

## 6. USE SURVEYS

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### 6.1 Introduction

A variety of different recreational uses of Buffalo River water and riparian zones have been observed informally over the past 20 years, including swimming, canoeing, kayaking, power boating, fishing, walking along trails, and sitting at observation areas. However, the level of activity has never been quantified. This study provided a preliminary evaluation of activity level related to the 10 habitat sites, as well as other locations along the river, within the defined study area. This survey was not meant to be as detailed as those outlined, for example, by the Statewide Comprehensive Outdoor Recreation Plan (SCORP) prepared by the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) (2002). The SCORP assesses both the supply and demand of recreation resources that includes consideration of geographic area, a variety of demographic information, use surveys, and impact on the environment. However, the survey reported here does provide insight as to the type of recreational uses that are prevalent, the level of activity, and the locations of highest activity along the river.

### 6.2 Methodology for Recreational Use Survey

It was necessary to conduct the recreational use survey by boat because many of the sites are more readily (and rapidly) observed from the water. The survey team consisted of two people, one to operate the 14 foot Boston Whaler and the second to complete the survey sheets. The surveys were done during randomly selected time slots (7-9 am; 9am-12 pm; 12 pm-3 pm; 3-6 pm) on randomly selected days of the week. All days and all time slots were sampled during the two year study. The survey was completed on 34 dates between June 18 and September 7, 2003 and on 39 dates between June 7 and September 3, 2004 (a total of 73 dates).

On each sample date, the survey was completed for 15 pre-determined sites. These sites were selected based on the author's 17 years of experience on the river. The 15 pre-determined sites were:

- Kotter Fireboat
- Great Lakes Fishing Club
- Ohio Basin Habitat Remediation Site and Canoe Launch
- Bison City Rod and Gun Club
- Foot of Hamburg St.
- Cargill's Grain Elevator
- Concrete Central Grain Elevator
- First CSX Railway Bridge
- Smith St. Habitat Remediation Site
- Smith St. CSO
- Second CSX Railway Bridge

- Third CSX Railway Bridge
- Boone St. CSO
- Old Bailey Woods
- Seneca Bluffs

A photo of each of these sites is provided in Appendix 6.1. The survey also was completed for each of the 10 habitat sites. The Old Bailey Woods site, listed above, is part of Habitat Project Site 1, but for the use survey it was considered separately because of its physical disconnect from Cazenovia Point. In addition to the 25 fixed sites, any activity that occurred at other locations within the study area was noted and the location was referenced with GPS.

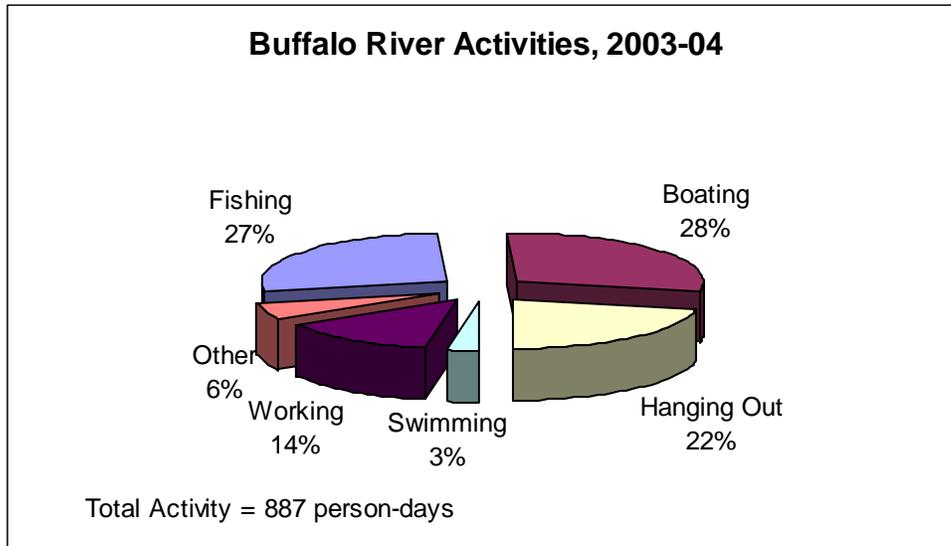
### 6.3 Results and Discussion for Recreational Use Survey

A total of 887 person-days of activity were observed on the 73 sample days, 2003-04. Following the work done by Johns et al. (2003), this study defines a person-day as one person participating in an activity for a portion or all of a day. A summary of the activities observed in 2003-04 is provided in Figure 6.1. Clearly, fishing, boating, and “hanging out” were the predominant activities. In this case, boating includes, power boating, canoeing, kayaking, sailing, rafting, and rowing. “Hanging out” was a category used to classify general riparian activity that might include eating lunch, reading, talking with friends, walking trails, sunning, or relaxing (but *not* fishing).

