

Sleeping Bear Dunes National Lakeshore 2024 Visitor Use Study:

Description of Users and Use Characteristics

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Executive Summary

The 2024 Visitor Use Study at Sleeping Bear Dunes National Lakeshore (SLBE) was conducted to better understand visitor characteristics, patterns of use, experiences, and perceptions across multiple sites within the park. This work builds upon a 2014 study, particularly at the Crystal and Platte Rivers, and provides a ten-year comparison of changes in visitation, motivations, and crowding perceptions. The study was also shaped by important contextual shifts: the park's federal wilderness designation, a significant increase in visitation, and broader recreational changes associated with the COVID-19 pandemic.

A survey instrument, designed with park staff and approved through federal processes, was implemented from May–August 2024 at four main sites: Crystal River, Platte River, Glen Haven Beach, and Pierce Stocking Scenic Drive (PSSD). North Manitou Island was initially included, but dock closures curtailed sampling. Data collection followed a stratified approach across weekdays, weekends, times of day, and site types. Respondents completed 1,360 surveys out of 2,075 contacts (65.5% response rate).

The visitor profile reflected a mix of regional and out-of-state use, with strong representation from Michigan and neighboring Midwest states. The mean age was 47 years with broad distribution across 18–69 years. Most respondents traveled in groups of 2–5, averaging 4.7 people. Family groups dominated, followed by family + friends, and solo respondents were rare. Respondents were almost all domestic (U.S. residents), and approximately half were from Michigan. States with notable frequencies of response include Illinois, Indiana, and Ohio. There were small variations in response patterns across the survey administration sites.

Visits were generally short in duration and structured around family recreation and scenic enjoyment. Most stayed 2–4 hours, arriving late morning and leaving mid-afternoon. The majority of respondents considered SLBE one of several destinations of their trip and about a third made it their primary destination. This aligns with the trip purposes reported, as many respondents visited the region specifically to visit SLBE and, secondarily, to visit other local attractions. Respondents were generally either first time or many-time repeat visitors to the park, visiting the park either for the first time or the sixth or more time. Summer was the most popular season of past visits.

Respondents prioritized scenery, family connection, and outdoor activities. Their top three motivations were to enjoy natural scenery, share time with family/friends, and experience tranquility and adventure. The most common activities were beach going, dune climbing, hiking, canoeing / kayaking, and swimming. Some site-specific activities are of note. PSSD respondents reported more interest in learning, history, and ranger programs. Glen Haven respondents

reported more biking, swimming, and local history. Crystal River respondents reported more canoeing / kayaking. Finally, Platte River respondents reported more camping, fishing, tubing, and paddling.

The sites that respondents visited, spent the longest time, and looked forward to the most were consistent across these measures and survey administration sites: the Dune Climb, PSSD, Glen Haven / Maritime Museum, Crystal River, and Platte River.

Crowding perceptions remained moderate overall but varied by site. About a third of respondents reported not feeling crowded at all, and the mean response was in the “moderately crowded” range. The average observed group encounters was 17, ranging from a low of 5 at Crystal River to a high of 31 at PSSD. Respondents would prefer to encounter 12 or fewer groups. They would prefer managers to act if groups exceed 47 overall, but with a more stringent threshold at Crystal River (16 groups). Respondents report they would be displaced if they encountered about 61 groups overall, but again with a more stringent threshold at Crystal River (23). Across the four survey administration sites, Crystal River and Platte River were the most vulnerable to crossing thresholds where management action or visitor displacement may occur, whereas PSSD and Glen Haven showed higher tolerance for crowding.

Overall, this study presents SLBE as a park that attracts a diverse mix of local, regional, and national visitors, with family groups central to the experience. The park is primarily valued for its scenery, tranquility, and family recreation opportunities, underscoring its dual role as both a tourist destination and a local resource. Respondents are noting a variety of activities and motivations, and these tend to differ by the site of survey administration, reflecting the varied resource settings and opportunities that they provide. They report visiting SLBE alongside other regional attractions, signaling the park’s integration into broader tourism networks. Crowding is reported as moderate, but respondents favor lower use levels at some sites, particularly the Crystal River. Finally, respondents are of two visitor types (first time and many-repeat), which indicates both a strong base of loyal users and the novelty of attraction for new users and continued new demand.

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2024 Visitor Use Study and Results



Introduction

The main purpose of the Sleeping Bear Dunes National Lakeshore 2024 study was to better understand when and where visitor use was happening at this park. A similar study was conducted in 2014, focusing on the two river locations also studied in 2024, and thus a comparative analysis of these datasets can also inform us on how visitor use has shifted at these locations over a decade. This study intended to build off the information collected in 2014 and see how intended use of this unique park designation has shifted in the past decade.

Sleeping Bear Dunes National Lakeshore (SLBE or “the park”) is a 71,199-acre unit within the national parks system. Its purpose is “to preserve outstanding natural features, including forests, beaches, dune formations, and ancient glacial phenomena in their natural setting and protect them from developments and uses that would destroy the scenic beauty and natural character of the area, for the benefit, inspiration, education, recreation, and enjoyment of the public.”

The 2009 General Management Plan (GMP) identified areas of importance and issues that include congestion at certain visitor areas and the preservation of designated wilderness areas.

Data from 2012-2013 visitors of the Crystal River, Platte River, and North Manitou Island suggest that while social conditions were acceptable, social encounters on the Platte River could increase and negatively affect both social and resource conditions. Therefore, continued monitoring and evaluation are necessary to maintain the quality of the visitor experience and better understand visitor expectations.

The purpose of this study was to re-examine visitor use and user characteristics on the Platte River, Crystal River, and North Manitou Island and provide managers with updated data on current conditions. It also aimed to investigate visitor use patterns that have emerged following federal wilderness designation, rapidly increasing annual visitation, and the COVID-19 pandemic. The outcomes of this study were:

- To provide updated information on visitor use patterns, motivations, and preferences across previously studied sites and new areas of interest at SLBE.
- To examine visitor attitudes toward management strategies and actions implemented to address visitor use.
- To provide information for utilization in future potential planning efforts (e.g. river use plans, management plan updates, wilderness character monitoring).

2024 Sampling

In 2022, the project directors (Drs. Perry and Dvorak) worked with the park extensively to craft and finalize a survey that centered the park's needs for current and longitudinal data, using robust survey design and federal formatting specifications. The project was paused for more than a year, awaiting OMB approval. Approvals for the data collection were received in October 2023 from OMB and in the spring of 2024 by Michigan State University and Central Michigan University. This delay resulted in one season of survey administration with a survey focusing on visitor use, instead of the intended two seasons where a second survey administered would focus on visitor attitudes toward management strategies and actions implemented to address visitor use. These changes were discussed and decided among the project directors and lead park contacts throughout the project duration.

A total of five locations were chosen as sampling sites, all of which had unique characteristics both ecologically and socially. In 2024, data were collected on-site. The project directors assembled a field crew of four Michigan State University and Central Michigan University students and planned the logistics of the summer-long data collection in the park. The crew was housed locally and sampled sites and days of the week based on a stratified approach (balancing weekdays, weekends; morning, midday, and afternoon; and beach and river sites) from May 22 – August 7 (12 weeks). The crew totaled 48, 10-hour intercept days, with 28 days

(58%) on weekends and 20 days (42%) on weekdays. They administered the questionnaire to visitors at four sites: Crystal River, Platte River, Glen Haven Beach, and Pierce Stocking Scenic Drive (PSSD)¹ site #9. The finalized survey is attached as Appendix A. The survey instrument was similar across sites of administration, with site-specific language included. Each page of the survey administered was marked with the OMB approval number (1024-0224) and expiration date (10/31/2024).

A fifth site, the ferry docks for the North Manitou Island, was planned and originally sampled. These data were meant to capture this potentially unique visitor group and specifically to 1) compare data to a similar inquiry in 2014 and 2) assess perceptions about and experiences in the Wilderness on the island. However, there was a low response in these initial days, and ferry cancelations, before the North Manitou Island dock was ultimately closed for the season (and remains closed currently). Because of this closure, and in consultation with Superintendent Scott Tucker, we omitted further sampling effort in this location and rededicated effort within the four remaining sites in a balanced format. Data from the 39 responses collected for North Manitou Island before the change in protocol are included in the “Total” responses for the park but are not presented as a unique site within the tables due to the low response and potential for disproportionate emphasis on this small number in comparison to the larger number of responses at the four other sites.

The data collections yielded 1,360 completed surveys (responses) for the 2024 summer season. Table 1 lists the number of intercepts, responses, and refusals at each sampling location and overall, followed by the response rate for each location and overall. Our overall response rate of 65.5% and the site-level response rates for the four primary sites ranging from 60-70% were within expectations from previous on-site intercept surveying at the park and similar efforts in other national parks. Overall and at each site, about 60% of the effort was concentrated on weekdays and non-holidays (Table 2) and with the most surveys collected in July (n=713) (Table 3).

Data from the hardcopy (paper) surveys distributed to park visitors were entered by the field crew in summer and fall 2024 into a digital database. From here, data were cleaned and standardized to facilitate quantitative summaries. Data were analyzed in IBM SPSS version 30.0 and are presented in this report with percentages of responses, means from response scales, and other formats as appropriate for each question type.

¹ Pierce Stocking Scenic Drive is referred to throughout the rest of this report as PSSD.

Table 1. Intercepts and response rates per sampling site and overall at SLBE in summer 2024.

Site	Total Intercepts	Responses	Refusals	Response Rate
Crystal River	496	300	196	60.5%
Glen Haven	479	337	142	70.4%
PSSD	619	381	238	61.6%
Platte River	432	303	129	70.1%
Manitou Islands	49	39	10	79.6%
Total	2075	1360	715	65.5%

Table 2. Total survey distributions (percentages, %) at the sampling sites for weekday and non-holidays versus weekend and holidays in summer 2024.

	PSSD	Glen Haven	Crystal River	Platte River	Manitou Islands	Total
Weekday and non-holidays	58.8	56.6	58.6	60.1	59.0	58.5
Weekend and holidays*	41.2	43.5	41.4	39.9	41.0	41.5
*Federal holidays during data collection (May – Aug. 2024): Memorial Day (May 27 th), Juneteenth (June 19 th), Independence Day (July 4 th)						

Table 3. Monthly distribution of surveys collected per sampling site and overall at SLBE in 2024.

	May	June	July	August	Total
PSSD	42.1	40.8	21.3	17.7	27.9
Glen Haven	18.0	22.7	27.4	23.1	24.8
Crystal River	26.5	17.8	23.3	31.3	22.1
Platte River	23.3	18.1	23.0	27.9	22.3
Manitou Islands	--	0.6	5.1	--	2.9

2024 Results

Demographics of Participants

Trip demographics were calculated overall and per trip site for the following sites: PSSD, Glen Haven, Crystal River, and Platte River. Manitou Islands was not included in this section or any of the following sections of the report, due to having low sampling numbers and these numbers adding non-significant data.

Overall, respondents had a mean age of 47 years old and most of them visited with their family, were from the U.S., and were non-Michigan residents (Tables 4-8). The age distribution was evenly distributed between ages 18-69, with the highest percentage of respondents being 40-49 years old (Table 4). After family (only), the second largest percentage of respondents were traveling with family and friends (Table 5). The mean percentage of respondents from May – August and across sites, who were from the United States was 97.4% (Tables 6-7). August had the largest percentage of respondents from other countries at 4.1% (Table 6). Across the four sites, there was approximately an even split of non-Michigan and Michigan resident respondents at 54.5% and 45.5% respectively (Table 8). Major trends for state-level responses show that the top five states respondents were from are Illinois (8.2% of total visitors), Indiana (4.2% of total visitors), Michigan (45.5% of total visitors), Ohio (9.0% of total visitors) and Kentucky (1.9% of total visitors). All other states had <1.8% of visitors total during the sampling period for all sites.

The respondents at PSSD had a mean age of 51 years old, and most of them also visited with their family (only), were from the U.S., and were non-Michigan residents (Tables 4, 5, 7, and 8). The largest percentage of respondents were in the age group 60-69 years old at 24.1%, and there was a similar pattern to the overall results, with a relatively even distribution throughout age groups (Table 4). Compared to the other three sites, PSSD had the largest percentage of respondents who were from outside the U.S. at 4.2% (Table 7). PSSD also had the largest percentage of non-Michigan respondents at 65.3% (Table 8).

The respondents at Glen Haven had a mean age of 50 years old, and, similar to the overall results, most of them also visited with their family (only), were from the U.S., and were non-Michigan residents (Tables 4, 5, 7, and 8). Approximately two-thirds of the respondents were aged 40-69, with the largest percentage being in the 60-69 age group at 22.6% (Table 4). Unlike the other three sites, there were no respondents who were a part of a “tour/other” (Table 5). There was approximately an even split between non-Michigan and Michigan residents (Table 8).

The respondents at Crystal River had a mean age of 41 years old, and most of them also visited with their family (only), were from the U.S., and were non-Michigan residents (Tables 4, 5, 7, and 8). Compared to the other three sites, Crystal River had a “younger” age distribution, with approximately 75% of the respondents aged 18-49 (Table 4). The largest percentage of respondents were in the age group 40-49 (Table 4). There were also no respondents 80 years or older (Table 4). In terms of group composition, “alone” and “tour/other” were tied for the smallest percentage of respondents (Table 5). Michigan versus other state residency mirrored the overall results (Table 8).

The respondents at Platte River had a mean age of 45 years old, and most of them also visited with their family (only) and were from the U.S. Approximately half of the respondents were ages 30-49 with the largest percentage being in the 40-49 age group (Tables 4, 5, and 7). There were no respondents 80 years or older (Table 4). Platte River had the smallest percentage of respondents from outside the U.S. at 1.3% (Table 7). Compared to the other three sites, Platte River was the only site to have more Michigan residents than non-Michigan at 55.3% (Table 8).

Table 4. Percentages (%) of age distribution of respondents and mean age in years per sampling site and overall.

Age	PSSD	Glen Haven	Crystal River	Platte River	Total
18-29	14.6	11.6	20.5	14.2	15.3
30-39	10.9	16.1	24.9	21.9	17.8
40-49	17.2	20.5	28.6	27.5	23.2
50-59	17.5	18.2	15.5	15.9	16.7
60-69	24.1	22.6	9.4	15.9	18.4
70-79	14.3	9.5	1.0	4.6	7.8
80+	1.3	1.5	--	--	0.7
Mean (years)	51.38	50.39	41.42	45.33	47.38

Table 5. Percentage (%) of responses for each group composition per sampling site and overall.

Group type	PSSD	Glen Haven	Crystal River	Platte River	Total
Alone	5.6	3.0	1.7	1.7	3.2
Family (only)	66.1	73.4	67.3	61.3	66.9
Friends (only)	14.0	6.9	9.1	10.0	10.4
Family + Friends	13.5	16.7	20.2	24.0	17.9
Tour/other	0.8	--	1.7	3.0	1.6

Table 6. Percentages (%) of responses for group nationality by month of sampling effort.

	May	June	July	August	Total
United States	97.0	97.4	97.8	95.9	97.4
Other countries*	3.0	2.6	2.2	4.1	2.6
*Other countries (n): Canada (13), United Kingdom (2); all the following with (1) each Brazil, China, Colombia, Denmark, Germany, India, Luxembourg, Puerto Rico, Scotland, South Africa, Sweden, and Turkey					

Table 7. Percentages (%) of responses for group nationality by sampling site and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
United States	95.8	98.2	97.0	98.7	97.3
Other countries	4.2	1.8	3.0	1.3	2.7

Table 8. Percentages (%) of response for Michigan residency by sample site and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
Non-Michigan	65.3	51.8	54.5	44.7	54.5
Michigan	34.7	48.2	45.5	55.3	45.5

Trip Characteristics

Overall, a majority of respondents were in groups of 2-5 people (with a mean size of 4.7 people), were first time visitors at the time of the survey (responded 1 for number of trips) in the past 12 months, and had previously visited SLBE in the summer in the past 12 months (Tables 9-11). The largest percentage of respondents were in groups of 2-3 people at 45.7% (Table 9). The mean number of trips taken to SLBE in the past 12 months was 3.4 trips (Table 10). Summer was the most popular season for past visits to SLBE overall, and winter was the least popular season (Table 11 and Figure 1). Figure 1 shows the percentages of the seasons visited by repeat visitors. The breakdown of percentages across individual sites was the same for all four seasons (Table 11). In other words, of the 31.9% of respondents who visited in the summer, 31.9% of respondents were visiting Glen Haven, 28.0% of respondents were visiting Platte River, 23.8% of respondents were visiting Crystal River, and 13.7% of respondents were visiting PSSD (Table 11). These site distributions were repeated in the other three seasons (Table 11). This implies that each site is visited throughout the year without a standout season. Glen Haven has the highest percentages across the four sites, which could show that respondents favor that site (Table 11). Therefore, when respondents are visiting, they may favor the sites rather than a particular season.

The mean number of all trips taken in the past to SLBE was 23.3 trips (Table 12). Approximately 70% of respondents were either first-time visitors at the time of the survey or had made 6+ trips in the past (Table 12). The largest percentage for all sites combined was 37.1% for 6+ trips (Table 12). Similar to all trips taken in the past to SLBE, when asked about all previous trips taken to specific sites, 70% of respondents were either first-time visitors or had made 6+ trips (Table 13). However, the largest percentage was for first time visitors at 41.1% (Table 13).

Respondents at PSSD had a mean group size of 3.6, and a majority of them were in groups of 2-5 people (~80%) and were first time visitors to the site at the time of the survey (Tables 9-10). When respondents were asked about their previous trips to PSSD in the past 12 months, the mean was 1.7 trips, which is the lowest across the sites, and the largest percentage responded with one trip (78.4%), which means only the current trip without previous trips (Table 10). This is the largest percentage across the four sites (Table 10). Across the sites, PSSD had the lowest percentages for visitation across all seasons (Table 11). When asked about all trips taken to SLBE in the past, respondents at PSSD had a mean of 8.71 trips, which is the lowest mean across the four sites (Table 12). About 70% of respondents were either first-time visitors at the time of the survey or had visited 6+ times (Table 12). The highest percentage was one trip at 45.7% (Table 12). PSSD is the only site where one trip is the largest percentage for this question. When asked about all previous trips to PSSD, respondents at PSSD reported a mean of 5.6 trips and, similar to the previous question, the largest percentage is one trip at 54.3% and about 70% of respondents were either first-time visitors or had made 6+ trips (Table 13).

