

Striking a Balance: Recreation and Conservation in Wisconsin State Parks

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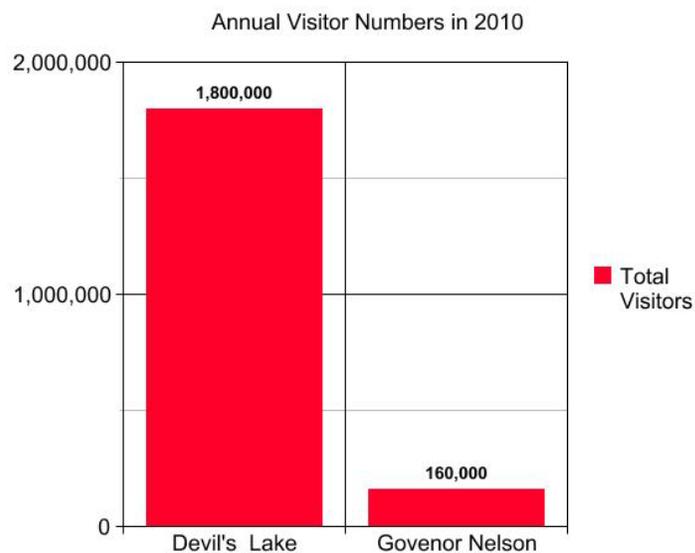
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**Striking A Balance: Conservation and Recreation
in Wisconsin State Parks**



Abstract: The basis of this project was to explore how visitor numbers to state parks affects both quality of visitor experience and conservation plans of park management. The research question and subsequent data collection investigates how state parks balance conservation and recreation. The research focused on Devil's Lake State Park and Governor Nelson State Park because of the vast differences in total park area and annual visitor numbers. Data was collected through park user surveys and interviews of park management. Through the analysis of primary data, it was concluded that visitor numbers really only negatively affected park goers when there was a high volume of visitors present at the park and park management at each park faces differing problems, in regards to conservation based on park size and visitor volume.

Figure 1: Comparison of annual visitor numbers. Data courtesy Rene Lee, Governor Nelson State Park Manager and Steve Schmelzer, Devil's Lake State Park Superintendent



I.

I. Introduction

The main purpose of our project was to explore the relationship between visitor numbers to a state park, the quality of the experience for users in relationship to the visitor numbers, and how the number of visitors can affect park management's approach to environmental conservation. We compared Devil's Lake State Park and Governor Nelson State Park to

investigate this topic. To address the research question we used abductive reasoning, which is reasoning in which explanatory hypotheses are formed and evaluated (Rhoads 36). Our explanatory hypothesis states that the volume of visitors to a state park affects the quality of visitor recreational experience and the conservation plans of park management. We evaluated this hypothesis by researching and collecting data from park visitors and park management in the form of surveys and interviews.

II. Background Information

A) Devil's Lake State Park

The area that is now Devil's Lake State Park has a lengthy and rich history of human activity beginning about 7,000 years ago. Glaciers receded from the area actively around 13,000 years ago (Clayton and Attig 1990). Some of the earliest known humans in the Midwest dwelt at nearby Natural Bridge State Park, a park whose main attraction is a sandstone arch and rock shelter about 13 miles from Devil's Lake, well within a day's walk (Weizeniker 1975). The park also features effigy mounds created by the Late Woodland Peoples about 1,000 years ago (Birmingham and Eisenberg 2000). More recent Native American activity in the area indicates that the HoChunk Nation dwelt on both shores of the lake seasonally and created many legends about the lake, talus fields surrounding it, and nearby Wisconsin Dells. The earliest European explorers to the area were French fur trappers and other settlers soon followed in the mid 1800s. By the 1860s, a railroad was built through what is now the park and it became a popular tourist destination featuring camping and rustic accommodations on the south end of the lake and hotels and boat tours on the north end of the lake. By the time Devil's Lake became a park,

all of the hotels had closed and were torn down, however, many small summer cottages had popped up to be later bought out by the DNR in the 1940s (Limbach, personal observation, 2011).

Devil's Lake State Park was opened in 1911 making it the third oldest State Park in Wisconsin, while also being the largest and most visited in Wisconsin (WDNR: Devil's Lake 2011). It is within an hour of Madison, WI and three hours from Chicago, IL. Many recreational activities are offered in the park, the most popular being hiking and camping, as there are 29 miles of hiking trails throughout the park and 3 separate family campgrounds with over 400 campsites and a group camping area with 9 large group sites. There is also 8 miles of mountain biking trails which double as hiking trails and are included in the 29 mile count. Rock climbing is a popular activity, but the park isn't specifically maintained for rock climbing and tells users to climb at their own risk. Scuba Diving is quite popular at the park, along with boating, swimming, kayaking, fishing, and in the winter ice fishing. Snow-shoeing, cross country skiing, and winter camping are also activities offered during the off season. The park has a few main attractions, including Balanced Rock, Devil's Doorway, Elephant Rock and the lake itself. Devil's Lake hosts about 100 species of birds and 880 species of plants. Wisconsin's oldest State Natural Area, Parfrey's Glen, is located in the southeast corner of the park and boasts unique plants, animals and geology.

Devil's Lake itself was made when the Baraboo River was cut off on both the north and south end of the lake by end moraines from the glaciers blanketing the area during the Ice Age, 18,000 years ago, and is currently 48 feet deep. Currently the lake is spring fed and has a

watershed about double the size of the lake itself. The elevation from the lake surface to the top of the bluff is 500 feet (WDNR: Devil's Lake, 2011).