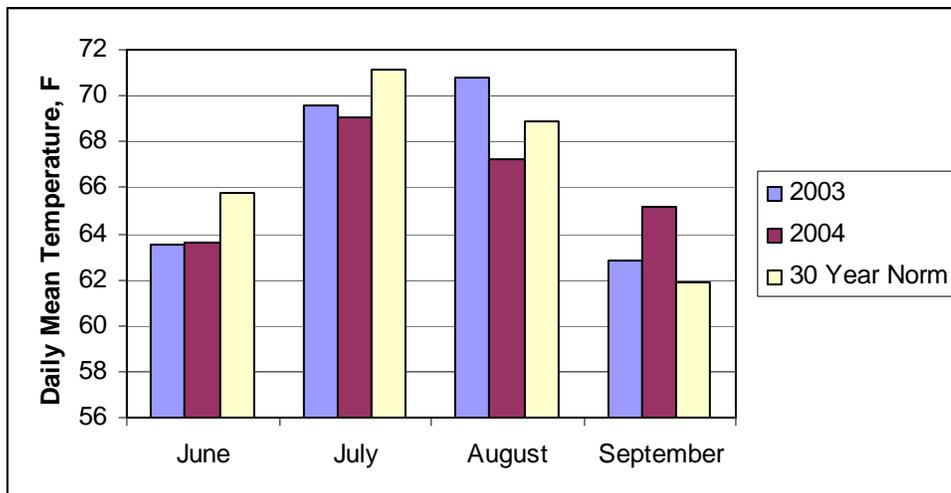
The frequency of swimming, as shown in Figure 6.1, is lower than had been anticipated and there may be several explanations for this observation. Mean temperature data from the Buffalo Airport for 2003 and 2004 are shown in Figure 6.2, together with the 30-year norms (1961-1990). In both years, June and July were cooler than average, as was August, 2004. August, 2003 was warmer than average. Furthermore, there were no days greater than 90 °F (32.2 °C) in any of the surveyed months, 2003 or 2004. Historically, the mean number of days greater than 90 °F (32.2 °C) at the Buffalo Airport is 1 for June, 2 for July, 1 for August, and 0.5 for September. Monthly mean rainfall data from the Buffalo Airport for 2003 and 2004 are shown in Figure 6.3, together with the 30-year norms (1961-1990). June and August of both years were drier than average, while July and September of both years were wetter than average. In particular, July, 2004 had nearly twice the average monthly precipitation.

It might be argued that the study years were slightly cooler (both the mean temperature and days greater than 90 °F (32.2 °C)) and wetter at critical times (e.g. July) than average, which could negatively impact the frequency of swimming. Alternatively, because this is the first quantitative measure of swimming frequency, previous qualitative perceptions could be inaccurate and swimming frequency in fact may not have declined. If previous qualitative perceptions are correct and there has been a decrease in swimming activity, other possible explanations may include a shift in demographics (e.g. fewer children in the neighborhoods surrounding the Buffalo River), alternative available activities, or improved communications regarding the risk of swimming in the Buffalo

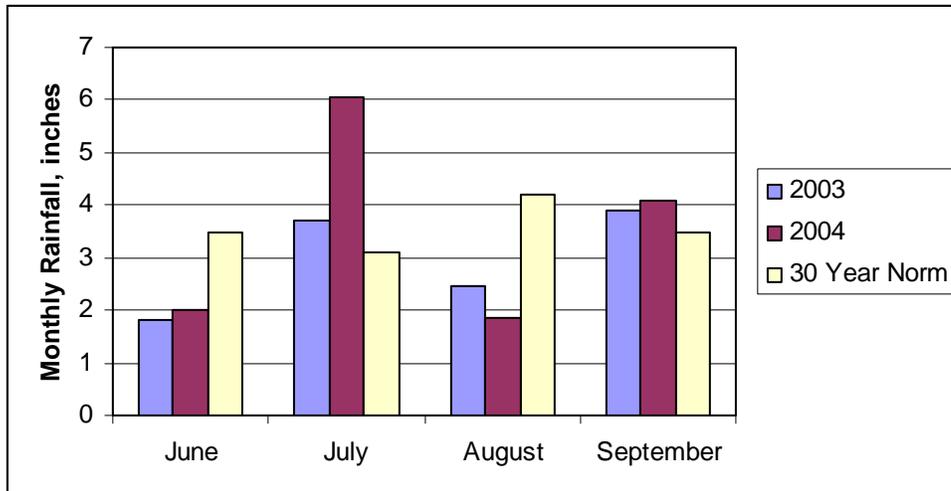
River (e.g. Buffalo Niagara Riverkeeper community outreach; posting of CSO locations). It is beyond the scope of this study to assess these alternative interpretations of the data.