Respondents at Glen Haven had a mean group size of 4.4, and a majority of them were in groups of 2-5 people (~75%) and were first time visitors to the site at the time of the survey (Tables 9-10). When respondents were asked about their previous trips to Glen Haven in the past 12 months, the mean was 6.5 trips, which was the highest across the sites, and most respondents reported one trip (50%) (Table 10). Glen Haven had the largest percentage of 6+ visits in the past 12 months across the four sites at 16.2% (Table 10). Across the sites, Glen Haven had the highest percentages for visitation across all seasons (Table 11). When asked about all trips taken to SLBE in the past, respondents at Glen Haven had a mean of 38 trips (Table 12). About 70% of respondents were either first-time visitors at the time of the survey or had visited 6+ times (Table 12). The highest percentage was 6+ trips at 43.8% (Table 12). When asked about all previous trips to Glen Haven, respondents at Glen Haven reported a mean of 5.6 trips, which is the highest mean across all four sites (Table 13). Similar to the previous question, the largest percentage is 6+ trips at 45%, and about 70% of respondents were either first-time visitors or had made 6+ trips (Table 13).

Respondents at Crystal River had a mean group size of 4.7, and a majority of them were in groups of 2-5 people (~75%) and were first time visitors to the site at the time of the survey (Tables 9-10). When respondents were asked about their previous trips to Crystal River in the past 12 months, the mean was 2.5 trips and the largest percentage responded with one trip at 57.1% (Table 10). When asked about all trips taken to SLBE in the past, respondents at Crystal River had a mean of 9.9 trips, which is a similar value to PSSD (Table 12). About 70% of respondents were either first-time visitors at the time of the survey or had visited 6+ times (Table 12). The largest percentage was 6+ trips at 37.9% (Table 12). When asked about all previous trips to Crystal River, respondents at Crystal River reported a mean of 4.1 trips, which is the lowest mean across all four sites (Table 13). Similar to the previous question, about 70% of respondents were either first-time visitors or had made 6+ trips. However, the largest percentage was first-time visitors at 48.9% (Table 13).

Respondents at Platte River had a mean group size of 6.4, and a majority of them were in groups of 2-5 people (~60%) and were first time visitors to the site at the time of the survey (Tables 9-10). The Platte River had the highest percentage of group sizes of 10+ people at 17.5% (Table 9). When respondents were asked about their previous trips to Platte River in the past 12 months, the mean was 3.4 trips and the largest percentage responded with 1 trip at 50.4% (Table 10). When asked about all trips taken to SLBE in the past, respondents at Platte River had a mean of 40.9 trips, which is a similar value to Glen Haven (Table 12). About 70% of respondents were either first-time visitors at the time of the survey or had visited 6+ times (Table 12). The highest percentage was 6+ trips at 48.1% (Table 12). When asked about all previous trips to Platte River, respondents at Platte River reported a mean of 21.5 trips (Table

13). Similar to the previous question, the largest percentage was 6+ trips at 37.7%, and about 70% of respondents were either first-time visitors or had made 6+ trips (Table 13).

Table 9. Percentages (%) of responses per site and overall for personal group size (number of people).

Group Size	PSSD	Glen Haven	Crystal River	Platte River	Total
1	5.0	2.8	1.4	2.1	3.0
2-3	56.7	46.5	45.9	29.8	45.7
4-5	22.9	26.9	27.1	29.1	26.1
6-7	10.9	11.6	12.3	14.7	12.0
8-9	2.2	4.9	5.1	6.8	4.7
10 (+)	2.2	7.3	8.2	17.5	8.6
Mean	3.6	4.4	4.7	6.4	4.7

Table 10. Percentages (%) for each number of previous trips to the park in the past 12 months per sampling site and overall, with the mean number of trips in the past year.

Trips to the park	PSSD	Glen Haven	Crystal River	Platte River	Total
1*	78.4	50.0	57.1	50.4	59.8
2	11.7	19.7	21.6	23.9	18.9
3	2.4	5.4	8.1	8.7	5.9
4	1.2	5.7	2.2	3.3	3.2
5	1.2	2.9	3.3	2.9	2.5
6+	5.1	16.2	7.7	10.9	9.7
Mean	1.7	6.5	2.5	3.4	3.4

*1 trip means only the current trip, no previous trips

Table 11. Percentages (%) for season(s) of past visits in the past 12 months to the park per sampling site and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total*
Spring	15.6	35.2	22.1	25.1	14.7
Summer	13.7	31.9	23.8	28.0	31.9
Fall	14.3	34.8	23.7	25.0	16.5
Winter	15.2	36.2	23.8	23.8	7.8

*Total visitation represents the proportion of repeat visitors in the sample (70.9%).

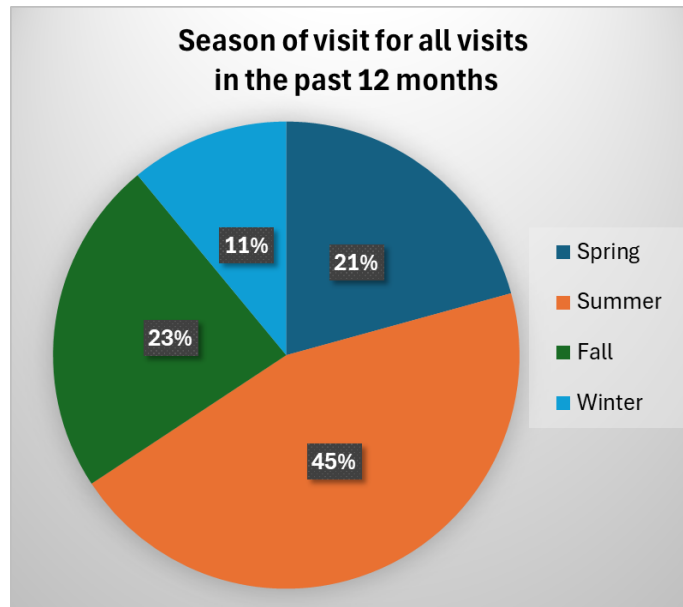


Figure 1. For repeat visitors, percentages (%) of season(s) of past visits in the past 12 months to the park.

Table 12. Percentages (%) for each number of previous trips to the park ever per sampling site and overall, with the mean number of lifetime trips.

Trips to the park	PSSD	Glen Haven	Crystal River	Platte River	Total
*1	45.7	26.0	29.2	19.5	31.0
2	16.1	14.2	15.5	14.3	15.0
3	6.7	4.9	6.8	8.3	6.7
4	4.7	6.9	7.2	4.9	5.8
5	4.1	4.2	3.4	4.9	4.4
6+	22.6	43.8	37.9	48.1	37.1
Mean	8.71	38.0	9.9	40.9	23.3

*1 trip means only the current trip, no previous trips

Table 13. Percentages (%) of response for each number of previous trips to the specific sampling site ever per sampling site and overall, with the mean number of lifetime trips to that site.

Trips to site within the park	PSSD	Glen Haven	Crystal River	Platte River	Total
*1	54.3	28.2	48.9	28.6	41.1
2	14.2	12.4	16.9	15.8	14.8
3	6.8	5.2	4.8	6.2	5.9
4	3.0	5.2	6.6	6.2	5.0
5	4.2	4.1	2.9	5.5	4.2
6+	17.5	45.0	19.9	37.7	29.0
Mean	5.6	26.3	4.1	21.5	13.7

*1 trip means only the current trip, no previous trips

Overall, the time respondents spent at SLBE during their current trip was 2-4 hours, arriving before 1pm and departing from the site between 1:01pm-4:00pm (Tables 14-16). The mean time spent at SLBE was 48 hours, but the data had a range of 1-576 hours (Table 14). The largest percentage of respondents arrived between 10:01am-1:00pm (53.5%) (Table 15). Very few respondents arrived overnight overall and across sites (Table 15). The largest percentage of respondents left between 1:01-4:00pm (46.7%), which makes sense if many of them arrived before 1:00pm and stayed for 2-4 hours (Table 16). This trend is seen across individual sites, too. When asked how their visit to SLBE fit into their travel plans, overall respondents selected “the park is one of several destinations” the most at 56.1% (Table 17). The second highest percentage was “the park is my primary destination” at 35.2% (Table 17). This trend also occurs across individual sites. The overall purpose of visiting SLBE was to “visit Sleeping Bear Dunes National Lakeshore” at 83.2% (Table 18). The second highest percentage was 64.5% for “visit other attractions in the area” (Table 18). This trend is again seen across individual sites. When asked to select the top three purposes for visitation, the results for total respondents were almost identical to Table 18 (Table 19).

Most respondents at PSSD spent 2-4 hours at SLBE, arriving between 10:01am-1pm and departing between 1:01pm-4:00pm, visited the park as one of several destinations, and came with the purpose of visiting the park and other attractions (Tables 14-18). The mean time spent at SLBE was 23.2 hours (Table 14). Of the few respondents who selected “travelling through – unplanned visit” (7.1%) or “business” (1.8%) as one of their top three purposes for visitation, a high percentage of respondents were from PSSD (Table 19). Of the “travelling through – unplanned visit” respondents, 44.8% were from PSSD and of the “business” respondents, 44% were from PSSD (Table 19).

Most respondents at Glen Haven spent 2-4 hours at SLBE, arriving between 10:01am-1:00pm and departing between 1:01pm-4:00pm, visited the park as one of several destinations, and came with the purpose of visiting SLBE and other attractions (Tables 14-18). The mean time spent at SLBE was 50.7 hours (Table 14). In Table 18 and Table 19, of the percentage of respondents whose purpose of visitation was “resident of the area,” many respondents were from Glen Haven.

Most respondents at Crystal River spent 2-4 hours at SLBE, arriving between 10:01am-1:00pm and departing between 1:01pm-4:00pm, visited the park as one of several destinations, and came with the purpose of visiting SLBE and other attractions (Tables 14-18). The mean time spent at SLBE was 64.6 hours (Table 14).

Most respondents at Platte River spent 2-4 hours at SLBE, arriving between 10:01am-1:00pm and departing between 1:01pm-4:00pm, visited the park as one of several destinations, and came with the purpose of visiting SLBE and other attractions (Tables 14-18). The mean time

spent at SLBE was 55.8 hours (Table 14). In Table 17, when asked about how SLBE fits into travel plans, Platte River had the highest percentage across the four sites for “the park is my primary destination” at 44.9%. In Table 18 and Table 19, of the percentage of respondents whose purpose of visitation was “resident of the area”, many respondents were from Platte River.

Table 14. Percentages (%) of responses for number of hours spent at the park across survey sites and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
1	5.0	3.1	1.8	1.7	2.9
2-4	47.5	31.3	25.4	31.9	33.8
5-8	18.2	19.9	17.6	19.8	18.7
9-12	3.4	4.6	3.9	4.5	4.0
13-24	3.9	6.4	5.0	3.5	5.0
25-48 (2 days)	7.8	6.4	9.0	4.9	7.4
49-72 (3 days)	6.1	6.4	10.0	8.7	8.0
73-168 (4-7 days)	6.7	16.3	20.8	20.1	15.8
169-336 (8-14 days)	1.1	4.0	4.7	3.1	3.1
337+ (2+ weeks)	0.3	1.5	1.8	1.7	1.3
Mean (days)	23.2	50.7	64.6	55.8	48.0
Median (days)	4	7	24	6	6
Range (days)	1-360	1-576	1-576	1-576	1-576

Table 15. Percentage (%) of responses for arrival time block at site across sampling sites.

Arrival time at site	PSSD	Glen Haven	Crystal River	Platte River	Total
7:01-10:00 AM	24.4	17.6	31.5	32.5	25.7
10:01 AM – 1:00 PM	49.6	57.6	53.5	52.3	53.5
1:01 – 4:00 PM	22.9	18.6	12.8	10.8	16.9
4:01 – 7:00 PM	2.3	4.8	2.2	3.2	3.0
Overnight	0.9	1.4	--	1.1	0.9

Table 16. Percentage (%) of responses for departure time block at site across sampling sites.

Departure time from site	PSSD	Glen Haven	Crystal River	Platte River	Total
7:01-10:00 AM	0.3	3.1	3.4	1.1	1.8
10:01 AM – 1:00 PM	29.9	24.5	24.4	22.1	25.9
1:01 – 4:00 PM	48.1	42.3	46.2	51.3	46.7
4:01 – 7:00 PM	20.5	25.5	21.8	21.4	22.0
Overnight	1.2	4.9	4.1	4.1	3.5

Table 17. Percentage (%) of responses to how their visit to SLBE fit into their travel plans by sampling site and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
The park is one of several destinations	65.4	58.1	53.6	48.1	56.1
The park is my primary destination	23.6	37.0	34.2	44.9	35.2
I am passing through the park to my primary destination	7.5	3.4	7.1	5.6	5.8
I did not plan to visit this park	3.5	1.5	5.1	1.4	2.8

Table 18. Percentage (%) of responses about purpose of trip to the park by sample site and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
Visit Sleeping Bear Dunes National Lakeshore	86.0	86.6	77.6	82.5	83.2
Visit other attractions in the area	67.7	65.8	64.5	62.9	64.5
Visit friends/relatives in the area	26.7	19.9	29.8	26.8	25.6
Resident of the area	11.1	18.8	15.4	21.9	16.4
Other*	6.6	8.9	7.0	9.6	7.9
Travelling through – unplanned visit	11.6	5.7	6.7	4.0	7.2
Business	2.4	1.5	1.3	1.3	1.7
*Other: Recreation (48), vacation (29). Spending time with family/friends (not in the area) (20), relaxing (8), fun (2), and travel recommendation (2).					

Table 19. Percentage (%) of response to the top 3 purposes for visiting the SLBE area across sampling sites and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
Visit Sleeping Bear Dunes National Lakeshore	28.8	25.9	20.6	22.0	83.1
Visit other attractions in the area	29.3	25.3	22.1	21.8	64.5
Visit friends/relatives in the area	29.1	19.3	25.6	23.3	25.6
Resident of the area	18.6	28.8	20.8	29.6	16.7
Other*	24.0	27.9	19.2	26.9	7.7
Travelling through – unplanned visit	44.8	19.8	20.8	12.5	7.1
Business	44.0	20.0	16.0	16.0	1.8
*Other: Recreation (48), vacation (29), spending time with family/friends (not in the area) (20), relaxing (8), fun (2), and travel recommendation (2).					

Trip Motivations, Activities, and Locations

Overall, respondents overwhelmingly chose “to enjoy the natural scenery” (79.0%) and “to share quality time with family / friends” (75.8%) as one of their top three motivations for visiting SLBE (Table 20), emphasizing the park’s scenic beauty and opportunities for connection. Motivations related to activities with family / friends, tranquility, and adventure were also commonly chosen.

When examined by site of survey administration, response frequencies for each motivation were similar and may indicate that respondents are having activity experiences across the park and not just at the intercept site (e.g., respondents noting water-based activity participation who were intercepted on PSSD). There were a few notable outliers among sites:

- Respondents at PSSD were more apt to select “to learn more about nature,” “to learn about the history of the area,” “to gain a sense of self-confidence,” and “to develop a sense of self-pride.”
- Respondents at Glen Haven were more apt to select “to get away from crowded areas” and “to be with people who have similar interests.”
- Respondents at Crystal River were more apt to select “to experience excitement.”
- Respondents at Platte River were more apt to select “to experience the solitude / privacy” and “to be with people who have similar interests.”

Many activities are popular at SLBE, and distributions of participation (Figure 2) reflect this. Beach going (62.1%), dune climbing (56.4%), hiking (48.2%), canoeing / kayaking (45.6%), and swimming (37.7%) were the top five most selected activities and the most selected primary activities (Table 21).

On the site-specific level, sites with substantially higher frequency of response about all activities and/or primary activities than other sites were:

- Respondents at PSSD were more apt to participate in visiting the visitor center and historical sites. They were more apt to select dune climbing, stargazing, exercising, visiting the visitor center, hiking, visiting historical sites, and “other” activities as their primary ones.
- Respondents at Glen Haven were more apt to participate in biking, beach going, visiting the visitor center, and visiting historical sites. They were more apt to select biking, beach going, exercising, swimming, and visiting historical sites as their primary ones.
- Respondents at Crystal River were more apt to participate in canoeing / kayaking. They were more apt to select canoeing / kayaking as their primary one.

- Respondents at Platte River were more apt to participate in camping, fishing, tubing, and canoeing / kayaking. They were more apt to select camping, fishing, tubing, and canoeing / kayaking as their primary ones.

Respondents shared which locations they visited (Figure 3), which ones they spent the most time at (Figure 4), and which ones they were looking forward to the most (Figure 5). Overall, the Dune Climb (50.3%), PSSD (46.8%), Glen Haven / Maritime Museum (40.1%), Crystal River (29.5%), and Platte River (29.2%) were the most visited locations. These were similarly the locations where respondents spent the most time and that they were looking forward to the most, with some variation among the ordering of those top five.

There was an expected increase in response for the location at which they were surveyed or nearby to that location for where respondents visited, spent the most time, and were looking forward to the most. Otherwise, patterns of response were similar among the sites surveyed. That responses for sites visited (see Appendix B2) are not 100% at each site where they were intercepted (i.e., 85.4% to 89.7%) indicates that respondents may not have been considering their “current” site (where the intercept occurred) as a “visited” one, that they did not know the name of the site they were at, or that they only considered their main stops in the park and not ones they were passing through or spending shorter amounts of time.

Table 20. Percentage (%) of response to visitors’ main motivations or desired experiences for visiting the park.

