

A Review of Recreational Use Surveys on the Upper Mississippi River

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Inter-agency Support for Recreational Use Surveys using the Fleener Method

- Adopted by UMRCC Fisheries Technical Section to replace 5 year creel census in 1974.
- GREAT I Recreation Group endorsed method for the St. Paul District in 1975.
- Surveys Coordinated with UMRCC Recreation and Water Use Technical Section.



Summary of Recreational Use Surveys

<u>Pool</u>	<u>Lead Agency</u>	<u>Year</u>	<u>Lead Authors</u>
5	Minnesota DNR	1979	Watson and Hawkinson
5A	Wisconsin DNR	1989	Benjamin and Langrehr
9	Iowa CC	1979	Ackelson
21	Missouri DOC	1975	Fleener
24	Missouri DOC	1993	Farabee



Fleener Method

Non-uniform probability sampling technique based on known use patterns and assigned probabilities that determine sampling frequencies.

$$\begin{array}{l} \text{Estimated} \\ \text{Hours or Visits} \\ \text{of each} \\ \text{Recreational} \\ \text{Use per Week} \end{array} = \left(\frac{1}{\begin{array}{l} \text{Station} \\ \text{Probability} \end{array} \times \begin{array}{l} \text{Time of Day} \\ \text{Probability} \end{array} \times \begin{array}{l} \text{Day of Week} \\ \text{Probability} \end{array}} \right) \left(\begin{array}{l} \text{Actual Use in} \\ \text{Hours or Visits} \end{array} \right)$$



Summary of Recreational Use Surveys

Pool	# Stations	# Interviews	# Uses
5	28	11,403	22
5A	8	3,987	21
9	30	7,155	18
21	24	4,330	27
24	11	<u>21,369</u>	32
		Total	<u>48,244</u>



Summary of Recreational Use Surveys

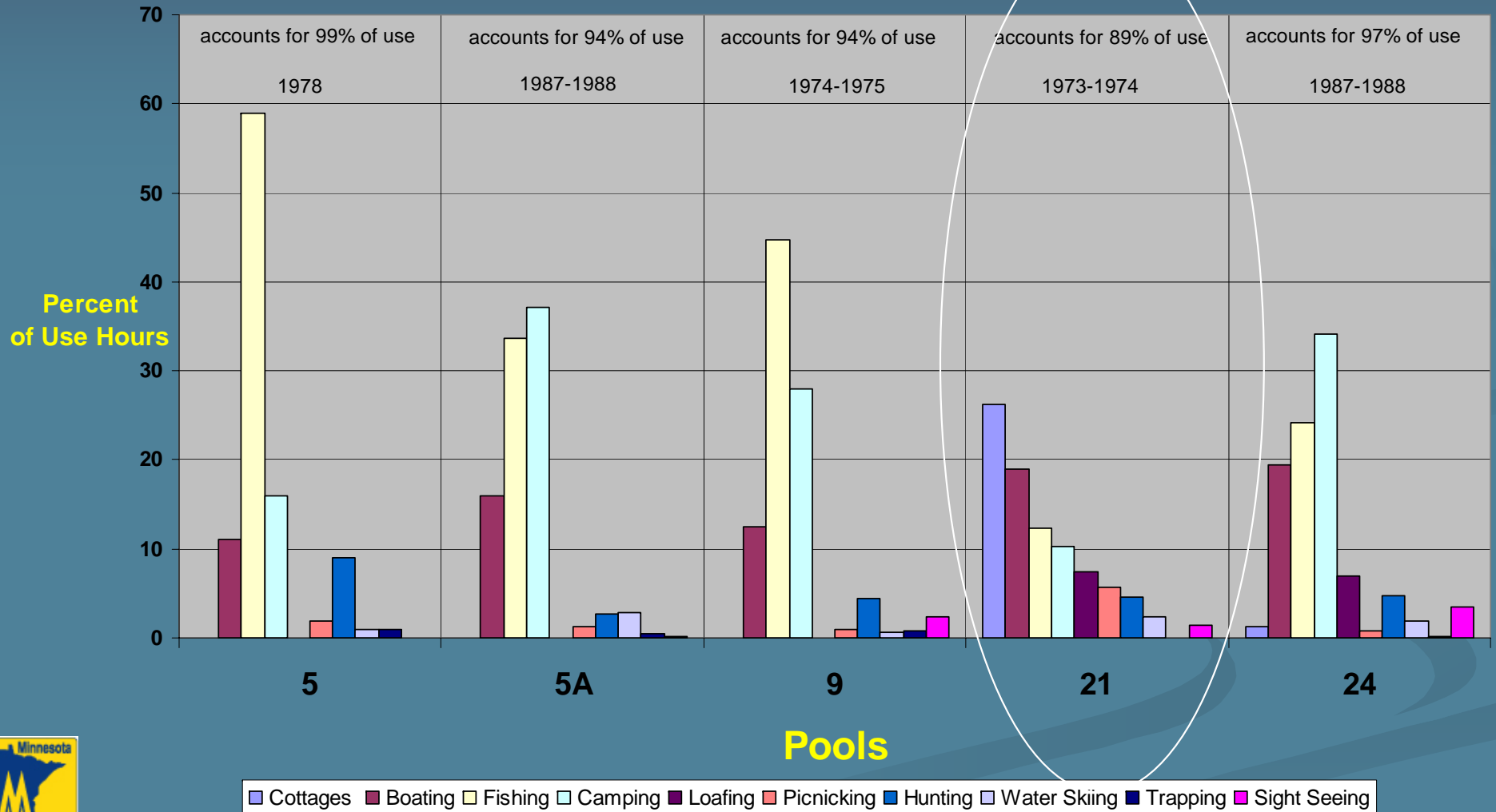
<u>Pool</u>	<u>User Visits</u>	<u>User Hours</u>
5	158,890	529,590
5A	97,291	457,203
9	383,521	1,678,804
21	386,000	1,083,000
24	69,081	295,793