**Figure 6.1** Summary of Buffalo River activities, 2003-04



**Figure 6.2** Daily mean temperature data from the Buffalo Airport



**Figure 6.3** Monthly rainfall data from the Buffalo Airport

In 2003 there was a significant correlation ( $\alpha=0.05$ ) between time of sample and air temperature ( $r=0.53$ ); time of sample and number of people observed in activity ( $r=0.60$ ); and air temperature and number of people observed in activity ( $r=0.41$ ). In 2004, correlations were weaker. The correlation between time of sample and air temperature was not significant ( $r=0.20$ ) and neither was the correlation between number of people observed in activity and air temperature ( $r=0.002$ ). The correlation between time of sample and number of people observed in activity was significantly correlated ( $r=0.32$ ). Sunday tended to be the day of heaviest use in both 2003 and 2004; Saturday had the highest mean use of any day in 2003, but Saturday use was considerably lower in 2004. There appears to be some significant temporal trends in the level of activity, as use tends to increase through the day and, not surprisingly, is highest on weekends. The activity of fishing did not appear to attract people early in the morning.

The observed activity level of 887 person-days underestimates actual activity because it only represents a three hour segment on each of the 73 sample dates. Brothier and Moore (1994) noted that samples of recreational activity should be adjusted to account for the entire period of activity. Adjustments to the estimates should consider the peak use periods, duration of the use, facility availability, resident or non-resident, and the turnover rate of the activity (Brothier and Moore, 1994). Our survey data indicated that there were temporal trends in the level of activity. Given the types of activity recorded for the survey, we assumed that the turnover rate would be within the three hour time period of each survey. In our case, activity level also might have been adjusted for air temperature, but because the correlation was not significant in 2003, it was decided not to make this adjustment. A “representative” activity level for each survey time slot and each day was calculated from the observed data for each year. The representative level typically was calculated as the mean person-days from the observed data. These representative levels were used to adjust the estimate of 887 person-days for the period June through September 15 of each year. For time slots that had observed data, these

were used in place of the representative level. Following this procedure, the adjusted activity level for 2003 was 6,862 person-days and for 2004 was 5,922 person-days. By way of comparison, Erie County parks totaled 120,000 visits in 2000 (i.e. Buffalo River activity was 5-6% of the Erie County park activity).

Both “formal” and “informal” spaces were used in the different activities represented in Figure 6.1. Generally, however, the “formal” spaces had the highest level of activity. Bison City Rod and Gun Club had the highest activity over the two year period, followed in order by Habitat Project Site 1 (fishing and hanging out at the “point” was popular), Ohio Basin Canoe Launch and Park, and Smith St. Habitat Remediation and Park. Habitat Project Sites 3, 4, 5, 6, 8, and 10 had the lowest level of activity of all survey sites, with each of these sites being 8 or less person-days (unadjusted numbers) over the entire two year period.

OPRHP (2002) calculated a relative index of needs on a county basis for different recreational activities observed within New York state. The index indicates the degree to which additional facilities are needed to meet future demand. A value of five indicates that for a given activity, the projected supply/demand ratio in the year 2020 will be at the statewide average. The scale ranges from 1 to 10. A value of one indicates a large availability of recreation resources relative to demand, with little or no crowding. A value of 10 indicates the opposite; most sites are heavily used. The relative index of needs for Erie County are: Swimming – 7; Walking – 7; Boating – 6; Fishing – 7. For these recreational activities OPRHP (2002) has indicated that Erie County will have pressure to meet the public demand. These activities already are observed for the Buffalo River. With improved habitat areas, the Buffalo River could have an increased capacity to meet this demand.

#### **6.4 Land Ownership – Riparian Zone**

Land ownership of the habitat sites are shown in Appendix 6.2. Clearly, some sites are entirely privately owned while other sites have mixed public and private ownership. It is unknown at this point whether any of the owners would be willing to consider a riparian restoration project on their property.

#### **6.5 References**

Brother, G. and Moore, R. 1994. Economic Impact of Assessment of Recreation Based Tourism. NCRPS Conference, Asheville, NC.

Johns, G.M., Leeworthy, V.R., Bell, F.W., and Bonn, M.A. 2003. *Socioeconomic Study of Reefs in Southeast Florida*, Report to NOAA.

Office of Parks, Recreation and Historic Preservation (OPRHP), 2002. *Final Statewide Comprehensive Outdoor Recreation Plan and Final Generic Environmental Impact Statement for New York State, 2003*. Albany, NY.

**APPENDIX 6.1**  
**FIXED RECREATIONAL USE SURVEY SITES**



**Kotter Fireboat**



**Great Lakes Fishing Club**



**Ohio Basin Habitat Remediation Site  
and Canoe Launch**



**Bison City Rod and Gun Club**



**Foot of Hamburg Street**



**Cargill's Grain Elevator**



**Concrete Central Grain Elevator**



**First CSX Railway Bridge**



**Smith St. Habitat Remediation Site**



**Smith St. CSO**



**Second CSX Railway Bridge**



**Third CSX Railway Bridge**



**Boone St. CSO**



**Old Bailey Woods**



**Seneca Bluffs**



**Seneca Bluffs (Continued)**

**APPENDIX 6.2**  
**LAND OWNERSHIP IN THE BUFFALO RIVER RIPARIAN**  
**ZONE**