	PSSD	Glen Haven	Crystal River	Platte River	Total
To enjoy the natural scenery	29.7	26.1	21.1	20.6	79.0
To share quality time with family/friends	24.7	25.8	23.9	22.9	75.8
To do something with my family/friends	27.6	23.8	24.2	22.5	39.7
To enjoy the tranquility of the area	20.7	33.0	21.5	21.8	27.1
To experience an adventure	30.6	19.9	22.5	23.5	22.7
To get away from crowded areas	15.7	37.0	20.4	22.2	8.0
To experience the solitude/privacy	20.7	24.4	19.5	31.7	6.1
To learn about the history of the area	67.9	15.4	6.4	7.7	5.8
To learn more about nature	47.5	14.8	14.8	21.3	4.5
To experience excitement	21.2	19.2	36.5	21.2	3.8
To be with people who have similar interests	18.2	30.3	18.2	33.3	2.4
To develop a sense of self-pride	77.8	--	--	22.2	0.7
To gain a sense of self-confidence	62.5	--	12.5	25.0	0.6
To meet new people	33.3	33.3	33.3	--	0.4

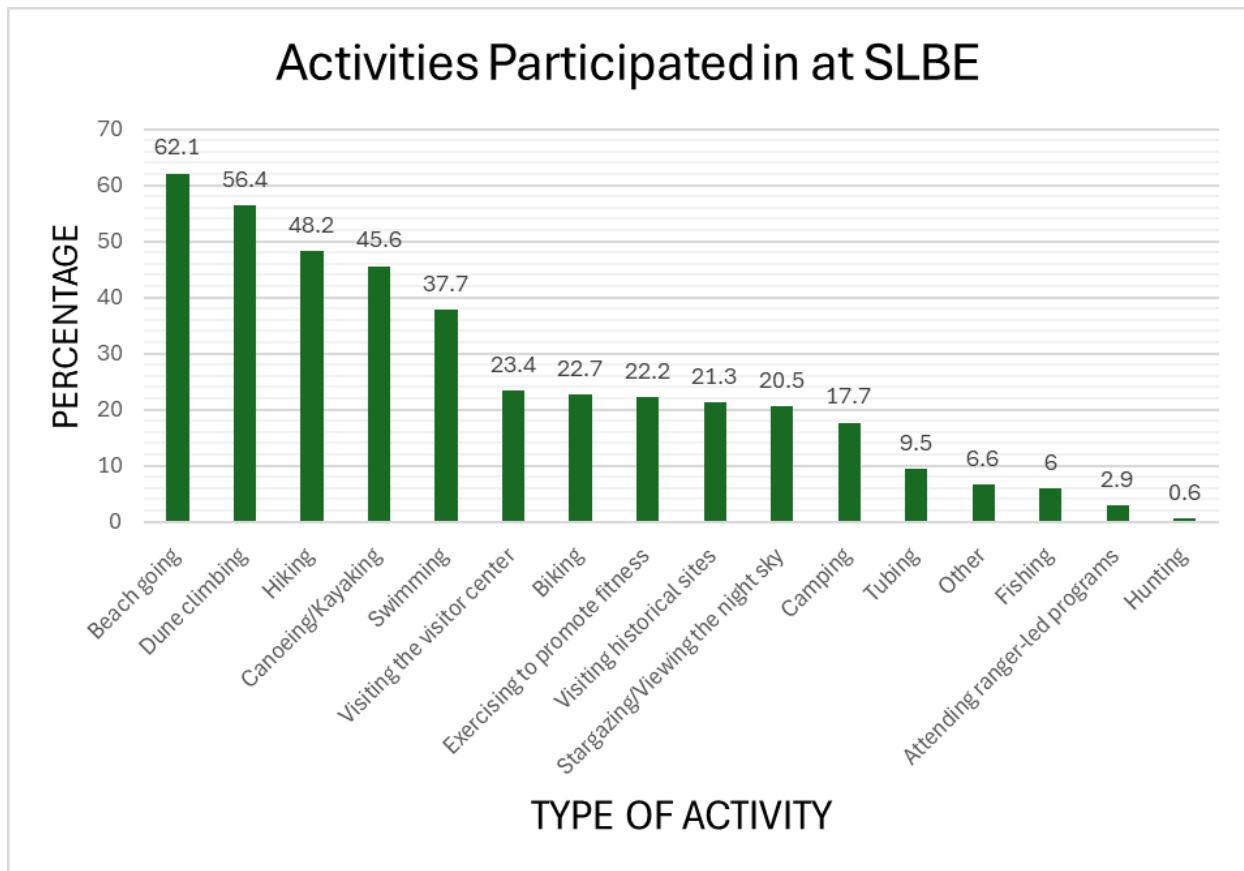


Figure 2. Percentage (%) of respondents reporting types of activity participation in the park. Other includes enjoying nature/scenic beauty (28), scenic driving (13), engaging in local tourism (10), boating (8), birding (5), relaxing (5), photography (4), visiting (4), picnicking (3), paddle boarding (3), surfing (2), dog walking (1), golfing (1), painting (1), and snorkeling (1).

Table 21. Percentage (%) of response to the top three activities participated in on this trip to the park.

	PSSD	Glen Haven	Crystal River	Platte River	Total
Beach going	16.6	40.6	19.6	21.4	42.2
Dune climbing	40.2	25.3	18.2	15.6	36.6
Canoeing/Kayaking	2.9	6.7	47.7	42.4	35.2
Hiking	34.2	24.7	20.0	14.3	31.1
Swimming	10.6	39.4	22.9	25.4	17.4
Biking	10.9	53.6	23.0	12.0	13.5
Camping	24.7	18.4	13.8	33.3	12.9
Visiting historical sites	53.8	23.5	8.4	8.4	8.8
Visiting the visitor center	72.9	16.9	2.5	3.4	8.7
Exercising to promote fitness	41.7	34.5	6.4	16.4	8.1
Other*	53.6	23.2	11.6	11.6	5.1
Tubing	3.3	8.2	11.5	77.0	4.5
Stargazing/Viewing the night sky	38.6	10.5	26.3	14.0	4.2
Fishing	8.3	16.7	12.5	58.3	1.8
Attending ranger-led programs	25.0	25.0	--	25.0	0.3
Hunting	100	--	--	--	0.1
*Other: Enjoying nature/scenic beauty (26), scenic driving (11), boating (6), engaging in local tourism (4), birding (3), picnic (3), relaxing (3), photography (2), surfing (2) paddle boarding (2), and painting (1).					

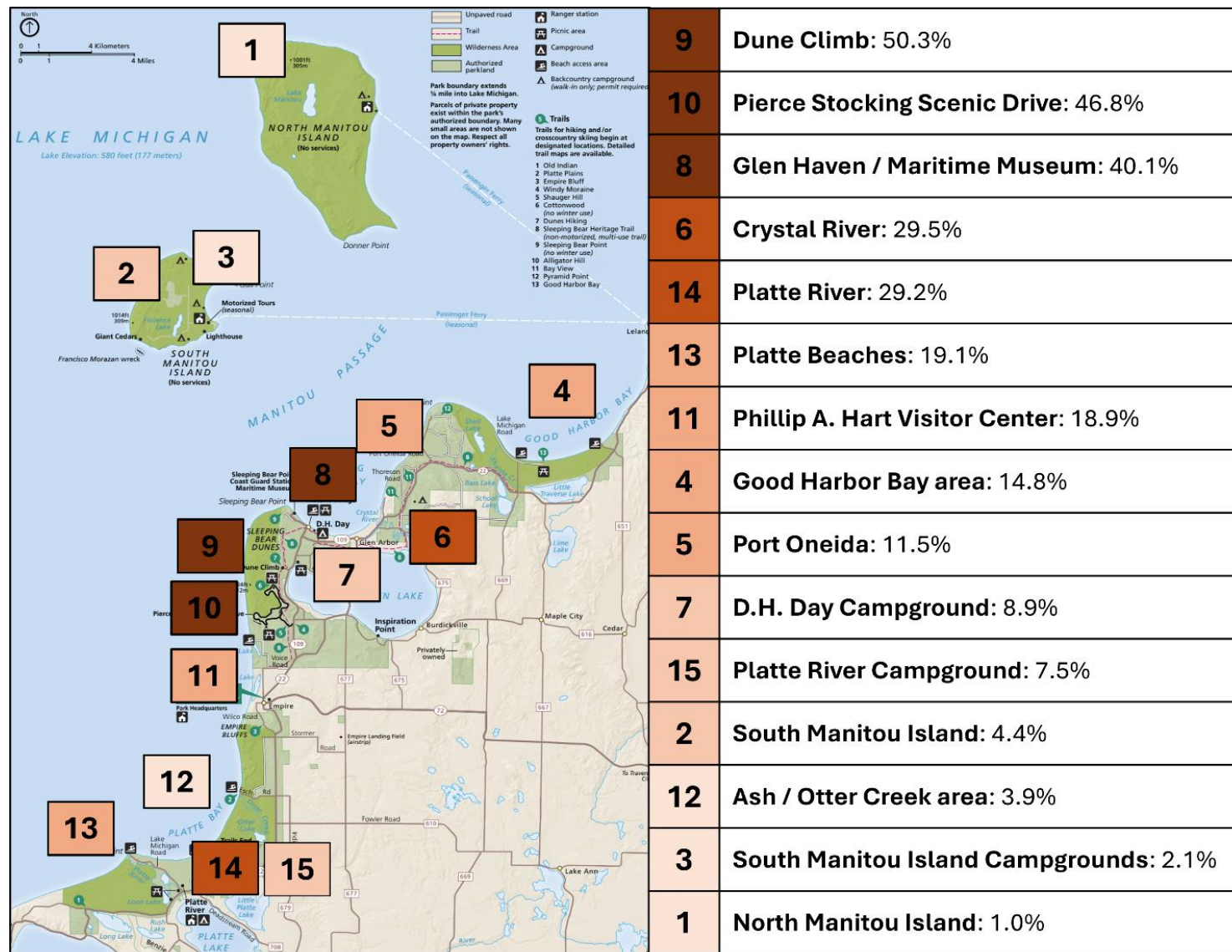


Figure 3. Frequency of response (percentages, %) to where respondents reported visiting in the park on this trip. Darker shades indicate higher frequencies of response.

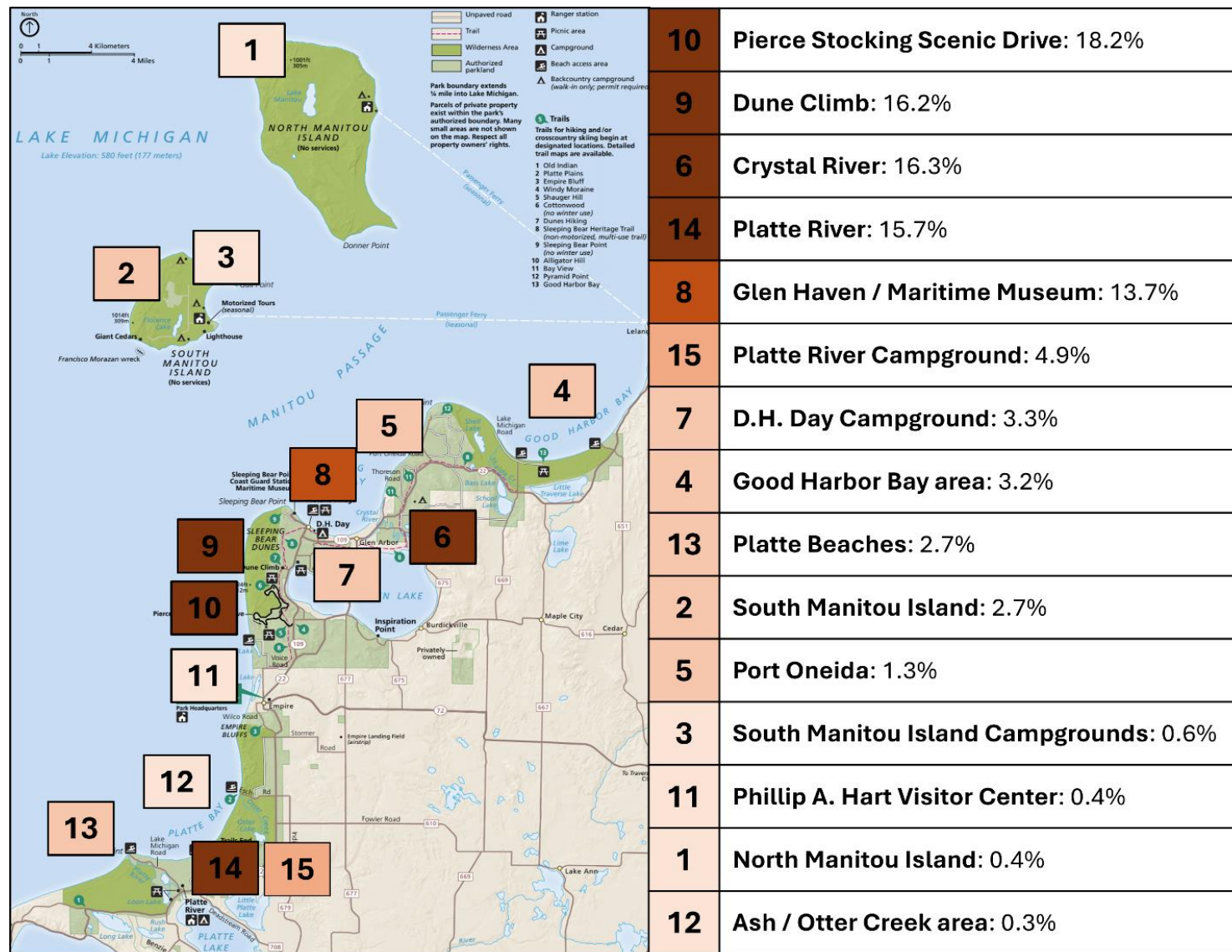


Figure 4. Frequency of response (percentages, %) to where respondents spent the most time in the park. Darker shades indicate higher frequencies of response.

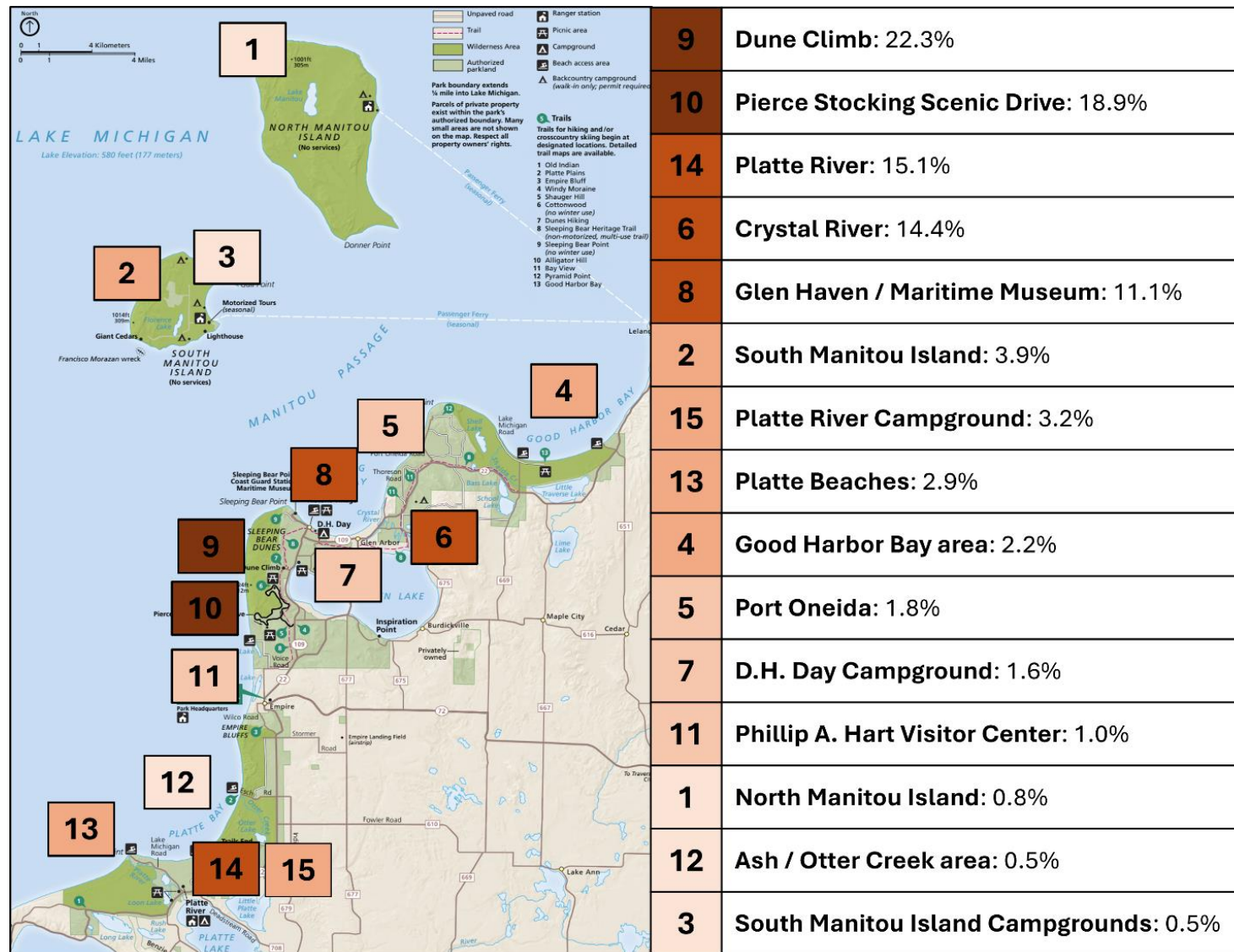


Figure 5. Frequency of response (percentages, %) to “most desired and planned locations” in the park. Darker shades indicate higher frequencies of response.

Perceptions about Crowding

Overall visitation at SLBE in 2024 was 1,670,025 recreation visits. Respondents reported how crowded they felt, the total number of other groups observed, their preference for total groups observed, when the park should act, and their preference for seeing varying numbers of groups (Figures 6-7 and Table 22). Overall crowding was reported on a 5-point Likert Scale, while perceptions of seeing other groups (5, 10, 20, 30, etc.) was on a 7-point Likert Scale.

Across all four study sites, 34.7% of all respondents reported feeling “*not at all crowded*” (Figure 6; see appendix B for site level data, Tables B6-9). This was highest at the Platte River, with 41.5% of respondents reported feeling not at all crowded. Additionally, over two-thirds of all respondents reported feeling not crowded or slightly crowded across all four study sites. The site where respondents reported higher levels of crowding was PSSD, with nearly 40% of respondents feeling moderately or very crowded. Overall crowding mean scores for all four study sites ranged from 1.99 (Crystal River) to 2.40 (PSSD) on the 5-point scale. None of these sites mean scores exceed 3.0, the midpoint on the scale representing feeling “*moderately crowded*.”

The average number of groups seen on respondents’ trips was 17 other groups. This was highest at PSSD (31 other groups) and lowest at Crystal River (5 groups). Respondents from both river locations encountered fewer groups compared to respondents from PSSD and Glen Haven. (Table 22). Across all sites, respondents preferred to see fewer groups than what they encountered during their visit.

The point at which respondents felt that SLBE managers should take action to address crowding varied greatly by site, from 16 group encounters at the Crystal River to 78 group encounters at PSSD. The average across all four sites needed for manager action was encountering 47 other groups. Again, the encounter preferences were lower for the river sites compared to the land-based sites. Finally, respondents shared the level of crowding at which they would no longer visit the specific site and be displaced. Respondents from PSSD would be displaced after encountering nearly 92 other groups, while respondents from Crystal River would be displaced after 23 groups.

