



Great Lakes Angler Survey 2023

A profile of behaviors, awareness and management opinions
of Wisconsin's Lake Michigan Salmon & Trout Anglers



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Executive Summary

This report presents findings from a study of adult anglers (age ≥ 18) who fished on Wisconsin's Great Lakes in the last five years, with an emphasis on Lake Michigan anglers targeting salmon and trout.

To assess angler behaviors, awareness and opinions regarding salmonid fishing and management on Lake Michigan, we drew a random sample of anglers who purchased either a Great Lakes salmon and trout stamp authority or a 2-day Great Lakes fishing license during the 2023 license year. The survey study was conducted online and achieved a 30 percent response rate, which is typical for similar studies in Wisconsin and above average for online survey studies in other states.

This report presents specific study findings, interprets results within relevant contexts and may identify potentially useful lines of additional inquiry. This report does not, however, include specific recommendations for management or policy decisions.

Select key study findings include:

Great Lakes Anglers and Fishing Participation

- Non-resident anglers traveled from 29 other states to enjoy Wisconsin's Great Lakes fishing opportunities but the majority travel from Minnesota (45%) and Illinois (27%). Resident anglers travel from across the state, a high proportion (51%) live in one of the eleven counties that border Lake Michigan.
- Most 2023 license holders (89%) had done some fishing on either Lake Michigan or Lake Superior in the last five years (2019-2023) and 67 percent had fished on Lake Michigan exclusively in that time.
- Overall, anglers averaged 12.5 years of experience targeting salmon and trout on the Great Lakes. Those buying a stamp paired with an annual license reported significantly higher levels of experience (13.2 years) than those buying a 2-day license (6.1 years).

Accessing the Water

- Of those who had done some Lake Michigan salmonid fishing in 2023, 86 percent indicated they have personal, social or financial means to access Lake Michigan waters by boat. One-third (34%) indicated that they own a fishing boat for use on Lake Michigan
- There are different opportunities to target Great Lakes salmon or trout throughout the year, but most anglers (68%) primarily use just one means of access. One third (32%) primarily use charter boats, 24 percent use a personal boat, 23 percent use a friend's or family member's boat. A total of one in five most often use non-boat means of access (shore, stream, docks or piers) with

shorelines of tributary streams and rivers being the most common (12%) of those non-boating options.

2023 Fishing Success and Satisfaction

- On average in 2023, anglers averaged 3.5 salmonids caught per trip and 2.9 harvested. Those who most commonly access the water by boat reported statistically ($p < 0.001$) higher numbers of fish caught and fish harvested than those primarily accessing through stream, shore, docks or piers.
- Most anglers felt satisfied or very satisfied with the number of salmon or trout they caught per trip (55%) and with the size and condition of the salmonids they caught in 2023 (73% satisfied or very satisfied). Those reporting higher per trip catch and harvest rates also reported higher levels of satisfaction.

Species Preferences

- For both 2-day license holders and stamp/annual license holders, the most commonly targeted salmonids on waters of Lake Michigan in the last three years (2020-2023) were coho salmon (74%), Chinook salmon (73%) and steelhead/rainbow trout (65%). More than one-third had targeted brown trout (35%) and lake trout (37%).
- Anglers targeting Chinook salmon (80%), coho salmon (77%), and steelhead (68%) expressed a high or extremely high preference for catching them. Even among those who have not targeted these species in the last three years, 35-47 percent indicated a high to extremely high preference for catching them. Overall, this suggests that an even higher proportion of anglers would target these species if the opportunity (e.g., time, seasonality, water access) were available to them.
- Interest in harvesting lake trout may be conditional for certain anglers. Half of anglers (52%) would choose to harvest a lake trout under any conditions, three in ten (30%) would only harvest if other salmon or trout species weren't accessible (e.g., not biting, lake conditions), and two in ten (18%) would never choose to harvest a lake trout.
 - Those fishing from charter boats were most likely to harvest lake trout under any conditions (70%) and were least likely of all access groups to indicate they would never choose to harvest a lake trout (7%). Those fishing from a friend/family member's boat or a personal boat were more likely than other groups to feel they would only harvest lake trout if other species weren't accessible (34-39%). Those fishing from open water shoreline or tributary streams were more likely than other groups to never harvest a lake trout (33-34%).
 - Among those who have targeted lake trout and primarily fish from shore, streams, docks or piers, having any number of lake trout in your bag seems to be uncommon. Nearly half (47%) reported that their bag never contains even one lake trout and, as the number of potential lake trout in one's bag increased, this never response increased and

- culminated with 77 percent who never have a full bag of lake trout (five fish).
 - Among those who have targeted lake trout and primarily fish from boats (either their own, a friend/family member's, or charter), lake trout more commonly make up a portion of one's bag. Four in ten (39%) reported that they occasionally harvest one lake trout and one-quarter (28%) often harvest one lake trout. A majority, however, reported that their bag never contains more than three lake trout (54-61%).
- Harvesting a full bag of five fish in any combination may not be a common experience for Great Lakes anglers. Half of those fishing on shorelines of open water (50%) and two-thirds of those fishing from shorelines of tributary streams (66%), or docks and pier on open water (65%) report that they *never* harvest a full bag of fish in any combination. Among those primarily fishing from a boat, a higher proportion (26-30%) occasionally harvest a full bag but fewer than one in five (7-13%) reported they often or always harvest a full bag.

Management Preferences

- Overall, Lake Michigan anglers felt satisfied with the DNR's management of the fishery over the past three years (2020-2023). Two thirds (66%) felt satisfied or very satisfied, one-quarter (24%) felt neutral and 10 percent felt dissatisfied or very dissatisfied. Those fishing from docks/piers on open water were the only access group for which less than half felt satisfied (45%). Those primarily fishing from charter boats were most likely to feel satisfied (74%) compared to all other groups (45-68% satisfied).
- A majority of Lake Michigan anglers felt that maintaining Lake Michigan as a top-level sport fishery (66%), science and data (57%), hatchery capabilities (57%), collaboration with other agencies (53%), and balancing predators and prey for productivity (53%) were *very important* management considerations. Fewer anglers rated public input (40%), restoration of native fish species (34%), and a diversity of predator species (32%) as *very important* considerations.
- Overall, very few 2023 respondents felt that recent past (2021-2023) stocking goals were too high (2-10%). Anglers that had not targeted a species in their last three years of Lake Michigan fishing were substantially more likely to hold no opinion on stocking goals. Among those who had targeted coho salmon, steelhead, or brown trout, we found that nearly equal proportions felt the stocking goals were about right (37-39%) as did felt they were too low (37-42%). Half (52%) of those who had recently targeted Chinook salmon felt the species stocking goal was about right.

Communication and Information Sources

- Most anglers (72%) had paid some degree of attention to Lake Michigan stocking news but few (9%) had paid a lot of attention. There are numerous opportunities for Great Lakes anglers to receive information and provide

feedback to the DNR Fisheries Management program. A majority of anglers get information through word of mouth (70%) and/or print newspapers or magazines (50%). Nearly half use the DNR websites (44%) and follow information from general social media outlets (46%).

- Public meetings or presentations by DNR (10%), Lake Michigan Fisheries Forum (5%), or the Great Lakes Fisheries Commission (4%) were among the least used resources. Interestingly, one quarter (25%) have read fishing club newsletters, nearly double the proportion of respondents who indicated they read DNR updates via email (14%).
- All Great Lakes anglers, regardless of how much they followed news, were asked their opinion of the DNR's communications over the last three years regarding science and data that informs management on Lake Michigan. A majority of those who had followed little or none of the Lake Michigan stocking news in the last three years (72-83%) had no opinion on DNR communications. Among those who followed some news, 26 percent felt DNR communications were good and 11 percent felt they were poor. Among anglers who follow a lot of stocking news, 35 percent felt DNR communications were good and 28 percent felt DNR communications were poor.
- In early 2023, the department hosted a series of meetings with representatives from groups in the Lake Michigan Community related to a potential lake trout commercial fishery. Overall, 64 percent of Great Lakes anglers were not aware of these meetings, one quarter (25%) had heard about the meetings but did not follow the news or participate, and six percent had heard about them and followed the news or participated.
- Awareness of and participation in this series of stakeholder meetings was significantly higher among those anglers who indicated they were members in a fishing related organization, association or club and among anglers who indicated they had followed recent Lake Michigan stocking news. While these groups may represent a smaller proportion of the overall Great Lakes angler population (e.g., 14% of anglers are members in a fishing or fishery management focused organization, club or association), this gives an indication of the angling audiences that engaged with this series of meetings.