B) Governor Nelson State Park

Before becoming a state park, the area that is now Governor Nelson State Park was home to two scout camps, Camp Indianola and Camp Wakanda. Camp Indianola ran from 1910 until it closed in 1967 after a tornado touched down in the area and in the camp. It was owned by the Woldenberg family and had many buildings and facilities as part of the well-equipped camp, none of which currently exist (Yahara Waterways, 22). Nearby the YMCA operated Camp Wakanda, a summer camp for boys from all over the Midwest. Camp Wakanda operated from 1919 until the 1970s and currently is reduced to a boat launch with a marked trail leading to several Paleo-Indian effigy mounds (Yahara Waterways 2007).

Governor Nelson State Park was established in 1975 and is comprised of 422 acres. Only day-use activities are allowed at Governor Nelson; it is one of the few state parks that does not allow camping. Governor Nelson is located on the northern shore of Lake Mendota in close proximity to downtown Madison. The 500 foot sand beach is the focal point of the park and it is open for swimming during the summer months. Governor Nelson has a plethora of diverse ecological communities that can be enjoyed along the 8.4 miles of hiking trails. In the winter, the hiking trails are open for cross-country skiing. The park overlooks the beautiful Lake Mendota. Access to Lake Mendota is available via the boat launch and fishing is permitted year-round. Visitors using personal watercraft (i.e. windsurfing, kite surfing) can use the boat launch to set sail as well (WDNR: Governor Nelson, 2009).

The facilities available to park visitors include picnic shelter/area, grills for picnicking, playground, flush toilets, pit toilets, and a bathhouse equipped with solar heated showers. The southern portion of the park is home to a 358 foot panther effigy mound and several conical mounds which were constructed by Late Woodland Peoples (Birmingham and Eisenberg 2000). Currently, restoration is underway in Governor Nelson to re-establish prairies and oak savannas that once dominated the natural landscape of southern Wisconsin (WDNR: Governor Nelson, 2009).

III. Project Research and Literature Review

Prior to gathering our primary data, we wanted to gain a better understanding of different park management strategies and the main conservation issues facing all parks. Through a review of literature we discovered that many parks were facing issues in regards to biodiversity/land, air, and water. Since we are focusing our research on how state parks balance conservation values with recreation values we reviewed literature that explores the different recreational management models as well. After reviewing the literature we wanted to explore how the literature correlated to our main thesis and included retrospective observations on how both Governor Nelson and Devil's Lake fit into the spectrum of research.

A) Environmental Conservation

When approaching environmental conservation in parks, there are several areas that management tries to assess in order to provide for the preservation of the park's natural resources. Some of these include land and biodiversity, water, and air conservation. Each of

these topics applies to both Governor Nelson and Devil's Lake in a strong way. We wanted to explore management approaches to these areas of conservation further to understand how each can impact a park and the park's management strategy.

Land & Biodiversity

Land degradation and biodiversity are both crucial when evaluating land and biodiversity management plans in state parks. Land and biodiversity are essential and arguably the most important part of parks. So understanding the management practices at Devil's Lake and Governor Nelson State Parks and the need to conserve land and biodiversity is very important. Land degradation can consist of a multitude of different things, for these parks, trampling is the largest factor of land degradation. While degradation affects the land, garbage and littering contributes adversely to the parks' wildlife. According to McDonald, "In more remote parks that nevertheless get a lot of visitation, trampling may be a localized problem along trails and near campsites. For instance, 98% of visitors to a heavily used park in Spain did not leave picnic areas, parking lots, or main trails". Both Governor Nelson and Devil's Lake see the problems of trampling, trail pack-tation and subsequent land degradation, particularly near the hiking trails. Governor Nelson encounters these problems primarily during special events in the park such as the triathlon held there and the triathlon training season that precedes it. Devil's Lake, on the other hand, experiences trail degradation and trampling on a primarily seasonal basis. Summer crowds and shallow soils have led to many trails being paved to minimize the impact of the hoards of summer hikers. It's also extremely crucial that park management deals with garbage around state parks because of the negative effects it has on the biodiversity of the area. McDonald claims, "... anthropogenic garbage in and around parks

often dramatically changes the habits of wildlife. For example, bobcats and coyotes living in protected areas on the outskirts of Los Angeles (California, USA) subsist primarily on trash from surrounding neighborhoods within a few kilometers". Human-induced issues, most notably garbage and trampling, impact biodiversity and land degradation in park settings and are positively correlated with increasing visitor numbers.

Water

With water being an integral aspect for both Devil's Lake State Park and Governor Nelson State Park, the effects of the surrounding land and places within the same watershed must be looked at. With Governor Nelson situated on the shores of Lake Mendota, one must look at what effects the water quality of the lake as the most visited aspect of Governor Nelson is the beach (WDNR, 2009). According to McDonald, "Most water quality effects on protected areas are due to agricultural practices, but urban waste-water (both residential and industrial) and storm water can also negatively impact water quality"(McDonald et al 2009 section 3.1)

According to Governor Nelson Park Manager Renee Lee, she avoids using fertilizers and chemicals on the park premise to reduce run-off into the park beach and subsequently Lake Mendota. Lake Mendota suffers from non-point pollution runoff from agricultural sources. "Non-point source pollution occurs when rainwater or snow-melt flows across the land and picks up soil particles, organic wastes, fertilizers, or other pollutants and carries them"(Betz, Lowndes and Porter 1997 S-1) This will have an impact on both the users' quality of experience, and how the management tries to counter-act this problem. Contrary to Lake Mendota, Devil's Lake is within the park boundaries and farther away from agriculture,(as it is located in the Baraboo range, and has a smaller drainage area) so non-point runoff isn't as much of a problem

