

2011 Campground Angler Survey: Upper Manistee and Pigeon Rivers



A Michigan Trout Unlimited Research Report

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May 2, 2012

Memorandum of Introduction to the report "2011 Campground Angler Survey: Upper Manistee and Pigeon Rivers", a Michigan Trout Unlimited Research Report.

In 2010, discussions and public input was sought on the addition of new river miles to gear-restricted status. The Upper Manistee River from Highway 612 downstream to M72 was added to gear restricted status, with an increase in minimum length of brown trout, a decrease in bag limit of them, and a restriction on natural bait use, with continued use of artificial lures or flies allowed. During this process, which followed criteria set forth in Fisheries Order 213, the MDNR State Forest Campground management expressed concern over a possible reduction in camping use at several campsites located within this reach of new gear restricted water. It was identified that a lack of information existed to adequately evaluate this, and that was the impetus for conducting the following study.

On December 8, 2012, a Memorandum of Agreement was entered into with various organizations, including Michigan Trout Unlimited, and the MDNR Fisheries and Forest Management Divisions. This MOA highlighted the possible concerns with the use of the campgrounds along the Upper Manistee River. Section II of the MOA stated that MITU would help collect information to determine if the new gear restrictions have negatively impacted campground revenue. This survey was our effort at addressing this question. Section III addresses the review of the information gained under II, in evaluating whether the regulations had impact and should be retained or removed. As will be addressed in this report, ample information is provided that clearly indicates that the new regulations cannot be claimed to have negatively impacted campground use or revenue. Section V of the MOA outlined assistance MITU would offer in promoting the use of state campgrounds on trout streams. In the spring/summer 2011 addition of the MICHIGAN TROUT magazine, an article was run promoting and displaying the locations of these campgrounds. This information is memorialized on the www.michigantu.org website. Collectively, we see our responsibilities under the MOA as now satisfied.

We enthusiastically present you the results of this survey of campground anglers on the Upper Manistee and Pigeon Rivers. The results of this study clearly illustrate the importance of using social science tools to understand the preferences of anglers today. While the results in many ways echo the results of other past research on this topic (such as motivations of anglers), the results also stand in stark contrast to many of the assertions we heard purported by many stakeholders, agency biologists and managers during the gear restrictions process. We hope this information not only closes a door on evaluation of the gear restrictions placed on the Upper Manistee from highway 612 to M72, but more importantly, opens up a new phase of discussion for trout management, one focused on better understanding of the desires and motivations of stakeholders and strategies for optimizing the value of the fisheries to them.



Bryan Burroughs – Executive Director – Michigan Trout Unlimited

Introduction

Very little information is available regarding the recreational use of the Michigan State Forest Campgrounds along the Pigeon (Otsego County) and Upper Manistee Rivers (Crawford County). This issue has become important as fishing regulations have changed near several State Forest Campgrounds on the Upper Manistee River. There was concern that a change from permitting the use of all types of terminal tackle (natural bait, artificial lures, artificial flies) to only artificial tackle (lures and flies) might negatively impact revenue at campgrounds near the river. Several key pieces of information were critical in order to address this question. First, what percentage of people camping there were angling while there (and how important angling was to their experience while camping). If angling is not a significant factor for those using the campgrounds, then changes in fishing regulations would not be expected to impact campground revenue significantly. Secondly, of those using the campgrounds for angling purposes, it is necessary to understand their motivations for their fishing experience while there, and the gear preferences for use. If a majority of campers fishing in the adjacent stream reach seek an experience or the use of gears which are not precluded or are enhanced by the new restrictions, then you would not expect the restrictions to have significant negative impact on campground revenue. Lastly, it is critical to understand how anglers of those stream reaches differ in their motivations and gear preferences than those anglers camping nearby. The mere presence of a state campground on a trout stream should not preclude managing it for non-camping anglers of that stream. The motivations and preferences of each angler type and their relative abundances should be thoughtfully weighted in considering how to manage the fishery.

At the time this study began there was limited information available on the recreational priorities of campers available. Nelson and Valentine conducted river use surveys on the Upper Manistee River. The Nelson survey was conducted on a 55 mile stretch of the Manistee River in 2001. Survey cards were left on vehicles at river access points, 1,080 of 4,867 survey cards were returned. Campers were asked what the most important recreational activity of their trip was, 36% responded with camping, 31% listed non-motorized watercraft use, and 28% listed fishing (Nelson and Valentine 2002). This survey information is very valuable; however, it is becoming dated and we wanted to focus our efforts on the three campgrounds near the new special regulations section on the Upper Manistee River (Upper Manistee River Campground, Goose Creek Campground, and Goose Creek Trail Campground). In addition, two campgrounds near the Pigeon River were surveyed, as it has become clear that information on the recreational use campgrounds and nearby rivers is needed. The Pigeon River campgrounds are not adjacent to a new special regulations section of the Pigeon River. So while the Pigeon River and its campground are inherently different in many ways to those of the Upper Manistee, it provides a useful “control” for contrast. We did not have an ability to survey campground anglers on the Upper Manistee River prior to the regulations; and therefore were not able to detect any anglers that had possibly been displaced to other waters. The survey of campground anglers on the Pigeon River, where gear restrictions did not exist, offers an opportunity to contrast the Upper Manistee to see if important differences exist.