Top 3 Uses in Terms of Hours in 4 out of 5 Pools = Fishing, Boating, Camping

Upper Mississippi River Recreational Use

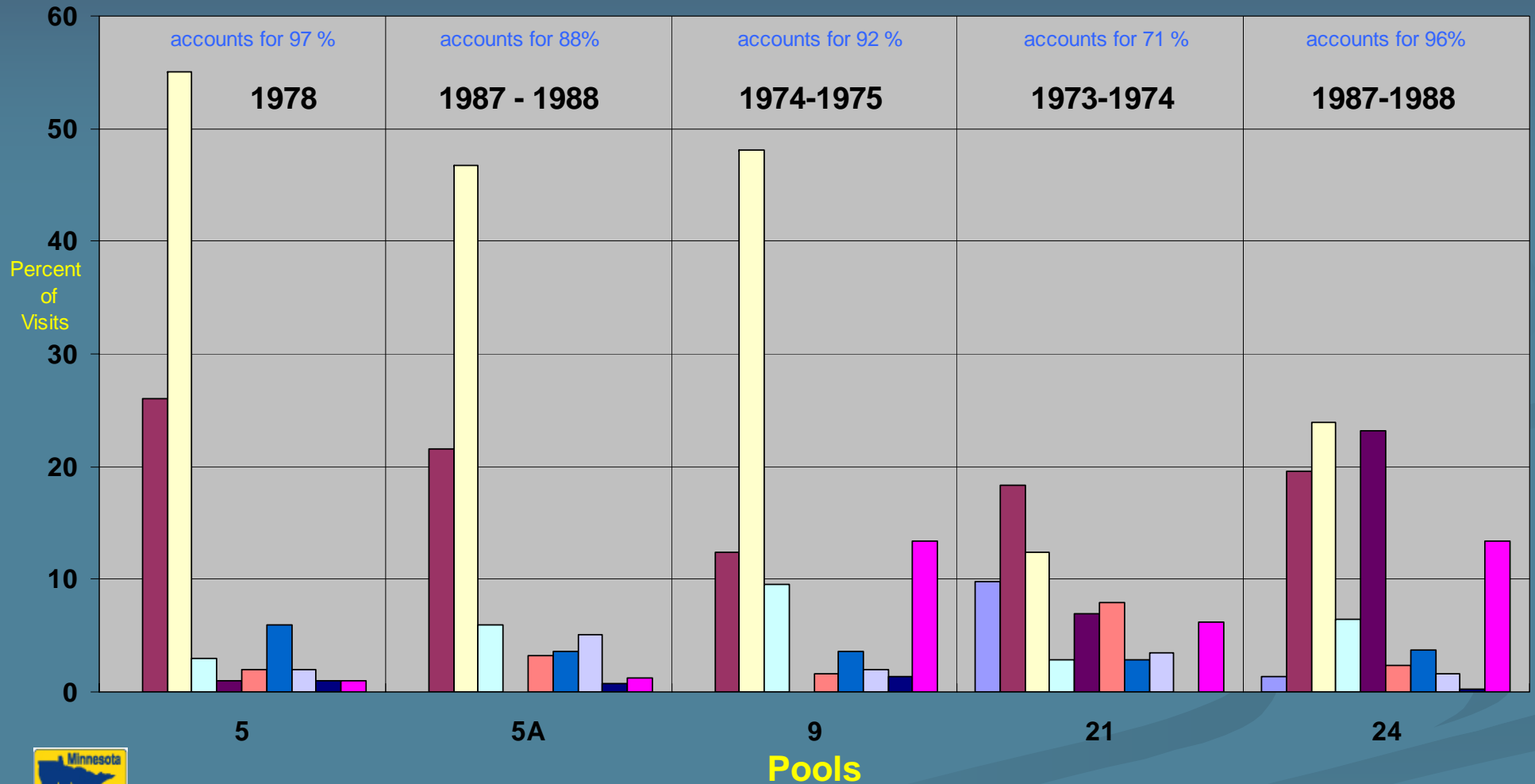
Top 10 Use Hours



Top 2 Uses in Terms of Visits in 4 out of 5 Pools = Fishing and Boating

Upper Mississippi River Recreational Use Surveys

Top 10 Visits by Use



Legend: Cottages, Boating, Fishing, Camping, Loafing, Picnicking, Hunting, Water Skiing, Trapping, Sight Seeing

Summary of Recreational Use Surveys

- Fleener Method - labor intensive.
- Discontinued by agencies.
- Was the information:
 - Useful?
 - Ever applied?
- Are there other survey methods that can gather this type of data more easily?



Recreational Use Surveys

1974 –1989

Personal Interviews

5 Pools over 15 years

Almost 50,000 contacts

+ - 1 sd at 67% confidence interval

Info Collected

Visitor Hours

Visits

Visitor Trips

Estimated Fisherman Harvest

Estimated Hunter Harvest

State of Origin

Distance Traveled

Age and Sex of Users

Pool 4-9 Boating Study

2003

Mail-Back Surveys

5 Pools over 1 Boating Season

3,625 returned surveys

depends on survey response rate
overall 1.6% at 95% confidence interval

Info Collected

Boating Access and Patterns

Boating Use from Outside the Area

Experience of Boaters

Market Area