Overall Concern

- A majority of Great Lakes anglers (60%) feel some degree of overall concern for the long-term sustainability of the Lake Michigan fishery; 38 percent were somewhat concerned and 22 percent were very concerned. As anglers gain experience fishing for salmon or trout on the Great Lakes, the proportion of unconcerned opinions remains relatively stable, but anglers may shift from feeling neutral to some degree of concerned. Those with over 20 years of experience (30%) were twice as likely as those with 1-5 years of experience (16%) to feel very concerned.

Stamp Fee Support

- The survey gauged potential support for an increase in the Great Lake salmon and trout stamp fee. A slight majority of anglers (56%) would support or strongly support this change if a proposal was brought forward in the state budget and 28 percent felt neutral about fee increases. Fewer than one in five (17%) would outright oppose a fee increase. The survey did not provide or propose any specific amount for a potential stamp fee increase.

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Introduction

The Wisconsin Department of Natural Resources (DNR) cooperates with state, federal and tribal agencies to manage Lake Michigan and Lake Superior fisheries. Agencies stock a variety of salmonid species into both Great Lakes and stocking helps create, maintain and enhance world-class sport fishing opportunities. In Lake Michigan, salmonids are stocked extensively and fishing for Chinook salmon, coho salmon, steelhead, brown trout and lake trout drive a robust fishing industry. Anglers participate in this industry through several fishing methods on Lake Michigan including pier, shore, stream, personal boats, chartered trips and guided trips.

In the 2020 license year, the department conducted a large-scale survey of Great Lakes anglers to assess common fishing behavior and experiences, opinions on management of the Lake Michigan fishery, and angler awareness of certain ecological processes that impact the recreational fishery. Findings from that survey effort were summarized by Bradshaw & Leger (2023) and provided valuable information related to how anglers participate in Great Lakes fishing, their opinions on management considerations such as stocking, and how they engage with information that the department shares.

This 2023 license year study provided opportunity to repeat questions from the 2020 study both to build on those prior findings and investigate response's to management actions taken since the 2020 license year survey. Data were gathered from a representative sample of Great Lakes salmonid anglers, including those who may not typically participate in other available stakeholder engagement opportunities. This study aimed to assess the behavior, satisfaction and opinions of the general Great Lakes' angling population on specific management topics relevant to fishing and management for salmon and trout on Lake Michigan.

Methods

Questionnaire development

The questionnaire was developed in consultation with Fisheries Management staff and largely focused on repeating questions asked in the 2020 survey. Some questions were simplified or removed to make the survey more concise. Overall, questions focused on angler participation in Great Lakes fishing, fishing effort in the survey year, satisfaction with salmon and trout fishing in the survey year, and opinions on various management topics (e.g., bag limits, stocking goals). Questions placed particular emphasis on Lake Michigan angling and fisheries management for salmon and trout.

Sampling

Using the license year 2023 Great Lakes salmon and trout stamp purchases and 2-day Great Lakes license purchases, we drew a sample of 4,000 resident anglers and 1,500 non-resident anglers aged 18 and older. Samples for resident and non-resident anglers were drawn separately according to the proportional sales of annual (i.e., stamp) and 2-day licenses. This step ensured that the stamp or 2-day license authorities were not over or underrepresented in our data (Table 1).

The Wisconsin Conservation Patrons License (CPL) is a combination license that includes the Great Lakes salmon and trout stamp and was not included in the sampling pool as it contains many different privileges including hunting and fishing licenses, stamps and state parks admission. Surveys done by the DNR have found that most CPL holders do not use their Great Lakes trout and salmon authority (Beardmore 2022).

Table 1. Sample and response sizes by residency and fishing authority.

Sample		Population %	Sample (n)	Responses (n)
Resident	Stamp	97%	3903	708
	2-day	3%	97	13
Non-resident	Stamp	71%	1094	290
	2-day	29%	406	83
Total Sample			5,500	1,094

We programmed the questionnaire using Survey Monkey under a DNR license and invited anglers to complete the survey online by emails generated through the survey platform. Anglers were first contacted on 31 October 2023 and any non-respondents were sent reminder emails on 6 November and 11 November. The survey closed on 13 November.

Across all 5,500 individuals contacted, 410 email addresses were invalid or had opted out of all Survey Monkey emails. Twenty-eight percent of those who received the survey did not open any of the email contacts. Of those who opened emails, 1,094 completed the survey (Table 1). The adjusted response rate after accounting for non-deliverable (i.e. unopened and bounced email contacts) surveys was 30 percent. This response rate is consistent with other recent online surveys that the DNR has conducted of hunters and anglers in Wisconsin.

Analysis and Weighting

We compared the proportion of age and gender characteristics of respondents to the known characteristics of the license sample to evaluate potential response bias. We found that the proportion of female respondents and those under the age of 44 were

underrepresented compared to the license sample. Consequently, we applied an age-weight correction factor to the frequencies in this report.

All analyses were completed by Analysis Services staff using SPSS software. Statistically significant differences are noted where they were found.

Results

Section 1: Great Lakes Fishing Experience

Over the last five years, nine in ten respondents (88%) had done some fishing for salmon or trout on waters of either Lake Michigan or Lake Superior (Table 2). Most (67%) indicated that they had fished on Lake Michigan waters exclusively, ten percent had exclusively fished Lake Superior waters, and 11 percent had fished on both Great Lakes. Non-resident anglers were more likely than residents to have fished on Lake Superior ($p < 0.001$). Those who indicated they had not done any fishing on either Great Lake were asked basic demographic questions and then were done with the survey. These individuals may have fished on the Great Lakes for species other than salmon or trout or in some cases may purchase a stamp to support conservation efforts with no or little intention to participate.

Table 2. Proportion of anglers who fished for salmon or trout on Wisconsin's Great Lakes in the last 5 years.

	Resident	Non-resident	Overall
Lake Michigan only	71%	60%	67%
Lake Superior only	8%	15%	10%
Both Lake Michigan and Superior	8%	18%	11%
None	14%	7%	11%

$p < 0.001$

Great Lakes salmonid anglers averaged 12.5 years of experience and experience ranged from brand new in 2023 to some who have been doing this activity for 60 years (Table 3). Average years of experience was significantly ($p < 0.001$) higher among those purchasing a stamp paired with an annual license (13.2 years) than those purchasing a 2-day license (6.1 years).

Table 3. Angler experience fishing for Great Lakes salmon and trout between license types (annual vs. short-term). Anglers whose first experience was in 2023 were directed to answer zero.

Experience	Stamp	2-Day	Overall
Brand new in 2023 (0 years)		15%	33%
1-5 years		31%	39%
6-10 years		16%	15%
11-20 years		16%	6%
> 20 years		23%	6%
Mean years	13.2 years	6.1 years	12.5 years

p<0.001

Among stamp holders, 46 percent reported five or fewer years of experience, 16 percent each reported 6-10 or 11-20 years of experience, and nearly a quarter reported over 20 years of experience. Among 2-day license holders, 72 percent reported five or fewer years of experience with a third (33%) being brand new to this activity in 2023. For some anglers, a Great Lakes salmon charter trip may be a once-a-year experience and while they've done the activity for many years, they don't consider themselves independently experienced. Some direct comments from anglers include:

"I have gone king salmon fishing about 3 times in the last 15 years in Lake Michigan."

"I always get a charter so I cannot honestly say I have any experience."

"1 [year] but always went with a guide never fished by myself."

Section 2: Lake Michigan 2023 Fishing

Of those who had done any fishing on Lake Michigan in the last five years, 85 percent indicated they had done some salmon or trout fishing in 2023. These anglers were asked further questions about their season experience.

Accessing the Water

In all, 86 percent of anglers have personal, social or financial means to access Lake Michigan waters by boat (i.e., their own boat, a friend's or family member's, or a charter boat). One-third (34%) indicated that they own a fishing boat for use on Lake Michigan for recreational (32%) or charter (2%) purposes. Note that while we asked about ownership of charter fishing boats, the survey was not intended to assess the unique perspectives or experiences of charter boat captains. All respondents were asked to reflect only on their own personal recreational fishing experiences.

For both residents and non-residents, no differences were found in use of charter boats (38-41%) or a friend's or family member's boat (31-34%; Table 4). Non-residents

were more likely (33%) than residents (26%) to use a personal boat ($p<0.05$) and less likely than residents to use shorelines on tributaries ($p<0.01$) or open water ($p<0.05$). One-quarter of residents (26%) have fished for salmon or trout from Lake Michigan tributary shorelines compared to 15 percent of non-residents. Sixteen percent of resident anglers had fished open water (lake) shoreline compared to 10 percent of non-residents.