(WDNR, 2011). Devil's Lake currently manages the phosphorous within the lake from older non-point runoff through a pump filtering system (Personal observation: Limbach, 2011). Both parks' management staffs recognize the importance of their water resources for the park although each experience different ways in which it affects their visitors. With a lake that is not contained within the park and is highly polluted, Governor Nelson staff can only do the little things to help with the problem of algae blooms that occur in Lake Mendota yearly. Their avoidance of fertilizers and chemicals sets an example for the community, but unfortunately they can do no more. At Devil's Lake where the lake is entirely contained in the park, clean-up of a once polluted lake is easier to do. With pumps in place to remove the bottom waters that contain the phosphorus remnants of a once highly agricultural watershed, the only sign of water pollution is the almost yearly occurrence of swimmers itch caused by parasites nourished by the phosphorus in the lake (Limbach, personal observation 2011).

Air

Air quality is affected by many different sources of air pollution. Air pollution is emitted by a variety of sources; emissions come from stationary, mobile and naturally-occurring sources (EPA, 2011). Air pollution can be transmitted globally but "most air pollutants operate at a regional scale, with the most intense impacts relatively close to the place of emission," (McDonald et al, section 3.1). Devil's Lake State Park and Governor Nelson State Park are both regionally situated near many urban centers (Madison, Twin Cities, Chicago and Milwaukee) which are large emitters of air pollutants. Increased visitor numbers may not have a large impact on air quality because of the vast numbers of sources that contribute but more visitors means more cars which emit pollutants in the park environment. The Clean Air Act sets

standards to help monitor and protect air quality. State parks are concerned primarily with the Secondary Standards set forth by the Clean Air Act because the secondary standards set limits on air pollutants that protect against decreased visibility, damage to animals, crops, vegetation, and buildings (EPA, 2011). Haze is caused by sunlight coming into contact with air pollutant particles. The scenic vistas enjoyed by visitors at both parks can be diminished by haze which negatively impacts their park-going experience. The pollutants that cause haze not only decrease visibility but they but they have been linked to serious health issues and environmental degradation when “particles such as nitrates and sulfates contribute to acid rain formation which makes lakes, rivers, and streams unsuitable for many fish, and erodes buildings, historical monuments, and paint on cars,” (EPA, 2011). Managing for air quality in parks is difficult because air pollution comes from a wide range of sources and can spread vast distances. Since 1985, National Parks have integrated the IMPROVE program to manage for air quality. The program was implemented to monitor “current visibility conditions, track changes in visibility and determine causal mechanism for the visibility impairment in the National Parks and Wilderness Areas,” (Schichtel, 2011). Park management can’t adequately address the air quality issues because of its vast nature but they try to reduce their own detrimental impact on air by using fewer 2-stroke engine vehicles and electric vehicles when possible according to interviews with each park’s management.

B) Recreation

Recreation in parks is undoubtedly growing for Wisconsin’s state parks and, “if recreational use of natural areas continues to grow, land managers might soon be

overwhelmed with vast numbers of people and their associated ecological and social impacts that undoubtedly will arise,” (Stein, 2009). One major social impact is the visitors’ quality of experience. Our research question directly references quality of experience. While defining the quality of experience a visitor may have at a state park can be challenging, several frameworks were developed to try to quantify and balance visitor experience, impact and environmental quality and management. The three main strategies utilized by most public land offices include Limits of Acceptable Change, the Recreation Opportunity Spectrum, and Visitor Experience and Resource Protection.

The Limits of Acceptable Change (LAC) framework was developed in the 1980s by the US Forest Service and was first derived from the concept of Carrying Capacity as related to the number of visitors a park can handle at a given time. When park managers realized that Carrying Capacity was far more complex and the problem was based more on human impacts, they developed the LAC concept (Stein, 2009). The LAC process first requires park management to set a limit on what conditions are acceptable within the park and then create an action plan to preserve or attain their conditional goal. “The challenge is not one of how to prevent any human-induced change, but rather one of deciding how much change will be allowed to occur, where, and the actions needed to control it,” (Stankey et. al. 1985). LAC is currently being used in 75% of national forests and has worked well for these places (McCool 1996). It is not without difficulties or shortfalls though, and while “intimate public participation has become one of the hallmarks of successful LAC-based planning,” components such as budget, communication with field workers, and changes in park bureaucracy are all brought up as difficulties for implementation of the LAC framework (McCool 1996) in the U.S.

Visitors seek different experiences and different activities when visiting natural areas; thus “providing a wide range of settings varying in level of development, access, ensures that the broadest segment of the public will find quality recreational experiences, both now and in the future,” (Clark and Stankey 1979). The basis of the Recreation Opportunity Spectrum (ROS) is to determine the broad range of recreation opportunities available in a natural area. ROS provides a way for managing the range of opportunities by broadly identifying and zoning large tracts of land where certain kinds of recreation experiences will likely be available to the public. The ROS uses five criteria to create a inventory of recreational settings: remoteness, size of area, evidence of humans, social settings and managerial settings (Morse et al 2009). By combining the criteria, ROS recognizes a continuum of six area classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban (Morse et al 2009). These diverse classes are settings for varying recreation opportunities. ROS describes “the factors that influence or define the range of possible settings and by communicating this information to recreationists, they will be able to choose the experiences they desire,” (Clark and Stankey 1979). One drawback of the ROS is that the criteria are predominantly focused on factors important to recreational visitors but not ecological factors (Morse et al 2009). Managers are forced to deal with the trade offs between managing for recreation verse managing for natural resources. In our project we focus on how managers/rangers at both parks are supplying a vast array of recreation opportunities in differing settings, as well as how they try to integrate recreation management with management of the natural landscape.