Trip Characteristics

Activities

Equipment

Safety and Enforcement

Management Actions

Exotic Species Concerns

Trip Satisfaction and Problems

Public Access Facilities

Marina Use and Services

Characteristics of Boaters

Biodiversity Survey

2007

Phone Calls and Focus Groups

Entire Mississippi River

1500 phone calls – 6 focus groups

+ - 2.8% at 95% confidence interval

Info Collected

Knowledge about River

Frequency of Visits

Visitor Use Estimated Frequency

Perceived River Health

Mental Associations

Other Perceptions

Current Threats

Assignment of Responsibility

Support for Federal Funding

Support for Specific Policies

Communication

Value and Themes

Credibility of Messengers



A Comparison of Visitor Use in Terms of Visits/Activities

	Recreational Use Surveys 1974 –1989 Average for Pools 5, 5A and 9 <u>Year Round Visits</u>	Pool 4-9 Boating Study 2003 Pools 4 through 9 <u>Boating Season Visits</u>	Biodiversity Survey 2007 Entire River <u>Frequently+Occasionally</u>
Fishing	49%	50%	26%
Boating	20%	21%	25%
Beaching	0%	10%	0%
Water Skiing	3%	4%	0%
Sailing	0%	4%	0%
Wildlife Observation/Photography	0.4%	4%	25%
Camping	6 %	2%	0%
Casino Gambling	0%	0%	15%
Hunting	4.4%	0%	9%
Walking/Hiking	0.8%	0%	51%
Community Event	0%	0%	41%
TOTAL	83.6%	95%	192%