Table 4. Angler means of accessing waters of Lake Michigan.

Fishing Access	Resident	Non-resident	p-value
Shoreline, tributaries	24%	15%	0.005
Shoreline, open water	16%	10%	0.028
Docks or piers, open water	19%	15%	ns
My boat	26%	33%	0.024
Friend/family members boat	34%	31%	ns
Charter boat	38%	41%	ns

There are different opportunities to target Great Lakes salmon or trout throughout the year, but most anglers (68%) primarily use just one means of access. Of the listed options, one in five selected (19%) two means of access and 12 percent selected three or more means of access. When asked which single means of access they use most often, 32 percent indicated charter boats, 24 percent indicated a personal boat, 23 percent indicated a friend's or family member's boat (Figure 1). A total of one in five most often use non-boat means of access; shorelines of tributary streams and rivers being the most common (12%) of those non-boating options.

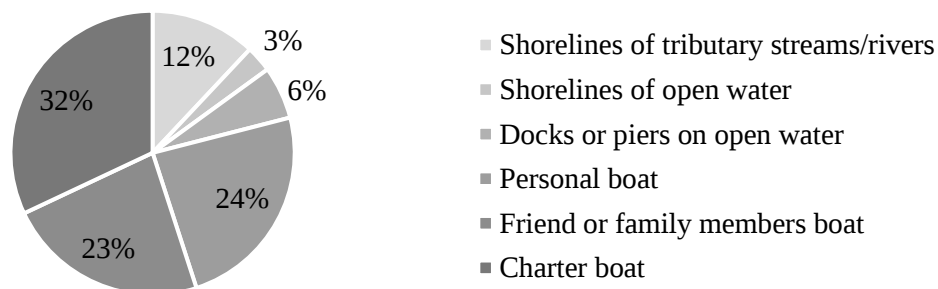


Figure 1. Angler reported most often used means of access for salmon and trout fishing on waters of Lake Michigan.

Among those who own a fishing boat for use on Lake Michigan, seven in ten (73%) keep it trailered and transport it to their boat launch of choice for use. Ten percent keep their boat docked at a private residence and 16 percent keep their boat docked at a marina. There are few locations where private docks on Lake Michigan waters are available and some anglers may have misunderstood this to mean private marinas or a private residence not on Lake Michigan waters.

Milwaukee, Sheboygan, Door and Kewaunee counties were the most commonly used to launch a boat or access tributary or lake shorelines (Table 5). Oconto and Brown were the least commonly used counties. Non-residents were most likely to use Door County (30%), which might suggest that Lake Michigan fishing is paired with other tourism in the area. In contrast, resident anglers were most likely to use Milwaukee, Sheboygan, and Kewaunee Counties.

Table 5. Angler's primary county used to access water or launch a boat on Lake Michigan.

Primary Access County	Residents	Non-residents	Overall
Milwaukee	21%	7%	16%
Sheboygan	18%	12%	16%
Door	7%	30%	15%
Kewaunee	13%	14%	14%
Kenosha	5%	21%	11%
Ozaukee	14%	2%	10%
Manitowoc	11%	5%	9%
Racine	8%	8%	8%
Marinette	2%	1%	1%
Brown	1%	<1%	1%
Oconto	0%	0%	0%
Total	100%	100%	100%

P<0.001

2023 Fishing Success and Satisfaction

When asked to report the approximate number of combined salmon and trout that they caught and harvested per trip in 2023, anglers averaged 3.5 salmonids caught per trip and 2.9 harvested. Three quarters (75th quartile) of anglers reported catching four or fewer salmonids per trip and harvested four or fewer. These averages are near identical to results from the 2020 iteration of this survey which found that anglers averaged 3.5 salmonids caught per trip and 2.8 harvested per trip (Bradshaw & Legler, 2023).

Figure 2 below presents the average reported salmonids caught and harvested per trip for each access group and the 95 percent confidence interval around the mean. Those who most commonly access the water by boat reported statistically ($p<0.001$) higher numbers of fish caught and fish harvested than those primarily accessing through shoreline or dock/piers. There were no significant differences in reported catch or harvest between the three types of boat access. There were no significant differences in reported catch or harvest between the three types of non-boat access (tributary stream/river shoreline, lake shoreline, or docks/piers).

For all access groups, the mean reported salmonids harvested was slightly lower than the mean reported salmonids caught per trip. Among those primarily accessing the water via shorelines of tributary streams or rivers, however, there was a noticeably

larger difference between mean catch and mean harvest per trip (Figure 2). This may suggest that those fishing from tributary streams or rivers are more likely to practice catch and release or are more selective about the fish they harvest. In contrast, those primarily accessing the water via charter boats had nearly identical averages for reported per-trip catch (3.8) and per-trip harvest (3.7). This suggests that those fishing from charter boats may be more inclined to keep all they catch (i.e., harvest motivated), which is somewhat unsurprising given the short-term nature and costs associated with hiring a charter guide.

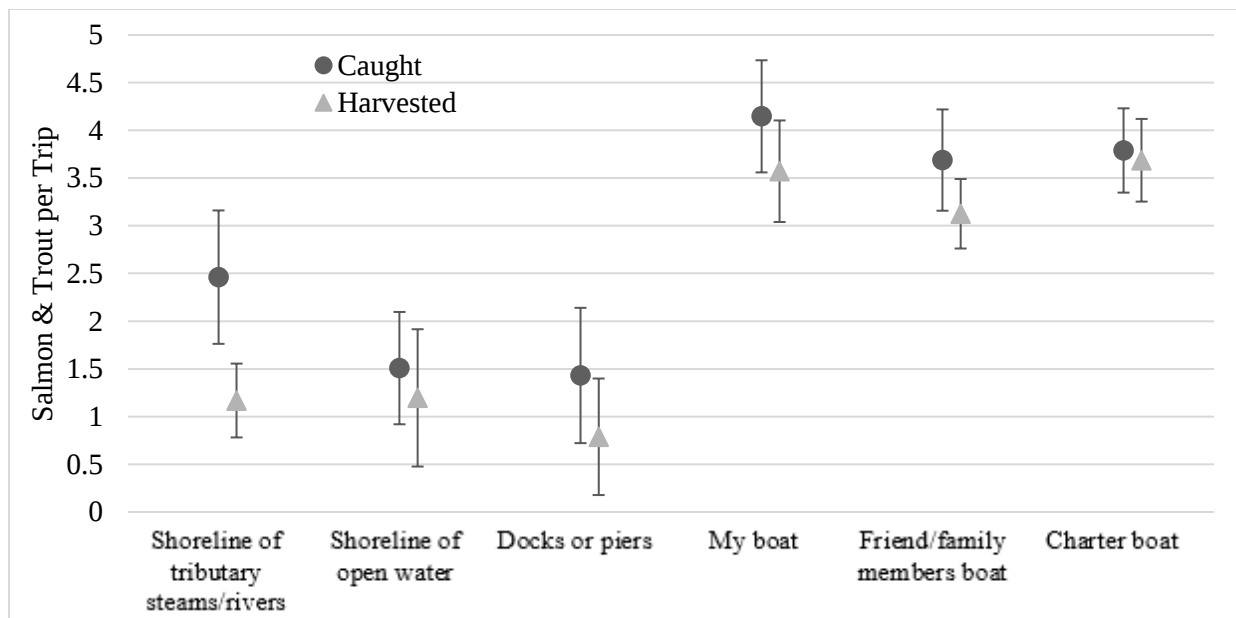


Figure 2. Mean (+/- 95% C.I.) salmon & trout caught (circle) and harvested (triangle) per trip in 2023 by most common means of access.

Reflecting on their 2023 experiences, half (55%) felt satisfied or very satisfied with the number of salmon or trout they caught per trip; 21 percent of anglers felt some level of dissatisfaction. Nearly three quarters of anglers (73%) felt satisfied or very satisfied with the size and condition of the salmonids they caught in 2023; seven percent felt some level of dissatisfaction. This is a notable increase in satisfaction when compared with findings of a prior iteration of this survey conducted in 2020 which found that 41 percent felt satisfied with the number they caught and 61 percent felt satisfied with the size and condition (Bradshaw and Legler 2023).