Visitor Experience and Resource Protection (VERP) is viewed as the most comprehensive of these three management strategies, combining the idea of carrying capacity, LAC, and ROS.

It is applicable in a wider range of settings (Stein, 2009) but as the newest framework, is only completely implemented in one national park and being implemented in four others (Hof 1997). The uncertainty of the actual abilities of the VERP framework to provide results leads some to be cautiously optimistic about VERP (Hof 1997). Like the other criticisms of such planning frameworks, VERP requires some difficult to implement or come by aspects: staff with the institution wishing to use VERP must all be on board with the process for it to work, and this is not always easy to do; there is currently no funding available in the national park system (where VERP was developed and being implemented) for management frameworks like VERP and no extra money is going into general management planning for parks; and actual monitoring during and after implementing VERP is key and not something to be overlooked (Hof 1997).

Of the three frameworks, LAC is most comparable to what parks are actually doing and its strong focus on carrying capacity aligns best with the problems large parks are facing. It could also provide direction to the management style of smaller parks, providing a new focus to the managerial style and help balance the needs of the visitors with the needs of the environment better.

IV. Methods

Our project focuses on both environmental management of the state parks as well as the park visitor's experience. To gather data we needed to collect information from both park managers and park visitors. We constructed a survey for park visitors and interview questions for park managers (see in Appendix). The survey was dispersed in three ways: in-person at the

park, in an online survey forum and in class discussion. The form in which the survey was taken affected the information and contributed to a sampling bias (this will be discussed in further detail in the data and analysis sections). Also the survey was conducted during non-peak season which also had an impact on the responses from survey-takers. We were able to collect 38 surveys. The survey was constructed in a mixed method approach since there were both qualitative (i.e. short response) and quantitative (i.e. rating/ranking) questions. The first several questions on the survey were used to gather background information on the survey taker. The ensuing questions dealt with overall park experience of the visitor and then was followed up with related questions as to how visitor numbers impacted their park experience.

We wanted to gain insight into the operational and managerial practices of both state parks. So interviews of park managers were conducted in person at each of the respective parks. The interviews and surveys were conducted in a friendly manner ensuring the comfort of our interviewees/survey-takers (a privacy statement was provided for all involved so that they felt confident in answering the questions knowing that we are ensuring their privacy) (Smith, 2010). The interview was conducted in person allowing for more qualitative and detailed responses. The initial questions of the interview were used to garner information about the interviewee's background as well as basic park background. The next several questions focused on generating data on management initiatives and the environmental/conservation concerns of the park. The final phase of the interview revolved around questions centered on visitor numbers and how they affect the conservation efforts of the management team. The interview questions are in the appendix at the end of this paper.

V. Data

Over the past few weeks, we have collected surveys from visitors at both Devil's Lake State Park and Governor Nelson State Park, while also conducting an interviews with the park management at both parks. The interview of the Governor Nelson Park Manager Rene Lee was conducted in person at the park with one group member taking notes of the responses while the other asked the interview questions. We began the interview by asking a few questions to get to know her experience at Governor Nelson as well as in the DNR. She has worked at the park for just over 10 years and has been the park manager for the entire time. She has been a park ranger within the Wisconsin DNR at other state parks. When asked why she chose the DNR, Lee simply stated that she loves the outdoors and that was reason enough. Lee explained the approach to environmental management that park staff takes. Lee said that there is no specific management plan because the park is too small to receive a master plan from the DNR, but that staff do follow general DNR guidelines and have certain focuses and areas of concern within the park. Some of these areas of focus are, first and foremost, safety of the people, plants, trees, and animals in the park, followed by the forest and clearing invasive species from the park. The park receives guidance from experts who routinely visit the park. Specialists such as foresters have helped identify areas within the park, such as the rare remnant oak savanna, that need extra attention from park staff and the DNR, according to Lee.

When asked about the number of visitors to the park, Lee said that the park saw around 160,000 visitors last year and that visitor numbers have been rising. The park management style has not changed, however, despite increases in numbers. Likewise, facilities have not and likely

will not change any time soon. Lee shared two sides of visitor impact on the park. We expected to hear about the negative impacts that visitors can have (i.e. that hunters illegally using lead shot or fishermen using lead sinkers can have negative effects on the environment). Lee stated that there is little impact in winter, but during peak season and special events such as the triathlon held at the park (and more importantly, the training season leading up to it) visitors can produce trail packstation and affect the beach, grounds and facilities. Lee also provided an answer that we did not expect, mentioning that visitors can also have a very positive effect on the park and the park can have an impact on its visitors. They like to see school groups come to the park and although not as many as she would like to see do come, she said park staff enjoys the chance to teach students about nature and about the park and see them enjoying it and discovering new things. She also mentioned that when visitors see park staff out working on projects in the park, often times they take the time to stop and ask questions of staff and some even volunteer to help out at the park after having these conversations and learning more about the park. But even though more visitors could mean more funds for the park, Lee pointed out that the “park could be more with more money, but how would it impact the land?” thus illustrating the need for her to continually try to balance the interests of visitors and the environment.