Examples of Other Recreational Use Surveys

- Boater Attitudes and Experiences – Wisconsin Recreational Boating Study - 1991 to 1992
- Angler Survey of Lake Pepin and Pool 4 of the Mississippi River - 2005 to 2007
- Recreational Use Surveys on Corps Managed Lands – late 1970s
- Boating in the Twin Cities Metropolitan Area: Current Status (1996) and Trends Since 1984
- Economic Impacts of Recreation in the Upper Mississippi River System – Carlson 1994
- Recreational Boating Study of the Mississippi, St. Croix and Minnesota Rivers – 2007
- MCC Opinions and Concerns Survey, MDNR, 1998



Pool 4-9 Boating Study

What was your group's primary activity on this trip?

Figures are column percents Activity	Total	Pool number						
		4	5	5A	6	7	8	9
Sailing	3.7%	8.2%	.0%	.0%	.0%	11.6%	.0%	.0%
Canoeing	.7%	.3%	1.7%	.0%	1.0%	1.5%	1.5%	.0%
Water skiing	4.0%	2.5%	3.5%	7.4%	5.5%	5.6%	4.0%	3.1%
Nature photography	.6%	.5%	.6%	.7%	.6%	.2%	.9%	.5%
Sail-boarding	.0%	.0%	.5%	.0%	.0%	.0%	.0%	.0%
Kayaking	.3%	.3%	1.9%	.0%	.0%	.2%	.0%	.3%
Beaching	10.0%	11.6%	13.0%	8.6%	12.4%	6.2%	11.4%	6.8%
Wildlife observing	3.1%	2.7%	3.5%	.6%	2.9%	7.1%	1.9%	4.0%
Boat riding	20.9%	25.7%	23.4%	22.7%	23.9%	14.7%	23.6%	10.7%
Jet skiing	1.5%	.9%	2.1%	.5%	1.8%	.5%	1.4%	3.6%
Camping	2.0%	1.2%	.9%	4.0%	1.7%	2.1%	3.5%	1.2%
Fishing-recreational	46.6%	38.7%	47.3%	52.6%	39.7%	45.1%	44.7%	63.9%
Fishing-tournament	3.0%	2.5%	1.0%	.0%	3.5%	2.9%	3.9%	4.4%
Transportation	.9%	1.4%	.4%	.0%	2.4%	.2%	1.0%	.0%
Other	2.6%	3.4%	.5%	2.8%	4.5%	2.1%	2.3%	1.4%
Number of surveys	3081	1312	179	122	191	320	637	320



Pool 4-9 Boating Study

Did you use a beach on this trip?

Figures are column percents Beach	Total	Pool number						
		4	5	5A	6	7	8	9
Yes	32.0%	29.9%	39.8%	33.7%	42.3%	28.8%	34.4%	26.7%
No	68.0%	70.1%	60.2%	66.3%	57.7%	71.2%	65.6%	73.3%
Number of surveys	3084	1311	179	121	191	320	642	320

(IF YES) How would you rate the quality of the beach for your use?

Figures are column percents Rating	Total	Pool number						
		4	5	5A	6	7	8	9
Excellent	17.9%	16.0%	18.4%	20.2%	20.1%	21.6%	14.5%	20.5%
Good	51.5%	56.9%	44.5%	49.9%	51.7%	48.9%	47.9%	52.4%
Fair	22.0%	21.2%	24.6%	22.7%	20.4%	19.4%	26.8%	18.0%
Poor	6.5%	4.2%	11.4%	3.8%	6.4%	7.0%	9.1%	6.3%
Very poor	1.9%	1.7%	1.1%	3.3%	1.4%	3.2%	1.6%	1.5%
Don't know	.2%	.0%	.0%	.0%	.0%	.0%	.0%	1.3%
Number of surveys	1045	393	79	41	104	85	252	91

~70%

Most Dissatisfied