Respondents were asked their tolerance for encountering other groups based on different numbers of groups, ranging from no other groups to 50 other groups on a 7-point Likert Scale (Figure 7). Results from the line graph representation of these data can be interpreted as when the line drops below the 4.0 mean score, respondents are reporting the experience of encountering other groups as now unacceptable. The site where this first occurs is with the Crystal River, where respondents report seeing more than 15 other groups would become unacceptable. Next is the Platte River, where seeing between 20-25 other groups would be

unacceptable. Finally, the respondents of PSSD and Glen Haven report seeing approximately 40 other groups would become unacceptable.

It is worth considering the comparison of current experienced conditions to when conditions would become unacceptable, when they should trigger management action, and when they lead to visitor displacement. To summarize the current conditions by study site:

- *PSSD* respondents currently encounter **31 groups**, with conditions unacceptable at **40 groups**, with action triggered at **77 groups**, and displacement occurring at **92 groups**.
- *Glen Haven* respondents currently encounter **22 groups**, with conditions unacceptable at **40 groups**, with action triggered at **65 groups**, and displacement occurring at **86 groups**.
- *Crystal River* respondents currently encounter **5 groups**, with conditions unacceptable at **15 groups**, with action triggered at **16 groups**, and displacement occurring at **22 groups**.
- *Platte River* respondents currently encounter **11 groups**, with conditions unacceptable at **20-25 groups**, with action triggered at **34 groups**, and displacement occurring at **47 groups**.

Based on this information, it appears that condition on the Crystal and Platte Rivers could approach the need to be addressed by management action if encounter rates were to increase in the near future.

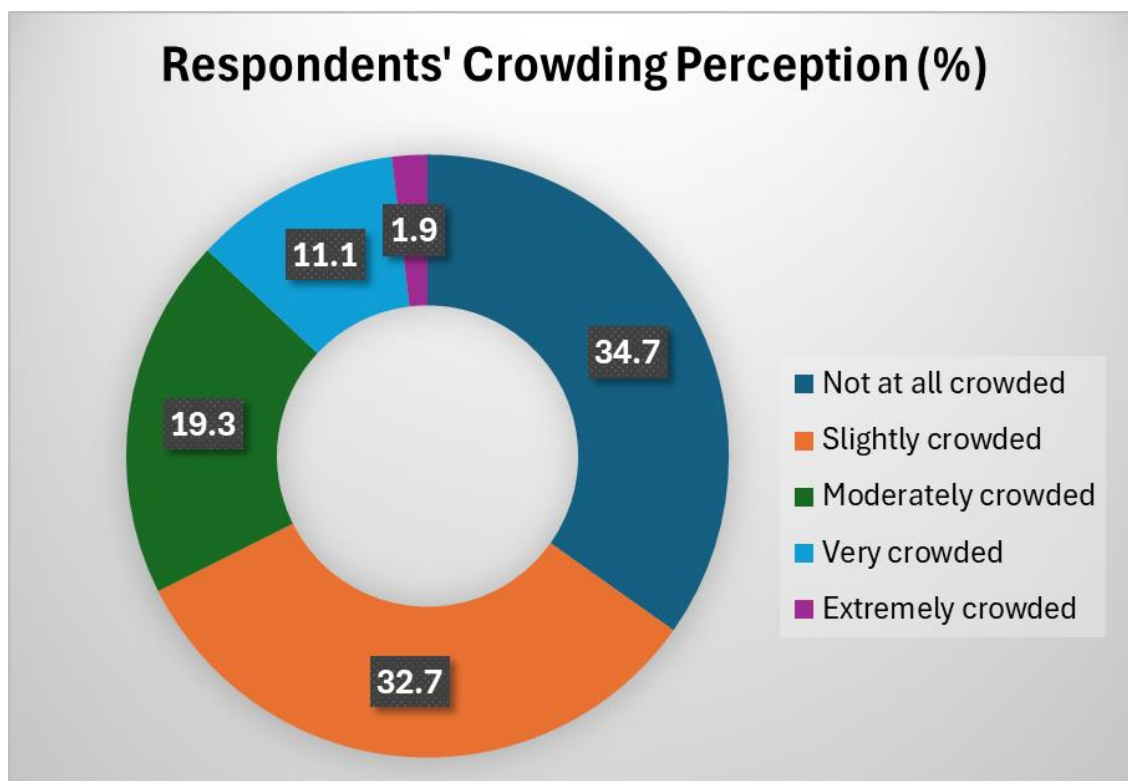


Figure 6. Percentage (%) of response to perceptions about crowding.

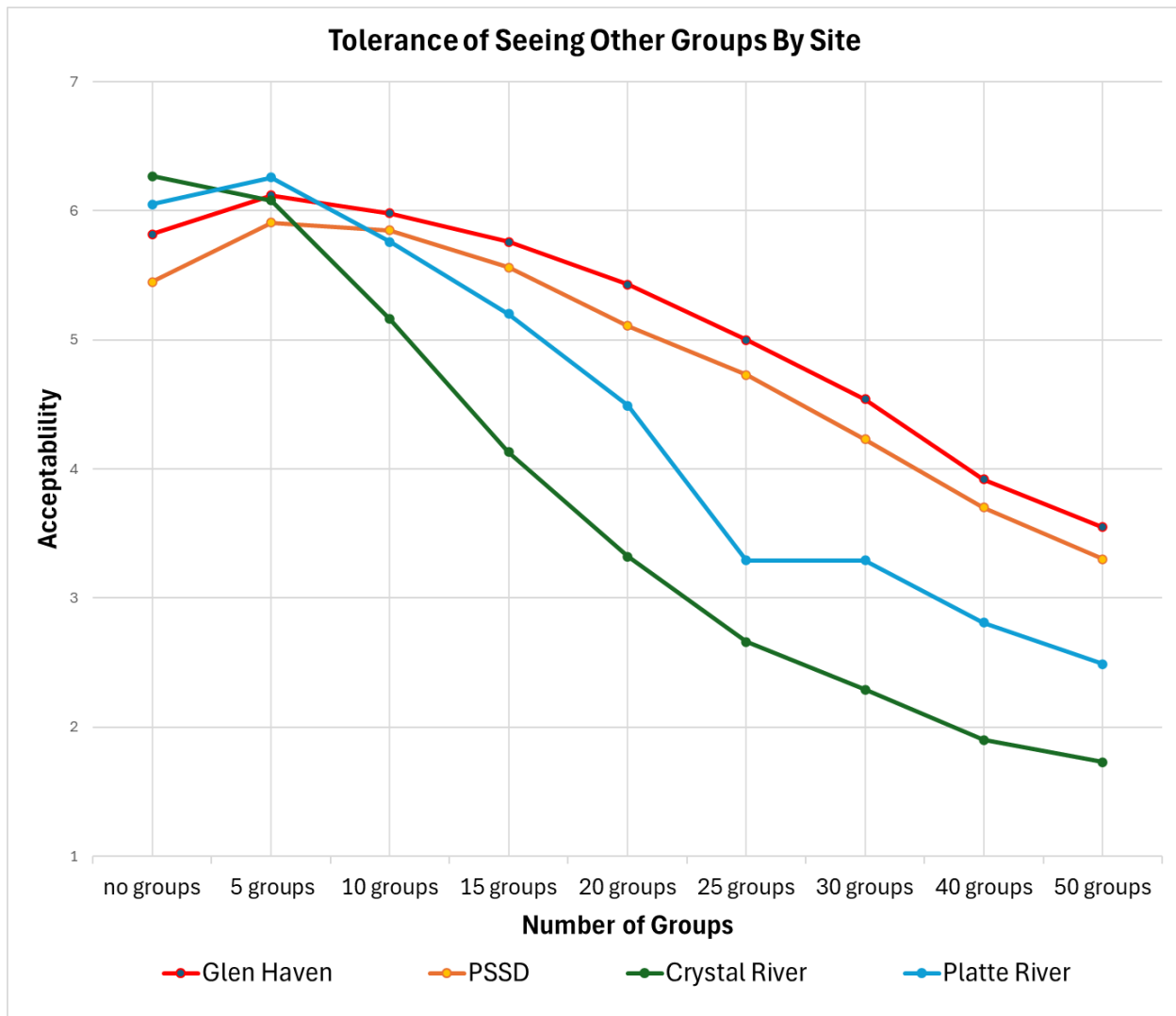


Figure 7. Acceptability ratings (1 Very Unacceptable to 7 Very Acceptable) of encountering different numbers of groups (i.e., crowding tolerance) compared by sampling site.

Table 22. Preferences for number of groups (means) by sampling site and overall.

	PSSD	Glen Haven	Crystal River	Platte River	Total
Total number of other groups seen on this trip while at survey location	30.87	22.50	5.08	11.56	17.27
Total number of other groups prefer to see during this trip while at survey location	22.75	16.11	3.51	8.74	12.51
Total number of other groups would see before managers should take action while at survey location	77.90	65.85	16.02	34.19	46.80
Maximum number of other groups could see before no longer use survey location	92.42	85.82	22.94	47.44	61.23

Respondents were asked how encountering crowding may change their plans during their previous visits to SLBE and during their current visit (Figure 8). Overall, a small proportion of visitors reported changing their visitation behaviors due to crowding. For previous visits, nearly 11% of respondents reported changing the day of the week they visited, while 10% changed the times of day for their visit. These behaviors compared to 6.2% of respondents changing the day of the week of their current visit and 6.1% changing the time of day on their current visit.

Further data on these behavioral changes are represented in Appendix B10. Total percentages represent the frequency of response for each change. Percentages listed within each site represent percentages of that total percentage. For example, 10.9% (n=147) of respondents changed the day of the week they visited the park in the past and 33.1% (n=45) of these were at Platte River.

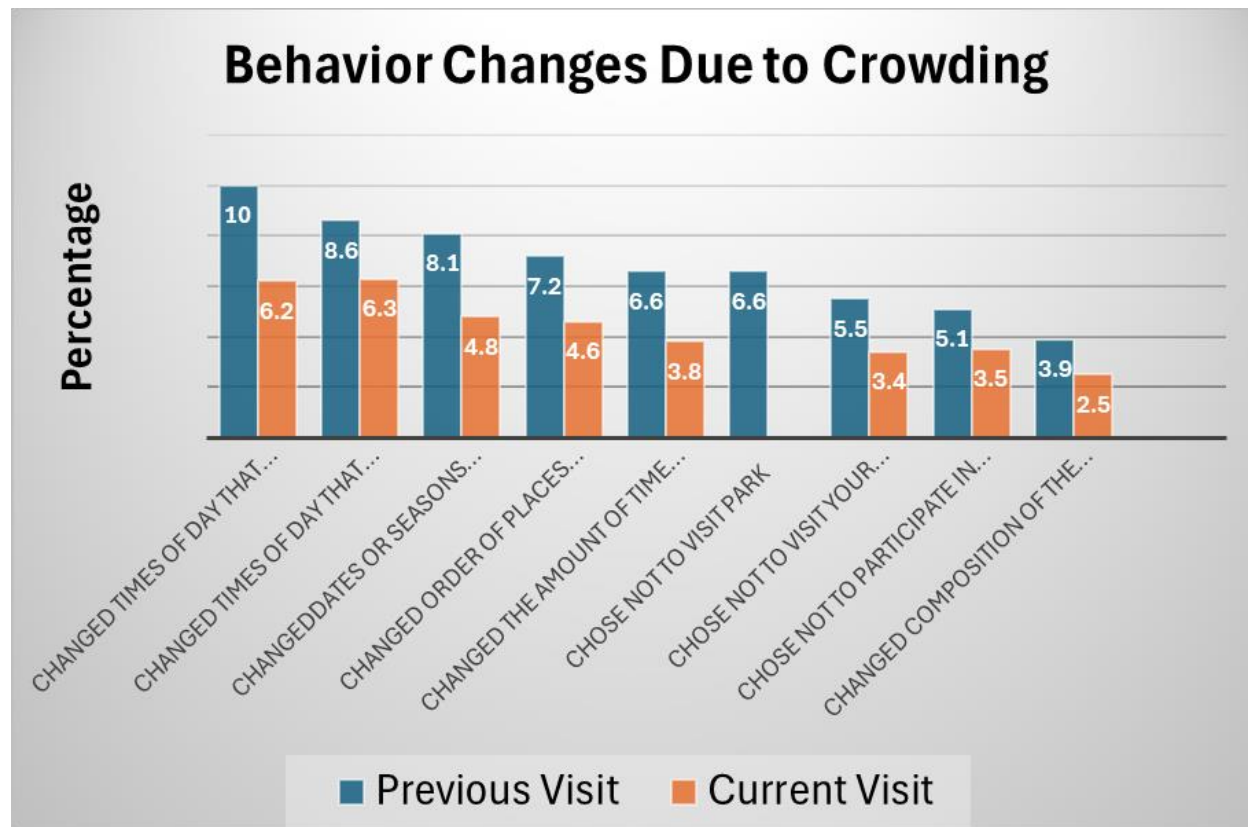


Figure 8. Percentage (%) of respondents reporting behavioral changes due to crowding on previous visit(s) or the current visit.

Perceptions about Park Conditions

Place attachment measures the strength of connection respondents have to particular locations in the park (Tables 23-26). Across sites on a 5-point Likert Scale of Strongly Disagree (1) to Strongly Agree (5), respondents noted the most agreement with “I am very attached to [SITE].” (range: 3.62 – 3.90) and least agreement with “Doing what I do at [SITE] is more important to me than doing it in any other place.” (range: 2.80 – 3.19). These means generally indicate overall neutrality to agreement with connections to each place. When examining percentages of agreement (summing “Agree” and “Strongly Agree”), the majority (>50%) of respondents indicated agreement at each site with the following measures of attachment. Several other measures at each location had greater than 30% agreement.

- PSSD: “I am very attached to Pierce Stocking Scenic Drive.” (53.4%) and “Pierce Stocking Scenic Drive is the best place for what I like to do.” (50.8%).
- Glen Haven: “The Glen Haven area is very special to me.” (59.4%) and “I am very attached to the Glen Haven area.” (52.0%).
- Crystal River: No measure garnered more than 50% agreement. The highest were “The Crystal River is very special to me.” (45.5%) and “The Crystal River is the best place for what I like to do.” (44.3%).
- Platte River: “I am very attached to the Platte River.” (62.7%), “The Platte River is the best place for what I like to do.” (62.3%), “The Platte River is very special to me.” (60.0%), and “The Platte River means a lot to me.” (58.5%).

Park conditions may typically be classified as social, managerial, or resource conditions. Respondents were asked if they noticed specific conditions within each of these while in the park and if this condition would or did negatively affect the quality of their visit (Figures 9-11 and Appendix B11-B14).

For social conditions, the most noticed condition was large groups (40.6%), by a substantial margin over other social conditions overall and across each site surveyed. “Large groups” and “Loud/noisy” groups were the most noticed that negatively affected the experience (12.6% and 8.4%, respectively). Each social condition would degrade the quality of the visit for at least a third of respondents per survey site, though “large groups” was consistently on the lower side of affecting visit quality, with conflicts, inappropriate behavior, loud groups, and unsafe driving all negatively affecting the visit quality for a greater percentage of the respondents. This pattern was similar across the sites of survey administration.

For managerial conditions, “poor cellular service” (36.2%), “poor wi-fi access” (29.3%), and “lack of parking” (23.4%) were the three conditions noticed most often overall and across the sites. “Lack of restrooms” was commonly the fourth most noticed (14.0% overall). Though respondents noted that many of the managerial conditions would negatively impact their

experience if present, only a few of the most noticed conditions were also currently negatively affecting the experience. Notably, lack of parking and lack of restrooms had or would have a negative effect on the visitor experience. Overall, 14.1% of visitors noticed a lack of parking and were negatively affected by it, followed by 10.5% for poor cellular service. All other conditions noticed had single-digit reports of negative impacts to the experience, though combined with the potential for conditions not noticed (i.e., which conditions had or would have the greatest negative effect) indicates the importance of these facilities and services to visitors overall and at each of the sites surveyed.

For resource conditions, there were lower frequencies of visitors noticing each condition. Prominently higher levels were reported for dune erosion (22.7%), social trails (19.2%), and litter (18.5%) overall and at each site. Though many resource conditions would or did affect the quality of the experience, litter was reported the most frequently as a negative impact when noticed (11.8%) overall.

Visitors were also asked about their trust and connection with SLBE staff (Figures 12-13). In general, respondents reported agreement with each trust measure, and similar response means across survey sites. Connection was lower (neutrality to agreement) and similar means reported across survey sites.