Steve Schmelzer of Devil’s Lake State Park has been working at Devil’s Lake for twenty years. This interview was conducted in person in his office at Devil’s Lake State Park. The same set of interview questions used for Rene Lee were used for Steve. He said he also wanted to work outdoors and had applied to a few parks around the country, with Devil’s Lake accepting him first. He said its his job to be the intermediary between visitors and the park itself, trying

to balance what is best for everyone. He stated that much of the work that is done doesn't have to do with conservation in an environmental sense, but more to conserve the high impact areas so users don't complain about trash, overcrowding etc.

VI. Analysis

A) Survey Analysis

When analyzing the survey results and looking at the main finding which stated that visitor numbers really only negatively affected park goers when there was a high volume of visitors to the park, it's first important to address some of the bias/ shortcomings that may have effected our project results.

One of the major issues we had was the timing of when we distributed the survey to park users. We conducted our survey during the off season for park users. This probably didn't allow us to gather nearly as many responses compared to if we were to have distributed our survey during the summer time when the majority of people attend the parks. Also, it's more likely that because we gathered our surveys during the off season, the surveys that we were able to get were more than likely to be from someone who attends the parks on a more regular basis versus someone who likes to go once or twice during the summer time.

Another source of bias comes from the fact that some of our surveys were collected during our class discussion. This could cause a bias because everyone in our class knew our project design and what we are aiming to find. Also, the online and class discussion surveys made people recall past events and experiences at parks so they may not be as accurate as someone who was actually at the park when we conducted the survey.

After looking at the bias we were able to analyse our survey results. The tables show that visitor impact depends on the user background and what park they are visiting (Tables in Appendix). We asked survey respondents to explain how visitor numbers impacted their visit to the park. After gathering the data, we categorized the written responses into groupings of negative impact, no impact or positive impact.

At Governor Nelson State Park, all respondents said that visitor numbers did not have a negative impact on the quality of their visit to the park. Many Governor Nelson survey respondents mention the low visitor numbers present while at the park. Their responses are interesting because they show that although Devil's Lake is a much larger park than Governor Nelson, and it would be expected that there would be more people at Devil's Lake, the park users feelings about visitor numbers are in sharp contrast with one another. This could be attributed simply to the fact that someone is less likely to see someone else while attending Governor Nelson because there is such a small amount of people that actually go there, so park users don't need to worry about visitor numbers having any sort of impact on them (see Figure 1).

Devil's Lake visitor survey responses had a much more negative outlook on visitor numbers and their impact on park experience. 52% of respondents said that visitor numbers detracted from the quality of their park experience. Many described the park as being busy, especially in the summer, and how these high visitor numbers created a minor disturbance/annoyance. The surveys that were conducted at the park during the month of November describe that the park had low visitor traffic, thus these were the majority of the respondents who replied that visitor numbers did not impact their visit to the park. Also, when

looking at the tables which show overall visitor experience on a 1-5 scale, it should be noted that Devil's Lake has a much higher amount of responses rated great overall (76% of responses) which made up a larger portion of survey responses than Governor Nelson's, which had around 56% of responses say their experience was great. These responses may suggest that because Devil's Lake is larger and there are more options for things for park users to do, visitor numbers did impact their overall enjoyment level, but because Devil's Lake is a destination State Park with much more to offer, it made up for the negative feeling towards high visitor numbers. It didn't detract from people attending the park.

B) Interview Analysis

Governor Nelson has experienced increased visitor numbers in recent years. According to Rene Lee, the Governor Nelson Park Manager, the estimated number of park visitors in 2010 was 160,000 (see Figure 1). Visitors play an important role in park management because without park visitors there would be no park. The management at Governor Nelson has no specific environmental plan but they do have areas of concern and areas of focus. The management's greatest concern is safety- safety of visitors, wildlife and vegetation. When managing the land, Governor Nelson employs the help of specialists (i.e. foresters, natural resource person) to emphasize areas of interest or concern. Recently, the main focus of land management has centered around preservation of remnant Oak savanna and removal of invasive species. Visitors can contribute to environmental degradation in the park and the management tries to reduce this. Such impacts as trampling of vegetation can be seen around the trails, and during peak season trash can be found in high density areas such as the beach.

The users who fish sometimes use lead based materials such as sinkers, even though this is illegal. It seems lead shots from gun are also used sometimes, and both of these users end up hurting both water quality and animal health.

At Devil's Lake State Park, numbers have been increasing over the long run. There is a master plan from 1982, but it is quite old and according to Steve Schmelzer, superintendent at Devils Lake, doesn't give specific instructions on many aspects of management in the park.

There are places of focus within the park, but the majority of them are focused on basic customer service needs, as the budget and low staff numbers don't allow for park management to undertake big projects. Environmental degradation is a big issue along the high use trails and because of this, these high use trails have been paved. This also pushes some people to walk off trail, and degradation still persists next to many of these high use trails. Devil's Lake has a problem in the summer during peak use, as parking lots fill up and people must be turned away as they arrive. Carrying capacity is mentioned in the master plan, but still doesn't give much guidance because it wasn't meant to account for the current 1.8 million annual visitors.

According to the superintendent, much of the work done by the staff is service needs to the users that are influenced by the urban nature of the users. Many users complain when the grass isn't cut, or there isn't enough picnic tables, or the bathrooms are dirty, or the parking lot closest to the entrance to a hiking trail may be full. This illustrates that in the summer the main demographic of park users is urban residents. Due to the urban perspective of many of the visitors, many of the larger park projects (i.e. invasive removal, phosphorous lake cleanup) go unnoticed because visitors are unaware of non-urban affiliated problems. The users seem to be most concerned with aesthetic, surface issues instead of the more embedded problems faced

by the park. Budget seems to be the most constraining aspect for park management. Some of the money raised by the park itself through fees ends up supporting other parks in the system that don't hold their own weight. This leaves even less money for infrastructure upgrades and staff, which are both needed according to the Superintendent Schmelzer.