Those primarily accessing the water from a boat reported higher fishing success and we found that they were significantly more likely to feel satisfied with their experiences. A majority of those primarily fishing from a boat felt satisfied with the number caught (54- 64%; Figure 3) and were satisfied with the size and condition of salmonids caught per trip (73-80%; Figure 4).

Those accessing the water through tributary streams/rivers expressed high satisfaction with the size and condition of the salmonids they caught (67%); 10

percent felt some level of dissatisfaction with size and condition (Figure 4). Satisfaction with the number they caught, however, was lower (43%) for those primarily using tributary streams/rivers and 30 percent felt dissatisfied with the number they caught (Figure 3).

Anglers who primarily access the water on shorelines of open water were similarly likely to feel dissatisfied (42%) or satisfied (37%) with the number of salmonids caught (Figure 3). We found that a high proportion of these anglers (38%) reported zero salmon or trout caught in 2023 (Figure 4). For those who had opinions on the size or condition of salmonids caught in 2023, 72 percent felt satisfied and 6 percent felt dissatisfied. Nearly a quarter (22%) felt neither satisfied nor dissatisfied with the size and condition of their 2023 catch.

A majority of those fishing from docks or piers on open water felt dissatisfied with the number of salmon or trout caught per trip (57%; Figure 3). Summaries of their reported catch per trip shows that 48 percent of dock and pier anglers caught zero salmon or trout in 2023, which likely explains why a high proportion of those anglers (43%) felt neutral about the size and condition of salmonids caught (Figure 4). For those who did have opinions on the size and condition of salmonids caught in 2023, 19 percent felt dissatisfied and 38 percent felt satisfied.

Questionnaire design and sample sizes from the 2020 iteration of this survey limit our ability to make direct or statistical comparisons of satisfaction by primary means of access. We can, however, point to some general connections between 2020 findings (Bradshaw and Legler 2023) and 2023 (current study) findings. Generally, both studies found that groups with higher reported fishing success (i.e., those fishing from a boat) reported higher levels of satisfaction. Levels of dissatisfaction with catch among those fishing from shore, stream, docks or piers (as a combined group) decreased slightly from 50 percent dissatisfaction in 2020 (Bradshaw & Legler 2023) to 43 percent dissatisfaction in this study. Levels of satisfaction with size and condition of fish caught among those fishing from shore, stream, docks or piers (as a combined group) shifted very slightly from 16 percent dissatisfied and 49 percent satisfied with size and condition in 2020 to 12 percent dissatisfied and 51 percent satisfied with size and condition in 2023.

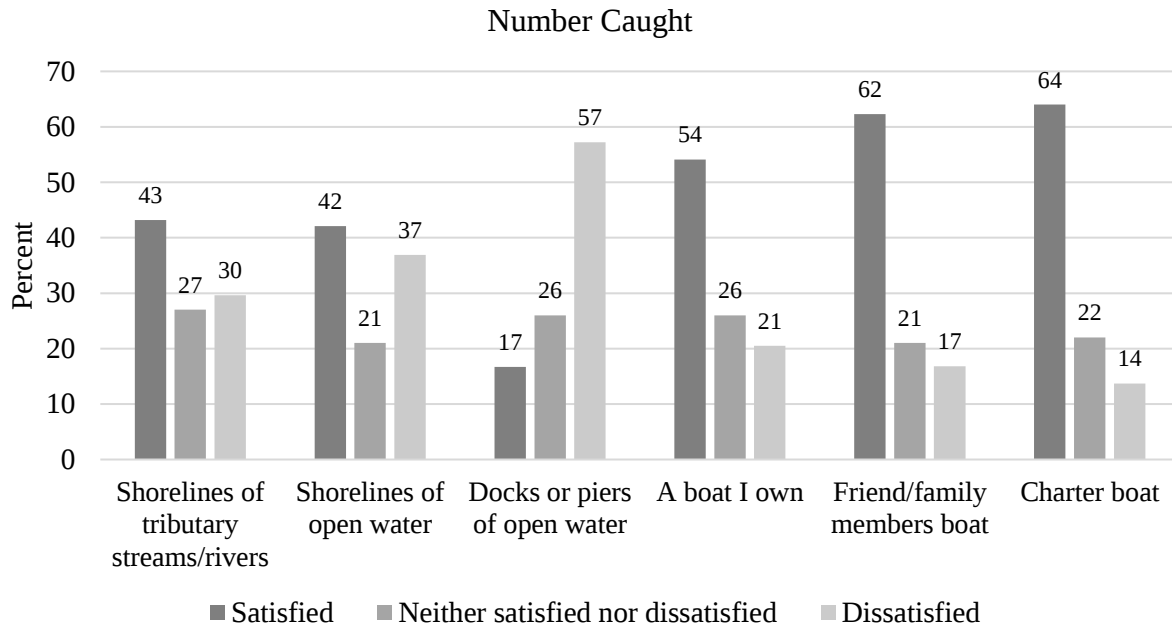


Figure 3. Angler satisfaction level with the number of salmon or trout caught per trip in 2023. Chi-squared $p < 0.001$.

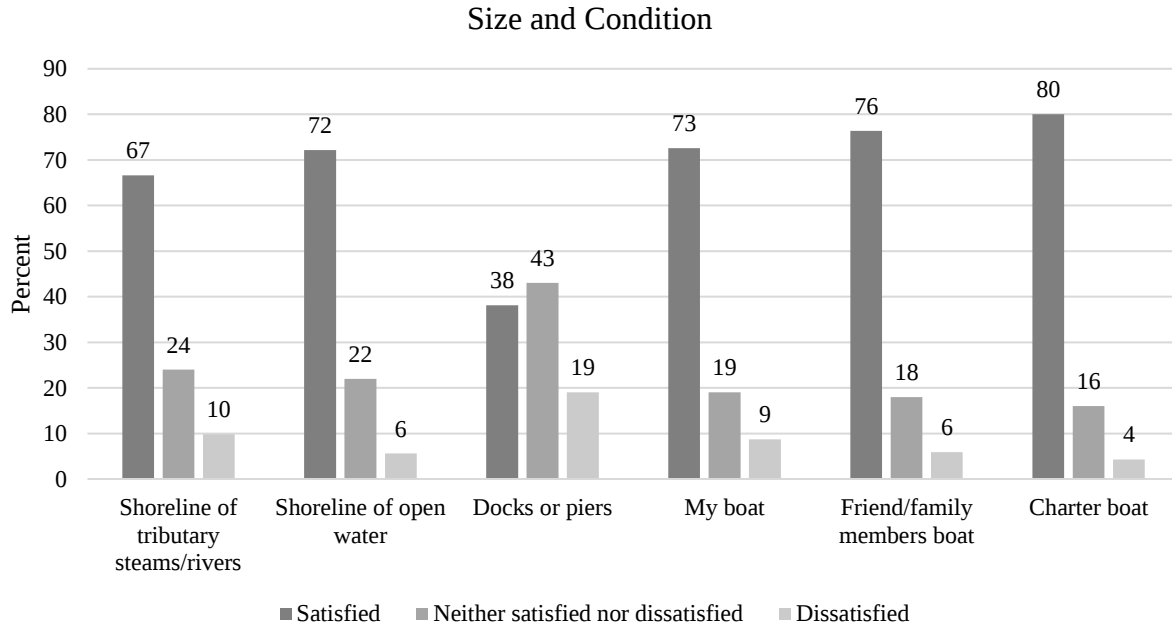


Figure 4. Angler satisfaction with the size and condition of salmon and trout caught per trip in 2023. Chi-squared $p < 0.001$.

Section 3: Species Preferences

We asked all anglers (including those who may not have fished Lake Michigan in 2023) to consider all the types of salmon or trout they have targeted on waters of Lake Michigan in the last three years (2020-2023). For both 2-day license holders and stamp/annual license holders, the most commonly targeted salmonids were coho salmon (74%), Chinook salmon (73%), and steelhead/rainbow trout (65%; Table 6). More than one-third had targeted lake trout (37%) and brown trout (35%). Two percent had not targeted any of these species in the last three years. These individuals may have purchased a short-term license but been unable to use it or purchased a stamp purely to support conservation without intention to use the authority.

Those buying a stamp/annual license for fishing were significantly more likely (38%) than 2-day license holders (9%) to have targeted brown trout in the last three years ($p < 0.001$). Stamp/annual license holders, however, were less likely (36%) than 2-day license holders (50%) to have targeted lake trout in recent years ($p < 0.01$). No other significant differences by license type were found in the types of salmonids targeted.