Table 23. Percentage (%) of response to place attachment measures at PSSD and overall means of response for each statement.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean (1-5)
I am very attached to the Pierce Stocking Scenic Drive.	4.8	5.7	36.0	29.4	24.0	3.62
The Pierce Stocking Scenic Drive is the best place for what I like to do.	2.1	7.9	39.3	40.2	10.6	3.49
The Pierce Stocking Scenic Drive means a lot to me.	4.3	8.8	39.0	31.7	16.2	3.47
The Pierce Stocking Scenic Drive is very special to me.	4.5	9.3	37.2	33.9	15.0	3.46
I identify strongly with the Pierce Stocking Scenic Drive.	6.3	13.9	37.8	32.3	9.7	3.25
Visiting the Pierce Stocking Scenic Drive says a lot about who I am.	9.8	12.6	40.3	28.6	8.6	3.14
I feel like the Pierce Stocking Scenic Drive is a part of me.	10.2	12.3	49.7	20.4	7.5	3.03
I get more satisfaction out of visiting the Pierce Stocking Scenic Drive than any other place.	6.7	19.2	47.3	20.4	6.4	3.01
Doing what I do at the Pierce Stocking Scenic Drive is more important to me than doing it in any other place.	9.2	18.7	50.6	14.7	6.7	2.91

Table 24. Percentage (%) of response to place attachment measures at Glen Haven and overall means of response for each statement.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean (1-5)
I am very attached to Glen Haven.	4.0	4.3	39.8	25.2	26.8	3.66
Glen Haven is very special to me.	3.7	8.7	38.3	33.6	25.8	3.49
Glen Haven is the best place for what I like to do.	1.7	7.1	45.8	33.0	12.5	3.47
Glen Haven means a lot to me.	3.4	9.1	41.4	29.3	16.8	3.47
I identify strongly with Glen Haven.	8.2	12.7	45.0	22.0	12.0	3.17
I feel like Glen Haven is a part of me.	8.1	15.9	45.3	18.6	12.2	3.11
Visiting Glen Haven says a lot about who I am.	6.5	17.5	43.8	22.9	9.2	3.11
I get more satisfaction out of visiting Glen Haven than any other place.	7.8	20.5	48.1	17.4	6.1	2.94
Doing what I do at Glen Haven is more important to me than doing it in any other place.	8.2	25.9	49.1	11.6	5.1	2.80

Table 25. Percentage (%) of response to place attachment measures at Crystal River and overall means of response for each statement.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean (1-5)
I am very attached to the Crystal River.	4.2	8.3	46.0	22.6	18.9	3.44
The Crystal River is the best place for what I like to do.	2.3	7.2	46.2	33.3	11.0	3.44
The Crystal River is very special to me.	3.4	8.8	42.4	32.1	13.4	3.43
The Crystal River means a lot to me.	3.1	9.2	44.4	29.5	13.8	3.42
Visiting the Crystal River says a lot about who I am.	6.8	17.8	46.7	23.9	5.0	3.03
I identify strongly with the Crystal River.	8.0	15.7	49.8	20.3	6.1	3.01
I get more satisfaction out of visiting the Crystal River than any other place.	6.9	18.7	53.4	16.8	4.2	2.93
I feel like the Crystal River is a part of me.	9.9	16.0	54.2	12.6	7.3	2.91
Doing what I do at the Crystal River is more important to me than doing it in any other place.	7.3	21.8	55.6	11.5	3.8	2.83

Table 26. Percentage (%) of response to place attachment measures at Platte River and overall means of response for each statement.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean (1-5)
I am very attached to the Platte River.	3.4	4.2	29.7	24.7	38.0	3.90
The Platte River is the best place for what I like to do.	1.9	5.4	30.4	35.8	26.5	3.80
The Platte River is very special to me.	3.8	5.4	30.8	35.0	25.0	3.72
The Platte River means a lot to me.	3.8	5.0	32.7	33.1	25.4	3.71
I identify strongly with the Platte River.	6.6	10.8	38.2	26.3	18.1	3.39
I feel like the Platte River is a part of me.	7.3	11.5	42.3	19.6	19.2	3.32
Visiting the Platte River says a lot about who I am.	5.8	13.1	43.8	21.5	15.8	3.28
I get more satisfaction out of visiting the Platte River than any other place.	5.7	11.9	48.7	19.9	13.8	3.24
Doing what I do at the Platte River is more important to me than doing it in any other place.	5.8	16.7	46.1	15.9	15.5	3.19

Social Conditions		
Large groups	No negative effect	Negative effect
Not noticed	29.9%	29.4%
Noticed	28.1%	12.6%
Visitor conflicts	No negative effect	Negative effect
Not noticed	38.6%	59.4%
Noticed	1.2%	0.8%
Inappropriate behavior	No negative effect	Negative effect
Not noticed	32.3%	63.6%
Noticed	1.4%	2.8%
Loud/noisy groups	No negative effect	Negative effect
Not noticed	32.3%	53.2%
Noticed	6.1%	8.4%
Discourteous /unsafe driving	No negative effect	Negative effect
Not noticed	33.9%	61.5%
Noticed	1.5%	3.1%

Figure 9. Overall percentages (%) of responses to specific social conditions by whether each was noticed and/or negatively impacted the experience.

Managerial Conditions											
Lack of restrooms	No negative effect	Negative effect	Lack of bike lanes	No negative effect	Negative effect	Lack of docks	No negative effect	Negative effect			
	Not noticed	39.2%		46.8%	Not noticed		67.1%	20.8%	Not noticed	81.9%	9.4%
	Noticed	7.1%		6.9%	Noticed		6.9%	5.3%	Noticed	6.5%	2.2%
Lack of parking	No negative effect	Negative effect	Poor wi-fi access	No negative effect	Negative effect	Significant commercial use	No negative effect	Negative effect			
	Not noticed	34.6%		42.1%	Not noticed		61.8%	8.8%	Not noticed	54.2%	41.5%
	Noticed	9.3%		14.1%	Noticed		23.1%	6.2%	Noticed	1.9%	2.4%
Poor road quality	No negative effect	Negative effect	Poor cellular service	No negative effect	Negative effect	Lack of ADA access	No negative effect	Negative effect			
	Not noticed	63.9%		33.5%	Not noticed		50.3%	13.5%	Not noticed	72.0%	16.7%
	Noticed	1.7%		1.0%	Noticed		25.7%	10.5%	Noticed	7.0%	4.3%

Figure 10. Overall percentages (%) of responses to specific managerial conditions by whether each was noticed and/or negatively impacted the experience.

Resource Conditions					
Dune erosion	No negative effect	Negative effect	Degraded water quality	No negative effect	Negative effect
	Not noticed	49.1%		40.7%	56.6%
	Noticed	14.6%		0.6%	2.1%
Vandalism	No negative effect	Negative effect	Litter	No negative effect	Negative effect
	Not noticed	43.0%		29.2%	52.3%
	Noticed	0.9%		6.7%	11.8%
Social trails	No negative effect	Negative effect	Improper disposal of human waste	No negative effect	Negative effect
	Not noticed	62.7%		31.8%	65.9%
	Noticed	13.2%		0.7%	1.6%
Vegetation damage	No negative effect	Negative effect	Light pollution	No negative effect	Negative effect
	Not noticed	50.7%		36.0%	61.9%
	Noticed	4.6%		0.7%	1.4%
Unexpected human/ machinery noise	No negative effect	Negative effect	Wildlife harassment	No negative effect	Negative effect
	Not noticed	38.3%		52.2%	44.9%
	Noticed	2.7%		1.2%	1.7%
Invasive species	No negative effect	Negative effect			
	Not noticed	48.4%			
	Noticed	6.4%			

Figure 11. Overall percentages (%) of responses to specific resource conditions by whether each was noticed and/or negatively impacted the experience.



Figure 12. Means (1 Strongly Disagree to 5 Strongly Agree) of responses to statements on trust of park management. Responses of "Don't Know" were excluded.

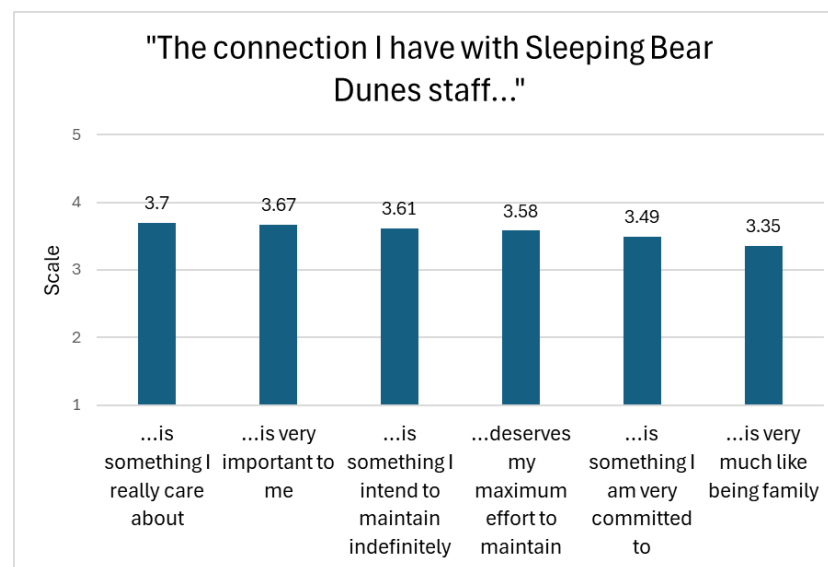


Figure 13. Means (1 Strongly Disagree to 5 Strongly Agree) of responses to statements on connection to park management. Responses of "Don't Know" were excluded.

2014 & 2024 Comparative Results



As previously described, this study follows a similar 2012-13 study that focused on the Platte and Crystal Rivers. That study addressed the need to further understand the characteristics and quality of the visitor experience for the Platte River and Crystal River. Its purpose was to examine visitor use and user characteristics and provide managers with baseline data for current conditions. Data from the 2012-13 visitors suggested that while social conditions were acceptable, social encounters on the Platte River could increase and negatively affect both social and resource conditions. Therefore, continued monitoring and evaluation would be necessary to maintain the quality of the visitor experience and better understand visitor expectations

The following section presents the comparative analysis of the demographic characteristics, place attachment and trust, and crowding perceptions of respondents from the 2012-13 and 2024 studies. In 2012-13 study, a total of 723 responses were collected from the two river locations, with 364 Crystal River respondents and 359 Platte River respondents. The 2024 study had 601 total respondents, 299 Crystal River respondents and 302 Platte River respondents (Table 27). This dataset informs park staff on how visitor use has shifted at these two locations over the course of a ten-year period.

Efforts were made to replicate the survey design and the intercepting of participants by field staff between the 2012-13 and 2024 studies. However, it is worth noting that differences did exist between the two studies. Data from 2012-13 were collected across two field seasons, staff were distributed across additional sites in 2024, and slight grammatical and wording changes were made to surveys. Most notably, questions examining trust and commitment were updated from focusing on the *National Park Service* to *Sleeping Bear Dunes staff*. The research team does not feel that these changes or modifications had any observable effect on the results or quality of the data.

Table 27. Sample size by year and by location.

	2012-2013	2024	Total
Crystal River	364	299	663
Platte River	359	302	661
Total	723	601	1324

Demographics

Respondents were asked to report their number of previous visits specifically to the Platte or Crystal Rivers, their group size, and their age (Tables 28-31). Over the ten-year period between studies, the number of total visits to either river increased from seven prior visits to over 12 visits. Average group size increased practically by one individual (from 4.7 to 5.5) while the age of the respondents was effectively the same in their early-mid 40s.

Combined respondents from the Platte River reported nearly three times more visits to the Platte River (15.31 visits) than those respondents from the Crystal River (4.3 visits). They also tended to have a slightly larger personal group (5.5 people compared to 4.7) and were slightly older in age.

The demographic profile of Crystal River respondents remained relatively unchanged over the ten-year period between studies. Differences in the number of previous trips, group size, and age were statistically insignificant if not practically insignificant. In contrast, some changes in the Platte River respondents' demographic profile were more noticeable. Specifically, previous reported visits to the Platte River increased from over 10 visits in the 2012-13 study to over 21 visits in the 2024 study (Table 31). Both group size and age also showed small increases.

Table 28. Respondents' number of previous visits, group size, and age compared by year.

	2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
Including this trip, how many times overall (total) have you visited the [SITE]?	7.46	12.76	11.541	-1.942 (618.139)	.026	-.123
How many people are in your personal group, including you?	4.76	5.54	18.038	-2.915 (1013.811)	.002	-.168
What is your age?	43.58	43.49	2.334	.124 (1310)	.451	

Table 29. Respondents' number of previous visits, group size, and age compared by location.

	Crystal River	Platte River	F value	T (df)	p value	Cohen's d effect size
Including this trip, how many times overall (total) have you visited the [SITE]?	4.33	15.31	44.099	-4.518 (656.591)	<.001	-.366
How many people are in your personal group, including you?	4.33	5.90	18.987	-6.178 (1199.297)	<.001	-.292
What is your age?	42.27	44.82	0.283	-3.465 (1308.900)	<.001	-.191

Table 30. Crystal River respondents' number of previous visits, group size, and age compared by year.

	2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
Including this trip, how many times overall (total) have you visited the [SITE]?	4.47	4.15	1.701	0.444 (642)	.328	
How many people are in your personal group, including you?	4.05	4.68	7.438	-2.013 (485.053)	.022	-.165
What is your age?	42.90	41.52	0.927	1.338 (655)	.091	

Table 31. Platte River respondents' number of previous visits, group size, and age compared by year.

	2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
Including this trip, how many times overall (total) have you visited the [SITE]?	10.51	21.52	13.049	-2.032 (299.895)	.022	-.183
How many people are in your personal group, including you?	5.49	6.39	12.704	-2.139 (516.311)	.016	-.174
What is your age?	44.29	45.44	8.542	-1.083 (603.892)	.140	

Perceptions about Place Attachment, Trust, and Commitment

Respondents were asked to report on their attachment to either the Platte or Crystal River, their trust in the National Park Service or SLBE staff, and their connection and commitment to staff (Tables 32-35). Items were measured on a 5-point Likert Scale with higher scores representing greater attachment, trust, and commitment. Place attachment scores reflect both how important the given river was to respondent's identity relative to SLBE, and the dependence they have with the river on attaining their desired recreation experiences and activities. Over the ten-year period between studies, there were mixed results in the data. Data show a slight increase in the importance of a river as the "best place for what I like to do" (from 3.50 to 3.61) but a decrease in the "satisfaction out of visiting the [SITE]" and the site being "more important to me than doing it in any other place" (Table 32). While these differences showed statistically significant differences, it is important to acknowledge that place attachment as a concept is multidimensional and that interpreting differences within a single item is not necessarily appropriate. A more holistic interpretation of place attachment scores across the ten-year period shows small changes in respondents' connections to the Platte and Crystal Rivers.

An examination of respondents' average trust scores shows an overall decrease in scores during the ten-year period. Mean scores decreased from 0.10-0.18 by item and represent a small effect size. Similarly, mean scores reflecting the connection and commitment respondents have with SLBE staff also all showed overall decreases, with mean changes ranging from 0.05-0.30. The largest decreases in commitment were represented by those items that asked about the effort and intent to maintain connections with SLBE staff.

Overall, Platte River respondents reported higher place attachment scores when compared to Crystal River respondents. Mean scores were consistently 0.20 points higher across all survey items. However, Platte River respondents' results were mixed when reporting their trust and commitment to the National Park Service and SLBE staff. Trust and commitment are proposed to represent similar concepts and perceptions. While Platte River respondents reported slightly higher levels of trust compared to Crystal River respondents, their commitment scores were slightly lower than Crystal River respondents. In both instances, this represents a relatively small difference between Platte River and Crystal River respondents.

Crystal River respondents reported the most notable decreases in place attachment, trust, and commitment scores during the ten-year period. Two place attachment items, "*I get more satisfaction out of visiting the Crystal River than any other place*" and "*Doing what I do at the Crystal River is more important to me than doing it in any other place*" showed mean scores that dropped below 3 on the 5-point Likert Scale. These were the only individual items with mean scores to drop below three for place attachment, trust, and commitment scale items. Crystal River respondents also consistently reported decreases in mean scores for trust and

commitment, with commitment score decreases being described as a moderate effect. These changes are noticeable, but it is important to note that trust scores were very positive in 2012-13 (ranging from 4.54-4.72) and all decreased mean scores are still above 4.40. However, reductions in commitment scores appear to represent a more noticeable decrease (Table 34).

Platte River respondents reported variable changes in place attachment, trust, and commitment scores during the ten-year period (Table 35). Place attachment scores were slightly increased for some items, and slightly for other items. Mean scores for trust and commitment items were lower overall for items, but in many cases these decreases were not statistically significant.

Table 32. Respondents' place attachment measures and perceptions of management compared by year.

		2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
Place Attachment	I am very attached to the [SITE].	3.59	3.67	18.313	-1.327 (1045.009)	.092	
	The [SITE] is the best place for what I like to do.	3.50	3.61	9.432	-2.320 (1048.956)	.010	-.136
	I get more satisfaction out of visiting the [SITE] than any other place.	3.33	3.08	0.020	4.686 (1212)	<.001	.272
	The [SITE] is very special to me.	3.57	3.57	15.103	-0.144 (1011.720)	.443	
	Doing what I do at the [SITE] is more important to me than doing it in any other place.	3.15	3.01	1.157	2.723 (1214)	.003	.158
Perceptions of Trust in Park Management	Sleeping Bear Dunes staff share my values about how the [SITE] should be managed.	4.50	4.40	0.476	1.735 (1218)	.041	.100
	I share the Sleeping Bear Dunes staff's goals for the [SITE].	4.61	4.43	0.103	2.983 (1216)	.001	.173
	Sleeping Bear Dunes staff support my views about the [SITE].	4.64	4.43	<0.001	3.397 (1216)	<.001	.197
	I trust Sleeping Bear Dunes staff in their efforts to manage the [SITE].	4.49	4.39	16.369	1.857 (997.907)	.032	.111
The connection I have with Sleeping Bear Dunes staff...	Is something I really care about.	3.98	3.73	24.530	4.727 (1009.742)	<.001	.286
	Is something I intend to maintain indefinitely.	3.94	3.66	17.819	4.926 (997.139)	<.001	.300
	Deserves my maximum effort to maintain.	3.94	3.64	9.106	5.394 (1019.375)	<.001	.326
	Is very important to me.	3.98	3.73	14.920	4.639 (1016.497)	<.001	.280
	Is something I am very committed to.	3.80	3.55	5.950	4.495 (1005.346)	<.001	.272
	Is very much like being family.	3.57	3.42	0.006	2.584 (1128)	.005	.155

Table 33. Respondents' place attachment measures and perceptions of management compared by location.

		Crystal River	Platte River	F value	T (df)	p value	Cohen's d effect size
Place Attachment	I am very attached to the [SITE].	3.48	3.77	2.677	-5.242 (1232)	<.001	-.298
	The [SITE] is the best place for what I like to do.	3.45	3.65	9.568	-4.098 (1204.248)	<.001	-.234
	I get more satisfaction out of visiting the [SITE] than any other place.	3.13	3.32	19.997	-3.775 (1190.491)	<.001	-.217
	The [SITE] is very special to me.	3.47	3.67	1.842	-3.961 (1222)	<.001	-.226
	Doing what I do at the [SITE] is more important to me than doing it in any other place.	2.98	3.20	34.504	-4.130 (1172.512)	<.001	-.238
Perceptions of Trust in Park Management	Sleeping Bear Dunes staff share my values about how the [SITE] should be managed.	4.55	4.36	0.324	3.397 (1218)	<.001	.195
	I share the Sleeping Bear Dunes staff's goals for the [SITE].	4.59	4.47	0.001	2.069 (1216)	.019	.119
	Sleeping Bear Dunes staff support my views about the [SITE].	4.62	4.49	0.158	2.132 (1216)	.017	.122
	I trust Sleeping Bear Dunes staff in their efforts to manage the [SITE].	4.48	4.40	0.430	1.528 (1205)	.063	
The connection I have with Sleeping Bear Dunes staff	Is something I really care about.	3.82	3.92	2.471	-2.052 (1135)	.020	-.122
	Is something I intend to maintain indefinitely.	3.75	3.88	4.447	-2.387 (1119.441)	.009	-.142
	Deserves my maximum effort to maintain.	3.72	3.91	11.341	-3.410 (1120.316)	<.001	-.203
	Is very important to me.	3.80	3.95	9.680	-2.750 (1132.370)	.003	-.163
	Is something I am very committed to.	3.61	3.78	2.079	-3.054 (1131)	.001	-.181
	Is very much like being family.	3.43	3.58	0.190	-2.616 (1128)	.005	-.156

Table 34. Crystal River respondents' place attachment measure and perception of management compared by year.