When we finally ask the question, is there a balance between recreation and conservation? The answer, based on these interviews would be a resounding, "no". Both park managers were fairly inundated with the administrative side of keeping a park running and running more like a business. Each had pinpointed specific areas where they would like to improve the environment within the park but were limited severely due to money, staff, visitor expectations, or the state.

VII. Discussion

A) Data collection and Analysis

When researching the correlation between the recreational experience of park users, conservation management plans, and visitor numbers at Devil's Lake State Park and Governor Nelson State Park, we have deduced that a strong relationship exists between the positive and negative impacts of annual visitor numbers and their effect on management's approach to conservation and the recreational experience of the park users. Our exploration of both state parks, both with vastly different annual visitor numbers, helped to give insight into this relationship.

The surveys and interviews we conducted asked relevant questions to the idea stated above, giving us primary data that we used to answer how visitor numbers affect a state park.

We chose to use surveys and interviews to conduct our research because it seemed the most efficient way to gather information with the limited time and money available to us.

Interviews are used, “for studies in which participants are “experts” from whom you hope to learn how certain practices, experiences, knowledges, or institutions work - or at least, *how your participants talk about* these things working,”(Secor 2010). The surveys and interviews illustrated both how visitors actually feel about the parks and managerial standpoints on issues concerning conservation and recreation.

B) Significance of the results

Surveys

Visitor numbers had a strong impact on when people chose to visit a park, as well as how much they enjoyed their visit. Many survey respondents indicated that Devil’s Lake, while a fun and beautiful park, had so many visitors that it detracted from their experiences, particularly in summer time. Respondents said that they had to get to the park earlier during peak seasons in order to find a parking spot or go to popular places in the park, and they disliked the fact that it was hard to get a campsite because there were so many people using the park. Many who felt this way said that the noise of all the people was annoying and bothersome and they just wanted to experience nature, but could not fully do that with so many people around. When asked what they disliked most about the park, before the question about visitor numbers was even asked, nine respondents said that the crowds were what they disliked most and this perspective was reiterated by one survey participant when they said “I prefer to go when there is less people.” Several rock climbers said that the amount of

“tourists” taking their picture was annoying and that on weekends they had to arrive earlier in order to stake out a climb they wanted to do in busier areas of the park. Table 1 shows that only 2 respondents stated that visitor numbers had a positive impact on them, both of which said they enjoy seeing other people out at the park. Many of those who said that visitor numbers had no impact on them simply stated that they understand that other people want to enjoy the park, too, and don’t mind sharing trails and facilities with others.

Although over half of the survey respondents for Devil’s Lake were deterred by high visitor numbers (see Table 1 in appendix), no one at Governor Nelson felt a negative impact from visitor numbers (see Table 2 in appendix). Because Governor Nelson has less traffic than Devil’s Lake, respondents either felt that the number of visitors did not impact their trip to the park or the scarcity of other people actually added to the experience. Respondents felt they could enjoy nature better with fewer people around them, and when they did run into another visitor, they were usually friendly and it was nice to see other people using the park or on the trails. Several dog owners who took the survey in particular enjoyed the low visitor numbers and said they would go more often because it is quieter.

When asked to rate their overall experience, however, Devil’s Lake was rated higher than Governor Nelson. Seventy-six percent of respondents for Devil’s Lake rated their overall experience a 5 out of 5, and the remaining 24% rated it a 4 out of 5 with 5 being the highest, best rating (see Table 3 in appendix). Governor Nelson received 5 out 5 by 56% of respondents but also had 11% that rated it a 3 out of 5 with the remaining 33% giving their experience at the park a 4 out of 5 (see Table 4 in appendix). These ratings may have been impacted by the season in which surveys were done--many of the Devil’s Lake respondents may have based

their rating of the park on a visit during the off-season that was not impacted by high visitor numbers but more likely is the amount of activities and facilities that each park has to offer.

When asked what they disliked most about Governor Nelson State Park, people stated that the trails were not long enough, the water quality was poor in Lake Mendota (which is not cared for by the park itself), the trails were poorly marked and they disliked the fish cleaning facility.

Governor Nelson is a much smaller park with less to offer than Devil's Lake in terms of trails and activities. Likewise, the scenery is beautiful, but almost everyone who responded to the Devil's Lake survey indicated that what they liked most was the uniqueness of the rock, bluffs, views, and activities available at the park. Thus, the season as well as location and features of each park may account for the differences in visitor experience.

Interviews

After interviewing Governor Nelson's Park Manager, Rene Lee, we learned that visitor numbers affect not only the environment and other visitors' experiences, but how the park is viewed by the state. Lee said that the park is not really considered a "jewel" to the state and is sustained because of the visitors but receives little or no extra money for projects or upkeep.

As stated, this park isn't very important to the state, and actually cannot be sold because of prior obligations. Lee stated that there would be no future upgrades to facilities in the park as the DNR has been turning down many requests throughout the park system for facility upgrades and building projects. Lee was hopeful, however, that the park would receive a grant to clean up and protect the Oak savanna that is situated within the park since it is a rarity in the state.