Table 6. Proportion of anglers who spent time targeting types of salmonids on Lake Michigan over the last three years (2020-2023).

Species	2-day	Stamp	Overall	p-value
Brown trout	9%	38%	35%	0.000
Chinook salmon	67%	74%	73%	ns
Coho salmon	72%	74%	74%	ns
Lake trout	50%	36%	37%	0.017
Steelhead/rainbow trout	56%	66%	65%	ns
None	3%	1%	2%	ns

Recent history of targeting a species is echoed in angler preference for catching certain species, but may also reflect angler access to certain species. Anglers targeting Chinook (80%) and coho salmon (77%) expressed a high or extremely high preference for catching them (Table 7). Even among those who have not targeted salmon in the last three years, 38-47 percent indicated a high to extremely high preference for catching them. Among those who have recently targeted steelhead, 68 percent reported a high-extremely high preference for them and even among those who have not recently targeted steelhead, 35 percent hold a high-extremely high preference for catching them. Overall, this suggests that an even higher proportion of anglers would target these species if the opportunity (e.g., time, seasonality, water access) were available to them.

Among those targeting brown trout, half (53%) held a high-extremely high preference for catching them and 27 percent had a moderate preference for them (Table 7).

Among those who have not recently targeted brown trout, preference for catching them was somewhat lower; 27 percent had a low preference and 29 percent had a moderate preference for catching brown trout.

Table 7. Angler preferences for catching types of Lake Michigan salmon and trout. High and extremely high response categories were combined for analysis.

Species	Targeted in last three years?	Preference for Catching			
		Low	Moderate	High or Extremely high	Makes no difference
Chinook salmon	No	13%	23%	38%	28%
	Yes	1%	10%	80%	10%
Coho salmon	No	17%	18%	47%	18%
	Yes	1%	9%	77%	13%
Steelhead/ rainbow trout	No	14%	30%	35%	21%
	Yes	2%	18%	68%	13%
Lake trout	No	45%	25%	14%	17%
	Yes	16%	32%	31%	20%
Brown trout	No	27%	29%	19%	25%
	Yes	7%	27%	53%	13%

Among those who targeted lake trout in the last three years, less than one-third (31%) indicated a high or extremely high preference for them; 32 percent reported a moderate preference for them and 17 percent reported a low preference for catching them (Table 7). Among those who had not recently targeted lake trout, 45 percent reported a low preference for catching them. Lake trout are a species with mixed popularity among anglers and these results may be explained by anecdotal evidence that some anglers choose to target them only under certain conditions. In order to better understand angler opinions on catching lake trout and how that impacts harvest of lake trout from Lake Michigan, we asked survey respondents additional questions about their lake trout harvest behaviors.

Overall, roughly half of Great Lakes anglers (52%) would choose to harvest a lake trout under any conditions, three in ten (30%) would only harvest if other salmon or trout species weren't accessible (e.g., not biting, lake conditions), and two in ten (18%) would never choose to harvest a lake trout (Table 8). Probability of harvesting lake trout, however, varied significantly ($p < 0.001$) by the primary means that anglers access Lake Michigan.

- A high majority of those fishing from charter boats (70%) would choose to harvest lake trout under any conditions and these anglers were the least likely

(7%) of all access groups to indicate they would never choose to harvest a lake trout.

- Half of those fishing shorelines of open water (50%) and docks or piers on open water (55%) would choose to harvest lake trout under any conditions. The remaining shoreline anglers were more likely to never harvest (33%) than conditionally harvest lake trout (17%) while the remaining dock/pier anglers were equally likely to never harvest (23%) lake trout versus conditionally harvest (23%)
- Slightly less than half of those using a friend/family member's boat (45%) and those using a personal boat (43%) reported that they would harvest lake trout under any conditions. These angling access groups were also more likely than other groups to feel they would only harvest lake trout if other species weren't accessible (34-39%).
- Among those fishing from shorelines of tributaries, four in ten (41%) would harvest under any conditions, 25 percent would harvest only if other salmonids weren't accessible, and one third (34%) indicated they would never harvest a lake trout.

Table 8. Conditions under which anglers would harvest lake trout, by most common means of accessing the water.

	Never	Only if other salmonids weren't accessible	Any conditions	Total
Shorelines of tributary streams/rivers	34%	25%	41%	100%
Shorelines of open water	33%	17%	50%	100%
Docks or piers on open water	23%	23%	55%	100%
A boat that I own	22%	34%	43%	100%
A friend or family member's boat	16%	39%	45%	100%
A charter boat company	7%	23%	70%	100%
Overall	18%	30%	52%	100%

p<0.001

Current regulations allow anglers to harvest up to five combined salmon or trout per day and harvest behaviors and preference may be better understood by also examining how often anglers are achieving a "full bag." While seasons throughout the year and each trip an angler takes (e.g., duration and location of trip) likely introduce variation in harvest success, anglers were asked how often they generally harvest a full bag in any combination and how often they harvest between one and five lake trout.

Among those who have targeted lake trout and primarily fish from shore, streams, docks or piers (i.e., not on a boat), having any number of lake trout in your bag seems to be uncommon (Table 9). Nearly half (47%) reported that their bag never contains even one lake trout and, as the number of potential lake trout in one's bag increased, this never response increased and culminated with 77 percent who never have a full bag of lake trout (five fish). Notably, no one in this group indicated that they often or always have a lake trout in their bag.

Among those who have targeted lake trout and primarily fish from boats (either their own, a friend/family member's, or charter), lake trout more commonly make up a portion of one's bag (Table 9). Four in ten (39%) reported that they occasionally harvest one lake trout and one-quarter (28%) often harvest one lake trout. Forty-four percent occasionally harvest two lake trout and three in ten (31%) occasionally harvest three lake trout. A majority (54-61%) reported that their bag never contains more than three lake trout. Very few indicated that they always have a lake trout in their bag (2-4%).

Table 9. Frequency of harvesting various numbers of lake trout among anglers who had spent time targeting lake trout in the last three years.

	Never	Rarely	Occasionally	Often	Always
Primarily shore, stream, dock, pier access					
1 Lake trout	47%	29%	24%	0%	0%
2 Lake trout	47%	35%	18%	0%	0%
3 Lake trout	63%	31%	6%	0%	0%
4 Lake trout	75%	25%	0%	0%	0%
5 Lake trout	77%	24%	0%	0%	0%
Primarily boat access					
1 Lake trout	11%	18%	39%	28%	4%
2 Lake trout	20%	19%	44%	15%	3%
3 Lake trout	39%	23%	31%	6%	2%
4 Lake trout	54%	17%	22%	6%	2%
5 Lake trout	61%	13%	19%	5%	2%

Results also suggest that harvesting a full bag of five fish in any combination may not be a common experience. Two-thirds of those fishing from shorelines of tributary streams (66%), or docks and piers on open water (65%) report that they never harvest a full bag of fish in any combination and an additional one-quarter (24-25%) report that they rarely harvest a full bag (Table 10).

While those accessing the water from a boat generally reported higher average per-trip catch and harvest (See Figure 2), few of these anglers would say that they often

or always harvest a full bag. Four in ten charter boat anglers (39%) report that they never harvest a full bag, 28 percent rarely do and 26 percent occasionally do. Among those fishing primarily from a friend/family member's boat, 30 percent never harvest a full bag, 35 percent rarely do, and 28 percent occasionally do. Those fishing from a personal boat were the least likely to report that they never harvest a full bag (19%); 38 percent rarely do, 30 percent occasionally do, and 12 percent often harvest a full bag of fish.

Table 10. Frequency that anglers harvest a full bag (5 fish) on an outing.

	Never	Rarely	Occasionally	Often	Always
Shoreline of tributary streams/ river	66%	24%	8%	3%	0%
Docks or piers of open water	65%	25%	8%	3%	0%
Shorelines of open water	50%	39%	11%	0%	0%
Charter boat	39%	28%	26%	7%	1%
Friend/family members boat	30%	35%	28%	6%	1%
My boat	19%	38%	30%	12%	1%
Overall	37%	32%	24%	7%	1%

Management Preferences

Overall, Lake Michigan anglers felt satisfied with the DNR's management of the fishery over the past three years (2020-2023). Half (51%) felt satisfied and another 15 percent felt very satisfied. One-quarter (24%) felt neutral about the DNR's management, 8 percent felt dissatisfied and two percent felt very dissatisfied. Figure 5 compares these results to findings from a 2020 survey of the same population, asking about satisfaction with the prior five years (2015-2020) of management (Bradshaw & Legler, 2023). Differences were small in magnitude but show a slight increase (6%) in satisfaction and slight decrease in dissatisfaction (4%) and neutral (2%) opinions between the two study years.