Methods

Five rustic State Forest Campgrounds were surveyed along the Upper Manistee (Goose Creek Trail Camp, Goose Creek Campground, and Upper Manistee River Campground) and Pigeon Rivers (Pigeon River Campground and Pigeon Bridge Campground) (Figure 1). Rustic campgrounds have pit toilets and water available from a hand pump or artesian well. Goose Creek Trail Camp is primarily an equestrian campground with 50 group sites located adjacent to the Upper Manistee River. Goose Creek Campground has 12 sites along the river near Goose Creek Trail Camp. Upper Manistee River Campground has 40 sites (10 walk in sites) also located adjacent to the river (Figure 1). Pigeon Bridge (10 sites) and Pigeon River (19 sites) campgrounds were surveyed along the Pigeon River (Figure1) in the Pigeon River Country.

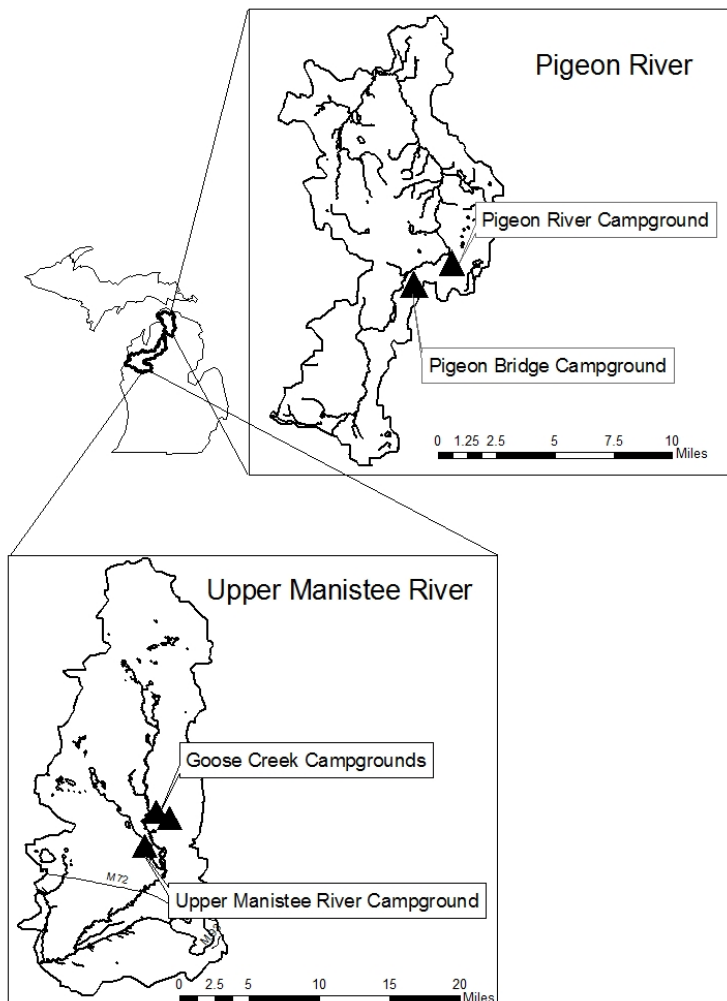


Figure 1. The location of the Manistee and Pigeon River watersheds in the state of Michigan and the location of campgrounds.

Campers and river users were surveyed via personal interviews. A Michigan Trout Unlimited (MITU) Huron Pines AmeriCorps member surveyed 243 campers and river users from May to September of 2011, 15 were repeat campers and thus interviews were not completed. The surveyor did not have any refusals to participate in the survey, though some campsites known to be occupied were not surveyed due to the absence of campers during survey hours (39 campsites). The surveyor asked the same questions to each camper or river user (Appendix 1). Not all survey respondents answered all questions.

The survey was administered on random weekdays and weekend days between May 17 and September 25 of 2011. Thirty days of surveying were completed throughout this period. This sampling effort was stratified by weekend days (S, S) versus week days (M,T,W,R,F), and then days were randomly selected within each strata. During sampling of weekends each river (Manistee or Pigeon) was sampled one day (Saturday or Sunday) sampling days were chosen randomly. Sampling was conducted on the weekend before the 4th of July (July 2 and 3) and on Labor Day weekend. A distribution of sampling days is shown in Table 1. The campgrounds were surveyed between 9:00 am and 7:00 pm in order to increase the likelihood of finding campers at their campsites. Rounds were made through the campgrounds and to commonly used access points within them. Campers were surveyed throughout the day when present. Individuals encountered at access points or in the river near the campgrounds were also surveyed.

Table 1. Distribution of survey days between both locations throughout the survey period.

	Weekdays	Weekend Days	Total Days
Upper Manistee River	6	8	14
Pigeon River	9	7	16

To administer the survey, campers and anglers were first greeted and asked if they would like to participate. If the person had previously been surveyed, it was noted and they were not surveyed again. The survey was then administered to willing participants (Appendix 2). In most cases, one individual from a group of campers responded or the group agreed on a particular response. However, with large groups effort was made to collect data specific to as many individuals as possible. Responses that fit into one of the categories listed were marked on the survey and responses which deviated from the list of expected responses were also recorded and analyzed.