The interview helped provide a link between what visitors experience and how that experience is managed and protected. Lee identified areas that were impacted by visitors but also provided ways that visitors themselves could be impacted by the park through education and volunteering to help. She asserted in the interview that her job is to balance the interests of the visitors as well as the impact they have on the park and the environmental needs and concerns of the park. From this interview we can conclude that visitor numbers at a small park like Governor Nelson are important to keep the park functioning and worthwhile to maintain, and that visitors can have both a positive and negative impact on the places they choose to seek out and enjoy. Impacts were mentioned in the interview analysis section of the paper.

An interview with Devil's Lake State Park superintendent Steve Schmelzer proved to be very useful for linking visitor number impacts to both user experience and management strategies used to counteract the implications of such high visitor use. Devil's Lake is the most visited park in Wisconsin, which means they do gather the most money, but also suffer the worst impacts from visitor use. The state has lowered the amount of money they get from taxes, and the majority, about 80%, of the funding to just run the park must be raised by the park itself. This is significant because the infrastructure of the park, especially the sewer system, was built back in the 1930s and is falling apart. If the sewer system shuts down, the park must shut down, especially during the peak season. Also, budget cuts mean less staff.

When Steve first started working at Devils Lake twenty years ago, there was a 4 person staff for trails, a 3 person staff for bathroom facilities etc. Today, there is only enough money for visitor center staff, one person for the bathrooms, a few rangers and the upper management of the park. This alongside not enough money means, as stated before, only basic needs are usually

done on a daily basis. In terms of the quality of experience of the user, Steve pointed out over the summer its a very urban crowd, and many complain about the little aspects that shouldn't be a big deal because its nature, but they want the grass cut and the bathrooms spotless, so he must cater to them. Along with Rene Lee, he stated it was his job to balance user needs and park needs, and much of the time the environmental needs of the park go by the wayside.

They have written off areas of the park in terms of invasive species, as they just do not have the time or money to work on removal of certain species (i.e. Garlic Mustard). Also, as the crowd is mostly urban in the summer, this means many may not care as much about overcrowding as the off season visitors do. Steve did state that when fall hits, the elderly start coming out more often as they do not like the overcrowding during the summer season. A few survey participants at Devil's Lake did state that the amount of people detracted from their experience, but not enough to persuade them to not go altogether. The interview illustrated to us that different time periods of the year bring different users, and this must be taken into account when looking at our survey results. It also told us that an increase in visitor numbers doesn't affect the management plan of the park much, as much of the money and work goes into the basic park operation and infrastructure.

C) Future Research

In terms of research for the future, there are several areas this project could be improved given time as well as expanded upon for future projects. The project could be much improved by conducting the survey during the peak visitation periods which would benefit the researchers in two ways. First, the chance of finding regular park users, who may have been

using the park for many years for a few specific activities is much higher. Second, as our project pertains to visitor numbers, the responses to the question of, “Do park visitor numbers affect your experience at this State Park?” would more accurately reflect visitors’ feelings towards this as they would have experienced higher visitor volume during their visit to the park than they are currently experiencing in the non-peak season.

An expansion of our project is to take the Limits of Acceptable Change (LAC) framework for recreation and conservation in parks and apply it to the parks. It would be interesting to figure out how beneficial it would be and how it would translate from national parks and forests to the state park level. This framework would likely be most applicable to parks with a higher volume of visitors as the LAC framework focuses a lot on carrying capacity of people within a park. However, applying it to a smaller, less visited park could be beneficial as well as the framework helps management with determining priorities and managing for its visitors and the park environment. National parks and forests have encountered similar problems with implementing the framework that state parks would face (i.e. budget, staff) but have still experienced success with it. Studying how to apply the framework and subsequently working with management to show them how it could help or improve the park and their management style or even going so far as to work with them to implement it may help alleviate some of the issues of carrying capacity within a park and the struggle to balance recreation and visitor expectations with conservation and the environment of the park.

VIII. Conclusion

After concluding our research and analyzing the data we gathered we came to two main conclusions. Our main findings are: 1) Visitor numbers really only negatively affected park goers when there was a high volume of visitors present at the park and 2) Park management at each park faces differing problems, in regards to conservation based on park size and visitor volume.

At Devils Lake State Park, visitor numbers have a more negative impact on the user experience than at Governor Nelson State Park, as shown through the visitor responses to our survey (Table 1+ 2 in the appendix). With higher visitor numbers at Devil's Lake, this was an expected outcome. In contrast, of the surveys conducted about Governor Nelson State Park, seeing other visitors had a positive impact on the experience of the user as there are fewer visitors to this park. In the context of conducting surveys in the off-season, it seems people enjoyed the solitude but were fond of seeing a few other users while using the park. Also, with fewer overall visitors at Governor Nelson visitors come into contact with other visitors at much lower rates than at Devil's Lake which may explain why survey-takers at Governor Nelson associated less negativity with visitor numbers.

Governor Nelson and Devil's Lake vary greatly in size of park and total visitor volume which presents the management of each park with differing problems. Although the parks face different problems during our research we discovered that neither of the parks have environmental management plans in place. Devil's Lake consists of a larger area and more visitors, the park was never intended to accommodate the 1.8 million visitors it is receiving today. Due to the difficulty in supporting the vast amount of visitors, managers are trying to maintain what they have (i.e. infrastructure, basic customer needs) and only have the capacity to deal with environmental/conservation issues on a small scale (i.e. removing invasive species,

water quality testing). On the other hand, Governor Nelson has a much smaller area and fewer visitors. Governor Nelson could accommodate more visitors which would increase revenue and allow for them to engage in more projects, instead of being reliant on government grants to implement conservation initiatives in the park. Even with lower visitor numbers and overall budget, the management at Governor Nelson tries to implement some basic conservation management (i.e. invasive removal, water testing, banning the use of lead products on the park premise) but its larger focus is on visitor interests. Since both Governor Nelson and Devil's Lake have no overt environmental or management plan that is followed they enlist the help of specialists to help recognize and protect areas of environmental concern and try to balance these needs with the expectations of visitors and budget constraints.