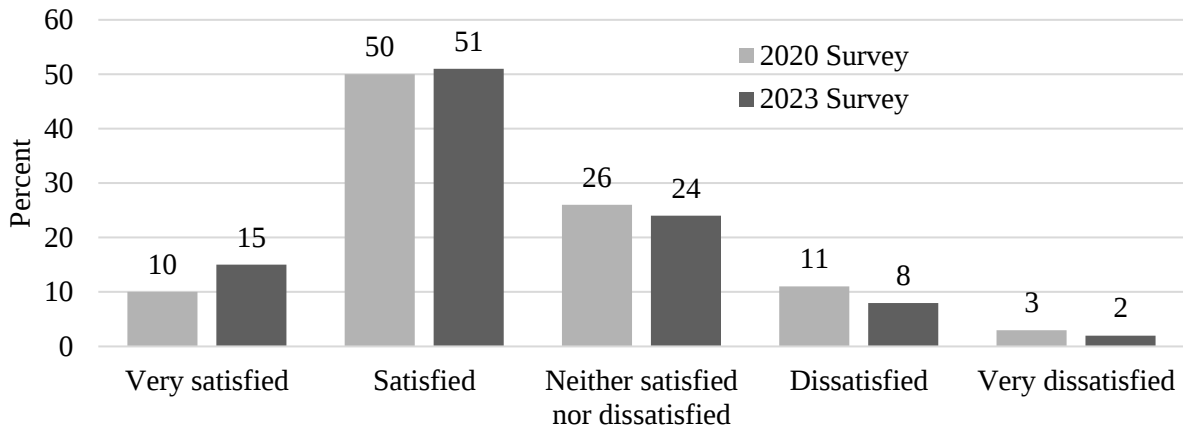


Figure 5. Comparison of angler satisfaction with DNR management of the Lake Michigan fishery asked on this survey (2020-2023 experiences) and prior survey asking about 2015-2020 satisfaction (Bradshaw & Legler, 2023).

Table 11 presents satisfaction with management of the fishery separately for anglers accessing the water in different ways. While generally more anglers felt satisfied than dissatisfied, there are notably differences in level of satisfaction. Those fishing from docks/piers on open water were the only access group for which less than half felt satisfied (45%). Those primarily fishing from charter boats were most likely to feel satisfied (74%) compared to all other groups (45-68% satisfied). Those fishing shorelines on open water and docks/piers on open water were the most likely to feel dissatisfied (21%) with DNR's management of the fishery.

Table 11. Angler satisfaction with DNR's management of the Lake Michigan fishery compared across primary means of access.

	Satisfied	Neither	Dissatisfied
Shorelines of tributary streams/rivers	60%	28%	13%
Shorelines of open water	63%	16%	21%
Docks or piers on open water	45%	34%	21%
A boat that I own	68%	18%	14%
A friend or family member's boat	64%	28%	8%
A charter boat company	74%	22%	5%
Overall	66%	24%	10%

We asked anglers for their opinion on the importance of seven different management considerations for the Lake Michigan fishery. As was found in a 2020 iteration of this study (Bradshaw & Legler 2023), very few Lake Michigan anglers felt any of these considerations were outright unimportant. We can glean the most information on anglers' management priorities by comparing the proportions of very important and somewhat important responses.

A majority of Lake Michigan anglers felt that maintaining Lake Michigan as a top-level sport fishery (66%), science and data (57%), hatchery capabilities (57%), collaboration with other agencies (53%), and balancing predators and prey for productivity (53%) were very important (Figure 6). When combined with somewhat important responses, these management considerations are nearly identical in relative overall importance to Great Lakes anglers.

Fewer though still a sizeable proportion of anglers rated public input (40%), restoration of native fish species (34%), and a diversity of predator species (32%) as very important considerations. An additional 29-40 percent felt these considerations were somewhat important (Figure 6). One in five anglers (22%) felt that restoration of native fish species was somewhat or very unimportant, the highest unimportance level of any management consideration listed.

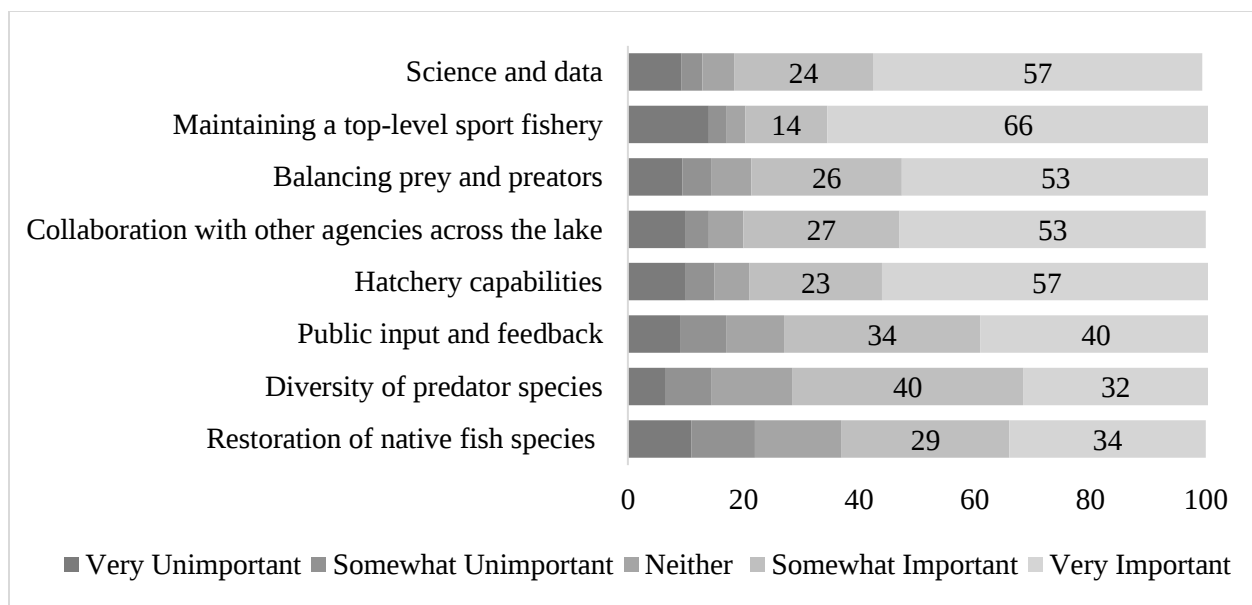


Figure 6. Angler opinions on importance of considerations for management.

At the time of survey development, the forthcoming stocking goals (2024 or beyond) were not yet available. We provided anglers with the recent past 2021-2023 stocking goals by species for Lake Michigan and asked their opinions of these goals. In the following tables we present these opinions overall between this survey and results from a 2020 iteration of the same question (Table 12), compared among 2023 respondents by means of access (Table 13), and compared among 2023 respondents by history of targeting a species (Table 14).

Overall, very few 2023 respondents felt that stocking goals were too high (2-10%) and the most common opinions were that recent individual stocking goals were about right or that anglers had no opinion (Table 12). A plurality of anglers felt stocking goals were about right for Chinook salmon (48%), steelhead (40%), brown trout (40%), coho salmon (39%), and lake trout (38%). Anglers were a little more likely to hold no opinion (40%) about brook trout stocking goals than to feel goals were about right (32%). Sentiment that stocking goals were too low ranged from 18 to 34 percent across species stocking goals and was highest for coho salmon (34%) and steelhead (31%).

These overall opinions of stocking goals are highly similar to the distribution of opinions observed in the 2020 iteration of this survey (Bradshaw and Legler 2023). The prior survey asked anglers their opinion of what was at the time the forthcoming 2021-2023 stocking goals. Specifically, the prior survey found that a plurality of anglers felt the goals were about right for all species except brook trout, for which the plurality had no opinion. If anything, comparisons of 2020 survey findings and these 2023 survey findings demonstrate a slight decrease in no opinion responses and a slight increase in about right and too low responses. However, it may be easier for anglers to reflect on the past than to have an opinion about future stocking goals.

Table 12. Angler opinions on 2021-2023 stocking goals for Lake Michigan salmon and trout compared between current survey (2023) results and 2020 survey results from Bradshaw & Legler 2023.