The survey design explored camper and angler motivation, priorities, and satisfaction. Study participants were first identified as campers, anglers or both campers and anglers. Participants who identified themselves as “campers” or “both” were then asked about their primary motivation for camping. Responses to this question were grouped into six categories: angling, nature enjoyment, aquatic sports, camping for the sake of camping, equestrian, and other. Nature enjoyment was

described as wildlife observation, trail use, fall color tours and other activities centered around nature. Aquatic sports included kayaking, canoeing and tubing down the river. The camping category included responses that stated vacation, tradition, rest and relaxation, and tranquility for their primary motivation. Other responses were written-in. Anglers who were not camping were not asked about camping motivations, but were asked the questions about angling. All participants were asked to rank their overall satisfaction with their camping/angling experience in their location. Satisfaction was ranked on a scale of 1 to 5, with 5 being extremely satisfied and 1 being extremely dissatisfied.

Anglers and campers who made any angling effort were interviewed further to determine motivations for angling. These participants were asked what the most important aspect of their angling experience at the campground was. Anglers were then asked to name the second most important aspect of their angling experience. Responses to this portion of the survey were forced into one of six categories: aesthetics, success (to at least catch something), to harvest and eat a fish, to catch a trophy sized fish, to catch a lot of fish, or other. Aesthetic reasons included scenery, tranquility, relaxation, social aspects or any other reason that indicated angling for the sake of angling. The final two survey questions (7 and 8) were “what type of terminal tackle are you willing to use here?” and “what type of terminal tackle would you prefer to use here?” Possible responses included natural bait, artificial lures, and artificial flies; in question 7 respondents could select all that applied, while in question 8 that were forced to choose 1 preferred gear category.

We believe the data from question 7 is unreliable due to inconsistencies in how the question was phrased. The question read “what type of terminal tackle are you willing to use?” However, it was asked incorrectly all, or some of the time. Through quality control follow up, the surveyor indicated that he asked a large portion of the survey respondents what type of terminal tackle they were **currently** using, rather than what type of terminal tackle they would be **willing** to use. We cannot determine which anglers were asked currently or willing, therefore the results of this question cannot be relied upon. Responses to this question are displayed in tables and graphs in the results section of this report. This data is labeled “willing/currently” with an asterisk indicating that the data is not reliable due to possible inconsistencies in the way the question was phrased. We have displayed this information for full disclosure, but assert that it is unreliable and should not be used.

Data was entered and validated by a separate individual. Survey results were summarized. Any additional comments were summarized and outlined as anecdotal data.

Results

There were no refusals to participate in the survey. Over the survey period, 281 campsites were occupied (including repeat campers). There were often campsites that appeared to be occupied but no one was present to take the survey at any point during the day. Of 265 opportunities, 226 surveys were completed, accounting for 85% of campers. 72 Pigeon River campers and 154 Manistee River campers were surveyed. There were 17 anglers surveyed who were not using the targeted campgrounds or any

other nearby campgrounds, 8 on the Pigeon River and 9 on the Manistee River. There were 16 campers who were encountered more than once in the survey period, the campers were not surveyed on the second encounter. Three of these campers were repeat campers, meaning they returned to the campground after some elapsed time. The rest were remaining for an extended period of time during a short interval between survey days. Table 2 shows how campers and campers who were also angling were distributed among the campsites studied. With the exception of Goose Creek Trail Camp, nearly half of all campground users were also anglers (Table 2). The decreased rate of angling campers observed on the Upper Manistee River appears to be related to proximity to the heavy-equine use Goose Creek Trail Campground.

25% to 53% of the campers surveyed during this study spent a portion of their time angling. About 53% of those surveyed at campgrounds near the Pigeon River were anglers and about a 25% of those surveyed at campgrounds near the Manistee River were anglers. This figure includes surveys of campers at Goose Creek Trail Camp, which is primarily horse camp, only about 3% of campers were also anglers. The primary motivation for camping of nearly 80% of those surveyed at that campground was horseback riding. With that campground excluded, distributions vary from the Pigeon River Campground (53% angler) to Goose Creek Campground (35% angler).

Table 2. Distribution of surveyed campers across the survey sites including the percentage of anglers camping at each site. One participant using a campground other than the targeted campgrounds is not included in this table. Anglers who were not camping are not included in this table.

Site	Camping		% Angler	Total
	Only	& Angling		
All Campers	149	77	34%	226
Pigeon River	34	38	53%	72
<i>Pigeon River</i>	32	36	53%	68
<i>Pigeon Bridge</i>	2	2	50%	4
Manistee River	115	39	25%	154
<i>Upper Manistee River</i>	37	31	46%	68
<i>Goose Creek</i>	11	6	35%	17
<i>Goose Creek Trail</i>	67	2	3%	69

There were differences in the primary motivations for camping among campgrounds and rivers. Nature and camping were the most common responses on the Pigeon River (Pigeon Bridge and Pigeon River Campgrounds, Table 3). Angling and camping were the primary motivators at the Upper Manistee River Campground whereas aquatic sports and camping topped the list at Goose Creek Campground; angling was a close third at Goose Creek Campground (Table 3). As expected, the vast majority of Goose Creek Trail Camp users stated horseback riding as their primary motivation for camping there, camping was

the second most common answer (Table 3). It was also noted that where the equine use is high, camping for other motivations is lower. Aquatic sports use was also higher at several of the Upper Manistee River campgrounds than on the Pigeon River.

Other responses were grouped and tallied. Written in responses included hunting and to volunteer (at a nearby visitors center). These motivations made up less than 1% of all camper responses (Table 3).