		2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
Place Attachment	I am very attached to the Crystal River.	3.51	3.44	3.744	0.891 (624)	.187	
	The Crystal River is the best place for what I like to do.	3.45	3.44	1.902	0.276 (621)	.391	
	I get more satisfaction out of visiting the Crystal River than any other place.	3.27	2.93	0.178	5.062 (613)	<.001	.413
	The Crystal River is very special to me.	3.50	3.43	3.818	0.920 (620)	.179	
	Doing what I do at the Crystal River is more important to me than doing it in any other place.	3.09	2.83	3.332	3.944 (617)	<.001	.321
Perceptions of Trust in Park Management	Sleeping Bear Dunes staff share my values about how the Crystal River should be managed.	4.63	4.44	0.709	2.404 (616)	.008	.196
	I share the Sleeping Bear Dunes staff's goals for the Crystal River.	4.70	4.44	1.057	3.126 (616)	<.001	.255
	Sleeping Bear Dunes staff support my views about the Crystal River.	4.72	4.48	0.088	2.825 (616)	.002	.230
	I trust Sleeping Bear Dunes staff in their efforts to manage the Crystal River.	4.54	4.40	14.681	1.797 (474.668)	.037	.152
The connection I have with Sleeping Bear	Is something I really care about.	3.99	3.58	13.567	5.552 (505.683)	<.001	.474
	Is something I intend to maintain indefinitely.	3.93	3.51	6.330	5.257 (500.226)	<.001	.452
	Deserves my maximum effort to maintain.	3.91	3.47	0.397	5.533 (568)	<.001	.468
	Is very important to me.	3.98	3.56	6.760	5.420 (510.474)	<.001	.461
	Is something I am very committed to.	3.77	3.41	0.405	4.561 (565)	<.001	.387
	Is very much like being family.	3.54	3.29	0.823	3.088 (565)	.001	.262

Table 35. Platte River respondents' place attachment measure and perception of management compared by year.

		2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
Place Attachment	I am very attached to the Platte River.	3.68	3.90	3.822	-2.703 (606)	.004	-.221
	The Platte River is the best place for what I like to do.	3.54	3.80	1.723	-3.458 (603)	<.001	-.284
	I get more satisfaction out of visiting the Platte River than any other place.	3.39	3.24	1.126	1.859 (597)	.032	.153
	The Platte River is very special to me.	3.64	3.72	6.682	-1.007 (498.634)	.157	
	Doing what I do at the Platte River is more important to me than doing it in any other place.	3.21	3.19	6.618	0.282 (501.792)	.389	
Perceptions of Trust in Park Management	Sleeping Bear Dunes staff share my values about how the Platte River should be managed.	4.36	4.36	0.576	-0.012 (600)	.495	
	I share the Sleeping Bear Dunes staff's goals for the Platte River.	4.51	4.42	0.063	1.053 (598)	.146	
	Sleeping Bear Dunes staff support my views about the Platte River.	4.56	4.39	0.020	1.950 (598)	.026	.161
	I trust Sleeping Bear Dunes staff in their efforts to manage the Platte River.	4.43	4.37	3.971	.773 (519.198)	.220	
The connection I have with Sleeping Bear	Is something I really care about.	3.96	3.88	6.337	1.094 (510.315)	.137	
	Is something I intend to maintain indefinitely.	3.94	3.81	5.941	1.665 (502.564)	.048	.143
	Deserves my maximum effort to maintain.	3.98	3.82	6.213	2.003 (493.726)	.023	.173
	Is very important to me.	3.98	3.90	2.358	1.055 (564)	.146	
	Is something I am very committed to.	3.84	3.70	3.784	1.833 (564)	.034	.156
	Is very much like being family.	3.60	3.55	0.096	0.578 (561)	.282	

Perceptions about Crowding

Visitation at SLBE has continued to increase over the ten-year period between visitor use studies. Visitation peaked at 1,722,955 recreation visits in 2021, up from 1,395,401 recreation visits in 2014. It slightly decreased before again rising to 1,670,025 recreation visits in 2024 (Courtesy of <https://www.nps.gov/subjects/socialscience/visitor-use-statistics-dashboard.htm>). Respondents reported how crowded they felt, the total number of other groups observed, their preference for total groups observed, and their preference for seeing varying numbers of groups (Tables 36-39). Overall crowding was reported on a 5-point Likert Scale, while perceptions about seeing other groups (5, 10, 20, 30, etc.) were on a 7-point Likert Scale.

Overall perceived crowding reported by Platte and Crystal River users for the ten-year period slightly increased from a mean score of 2.81 to 3.34. This level of perceived crowding represents a relatively low level. The total number of other groups seen and preferred to be seen by respondents remained similar. However, the reported maximum number of other groups seen before a respondent would no longer use the Platte or Crystal River more than doubled, from a maximum tolerance for 20 other groups in 2014 to 48 groups in 2024 (Table 36). The acceptability of seeing other groups in 2012-13 became unacceptable (dropped below a mean score of 4.0) with seeing more than 15 groups. The tolerance of seeing other groups increased in 2024 with 20 groups becoming unacceptable (Figure 14).

Crystal River respondents overall felt less crowded (2.62), saw fewer groups (4.34), and preferred to see no more than 3-4 groups when compared to Platte River respondents. They reported that 20 groups would be the maximum number tolerable before they would no longer use the Crystal River. In contrast, Platte River respondents saw more groups (13.72) and preferred to see no more than 9 groups. They reported that 45 groups would be the maximum number tolerable before they would no longer use the Platte River (Table 37). The acceptability of seeing other groups on the Crystal River became unacceptable (dropped below a mean score of 4.0) with seeing just fewer than 15 groups. The tolerance of seeing other groups on the Platte River became unacceptable around 20 groups.

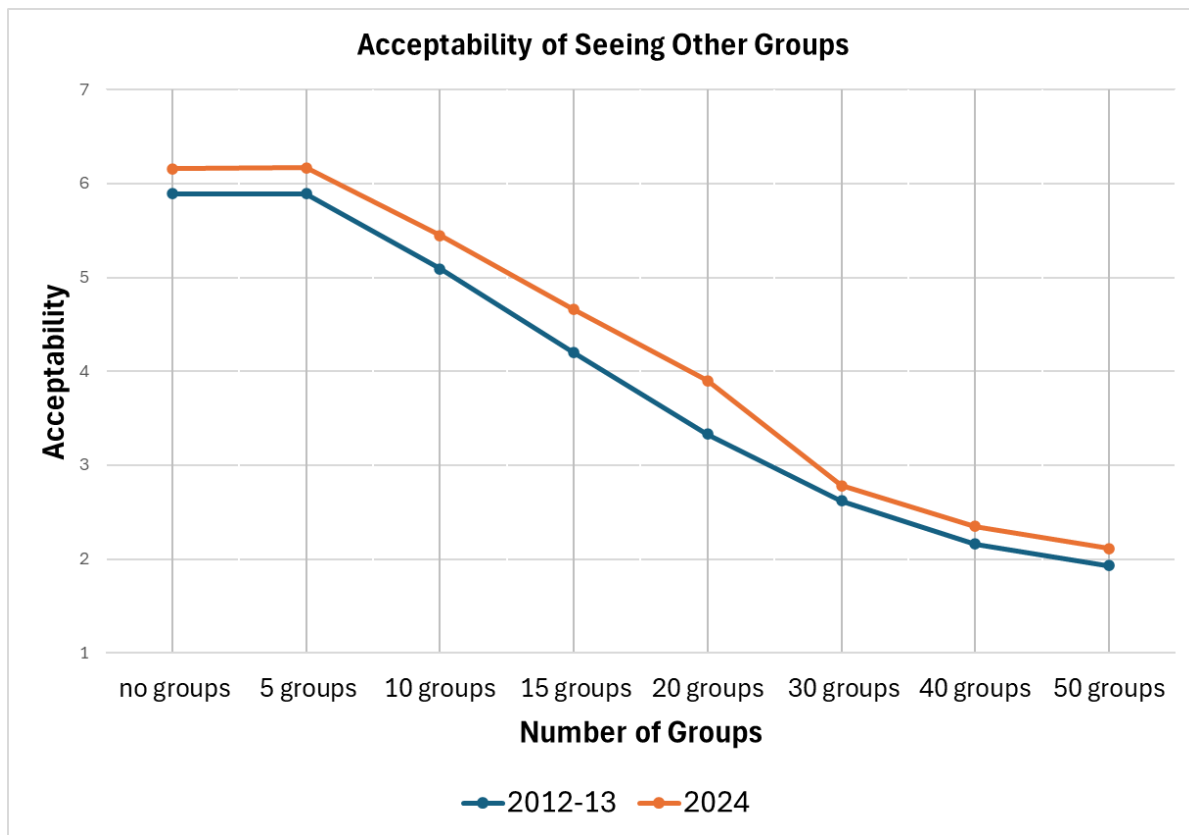


Figure 14. Acceptability (1 Very Unacceptable to 7 Very Acceptable) of seeing other groups by year of sampling.

Table 36. Respondents' perceptions about crowding compared by year.

	2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
How crowded did you feel on this trip while on the [SITE]?	2.81	3.34	5.374	-4.550 (1189.972)	<.001	-.257
What is the total number of other groups you saw on this trip while on the [SITE]?	9.33	8.17	8.832	1.594 (1232.776)	.056	
What is the total number of other groups you would prefer to see during your trip on the [SITE]?	5.86	6.05	0.496	-0.328 (1083)	.372	
What is the maximum number of other groups you could see during your trip before you would no longer use the [SITE]?	20.00	48.09	48.736	-4.613 (440.222)	<.001	-.344

Table 37. Respondents' perceptions about crowding compared by location.

	Crystal River	Platte River	F value	T (df)	p value	Cohen's d effect size
How crowded did you feel on this trip while on the [SITE]?	2.62	3.49	46.213	-7.682 (1172.959)	<.001	-.432
What is the total number of other groups you saw on this trip while on the [SITE]?	4.34	13.72	217.889	-12.869 (632.3345)	<.001	-.764
What is the total number of other groups you would prefer to see during your trip on the [SITE]?	3.11	9.00	160.543	-10.639 (589.236)	<.001	-.668
What is the maximum number of other groups you could see during your trip before you would no longer use the [SITE]?	20.50	44.91	19.804	-4.562 (758.928)	<.001	-.298

Overall, Crystal River respondents were feeling more crowded and seeing more people over the ten-year period. Overall reported crowding increased by 1.2 points on the 5-point scale (with a large effect size). The total number of other groups observed slightly increased, but the tolerance of respondents also appeared to increase. 2024 Crystal River respondents reported they would prefer to see only 3-4 other groups, up from 2-3 groups in 2012-2013. However, the maximum groups they were willing to see before no longer using the Crystal River nearly tripled, increasing from 12.77 to 31.66 (Table 38). The acceptability of seeing other groups also remained consistent, with the tolerance of seeing other groups becoming unacceptable around 15 groups in 2012-13 and 2024 respondents (Figure 15).

Platte River respondents were feeling slightly less crowded and seeing fewer people over the ten-year period. Overall, reported crowding decreased by .21 points on the 5-point scale. The total number of other groups observed decreased by about 4 groups (15 to 11 groups) and the tolerance of respondents also appeared to dramatically increase. 2024 Platte River respondents reported the maximum groups they were willing to see before no longer using the Crystal River increasing from 28.75 to 66.58 (Table 39). This data suggests that Platte River users would have to encounter a very large number of other groups during their visit to be displaced from the Platte River (Figure 16).

Table 38. Crystal River respondents' perceptions about crowding compared by year.

	2012-2013	2024	F value	T (df)	p value	Cohen's d effect size
How crowded did you feel on this trip while on the [SITE]?	2.06	3.30	49.054	-9.207 (500.755)	<.001	-.752
What is the total number of other groups you saw on this trip while on the [SITE]?	3.76	5.08	9.587	-4.754 (524.809)	<.001	-.388
What is the total number of other groups you would prefer to see during your trip on the [SITE]?	2.79	3.51	12.671	-2.501 (419.662)	.006	-.222
What is the maximum number of other groups you could see during your trip before you would no longer use the [SITE]?	12.77	31.66	17.778	-2.926 (229.156)	.002	-.303

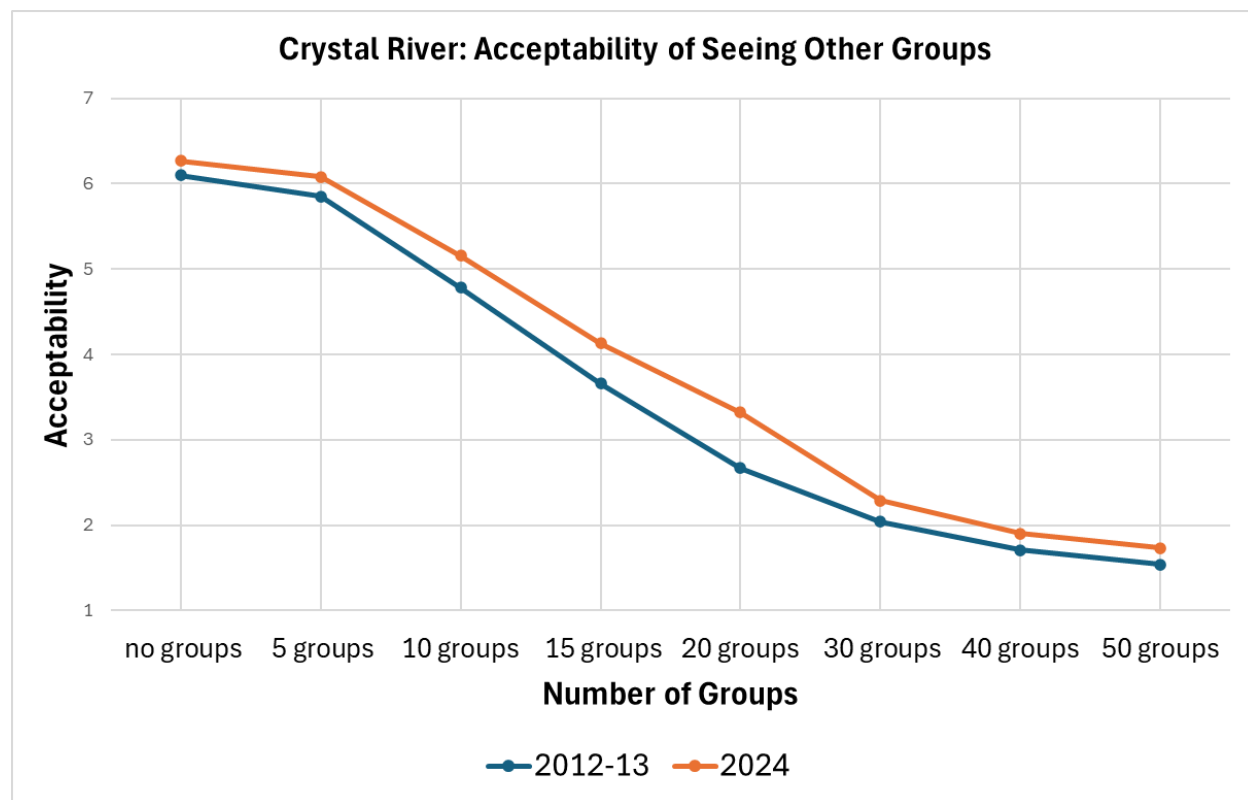


Figure 15. Crystal River respondents' acceptability (1 Very Unacceptable to 7 Very Acceptable) of seeing other groups by year of sampling.

Table 39. Platte River respondents' perceptions about crowding compared by year.

	2012-2013	2024	F value	T (df)	P value	Cohen's d effect size
How crowded did you feel on this trip while on the [SITE]?	3.59	3.38	0.385	1.164 (625)	.122	
What is the total number of other groups you saw on this trip while on the [SITE]?	15.41	11.56	5.518	2.764 (587.990)	.003	.223
What is the total number of other groups you would prefer to see during your trip on the [SITE]?	9.22	8.74	0.362	0.445 (490.782)	.328	
What is the maximum number of other groups you could see during your trip before you would no longer use the [SITE]?	28.75	66.58	31.172	-3.583 (206.998)	<.001	-.385

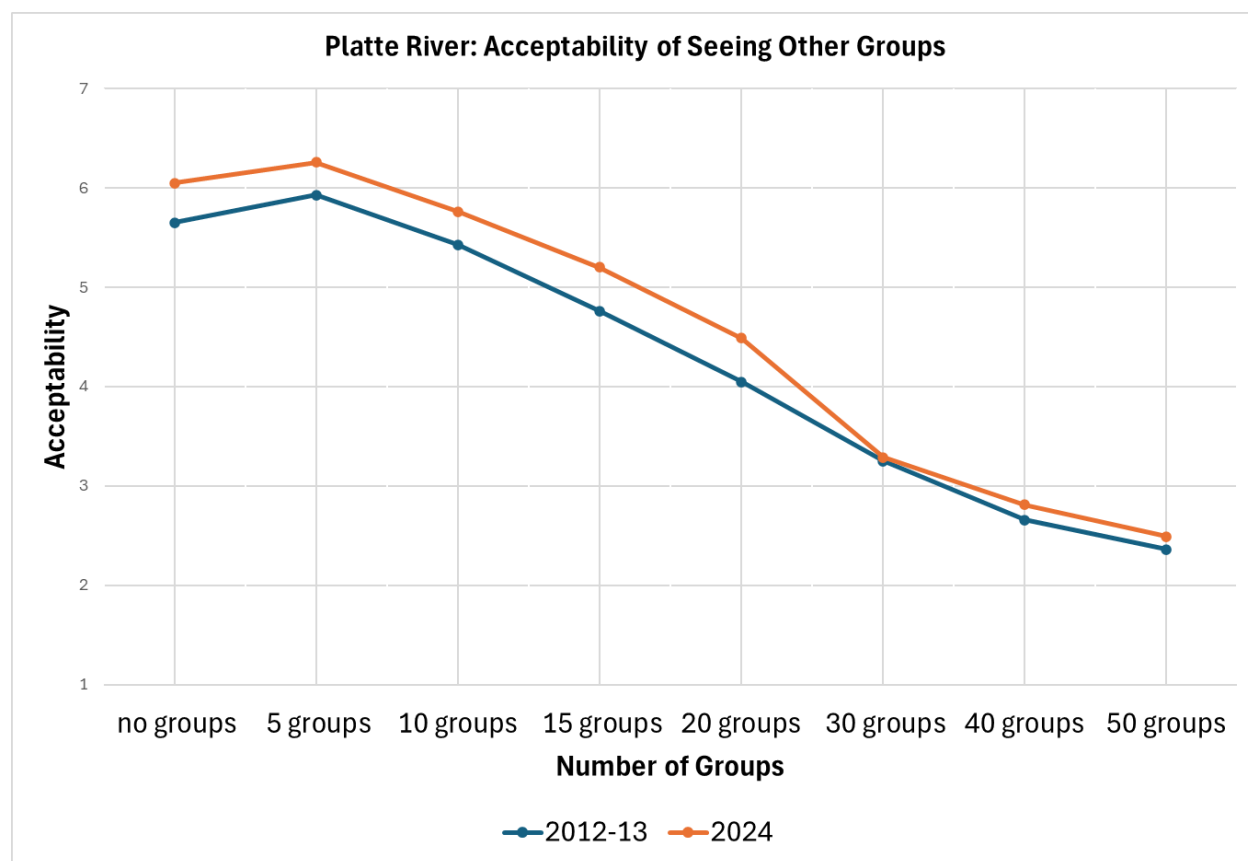


Figure 16. Platte River respondents' acceptability (1 Very Unacceptable to 7 Very Acceptable) of seeing other groups by year of sampling.