Species	Survey Year	Too Low	About Right	Too High	No Opinion/ Unsure
Chinook salmon	2023	22%	48%	4%	26%
	2020	18%	46%	5%	31%
Coho salmon	2023	34%	39%	2%	26%
	2020	23%	43%	2%	31%
Steelhead	2023	31%	40%	1%	28%
	2020	23%	43%	2%	33%
Brown trout	2023	27%	40%	3%	30%
	2020	20%	42%	2%	36%
Lake trout	2023	18%	38%	10%	35%
	2020	19%	39%	5%	38%
Brook trout	2023	27%	32%	2%	40%
	2020	21%	35%	1%	43%

When comparing stocking goal opinion between those primarily fishing from a boat versus those primarily fishing from a stream, shore, dock or pier (i.e. non-boat), we found some key differences (Table 13). Those not fishing from a boat were more likely (11%) than boating anglers (3%) to feel Chinook salmon stocking was too high. Non-boating anglers were also more likely than boating anglers to feel steelhead, brown trout, lake trout, and brook trout stocking was too low. Notably, one of only two

instances of majority opinion found in these stocking goal analyses (Tables 12-14) is among non-boating angler opinion of steelhead stocking goals where 57 percent agreed it was too low.

Ultimately, differences in opinion between shore and boating anglers are a reflection of the species they have access to and choose to target. Table 14 demonstrates that anglers who had not targeted a species in their last three years of Lake Michigan fishing were substantially more likely to hold no opinion on 2021-2023 stocking goals. Among those who had targeted coho salmon, steelhead, or brown trout, we found that nearly equal proportions felt the stocking goals were about right (37-39%) as did felt they were too low (37-42%). Half (52%) of those who had recently targeted Chinook salmon felt the species stocking goal was about right. Very few anglers (1-6%) who had recently targeted a species felt that stocking goals were too high.

Table 13. Angler opinion of stocking goals for Lake Michigan salmon and trout compared by means of access. Non-boating access includes shore, stream, dock, or pier access on Lake Michigan or tributaries. Boating access includes a personal, a friend's or family member's boat, or a charter boat.

Species	Primary Access	Too Low	About Right	Too High	No Opinion/ Unsure	p-value
Chinook salmon	Non-boat	21%	45%	11%	24%	0.004
	Boating	23%	48%	3%	26%	
Coho salmon	Non-boat	38%	36%	3%	23%	ns
	Boating	33%	39%	1%	27%	
Steelhead	Non-boat	57%	23%	0%	20%	0.000
	Boating	27%	43%	1%	29%	
Brown trout	Non-boat	43%	37%	2%	18%	0.002
	Boating	25%	40%	3%	32%	
Lake trout	Non-boat	33%	28%	7%	33%	0.001
	Boating	16%	40%	10%	35%	
Brook trout	Non-boat	47%	20%	2%	31%	0.000
	Boating	23%	34%	2%	42%	

Table 14. Angler opinions of stocking goals for Lake Michigan salmon and trout for 2021-2023 compared between anglers who did and did not target specific species. We did not ask about history of targeting brook trout, so it is not included here.

Species	Targeted species?	Too Low	About Right	Too High	No Opinion/ Unsure	p-value
Chinook salmon	No	15%	38%	6%	41%	0.000
	Yes	25%	52%	3%	21%	
Coho salmon	No	24%	39%	5%	33%	0.000
	Yes	37%	39%	1%	24%	
Steelhead	No	16%	47%	2%	36%	0.000
	Yes	39%	37%	1%	24%	
Brown trout	No	19%	42%	3%	36%	0.000
	Yes	42%	37%	2%	19%	
Lake trout	No	16%	37%	12%	36%	ns
	Yes	21%	41%	6%	33%	

Section 4: Communication, Overall Concern and Stamp Support

We asked all respondents, regardless of whether they had recently fished on Lake Michigan, the extent to which they had followed news over the past three years on Lake Michigan salmon and trout stocking efforts. Generally, seven in ten respondents (72%) had paid some degree of attention to stocking news but few had paid a lot (9%) of attention (Table 15). Most of those who had only fished on Lake Superior in recent years indicated they followed none (62%) of the Lake Michigan stocking news. Most of those who had fished on Lake Michigan indicated they had followed the news a little (38-41%) or some (29-31%). Lake Superior fishing is unaffected by stocking on Lake Michigan, so these observed differences are somewhat expected.

Anglers who recently fished both of Wisconsin's Great Lakes were twice as likely (16%) to indicate paying a lot of attention to stocking news relative to other groups (3-8%). Given the interest in fishing both Great Lakes, this finding may be an indication of general fishing avidity and a likelihood to follow any information about fishing.

Table 15. Degree that anglers followed stocking news for Lake Michigan over the last three years summarized overall and by anglers who fished on Lake Michigan, Lake Superior or both.

	None	A little	Some	A lot
Lake Michigan only	25%	38%	29%	8%
Lake Superior only	62%	28%	7%	3%
Both Lake Michigan and Superior	12%	41%	31%	16%
Overall	28%	37%	26%	9%

p<0.001

Those anglers who indicated they had paid any amount of attention to Lake Michigan stocking news were further asked about the information sources they rely on. There are numerous opportunities for Great Lakes anglers to receive information and provide feedback to the DNR Fisheries Management program. A majority of anglers get information through word of mouth (70%) and/or print newspapers or magazines (50%; Table 16). Nearly half use the DNR websites (44%) and follow information on social media (46%). Note that social media in this case does not necessarily mean DNR branded social media.

Public meetings or presentations remain among the least used resources (Bradshaw & Legler 2023). One in ten Great Lakes anglers (10%) have watched an online presentation by the DNR, five percent have participated in Lake Michigan Fisheries Forum, and four percent each have attended a DNR Fisheries Management public meeting or attended/watched online a Great Lakes Fisheries Commission meeting.

Two potential information sources added into this survey based on results from Bradshaw and Legler (2023) were attendance at local fishing club meetings and reading fishing club newsletters. While just 15 percent indicated they had attended a fishing club meeting, 25 percent have read fishing club newsletters. This is nearly double the proportion of respondents that indicated they read DNR updates via email (14%) and suggests that collaborating with fishing clubs to share updates about Lake Michigan management within their newsletters may reach a wider audience than through the DNR GovDelivery emails.

Anglers also specified “other” news sources in an open comment line. Written responses included conversations with DNR staff, lake-link.com, podcasts, radio shows, Wisconsin Outdoor News, and YouTube.

Table 16. News sources used by Lake Michigan anglers over the last 3 years (excludes anglers who didn't follow any news about stocking on Lake Michigan).

%	Information Source
70	Conversations with other anglers (e.g., friends, guides, at bait shops)
50	I have read newspaper or magazine articles
46	I follow information on social media (e.g. Facebook, Twitter)
44	I searched on DNR websites
25	I have read fishing club newsletters
15	I have attended a local fishing club meeting
14	I subscribe to and read DNR updates via email
10	I have watched an online presentation by the DNR
5	I have participated in the Lake Michigan Fisheries Forum
4	I have attended a DNR fisheries management public meeting
4	I attended a meeting or watched online presentation(s) with the Great Lakes Fishery Commission
5	Other

All Great Lakes anglers, regardless of how much they followed stocking news, were asked their opinion of the DNR's communications over the last three years regarding science and data that informs management on Lake Michigan. Few anglers felt that DNR had done the extremes of a very poor (4%) or a very good job (1%) and two-thirds (67%) felt unsure (Table 17). Those who had followed little or none of the Lake Michigan stocking news in the last three years were more likely (72-83%) than those who followed some or a lot of the news (31-58%) to hold no opinion on DNR communications ($p<0.001$).

Among those who followed some stocking news, 26 percent felt DNR communications were good and 11 percent felt they were poor. Among anglers who follow a lot of stocking news, 35 percent felt DNR communications were good and 28 percent felt DNR communications were poor. However, few Great Lakes anglers (9%) indicated they follow a lot of news (See Table 15).

Table 17. Angler opinions of communication by DNR about Lake Michigan science compared across anglers with different amounts of media/news interaction or use.

	Very Poor	Poor	Unsure	Good	Very good
None	5%	6%	83%	5%	1%
A little	3%	8%	72%	17%	1%
Some	4%	11%	58%	26%	2%
A lot	3%	28%	31%	35%	4%
Total	4%	10%	67%	18%	1%

$p<0.001$

In early 2023, prior to this study, the department hosted a series of meetings with representatives from groups such as commercial fishers, processors, charter captains, Sea Grant and others in the Lake Michigan Community. The purpose of these meetings was to share data and understand the range of opinions regarding a potential lake trout commercial fishery. The public was able to attend both in-person and virtually and we used this survey as an opportunity to understand widespread awareness and participation among general Great Lakes anglers.

