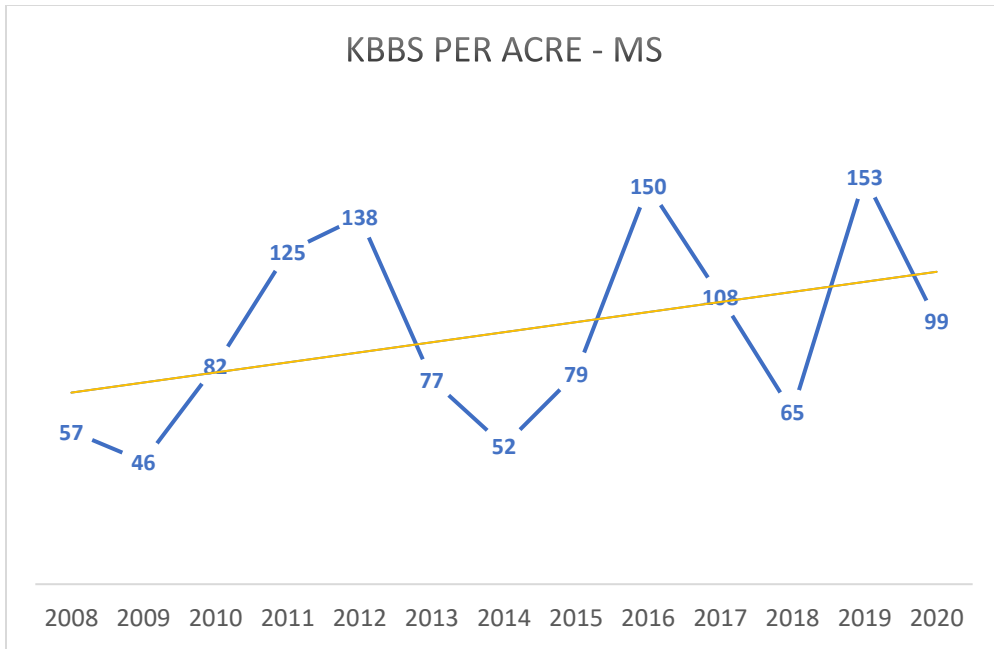


Figure 5. Annual number of Karner butterflies per acre at all sites surveyed in the Morainal Sands Recovery Unit. Orange line represents linear trend.

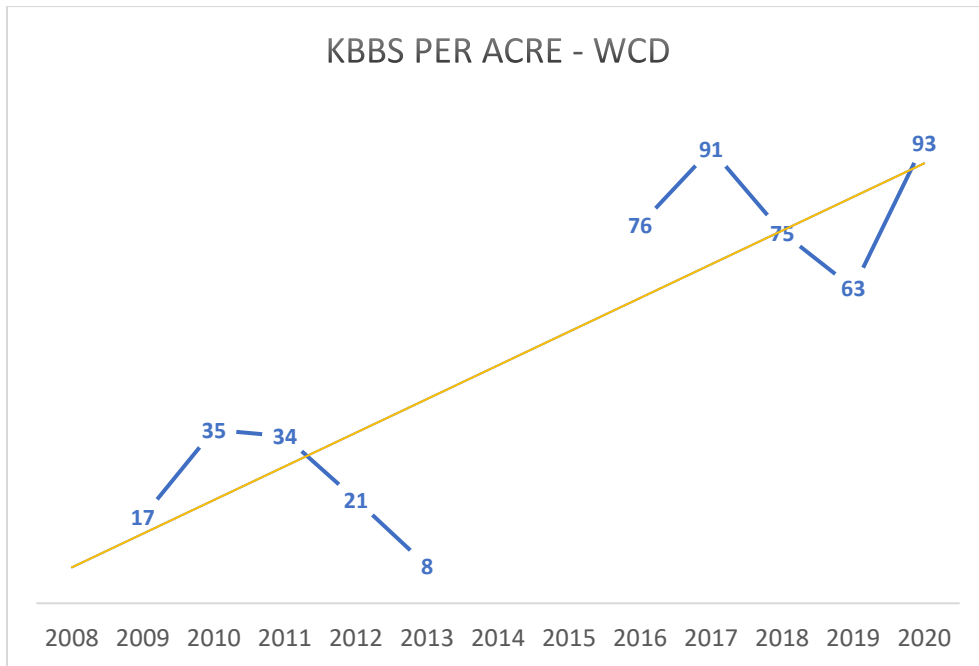


Figure 6. Annual number of Karner butterflies per acre at all sites surveyed in the West Central Driftless Recovery Unit. Orange line represents linear trend.