Recommendations and Conclusion

The 2024 Visitor Use Study provides updated data on who visits SLBE, why they come, and how they experience the park. It builds upon the 2012-2013 baseline study of the Crystal and Platte Rivers and reflects changing conditions over the past decade: significant increases in visitation, federal wilderness designation, and pandemic-related shifts. Several major findings of this report include:

- Visitation is a balance between first-time and repeat users. This indicates both growing demand for new visitors and strong loyalty among repeat visitors.
- Visitor-reported crowding remains moderate, though perceptions and thresholds vary widely across sites. The river settings for the Crystal and Platte Rivers have lower thresholds and could be more vulnerable to crossing these thresholds in the future.
- Visitor crowding norms have shifted compared to crowding perceptions a decade ago. Visitors reported being more tolerant of increased encounters, but expectations differ between rivers and land sites.
- Resource conditions continue to strongly influence the visitor's experience relative to social and managerial conditions. Lack of parking was reported by visitors, but other resource conditions might act as a “watch list” for experiential quality. Although not necessarily observed or a problem now, changes in light pollution, improper disposal of human waste, litter, and degraded water quality all have the potential to highly affect visitor experiences negatively.

These major findings direct several recommendations for SLBE staff. These recommendations apply to future visitor use management strategies, future monitoring, and the potential implication of management decisions.

- Plan for dual use: The populations of first-time visitors and long-term repeat visitors represent distinct and strong proportions of visitation. Communication, education, and enforcement strategies could be applied in different ways to directly reach these specific populations.
- Continue to closely monitor river sites: Social conditions on the Crystal and Platte Rivers are currently acceptable, and crowding remains moderate, but tolerance for crowding that leads to displacement is substantially lower than land-based sites. Ongoing monitoring of visitor encounters on the rivers will assist managers in proactively responding to conditions that approach thresholds for acceptable conditions.

- Targeted communication: Share expectations around crowding and respectful recreation, such as inappropriate behaviors (e.g., littering). Many visitors tolerate higher group numbers today than previously reported in the ten-year comparison, suggesting shifting encounter norms. However, proactive messaging and management may be necessary to address further increases in visitation and use of park resources.
- Monitor “watch list” resource conditions: Few resource or managerial conditions were encountered by visitors that negatively influenced their experience. However, several resource items, if they were to degrade, appear to likely have a strong negative effect on visitor experiences. Monitoring trends in light pollution, improper human waste disposal, litter, and water quality may all act as important triggers for proactive action. Management strategies should be planned and prepared to address future unacceptable changes to these conditions.
- Results-driven future planning: These results build on over a decade of social science research as SLBE. Results should be incorporated into visitor use management frameworks, future river management plans, and other park planning updates.

SLBE remains a highly valued destination for scenery, recreation, and family experiences. Overall experiences are positive, but rising visitation and sensitive thresholds at sites can signal the need for proactive management. Balancing resource protection with high-quality visitor experiences will require ongoing monitoring and adaptive strategies.

Appendix A: Survey Instrument



For each particular survey site, the name of the location replaces [SITE] in the master copy that follows.

Printed surveys were formatted slightly differently (margins, font size, etc.) for page fit. Surveys were printed with the OMB information in a header on each page:

OMB Number: 1024-0224
Expiration Date: 10/31/2024

Sleeping Bear Dunes National Lakeshore Visitor Study Master Copy



To be completed by field staff:

ID _____ Time _____ Location _____ Date _____ Field staff _____

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:

The National Park Service is authorized by the NPS Research Mandate (54USC100702) to collect this information for Sleeping Bear National Lakeshore. This study will provide insight into visitors' use and preferences for park activities, services, and facilities to inform ongoing management of park resources and enhance visitor experiences. Your response to this request is voluntary and anonymous. Your name will never be associated with your answers, and no contact information will be collected. No action may be taken against you for refusing to supply the information requested. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

BURDEN ESTIMATE STATEMENT: Public reporting burden for this form is estimated to average 13 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to NPS Information Collections Review Coordinator, 1201 Oakridge Dr., Fort Collins, CO 80525

SLEEPING BEAR DUNES NATIONAL LAKESHORE ("THE PARK")

NOTE: In this questionnaire, "personal group" is defined as anyone that you are visiting the park with, such as spouse, family, friends, etc. This does not include the larger group that you might be traveling with, such as school, church, scouts, or tour group.

1. What is your age _____
2. Are you a permanent resident or citizen of the United States?
☐ No – What is your country of origin? _____
☐ Yes – What is your zip code and state of residence?
_____ State _____ Zip Code _____
3. How many people are in your personal group, including you? _____
4. Please select the choice below that best describes your traveling party.
☐ Individual traveling alone ☐ Family only ☐ Friends only
☐ Family plus friends ☐ Tour or other group
5. Please tell us about your past visitation, including this trip, to Sleeping Bear Dunes National Lakeshore.
 - a. Over the **past 12 months**, how many visits have you made to the park? _____
 - b. If more than one trip in the last year, **what times of year** did you visit? (Check all that apply)
☐ Spring ☐ Summer ☐ Fall ☐ Winter
 - c. Including this trip, how many **trips overall** (total) have you made to visit the park?

 - d. Including this trip, how many **times overall** (total) have you visited [survey site]? _____
6. On this trip, how long did you stay/are you planning to stay at the park? List partial hours/days as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$.
_____ number of **hours**, if fewer than 24 OR _____ number of **days**, if 24 hours or more
hours more
7. What time did you arrive at [survey site] today?
_____ time of day ☐ AM ☐ PM
8. At what time do you plan to leave [survey site] today?
_____ time of day ☐ AM ☐ PM

9. How did your visit to Sleeping Bear Dunes National Lakeshore fit into your travel plans? (Select one.)

- ☐ The park is my primary destination
- ☐ The park is one of several destinations
- ☐ I am passing through the park to my primary destination
- ☐ I did not plan to visit this park

10. On this trip, what were your main reasons that you and your personal group came to the Sleeping Bear Dunes National Lakeshore area?

#1 #2 #3

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | Resident of the area |
| ☐ | ☐ | ☐ | Visit Sleeping Bear Dunes National Lakeshore |
| ☐ | ☐ | ☐ | Visit other attractions in the area |
| ☐ | ☐ | ☐ | Visit friends / relatives in the area |
| ☐ | ☐ | ☐ | Traveling through – unplanned visit |
| ☐ | ☐ | ☐ | Business |
| ☐ | ☐ | ☐ | Other (Please specify) _____ |

11. Which of these activities did you and your personal group participate in at the park on this trip? (Select all that apply)

- | | | | |
|--|---|-----------------------------------|--|
| ☐ Biking | ☐ Stargazing / Viewing the night sky | ☐ Camping | ☐ Canoeing/Kayaking |
| ☐ Dune climbing | ☐ Exercising to promote fitness | ☐ Fishing | ☐ Hiking |
| ☐ Hunting | ☐ Attending ranger-led programs | ☐ Swimming | ☐ Visiting historical sites |
| ☐ Beach going | ☐ Visiting the Visitor Center | ☐ Tubing | ☐ Other _____ |

12. Which of these activities were most important to you at the park on this trip? (Fill in up to three activities from the list above with Activity 1 being first, Activity 2 second, and Activity 3 third.)

Activity 1 _____ Activity 2 _____ Activity 3 _____

13. On this trip, what were your main motivations for visiting the park? (Select up to three, numbering 1 for first, 2 for second, and 3 for third.)

- | | |
|--|---|
| ☐ To share quality time with family/friends | ☐ To learn about the history of the area |
| ☐ To do something with my family/friends | ☐ To be with people who have similar interests |
| ☐ To enjoy the natural scenery | ☐ To meet new people |
| ☐ To enjoy the tranquility of the area | ☐ To gain a sense of self-confidence |
| ☐ To experience the solitude/privacy | ☐ To develop a sense of self-pride |
| ☐ To get away from crowded areas | ☐ To experience an adventure |
| ☐ To learn more about nature | ☐ To experience excitement |

14. The following map contains named locations in and near the park. Select the locations that you and your personal group visited on this trip. (Select all that apply.)

1	North Manitou Island
2	South Manitou Island
3	South Manitou Island Campgrounds
4	Good Harbor Bay area
5	Port Oneida
6	Crystal River
7	D.H. Day Campground
8	Glen Haven / Maritime Museum
9	Dune Climb
10	Pierce Stocking Scenic Drive
11	Phillip A. Hart Visitor Center
12	Ash / Otter Creek area
13	Platte Beaches
14	Platte River
15	Platte River Campground

15. Please list any other locations visited in the park on this trip not identified on the map

16. For this trip, where did you and your personal group spend the longest amount of time in the park?

17. For this trip, what was your most desired location to visit in the park?

SECTION 3: YOUR EXPERIENCE IN THE PARK

18. How crowded did you feel on this trip while at/on the [SURVEY SITE IN PARK]?
 Not at all crowded Slightly Crowded Moderately Crowded Very Crowded Extremely Crowded
☐ ☐ ☐ ☐ ☐
19. What is the total number of other groups you saw on this trip while at/on [SURVEY SITE IN PARK]? _____
20. What is the total number of other groups you would prefer to see during your trip at/on [SURVEY SITE IN PARK]? _____
21. What is maximum number of groups you think is acceptable to see before managers should take action at/on [SURVEY SITE IN PARK]? _____
22. What is the maximum number of other groups you could see during your trip before you would no longer use [SURVEY SITE IN PARK]? _____
23. We would like to know how many other groups you think are acceptable to see without [SURVEY SITE IN PARK] being too crowded. Please rate the acceptability of each of the following numbers of other groups seen on your trip.

	Very Unacceptable	Unacceptable	Somewhat Unacceptable	Neutral	Somewhat Acceptable	Acceptable	Very Acceptable
See no other groups	☐	☐	☐	☐	☐	☐	☐
See up to 5 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 10 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 15 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 20 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 25 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 30 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 40 other groups	☐	☐	☐	☐	☐	☐	☐
See up to 50 other groups	☐	☐	☐	☐	☐	☐	☐

24. [FOR NORTH MANITOU ISLAND VERSION ONLY] Please record the following for your wilderness visit. (Enter a number in all three columns for both items)

	Least in a single day	Most in a single day	Total for trip
The number of groups that <u>camped</u> within sight or sound of your campsite on North Manitou Island	_____	_____	_____
The number of groups that <u>hiked</u> within sight or sound of your campsite on North Manitou Island	_____	_____	_____

25. For this trip and previous trips, did crowding change your plans during your visit to Sleeping Bear Dunes National Lakeshore. (Select all that apply)

	Changed during a <u>previous visit</u> to the park	Changed <u>during this</u> <u>current</u> visit to the park
Chose <u>not to visit</u> the park	☐	
Changed the <u>amount of time</u> that you spent visiting the park	☐	☐
Changed the <u>times of the day</u> that you visited the park	☐	☐
Changed the <u>day of the week</u> that you visited the park	☐	☐
Changed the <u>dates or seasons</u> that you visited the park	☐	☐
Chose not to visit your desired <u>places</u> at the park	☐	☐
Changed the <u>times of day</u> that you visited <u>places</u> at the park	☐	☐
Changed the <u>order of places</u> visited at the park	☐	☐
Chose not to participate in your desired <u>activities</u> at the park	☐	☐
Changed the composition of the <u>personal group</u> with whom you visited the park.	☐	☐

SECTION 4: PARK CONDITIONS

26. These items represent conditions you may have noticed at the park on this trip. Please indicate two things for each condition. First, whether or not you noticed the condition during your trip. Second, whether or not you feel the condition negatively affected or would negatively affect the quality of your trip.

		Did you <u>notice</u> this condition in the park on your trip?		Did or would this condition <u>negatively affect</u> the quality of your trip?	
		No	Yes	No	Yes
Social conditions	Large groups	☐	☐	☐	☐
	Visitor conflicts	☐	☐	☐	☐
	Inappropriate behavior	☐	☐	☐	☐
	Loud/noisy groups	☐	☐	☐	☐
	Discourteous/unsafe driving	☐	☐	☐	☐
Managerial conditions	Lack of restrooms	☐	☐	☐	☐
	Lack of parking	☐	☐	☐	☐
	Poor road quality	☐	☐	☐	☐
	Lack of bike lanes	☐	☐	☐	☐
	Poor Wi-Fi access	☐	☐	☐	☐
	Poor cellular service	☐	☐	☐	☐
	Lack of ADA access	☐	☐	☐	☐
	Significant commercial use	☐	☐	☐	☐
	Lack of docks	☐	☐	☐	☐
Resource conditions	Dune erosion	☐	☐	☐	☐
	Vandalism	☐	☐	☐	☐
	Social trails	☐	☐	☐	☐
	Vegetation damage	☐	☐	☐	☐
	Degraded water quality	☐	☐	☐	☐
	Litter	☐	☐	☐	☐
	Improper disposal of human waste	☐	☐	☐	☐
	Unexpected human/machinery noise	☐	☐	☐	☐
	Light pollution	☐	☐	☐	☐
	Wildlife harassment	☐	☐	☐	☐
Invasive species	☐	☐	☐	☐	

27. [SURVEY SITE IN PARK] may play many different roles in people's lives. As you think about [SITE], please indicate your level of disagreement or agreement with each of the statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am very attached to [SITE].	☐	☐	☐	☐	☐
[SITE] is the best place for what I like to do.	☐	☐	☐	☐	☐
I feel like [SITE] is a part of me.	☐	☐	☐	☐	☐
I identify strongly with [SITE].	☐	☐	☐	☐	☐
I get more satisfaction out of visiting [SITE] than any other place.	☐	☐	☐	☐	☐
[SITE] is very special to me.	☐	☐	☐	☐	☐
[SITE] means a lot to me.	☐	☐	☐	☐	☐
Doing what I do at [SITE] is more important to me than doing it in any other place.	☐	☐	☐	☐	☐
Visiting [SITE] says a lot about who I am.	☐	☐	☐	☐	☐

28. The National Park Service is responsible for managing recreation use at Sleeping Bear Dunes National Lakeshore. Its mission is to conserve nature, wildlife, and historical objects while providing for their enjoyment for the public and future generations. As you think about your interaction with park staff, please indicate the extent to which you disagree or agree with each statement below.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Do not know
Sleeping Bear Dunes staff share my values about how the [SITE] should be managed.	☐	☐	☐	☐	☐	☐
I share the Sleeping Bear Dunes staff's goals for the [SITE].	☐	☐	☐	☐	☐	☐
Sleeping Bear Dunes staff support my views about the [SITE].	☐	☐	☐	☐	☐	☐
I trust Sleeping Bear Dunes staff in their efforts to manage the [SITE].	☐	☐	☐	☐	☐	☐

29. Please indicate the extent to which you disagree or agree with each statement below.
(Circle one number for each statement)

<i>The connection I have with Sleeping Bear Dunes staff...</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Do not know
...is something I really care about.	☐	☐	☐	☐	☐	☐
...is something I intend to maintain indefinitely.	☐	☐	☐	☐	☐	☐
...deserves my maximum effort to maintain.	☐	☐	☐	☐	☐	☐
...is very important to me.	☐	☐	☐	☐	☐	☐
...is something I am very committed to.	☐	☐	☐	☐	☐	☐
...is very much like being family.	☐	☐	☐	☐	☐	☐

Thank you for your help with this survey!
Please return the tablet to the person who gave it to you.

Appendix B: Further Raw Data in Tabular Format

Appendix B1

Which of these activities did you and your personal group participate in at the park on this trip?	Activities at SLBE				
	Site Location %				
	PSSD	Glen Haven	Crystal River	Platte River	Total
Biking	3.9	39.3	25.4	20.9	22.7
Dune climbing	64.3	58.0	55.9	47.0	56.4
Hunting	--	0.9	1.0	0.7	0.6
Beach going	42.1	86.0	61.5	62.3	62.1
Stargazing/Viewing the night sky	14.3	19.0	26.4	22.5	20.5
Exercising to promote fitness	23.5	26.2	20.1	18.2	22.2
Attending ranger-led programs	1.9	4.5	1.3	3.6	2.9
Visiting the visitor center	37.8	28.0	10.0	11.3	23.4
Camping	13.2	14.9	10.7	25.8	17.1
Fishing	1.3	5.4	6.4	11.9	6.0
Swimming	18.0	51.5	39.1	44.0	37.7
Tubing	1.3	5.4	9.0	25.5	9.5
Canoeing/Kayaking	7.9	17.6	94.0	80.8	45.6
Hiking	50	48.8	49.5	39.4	48.2
Visiting historical sites	29.4	22.6	12.4	15.9	21.3
Other*	11.4	6.0	4.3	4.6	6.6

*Other: Enjoying nature/scenic beauty (28), scenic driving (13), engaging in local tourism (10), boating (8), birding (5), relaxing (5), photography (4), visiting (4). Picnicking (3), paddle boarding (3), surfing (2), dog walking (1), golfing (1), painting (1), and snorkeling (1).