Table 3. Primary motivation for camping on the Manistee and Pigeon Rivers.

	Nature	Camping	Angling	Aquatic Sports	Equestrian	Other	Total
All Campers	17%	29%	17%	12%	24%	1%	100%
Pigeon River	38%	36%	15%	10%	0%	1%	100%
Pigeon River Campground	37%	37%	15%	10%	0 %	1%	100%
Pigeon Bridge Campground	50%	25%	25%	0%	0 %	0%	100%
Manistee River	7%	26%	18%	13%	35%	1%	100%
Upper Manistee	12%	34%	35%	19%	0%	0%	100%
Goose Creek	6%	29%	24%	35%	0%	6%	100%
Goose Creek Trail	3%	17.5%	0%	1 %	78.5%	0%	100%

Respondents were asked to identify the most important aspect of their angling experience there. After answering that, they were then asked what the second most important aspect was. Aesthetics was the most commonly reported as the most important aspect of an angler’s experience and made up the largest percentage of responses at each campground. The second most common angling aspect was to have some success (capturing a fish rather than getting “skunked”), though this did vary by individual campground (Table 4, Figure 2). On both rivers, the two most common second most important aspects of angling experience were also Success and Aesthetics. No respondents on either river indicated catching fish “to eat” as the most important aspect of their angling experience. Catching fish “to eat” ranked third as a secondary motivation on the Pigeon River, while the Manistee River had relatively larger proportions of anglers interested in catching quantity of fish or trophy fish as primary and secondary most important angling aspects. Harvest was the most common secondary priority at Goose Creek Trail Camp; however, only one trail camp angler responded to this portion of the survey (Table 4, Figure 2).

Table 4. The table of primary (1°) and secondary (2°) most important aspects of angler experience.

	Aesthetics		Success		Quantity		Trophy		Eat		Other	
	1°	2°	1°	2°	1°	2°	1°	2°	1°	2°	1°	2°
All Anglers (N=92)	55%	32%	28%	32%	9%	7%	7%	8%	0%	20%	1%	3%
All Anglers Pigeon (N=44)	66%	2%	23%	29%	7%	9%	4%	0%	0%	27%	0%	5%
Pigeon River (N=42)	67%	27%	21%	29%	7%	10%	5%	0%	0%	29%	0%	5%
Pigeon Bridge (N=2)	50%	50%	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%
All Anglers Manistee (N=48)	46%	33%	33%	33%	10%	4%	8%	15%	0%	13%	2%	2%
Upper Manistee (N=36)	39%	36%	39%	28%	14%	6%	5%	14%	0%	14%	3%	3%
Goose Creek (N=11)	73%	27%	9%	55%	0%	0%	18%	18%	0%	0%	0%	0%
Goose Creek Trail (N=1)	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%