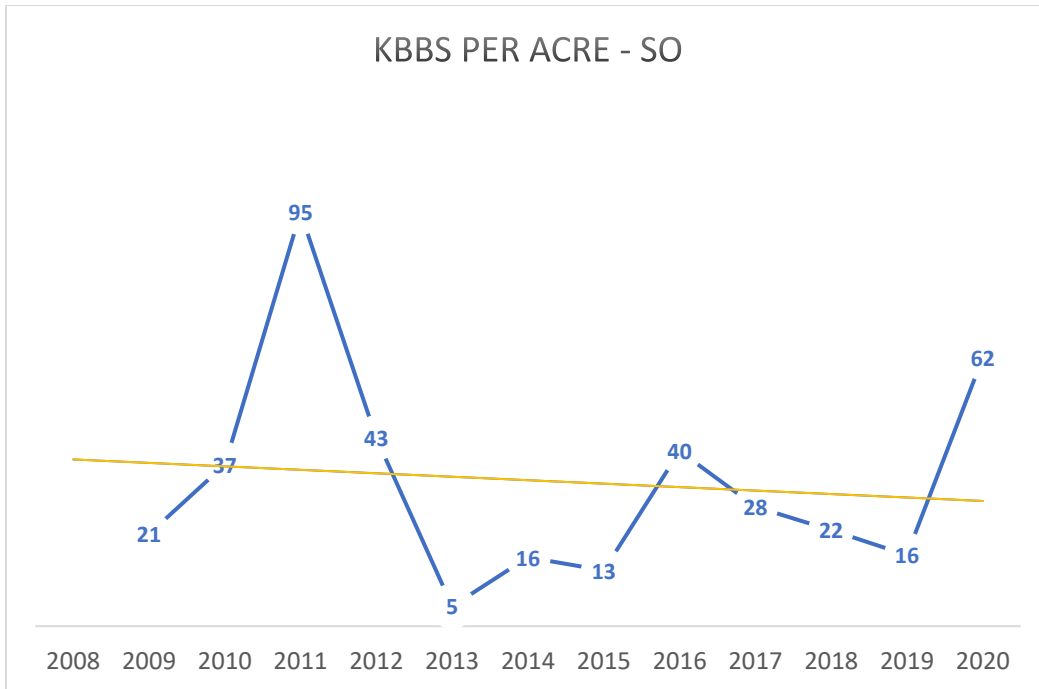


Figure 7. Annual number of Karner butterflies per acre at all sites surveyed in the Superior Outwash Recovery Unit. Orange line represents linear trend.

Karner Blue Butterfly Volunteer Efforts:

- Due to COVID19 DNR was unable to hold any Karner volunteer trainings in 2020, but some past volunteers continued to submit data. The Recovery Program was also able to partner with Fish & Wildlife Service to contract UW-Stevens Point to conduct additional occupancy surveys
- 133 observations were submitted to iNaturalist, similar to 2019 which had 136 submissions
 - The UWSP crew made up 48% of the total submissions
- More sites were visited this year at 76 compared to 59 in 2019
- Surveyors covered less acreage in 2020 but found approximately 25% more individual butterflies
- The naïve occupancy was slightly lower (2%) than 2019 (Figure 8) but still a strong number

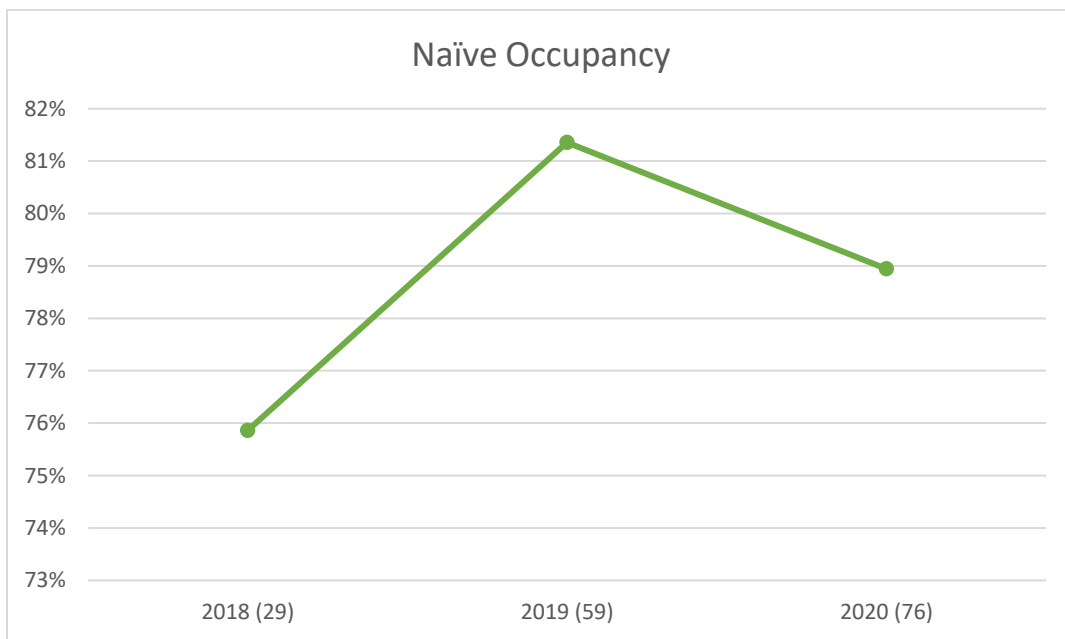


Figure 8. Percent naïve occupancy among sites surveyed from 2018-2020. Number in parentheses after year represents the number of sites surveyed.

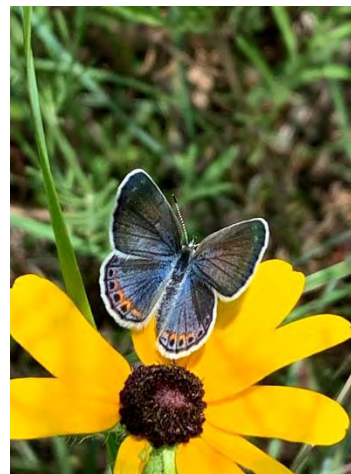
Highlights:

- Despite the lower amount of volunteer participation, valuable data were still submitted, including locating many new Karner populations!
- 18 new populations found in
 - Adams County
 - Columbia County
 - Portage County
 - Marquette County
 - Waushara County



Karner Recovery Habitat Enhancement Efforts:

- Grant approval to restore 400 acres on state lands
- Additional federal funding approval for 45 acres of habitat management work at Sandhill WA



Interested in joining the Karner Volunteer Monitoring Program?

Click [here](#) to learn more or e-mail Chelsea.Weinzinger@wisconsin.gov to sign up!