After considering all of the surveys, interviews, and research, and examining our conclusions when we ask, "is there a balance between recreation and conservation in state parks?", we must answer, "no," with the knowledge that visitors truly play the key role in unbalancing the scales but are also the important link that keeps our parks afloat.

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IX. Appendix

A) Park Manager Interview Questions

1. How long have you been working at this park?
2. What are all the positions you have held here at the park? In the DNR?
3. What drew you to working here?
4. What is your role in carrying out environmental management here?
5. Approximately how many visitors does your park have annually?
6. Are visitor numbers to the park increasing, decreasing or staying stable?
7. How does your management plan accommodate for changes in visitor numbers? (Or substitute in the answer from the previous question).
8. What are the top 3 conservation issues facing the park? Which of the aforementioned issues are most affected by visitor numbers?
9. What are the most important issues with regards to park infrastructure and use? Which of the aforementioned issues are most affected by visitor numbers?
10. How do visitor numbers impact the environmental plan of the park?
11. How should the environmental management plan be amended, if at all, due to the changing number of visitors?
12. What components of the environmental plan are visitors most aware of? Least aware of?
13. How does the environmental management of the park accommodate different park uses? How is the environmental management plan compromised by park use?
14. Do you think there is enough emphasis on environmental concerns and environmental management at this park?
15. Do budget constraints allow you to follow an environmental management plan, or is it sometimes pushed to the side?

B) Survey of Park Users

Governor Nelson State Park or Devils Lake State Park (Circle one)

1. Age: 18-29 30-39 40-49 50-59 60+

2. How often do you visit state parks throughout the year?
Rarely Occasionally Sometimes Often Frequently

3. What activities have you participated in at this state park?

picnicking sun-bathing
hiking nature program
cross-country skiing camping
swimming boating
biking hunting
fishing running
scenic views nature watching
rock climbing
Other: _____

4. What did you enjoy most about your visit to the park today or in past visits?

5. What did you dislike the most about your visit to the park today or in past visits?

6. How would you rate the quality of facilities at the park; (1=bad, 5=great)

Visitor's center -	1	2	3	4	5	n/a
Nature center -	1	2	3	4	5	n/a
Bath houses -	1	2	3	4	5	n/a
Fish cleaning facility -	1	2	3	4	5	n/a
Playground -	1	2	3	4	5	n/a
Boat Launch -	1	2	3	4	5	n/a
Concessions -	1	2	3	4	5	n/a

7. How did visitor numbers affect your visit to the park? (i.e. in what ways did visitor numbers detract from, have no impact on, or enhance/increase the quality of your park experience)

8. Why do you come to state parks?

9. How would you rate your overall experience at this state park?
(bad) 1 2 3 4 5 (great)

C) Privacy Statement

Thank you for participating in this survey for our Geography capstone project at the University of Wisconsin-Madison. Your privacy is important to us. The information we collect will only be used for our research project and all participation in the survey is voluntary. If you would like more information on the project, a copy of our finished paper, or an invitation to our public presentation of the project please feel free to contact Ellen Moleski at emoleski@wisc.edu or Angela Limbach at alimback@wisc.edu

Thank you for participating in this interview for our Geography capstone project at the University of Wisconsin-Madison. The information we collect will only be used for our research project and a class presentation. No personal identifying information will appear in our report or our class presentation, unless you give us your consent to do so. If you wish, we can assign you an alias. All participation in the interview is voluntary. If you would like more information on the project, a copy of our finished paper, or an invitation to our public presentation of the project please feel free to contact Ellen Moleski at emoleski@wisc.edu.

D) Tables

Effect of Visitor Numbers on People's Enjoyment at Devil's Lake		
Type of Impact	Number of Responses	Percentage
Negative Impact	14	52%
No Impact	11	41%
Positive Impact	2	7%

Table 1: Information in the table was gathered from written response on surveys given to park users. Data was analyzed and answers were categorized as to whether they referenced visitor numbers had a positive, negative, or no impact on the park user.

Effect of Visitor Numbers on People's Enjoyment at Governor Nelson		
Type of Impact	Number of Responses	Percentage
Negative Impact	0	0%
No Impact	4	44%
Positive Impact	5	56%

Table 2: Information in the table was gathered from written response on surveys given to park users. Data was analyzed and answers were categorized as to whether they referenced visitor numbers had a positive, negative, or no impact on the park user.

Overall Visitor Experience at Devil's Lake State Park		
Rating	Number of Responses	Percentage
1 (Bad)	0	0%
2	0	0%
3	0	0%
4	7	24%
5 (Great)	22	76%

Table 3: Data in the table was taken from surveys given to park users where they indicated how good or bad their experience at the park was using a 1-5 rating scale shown above.

Overall Visitor Experience At Governor Nelson State Park		
Rating	Number of Responses	Percentage
1 (Bad)	0	0%
2	0	0%
3	1	11%
4	3	33%
5 (Great)	5	56%

Table 4: Data in the table was taken from surveys given to park users where they indicated how good or bad their experience at the park was using a 1-5 rating scale shown above.

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