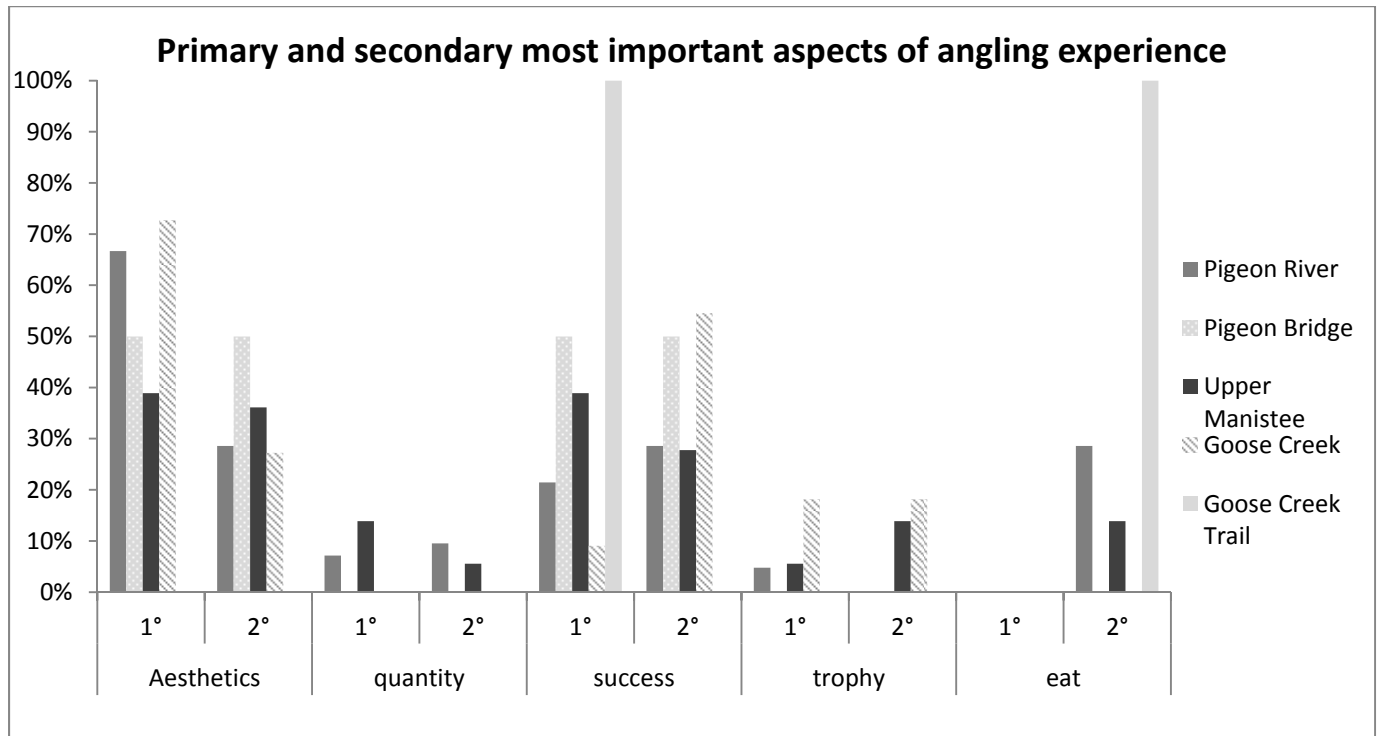


Figure 2. Primary and secondary most important aspects of angling experience at Pigeon and Upper Manistee River campgrounds.

Camper and angler satisfaction was comparable at each campsite as well as between rivers. The median response for all anglers and campers surveyed was 5 out of 5, the highest rating (Table 5). The mean and median satisfaction scores were above 4 in all categories (Table 5).

Table 5: A comparison of satisfaction between individuals camping, camping and angling (both), or angling on the Manistee and Pigeon Rivers.

	Activity	Mean	Median
Pigeon River	All Surveyed	4.5	5
	Camping	4.4	4.5
	Both	4.7	5
	Angling	4.3	4.5
Manistee River	All Surveyed	4.4	5
	Camping	4.4	5
	Both	4.2	4.5
	Angling	4.6	5

Most anglers were willing/currently using artificial terminal tackle (Table 6). The artificial terminal tackle category includes anglers using flies, lures, and a combination thereof. It was more common for anglers

to be willing/currently using natural bait on the Pigeon River than the Manistee (Table 6). We are unsure how many anglers were asked what terminal tackle they were willing to use and how many were asked what terminal tackle they were currently using; therefore, results from this question are unreliable. This data are presented for disclosure, but will not be discussed due to their unreliability.

Table 6: Tackle anglers are willing/currently* using on the Pigeon and Manistee Rivers. *This data is unreliable due to possible inconsistencies in the way the question was phrased. ** Only two anglers were surveyed at Goose Creek Trail Camp.

	Natural and Artificial	Natural Only	Artificial Only
All Anglers	21%	7%	72%
Pigeon River - All	36%	13%	51%
Pigeon River	38%	13%	49%
Pigeon Bridge	0%	0%	100%
Manistee River - All	6%	2%	92%
Upper Manistee	5%	3%	92%
Goose Creek*	0%	0%	100%
Goose Creek Trail*	50%	0%	50%

Of respondents asked what type of gear they preferred to use, 57% chose flies, 25% chose artificial lures, and 18% chose natural bait (Table 7). Overall, 82% of anglers indicated that they prefer to use artificial terminal tackle. Terminal tackle preference was more diverse on the Pigeon River than the Manistee, though the overall trend was the same; flies were most popular, followed by artificial lures, and natural bait (Table 7). 22% of Pigeon River anglers preferred natural bait, whereas 15% of Manistee River anglers preferred natural bait.

Table 7. Preferred tackle on the Pigeon and Manistee Rivers.

	Flies	Lures	Natural Bait
All Anglers	57%	25%	18%
Pigeon River - All	42%	36%	22%
Pigeon River	12%	20%	69%
Pigeon Bridge	100%	0%	0%
Manistee River - All	68%	17%	15%
Upper Manistee	70%	15%	15%
Goose Creek	73%	18%	9%
Goose Creek Trail	0%	50%	50%

Camping Anglers vs. Non-camping Anglers

The most important aspects of angling experience were very similar among camping and non-camping anglers (Table 8 and Table 9). Aesthetics was the most common primary important aspect for both groups, followed by success. Interestingly, no non-camping anglers listed catching trophy fish or

catching fish to harvest as the most important aspect of their angling experience, neither of these categories were popular with camping anglers either (8% trophy, 0% harvest). The most common secondary important aspect overall was aesthetics for camping anglers and success for non-camping anglers, though success came in a close second for those camping and aesthetics came in a close second for those not camping. The largest differences in the second most important aspect of angling experience between the two groups were that camping anglers were more inclined to list harvest and non-camping anglers were more inclined to list quantity as the second most important aspect of their angling experience. On the Pigeon River, camping and non-camping anglers showed a strong contrast in secondary motivations between success and quantity, with non-camping anglers more commonly reporting quantity and camping anglers reporting success. Also, non-camping anglers tended to identify catching trophy fish as their secondary important aspect more than camping anglers on both rivers. Overall, aesthetics and success dominated the motivations of all anglers.

Table 8. The table of most important aspects of angler experience for camping anglers (C) and non-camping anglers (n). Camping anglers N=74, non-camping anglers N=17.

	Aesthetics		Success		Quantity		Trophy		Eat		Other	
	C	N	C	N	C	N	C	N	C	N	C	N
All Anglers	54%	59%	27%	35%	9%	6%	8%	0%	0%	0%	1%	0%
Pigeon	67%	63%	22%	25%	6%	13%	6%	0%	0%	0%	0%	0%
Upper Manistee	42%	56%	32%	44%	13%	0%	11%	0%	0%	0%	3%	0%

Table 9. The table of secondary most important aspects of angler experience for camping anglers (C) and non-camping anglers (N). Camping anglers N=74, non-camping anglers N=17.