Appendix B2

Locations Visited in SLBE					
For this trip, select the locations in SLBE National Lakeshore that you and your personal group visited.	Site Location %				
	PSSD	Glen Haven	Crystal River	Platte River	Total
North Manitou Island	0.5	0.6	1.3	1.3	1.0
South Manitou Island	1.1	1.2	4.3	2.0	4.4
South Manitou Island Campgrounds	1.3	0.6	1.0	1.0	2.1
Good Harbor Bay Area	12.7	18.5	20.1	8.6	14.8
Port Oneida	9.0	17.3	13.7	6.3	11.5
Crystal River	8.5	18.5	88.0	12.3	29.5
D.H. Day Campground	9.0	9.5	10.4	6.0	8.9
Glen Haven / Maritime Museum	27.5	85.4	27.4	20.9	40.1
Dune Climb	56.3	54.8	51.2	40.4	50.3
Pierce Stocking Scenic Drive	86.5	37.5	28.4	28.1	46.8
Phillip A. Hart Visitor Center	33.6	19.6	7.7	11.9	18.9
Ash/Otter Creek area	2.6	5.1	3.0	5.6	3.9
Platte Beaches	2.7	3.3	1.8	10.9	19.1
Platte River	13.0	14.0	8.0	89.7	29.2
Platte River Campground	6.3	4.5	2.0	18.5	7.5
Other*	9.0	18.5	10.4	9.6	11.6

*Other: Empire Bluff (41), Pyramid Point Trail (26), Sleeping Bear Heritage Trail (24), Glen Arbor (21), Empire Bluff Trail (15), Empire (12), North Bar Lake (11), Glen Lake (10), Sleeping Bear Point Trail (9), Esch Beach (9), Treat Farm (5), Little Glen Lake (5), Peterson Beach (3), Otter Lake (3), Cottonwood Trail (3), Dunes Hiking Trail (3), School Lake (2), Alligator Hill Trail (2), Kettles Trail (2), Shell Lake (2), Hidden Lake (2), Shipwrecks (2), Loon Lake (1), Good Harbor Bay Trail (1), The Shalda Cabin (1), Narada Lake (1), Old Indian Trail (1), Shalda Creek (1), Chippewa Run (1), Black Smith Shop (1), and Big Glen Lake (1)

Appendix B3

Which location did you spend the longest time at?					
For this trip, where did you and your personal group spend the longest amount of time in the park?	Site Location %				
	PSSD	Glen Haven	Crystal River	Platte River	Total
North Manitou Island	0.0	0.0	0.7	0.4	0.4
South Manitou Island	0.3	0.0	1.5	0.4	2.7
South Manitou Island Campgrounds	0.3	0.4	0.4	0.4	0.6
Good Harbor Bay Area	0.3	7.7	4.8	0.7	3.2
Port Oneida	0.6	1.8	3.0	--	1.3
Crystal River	1.2	2.1	67.3	0.4	16.3
D.H. Day Campground	3.4	4.9	2.2	2.6	3.3
Glen Haven / Maritime Muse	2.8	50.5	2.6	0.7	13.7
Dune Climb	28.0	17.5	12.6	6.3	16.2
Pierce Stocking Scenic Drive	56.3	7.4	0.7	3.3	18.2
Phillip A. Hart Visitor Center	0.3	0.7	0.4	0.4	0.4
Ash/Otter Creek area	--	--	0.7	0.7	0.3
Platte Beaches	1.2	2.1	0.7	7.4	2.7
Platte River	1.5	2.1	1.1	63.3	15.7
Platte River Campground	3.7	2.8	1.1	13.0	4.9

Appendix B4

Most desired and planned location per site					
For this trip, which location in the park was the most desired / planned for by you and your personal group?	Site Location (%)				
	Pierce Stocking Scenic Drive	Glen Haven	Crystal River	Platte River	Total
North Manitou Island	1.1	0.0	0.8	0.4	0.8
South Manitou Island	0.2	0.1	0.5	0.5	3.9
South Manitou Island Campgrounds	0.4	0.4	0.4	--	0.5
Good Harbor Bay Area	1.4	4.7	2.4	0.4	2.2
Port Oneida	1.8	2.0	3.2	0.4	1.8
Crystal River	0.7	2.4	57.1	--	14.4
D.H. Day Campground	1.8	3.1	1.2	0.4	1.6
Glen Haven / Maritime Muse	2.9	39.0	2.8	0.9	11.1
Dune Climb	31.9	29.5	18.2	10.3	22.3
Pierce Stocking Scenic Drive	50.2	11.0	5.7	6.5	18.9
Phillip A. Hart Visitor Center	1.4	0.8	1.2	0.4	1.0
Ash/Otter Creek area	--	0.4	1.2	0.4	0.5
Platte Beaches	1.1	2.4	1.6	7.3	2.9
Platte River	1.8	2.4	0.8	62.5	15.1
Platte River Campground	2.9	1.6	1.2	7.8	3.2

Appendix B5. Respondents' Perceptions of Crowding compared by location

How crowded did you feel on this trip while at the survey location
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Level of Crowding	Site Location %				Totals
	PSSD	Glen Haven	Crystal River	Platte River	
Not at all crowded (1)	25.1	38.6	34.6	41.5	34.7
Slightly crowded (2)	31.4	33.7	38.7	26.4	32.7
Moderately crowded (3)	25.1	14.0	20.5	18.3	19.6
Very crowded (4)	14.8	11.9	5.8	12.0	11.1
Extremely crowded (5)	3.6	1.8	0.3	1.8	1.9
Mean	2.40	2.05	1.99	2.06	2.13

Appendix B6. Crowding Tolerance Glen Haven, acceptability (percentage, %; and means).

	Very unacceptable	Unacceptable	Somewhat Unacceptable	Neutral	Somewhat Acceptable	Acceptable	Very Acceptable	Means
See no other groups	6.2	3.1	2.7	11.3	2.7	14.8	59.1	5.82
See up to 5 other groups	3.8	1.1	2.7	4.6	5.3	24.4	58.0	6.12
See up to 10 other groups	3.4	1.9	2.7	6.9	6.9	27.1	51.1	5.98
See up to 15 other groups	3.9	3.5	3.1	7.5	7.5	32.5	42.0	5.76
See up to 20 other groups	4.3	5.9	4.7	7.8	13.7	32.2	31.4	5.43
See up to 25 other groups	6.6	6.2	8.9	10.1	16.3	30.6	21.3	5.0
See up to 30 other groups	9.8	8.6	12.5	10.9	20.3	21.1	16.8	4.54
See up to 40 other groups	12.1	14.1	19.9	13.7	14.1	16.0	10.2	3.92
See up to 50 other groups	19.3	18.1	16.2	11.6	13.5	12.0	9.3	3.55

Appendix B7 Crowding Tolerance Pierce Stocking Scenic Drive, acceptability (percentage, %; and means).

	Very unacceptable	Unacceptable	Somewhat Unacceptable	Neutral	Somewhat Acceptable	Acceptable	Very Acceptable	Means
See no other groups	11.2	3.9	3.0	10.9	3.0	17.8	50.3	5.45
See up to 5 other groups	5.0	2.0	1.7	9.2	5.9	23.1	53.1	5.91
See up to 10 other groups	4.9	1.0	2.0	7.2	10.8	29.2	44.9	5.85
See up to 15 other groups	4.3	1.3	5.7	10.7	12.3	31.7	34.0	5.56
See up to 20 other groups	4.7	5.3	7.0	4.1	17.9	26.9	23.6	5.11
See up to 25 other groups	6.8	1.9	9.2	20.7	14.6	23.1	18.6	4.73
See up to 30 other groups	10.4	9.1	17.5	15.8	17.2	16.8	13.1	4.23
See up to 40 other groups	16.3	17.7	14.6	15.6	12.9	11.9	10.9	3.70
See up to 50 other groups	28.2	13.8	16.4	12.5	9.8	9.2	10.2	3.30

Appendix B8 Crowding Tolerance Crystal River, acceptability (percentage, %; and means).

	Very unacceptable	Unacceptable	Somewhat Unacceptable	Neutral	Somewhat Acceptable	Acceptable	Very Acceptable	Means
See no other groups	5.1	1.2	1.9	3.9	1.6	14.4	72.0	6.27
See up to 5 other groups	4.6	0.8	0.8	3.1	5.8	36.3	48.6	6.08
See up to 10 other groups	4.2	4.5	10.2	8.0	19.7	32.2	21.2	5.16
See up to 15 other groups	10.6	12.5	16.5	12.2	19.2	20.4	8.6	4.13
See up to 20 other groups	18.4	20.7	18.8	13.7	12.9	12.9	2.7	3.32
See up to 25 other groups	30.6	22.6	19.8	11.9	9.1	4.4	1.6	2.66
See up to 30 other groups	40.3	26.1	15.1	7.0	6.6	3.1	1.6	2.29
See up to 40 other groups	54.9	22.9	11.1	5.1	1.6	2.8	1.6	1.90
See up to 50 other groups	63.5	19.2	7.5	4.3	2.4	2.0	1.2	1.73

Appendix B9. Crowding Tolerance Platte River, acceptability (percentage, %; and means).

	Very unacceptable	Unacceptable	Somewhat Unacceptable	Neutral	Somewhat Acceptable	Acceptable	Very Acceptable	Means
See no other groups	5.3	3.7	2.9	5.3	2.5	11.5	68.7	6.05
See up to 5 other groups	3.2	0.4	1.2	3.2	4.0	30.1	57.8	6.26
See up to 10 other groups	3.3	2.0	5.3	6.1	9.8	35.0	38.6	5.76
See up to 15 other groups	6.0	4.0	8.4	8.0	17.2	32.4	24.0	5.20
See up to 20 other groups	9.6	9.6	11.2	13.7	16.5	25.7	13.7	4.49
See up to 25 other groups	16.9	10.1	17.3	12.9	15.7	16.1	10.9	3.29
See up to 30 other groups	25.7	13.9	20.8	11.0	10.2	10.2	8.2	3.29
See up to 40 other groups	35.5	18.4	18.4	6.5	7.3	6.1	7.8	2.81
See up to 50 other groups	48.4	17.5	10.3	4.8	5.6	6.7	6.7	2.49

Appendix B10

Crowding						
For this trip and previous trips, did crowding change your plans during your visit to Sleeping Bear Dunes National Lakeshore.		2024 Field Season Site Location %				Totals
		PSSD	Glen Haven	Crystal River	Platte River	
Changed during a previous visit to the park	Chose <u>not to visit</u> the park	23.3	18.9	21.1	36.7	6.6
	Changed the <u>amount of time</u> that you spent visiting the park	18.9	24.4	23.3	33.3	6.6
	Changed the <u>times of the day</u> that you visited the park	16.9	26.5	22.1	33.1	10.0
	Changed the <u>day of the week</u> that you visited the park	20.4	27.9	23.1	28.6	10.9
	Changed the <u>dates or seasons</u> that you visited the park	22.9	28.4	22.0	25.7	8.1
	Chose not to visit your desired <u>places</u> at the park	20.0	26.7	21.3	29.3	5.5
	Changed the <u>times of day that you visited places</u> at the park	21.4	26.5	23.1	29.1	8.6
	Changed the <u>order of places</u> visited at the park	17.3	26.5	24.5	27.6	7.2
	Chose not to participate in your desired <u>activities</u> at the park	21.7	21.7	27.5	29.0	5.1
	Changed the composition of the <u>personal group</u> with whom you visited the park.	24.5	18.9	30.2	26.4	3.9
Changed during this current visit to the park	Changed the <u>amount of time</u> that you spent visiting the park	32.7	23.1	15.4	26.9	3.8
	Changed the <u>times of the day</u> that you visited the park	17.9	22.6	17.9	40.5	6.2
	Changed the <u>day of the week</u> that you visited the park	24.1	27.7	16.9	30.1	6.1
	Changed the <u>dates or seasons</u> that you visited the park	26.2	20.0	13.8	38.5	4.8
	Chose not to visit your desired <u>places</u> at the park	21.7	28.3	10.9	39.1	3.4
	Changed the <u>times of day that you visited places</u> at the park	18.8	24.7	16.5	36.5	6.3
	Changed the <u>order of places</u> visited at the park	21.0	29.0	12.9	35.5	4.6
	Chose not to participate in your desired <u>activities</u> at the park	25.5	31.9	8.5	31.9	3.5
	Changed the composition of the <u>personal group</u> with whom you visited the park.	26.5	29.4	2.9	38.2	2.5

Appendix B11

Pierce Stocking Scenic Drive Conditions and Impact			
Type of Condition		Conditions were NOTICED on their trip in the park (%)	Conditions negatively affected or would affect the quality of the trip in the park (%)
Social Conditions	Large groups	42.9	35.5
	Visitor conflicts	0.9	60.3
	Inappropriate behavior	2.7	63.6
	Loud/noisy groups	9.4	60.0
	Discourteous/unsafe driving	5.1	62.4
Managerial Conditions	Lack of restrooms	19.2	55.3
	Lack of parking	28.0	58.2
	Poor road quality	1.2	39.3
	Lack of bike lanes	10.8	21.5
	Poor Wi-fi access	34.2	14.2
	Poor cellular service	41.9	22.6
	Lack of ADA access	16.7	22.9
	Significant commercial use	1.6	47.7
	Lack of docks	5.6	10.3
Resource Conditions	Dune Erosion	31.2	36.5
	Vandalism	5.0	57.9
	Social trails	18.7	26.1
	Vegetation damage	13.4	46.9
	Degraded water quality	1.6	54.9
	Litter	15.0	63.7
	Improper disposal of human waste	1.5	68.4
	Unexpected human/machinery noise	4.7	59.5
	Light pollution	1.9	59.5
	Wildlife harassment	1.3	46.8
	Invasive species	11.4	64.0

Appendix B12

Glen Haven Conditions and Impact			
Type of Condition		Conditions were NOTICED on their trip in the park (%)	Conditions negatively affected or would affect the quality of the trip in the park (%)
Social Conditions	Large groups	28.2	42.4
	Visitor conflicts	1.0	63.5
	Inappropriate behavior	4.4	73.7
	Loud/noisy groups	6.1	65.1
	Discourteous/unsafe driving	4.5	71.8
Managerial Conditions	Lack of restrooms	12.8	60.3
	Lack of parking	22.4	60.7
	Poor road quality	1.7	38.6
	Lack of bike lanes	8.8	36.0
	Poor Wi-fi access	22.4	16.4
	Poor cellular service	24.5	15.9
	Lack of ADA access	10.2	24.5
	Significant commercial use	3.2	47.0
	Lack of docks	15.4	11.0
Resource Conditions	Dune Erosion	15.0	34.2
	Vandalism	4.1	59.2
	Social trails	17.5	26.8
	Vegetation damage	8.2	46.6
	Degraded water quality	3.9	61.3
	Litter	9.4	69.4
	Improper disposal of human waste	2.1	71.6
	Unexpected human/machinery noise	4.6	64.0
	Light pollution	3.2	50.7
	Wildlife harassment	1.8	65.9
	Invasive species	8.6	47.5

Appendix B13

Crystal River Conditions and Impact			
Type of Condition		Conditions were NOTICED on their trip in the park (%)	Conditions negatively affected or would affect the quality of the trip in the park (%)
Social Conditions	Large groups	27.1	47.3
	Visitor conflicts	1.9	59.4
	Inappropriate behavior	1.1	65.8
	Loud/noisy groups	11.9	62.8
	Discourteous/unsafe driving	4.6	63.2
Managerial Conditions	Lack of restrooms	12.1	47.0
	Lack of parking	17.8	50.0
	Poor road quality	3.9	32.6
	Lack of bike lanes	9.8	25.8
	Poor Wi-fi access	19.4	17.3
	Poor cellular service	27.5	25.0
	Lack of ADA access	5.6	15.5
	Significant commercial use	7.6	39.6
	Lack of docks	1.6	12.9
Resource Conditions	Dune Erosion	12.9	39.7
	Vandalism	2.8	52.2
	Social trails	12.7	20.5
	Vegetation damage	6.7	44.8
	Degraded water quality	3.2	59.0
	Litter	16.5	61.3
	Improper disposal of human waste	1.2	63.9
	Unexpected human/machinery noise	9.1	54.0
	Light pollution	2.4	45.3
	Wildlife harassment	1.6	62.3
	Invasive species	10.4	45.7

Appendix B14

Platte River Conditions and Impact			
Type of Condition		Conditions were NOTICED on their trip in the park (%)	Conditions negatively affected or would affect the quality of the trip in the park (%)
Social Conditions	Large groups	45.3	43.8
	Visitor conflicts	2.8	56.6
	Inappropriate behavior	7.5	61.6
	Loud/noisy groups	22.3	57.4
	Discourteous/unsafe driving	3.2	59.7
Managerial Conditions	Lack of restrooms	8.7	52.3
	Lack of parking	17.2	59.2
	Poor road quality	4.4	28.9
	Lack of bike lanes	12.3	22.3
	Poor Wi-fi access	30.4	14.4
	Poor cellular service	39.6	24.9
	Lack of ADA access	8.6	21.9
	Significant commercial use	5.2	40.1
	Lack of docks	5.2	11.9
Resource Conditions	Dune Erosion	20.0	35.0
	Vandalism	3.2	53.1
	Social trails	18.7	23.5
	Vegetation damage	10.8	40.1
	Degraded water quality	3.2	59.4
	Litter	22.1	61.5
	Improper disposal of human waste	4.0	64.8
	Unexpected human/machinery noise	7.6	57.3
	Light pollution	5.2	41.9
	Wildlife harassment	4.8	61.1
	Invasive species	13.3	44.2

Appendix B15. Means are presented on a 1-5 scale: 1) Strongly Disagree, 2) Disagree, 3) Neutral, 4) Agree, 5) Strongly Agree.

Perceptions of Park Management					
As you think about your interaction with park staff, please indicate the extent to which you disagree or agree with each statement below.	2024 Field Season (means)				Overall
	PSSD	Glen Haven	Crystal River	Platte River	
Sleeping Bear Dunes staff share my values about how the [SITE] should be managed.	4.24	4.11	4.16	4.12	4.16
I share the Sleeping Bear Dunes staff's goals for the [SITE].	4.21	4.10	4.14	4.15	4.16
Sleeping Bear Dunes staff support my views about the [SITE].	4.19	4.02	4.13	4.11	4.12
I trust Sleeping Bear Dunes staff in their efforts to manage the [SITE].	4.36	4.21	4.19	4.24	4.25

Appendix B16. Means are presented on a 1-5 scale: 1) Strongly Disagree, 2) Disagree, 3) Neutral, 4) Agree, 5) Strongly Agree.

Connections to staff					
<i>The connection I have with Sleeping Bear Dunes staff...</i>	2024 Field Season (means)				Overall
	Pierce Stocking Scenic Drive	Glen Haven	Crystal River	Platte River	
...is something I really care about.	3.75	3.62	3.58	3.88	3.70
...is something I intend to maintain indefinitely.	3.60	3.53	3.51	3.81	3.61
...deserves my maximum effort to maintain.	3.55	3.49	3.47	3.82	3.58
...is very important to me.	3.65	3.57	3.56	3.90	3.67
...is something I am very committed to.	3.44	3.43	3.41	3.70	3.49
...is very much like being family.	3.30	3.28	3.29	3.55	3.35