	Aesthetics		Success		Quantity		Trophy		Eat		Other	
	C	N	C	N	C	N	C	N	C	N	C	N
All Anglers	34%	24%	31%	29%	4%	18%	7%	12%	22%	12%	3%	6%
Pigeon	31%	25%	36%	0%	3%	38%	0%	0%	28%	25%	3%	13%
Upper Manistee	37%	22%	26%	56%	5%	0%	13%	22%	16%	0%	3%	0%

Preferred terminal tackle is also very similar between camping and non-camping anglers. Flies are the most common preferred terminal tackle among both groups, with the percentage of anglers who prefer flies being greater on the Manistee River than the Pigeon (Table 10). Similarly, lures are the second most preferred terminal tackle between both groups, with the Pigeon River having a higher percentage of anglers who prefer lures than the Manistee (Table 10). Natural bait preference is slightly higher among camping anglers than non-camping anglers, likewise fly preference is slightly higher among non-camping anglers than camping anglers.

Table 10. Preferred tackle of camping anglers (C) and non-camping anglers (N) on the Pigeon and Upper Manistee Rivers.

	Flies		Lures		Natural Bait	
	C	N	C	N	C	N
All Anglers	58%	63%	26%	25%	17%	13%
Pigeon River - All	43%	43%	33%	43%	23%	14%
Manistee River - All	69%	78%	19%	11%	11%	11%

Anecdotal Evidence

In administering the survey, participants often voluntarily disclosed additional information. In some cases, this information was recorded as a comment. Other times, comments and behaviors were not recorded because they were irrelevant to the survey, but were frequent enough that they deserve to be mentioned. For instance, many campers showed some initial apprehension before they realized the purpose of the survey. On at least three occasions, campers inadvertently provided justification for why they haven't paid the camping fee "yet".

Additional information was also occasionally given by anglers. Some of the noted comments from anglers include one camper expressing that the fishing license was too expensive. Another angler expressed that although they were using lures, they would prefer to use fly fishing gear but they are too expensive. There were two campers and one angler who passionately expressed their disagreement with gear restrictions. Two of these individuals were mostly concerned that their kids did not have a simple means to fish. One camper mentioned that "they would like to use natural baits if it meant more success, but understand the need for gear regulations." A common noted practice among anglers of all types was catch and release.

Discussion

The survey results seem to clearly indicate that campground revenue on the Manistee River should not be substantially, negatively impacted by special regulations in place. In addition, angling priorities and practices of those surveyed also indicate that the special regulations placed on the Manistee River are aligned with angler practices and preferences.

Only 25% of all campers surveyed on the Manistee River are also angling and of those, angling is the primary motivation for camping for only 18%. This is a relatively low proportion of campground users thus a change in fishing regulations, popular or not, will not greatly impact revenue. However, this survey was conducted after the special regulations were put in place. Unfortunately we were not able to conduct a survey before the special regulations were instituted. The survey done on the Pigeon River was used as a "control" as the Pigeon is also a coldwater stream but the river adjacent to the campgrounds surveyed does not have special regulations. Survey data collected on the Pigeon River aligns well with the Manistee in that 53% of campers were also angling, but of those, angling was the primary reason for camping for only 15%. In addition, only 22% of Pigeon River anglers preferred

natural bait versus 15% on the Manistee River. The data from the Pigeon River seems to further support that changes in fishing regulations near the Manistee River Campgrounds most likely will not have a significant, negative impact on revenue.

Most anglers interviewed want to spend time on the river and hopefully catch at least one fish. The majority of all anglers stated aesthetics as the most important aspect of angling, success was the second most common response. No anglers listed harvest as the most important aspect of angling. In addition, aesthetics tied with success as the second most important aspect of angling. In total 83% of anglers listed aesthetics or success as the most important aspect of angling, and 64% identified aesthetics or success as their secondary motivations for angling. Quantity, trophy size, and harvest are of lesser importance. These priorities align well with the high minimum size and low bag limit placed on the Upper Manistee River, which would aid a higher density of fish present and higher probability of some form of minimal "success". This also tends to support objectives for quantity or fish caught and of those seeking trophy fish.

Angler gear preference also aligns well with the artificial terminal tackle only regulation on the Upper Manistee River. Most anglers on both rivers prefer to use flies or artificial lures. Less than a quarter of anglers on either river indicated that they would prefer to use natural bait. It was our intent to survey what percent of anglers would only be willing to use natural bait; and while this might be expected to be lower than those preferring to use only natural bait, this survey question was compromised and not useable here for that purpose. Overall, these angler preferences indicate a good fit for the artificial only regulation.

The Michigan Department of Natural Resources also conducted a mail survey of campers who have camped, and filled out a fee card, at Goose Creek Campground and Upper Manistee River Campground between 2009 and 2011. 40% of the individuals who received and returned the survey indicated that fishing is their primary reason for camping at these campgrounds. This is slightly higher than the 24- 35% we recorded for these campgrounds, and significantly higher than the 18% we recorded while including all of the Upper Manistee River campgrounds. Flies were the most commonly used tackle, followed by artificial lures, and natural bait. In an effort to determine the impact the new regulations will have on campground revenue, campers were asked if they will camp more, less, or the same in 2012. The change in regulations was explained at the beginning of the survey. 54% of campers said they would camp the same amount, 34% said they would camp more, and 13% said they would camp less. The DNR survey seems to reiterate the results from the interview survey, new fishing regulations will not have a substantial, negative impact on campground revenue. In fact, the mail survey may indicate that revenue may actually increase as a third of campers indicated they will camp more this year. It is important to note that the demographics of the individuals surveyed in person and by mail most likely differed. All campers present were surveyed in person, even those who did not pay and therefore did not fill out a fee card. Only those who paid received a mail survey, and of those 51% returned the survey. In this, our survey used stratified random sampling of camping days and interviewed all campers present, and as such could be interpreted as being more representative of the population of campers than the mail

survey conducted. Despite this, results from the two surveys were relatively comparable in results, lending additional confidence to the results.

The DNR survey did not include individuals who camped at Goose Creek Trail Camp. This is understandable as including those campers would have added to the cost of the mail survey. However, we felt it appropriate to interview campers at the Trail Camp. Almost half of the campers interviewed on the Manistee River were at the Trail Camp. This is important because these campers account for a large portion of the revenue of the campgrounds near the river. Leaving them out of the survey would mean ignoring a large chunk of Manistee River campers. The recreational priorities of campers at Goose Creek Trail Camp certainly varied from Upper Manistee River and Goose Creek, but there were some anglers present, and these campers are still part of the total picture. It was important to examine this contingent in evaluating whether campground revenue might be affected due to the fishery management activities in this area. Of interesting note though, was that heavy equestrian use of a state forest campground seems to be negatively correlated with its use by anglers and other camp users.

Conclusions

Overall, anglers seemed to indicate two important trends to note. First, primary objectives for anglers' experiences were dominated by enjoyment of aesthetics and to attain at least some minimal success in catching a fish. After those two most important aspects, catching a quantity of fish was most important, followed even more distantly by those seeking trophy fish, or to harvest fish for eating. This seems to indicate that aesthetic enhancement should be explored in management techniques for other streams (satisfaction was high on these two). Having success, catching high quantity of fish, and catching trophy fish are all objectives that are well served or enhanced by managing for higher densities of fish present. This can be aided by lower mortality through reduced hooking mortality and harvest mortality.

Second, the portions of anglers indicating preferences for use of flies and artificial lures are perhaps surprising. However, this trend was consistent between rivers and between camping and non-camping anglers. This would seem to suggest a trend for trout angler preferences that had not been previously documented. This is important when considering future use and acceptance for gear-restrictions. MITU is currently working with MSU and MDNR to conduct research of trout anglers statewide that should help further elucidate this trend for all trout anglers in the state.

We then conclude, that on the upper Manistee river, given that only 18% of the campers are there primarily to angle, and given that a large majority of primary and secondary important motivations for angling were for aesthetics and to have some form of success, with tertiary priorities including catching quantity of fish or trophy fish (and are well served by lower bag limits, higher minimum lengths, and reduced hooking mortality); given that harvesting fish was not a primary motivation by any survey respondents; given that a minority of anglers prefer to use natural baits, while $\frac{3}{4}$ or more prefer to use artificial lures or flies, and given that anglers have expressed exceedingly high satisfaction levels for their experiences on this stretch; we conclude that the gear-restricted regulations placed on the upper

Manistee river from highway 612 to M72, will not decrease revenue at the state forest campground, and are well serving the interests of anglers camping and fishing there, and should therefor stay in effect.

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Appendix 1.

Memorandum of Understanding.

Appendix 2.

The survey form used in this angler survey.

Appendix 1.

Michigan Department of Natural Resources and Environment

Fisheries Division
Forest Management Division

Memorandum of Agreement

State Forest campgrounds on the Upper Manistee River below County Road 612

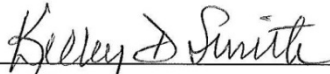
December 8, 2010

Fisheries and Forest Management divisions of the Michigan Department of Natural Resources and Environment (DNRE) enter into this Memorandum of Agreement (Agreement) with the following groups – Anglers of the Au Sable, Au Sable Big Water Preservation Association, Great Lakes Council of Federation of Fly Fishers, Michigan Chapter of the Sierra Club, and Michigan Chapter of Trout Unlimited – related to the Goose Creek State Forest Campground and the Upper Manistee River Campground (collectively Campgrounds).

- I. The economic and user effects of implementing gear restrictions between County Road 612 and Logger's Landing are uncertain inasmuch as:
 - a. users may abandon the Campgrounds as a result of implementing gear restrictions on this stretch of the Upper Manistee River;
 - b. economic factors and effects on users may be positive as a result of attracting more anglers to the Campgrounds due to implementing gear restrictions on this stretch of the Upper Manistee River, which allows for an extended fishing season; or
 - c. implementing gear restrictions on this stretch of the Upper Manistee River may have no significant effect on economic factors or the number of users at the Campgrounds.
- II. Beginning no later than April 2011, the DNRE will work with the groups who are signatory to this Agreement to collect data on the economic status and numbers of users for the Campgrounds. The effort should provide information to determine if implementing gear restrictions for trout fishing on this stretch of the Upper Manistee River will negatively affect use of the Campgrounds.
- III. No later than September 15 2012, the DNRE will revisit the appropriateness of designating County Road 612 as the uppermost terminus of the gear restricted waters on this stretch of the Upper Manistee River. Considerations for making such determination include information from surveys of users of the Campgrounds, coupled with changes in both user days and revenue generated for the Campgrounds.

- IV. Except for the Michigan Chapter of Trout Unlimited, the groups who are signatory to this Agreement will do the following in order to help assure no loss of revenue to the Campgrounds:
 - a. create and distribute materials to educate users on the locations of streams in the vicinity of the Campgrounds that have fishing for trout and are not under gear restrictions;
 - b. respond to volunteer opportunities;
 - c. create and distribute materials encouraging anglers and others to patronize the Campgrounds; and
 - d. work to rehabilitate habitat for trout in this stretch of the Upper Manistee River.
- V. The Michigan Chapter of Trout Unlimited will do the following in order to help assure no loss of revenue to the Campgrounds:
 - a. distribute materials to educate members on the locations of State forest campgrounds throughout Michigan that are adjacent to trout streams, including information about the type of regulations that apply to each of those trout streams; and
 - b. communicate the need for and encourage the participation of its members in volunteer opportunities led by the DNRE at the Campgrounds, including assistance with maintenance, surveys of camper, and education of campers about fishing opportunities.
- VI. Given this Agreement and the generous offer of help from the groups who are signatory to this Agreement, the Fisheries and Forest Management divisions agree to support a recommendation to the Director of the DNRE that the boundary for the gear restricted stretch on the Upper Manistee River will begin at County Road 612 during the 2011 and 2012 fishing seasons.
- VII. If the Director of the DNRE does not support and concur with the recommendation that the boundary for the gear restricted stretch on the Upper Manistee River will begin at County Road 612 during the 2011 and 2012 fishing seasons, then this Agreement shall be rescinded in its entirety.

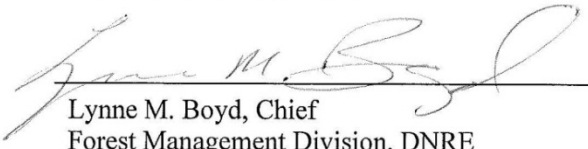
December 8, 2010



Kelley D. Smith, Ph.D., Chief
Fisheries Division, DNRE

December 8, 2010

Date



Lynne M. Boyd, Chief
Forest Management Division, DNRE

December 8, 2010

Date

/s/ Bruce Pregler

Bruce Pregler, President
Anglers of the Au Sable

December 7, 2010

Date

/s/ Thomas Buhr

Thomas Buhr, President
Au Sable Big Water Preservation Association

December 6, 2010

Date

/s/ James Schramm

James Schramm, President
Great Lakes Council of Federation of Fly Fishers

December 6, 2010

Date

/s/ Marvin Roberson

Marvin Roberson, Ecologist
Michigan Chapter of Sierra Club

December 6, 2010

Date

/s/ Bryan Burroughs

Bryan Burroughs, Executive Director
Michigan Chapter of Trout Unlimited

December 6, 2010

Date

Appendix 2.

**Survey of Angler Use of State-owned Campground areas on trout streams:
Upper Manistee River & Pigeon River**

Date (MM/DD/YYYY): _____ **Time (##:##):** _____ AM / PM (*circle one*)

River Name: Upper Manistee River or Pigeon River (*circle one*)

Sampling Stratifications (circle all that apply):

- Weekday or Weekend
- Monday Tuesday Wednesday Thursday Friday Saturday Sunday

Completeness of In-person Interviews (percent of people present that time permitted to be interviewed)

- % Campers _____% % Active anglers _____%

-
-
1. **Which of the following are you doing?** (*check one*) Camping Angling Both
 2. **Which campground are you using?** (*circle one*) (*not for those answering "angling" in #1*)
 - Manistee Campground 1(furthest upstream) (Goose Creek Trail Camp)
 - Manistee Campground 2 (middle) (Goose Creek Campground)
 - Manistee Campground 3 (furthest downstream) (Upper Manistee River Campground)
 - Pigeon Campground 1 (furthest upstream) (Pigeon Bridge Campground)
 - Pigeon Campground 2 (middle) (Pigeon River Campground)
 - Other _____
 3. **Which of the following would you identify as your primary motivation for camping here?** (*circle one*)
 - Camping for camping sake
 - Angling
 - Nature enjoyment / aesthetics / hiking / bird watching / etc.
 - Canoeing/ kayaking / tubing
 - Equestrian
 - Other _____
 4. **Have you taken this survey already this season?** (*circle one*) Yes or No
 5. **What is the most important aspect of your angling experience here?** (*Ask for most important aspect, than ask for secondary aspect*)
 - ___ To successfully catch a fish (not fail to at least catch something)
 - ___ To catch a lot of fish
 - ___ To catch as a trophy-sized fish
 - ___ To be able to keep and eat fish caught
 - ___ Aesthetics (e.g., scenery, social aspects, ease of access, uniqueness of this stretch of river)
 - ___ Other _____
 6. **Rank your satisfaction with your experience here (1 is low – 5 is high):** _____
 7. **What types of terminal tackle would you be willing to use here?** (*circle all that apply*)
 - Flies - Artificial Lures - Natural Baits
 8. **What types of terminal tackle would you prefer to use here?** (*circle one*)
 - Flies - Artificial Lures - Natural Baits