Overall, 64 percent of Great Lakes anglers were not aware of these meetings, one quarter (25%) had heard about the meetings but did not follow the news or participate, and only six percent had heard about it and followed the news or participated (Figure 7). An additional five percent couldn't recall one way or the other. We found no significant difference in responses between Lake Superior versus Lake Michigan anglers.

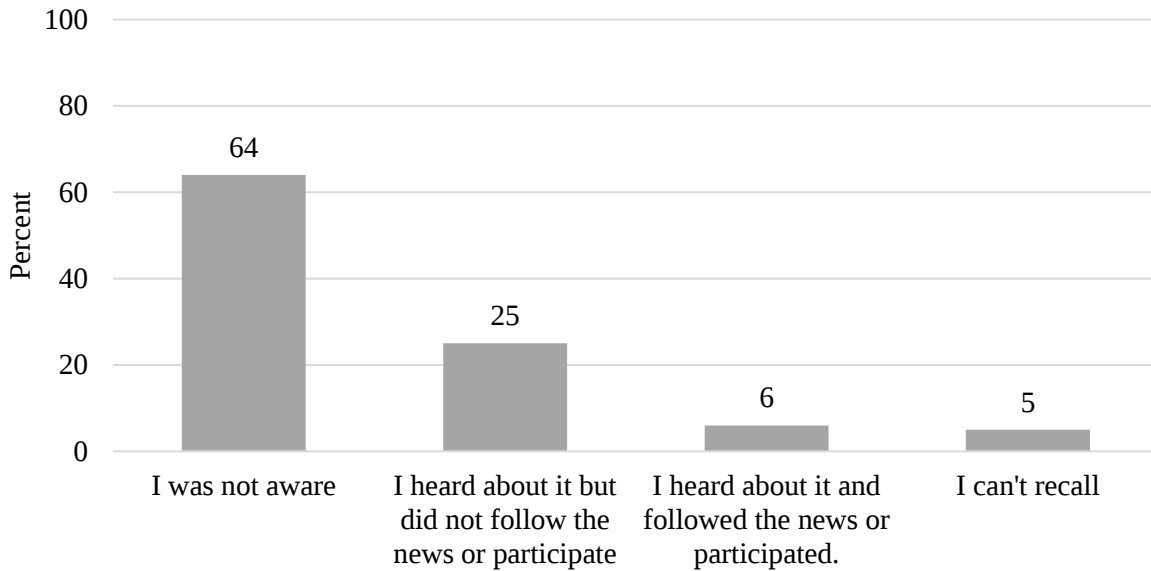


Figure 7. Great Lakes anglers' awareness and engagement with 2023 series of meetings regarding a commercial lake trout fishery.

Among those who reported doing any fishing for lake trout in the last three years, two-thirds (65%) were not aware of the 2023 series of meetings (Table 18). They were no more likely to be aware of these meetings (31%) as those who had not targeted lake trout (32%). They were, however, more likely to have followed the news regarding these meetings or participated (10%) than those who had not targeted lake trout (5%; $p < 0.05$).

Awareness of and participation in this series of stakeholder meetings was significantly higher among those anglers who indicated they were members in a fishing related organization, association or club ($p < 0.001$) and among anglers who indicated they had followed recent Lake Michigan stocking news ($p < 0.001$). While these groups may represent a smaller proportion of the overall Great Lakes angler population, this gives an indication of the angling audiences that engaged with this series of meetings.

Table 18. Awareness and engagement with 2023 series of meetings regarding a commercial lake trout fishery. Results compare responses by Lake Michigan anglers who had or had not targeted lake trout in the last three year, by angler membership in fishing related organizations or clubs, and by degree that anglers followed other stocking related news.

	Not aware	Aware; did not follow news or participate	Aware; followed news or participated	Can't recall	p-value
Recent lake trout fishing?					
Yes (n= 209)	65%	21%	10%	5%	0.05
No (n=370)	61%	27%	5%	7%	
Member in any fishing related org. or club?					
Yes (n= 114)	36%	37%	23%	4%	0.000
No (n= 673)	68%	23%	3%	6%	
Followed news related to Lake Michigan stocking?					
Some or A lot (n= 278)	41%	37%	15%	6%	0.000
A little (n= 295)	69%	23%	1%	6%	
None (n=222)	86%	11%	0%	4%	

Angler Concern

A majority of Great Lakes anglers (60%) feel some degree of overall concern for the long-term sustainability of the Lake Michigan fishery; 38 percent were somewhat concerned and 22 percent were very concerned (Table 19). As anglers gain experience fishing for salmon or trout on the Great Lakes, the proportion of unconcerned opinions remains relatively stable (13-15%), but anglers may shift from feeling neutral to some degree of concerned. Those with 1-5 years of experience were twice as likely to feel neutral (35%) as those with over 20 years of experience (17%) and half as likely to feel very concerned (16% versus 30%, relatively).

Table 19. Overall concern for long-term sustainability of Lake Michigan fishery across angler experience fishing for salmon/trout on the Great Lakes.

Degree of overall concern for long-term sustainability	Great lakes salmon/trout fishing experience				Overall
	1- 5 years	6-10 years	11-20 years	21+ years	
Very unconcerned	4%	3%	3%	4%	4%
Somewhat unconcerned	10%	11%	10%	11%	11%
Neutral	35%	22%	25%	17%	26%
Somewhat concerned	35%	46%	34%	38%	38%
Very concerned	16%	18%	28%	30%	22%

Stamp Fee Support

The survey also gauged potential support for an increase in the Great Lake salmon and trout stamp fee, which would be used in accordance with state statute to supplement and enhance the existing trout and salmon rearing and stocking program for the Great Lakes watershed. A slight majority of anglers (56%) would support or strongly support this change if a proposal was brought forward in the state budget and 28 percent felt neutral about fee increases (Figure 8). Fewer than one in five (17%) would outright oppose a fee increase. Note that this survey question did not provide or propose any amount for a potential stamp fee increase.

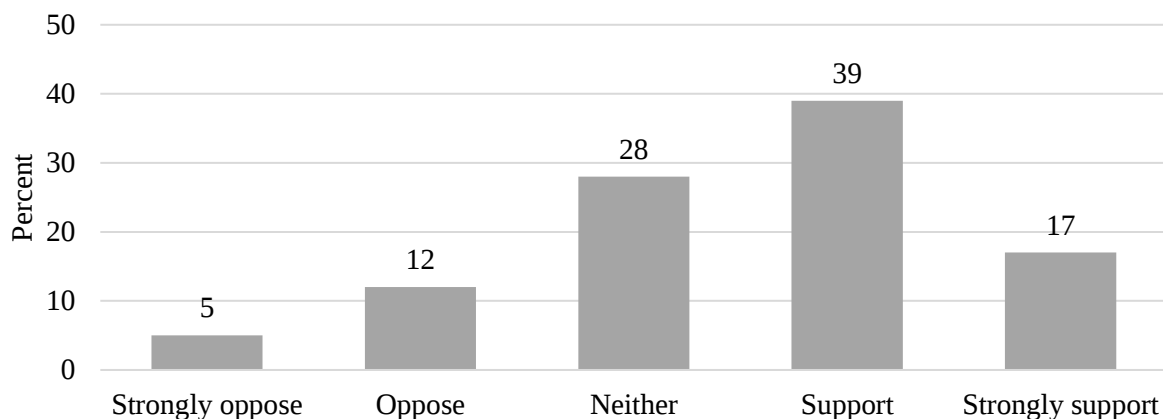


Figure 8. Angler support for Great Lakes salmon and trout stamp fee increase.

Section 5: Angler Demographics

Most Great Lakes anglers (85%) are men; 13 percent identified as women, less than one percent as non-binary and one percent preferred not to share their gender identity. Great Lakes anglers tend to skew older in their age distribution. Five percent were under the age of 25 and 11 percent were 25-34 years old. Roughly 20 percent each fell into the age groups of 35-44, 45-54, 55-64 and 65+ years old (Figure 9).

Non-resident anglers traveled from 29 other states but the majority travel from Minnesota (45%) and Illinois (27%). Resident anglers travel from across the state and respondents represent primary addresses in 66 of Wisconsin's 72 counties. A high proportion (51%) of resident Great Lakes anglers live in one of the eleven counties that borders Lake Michigan.

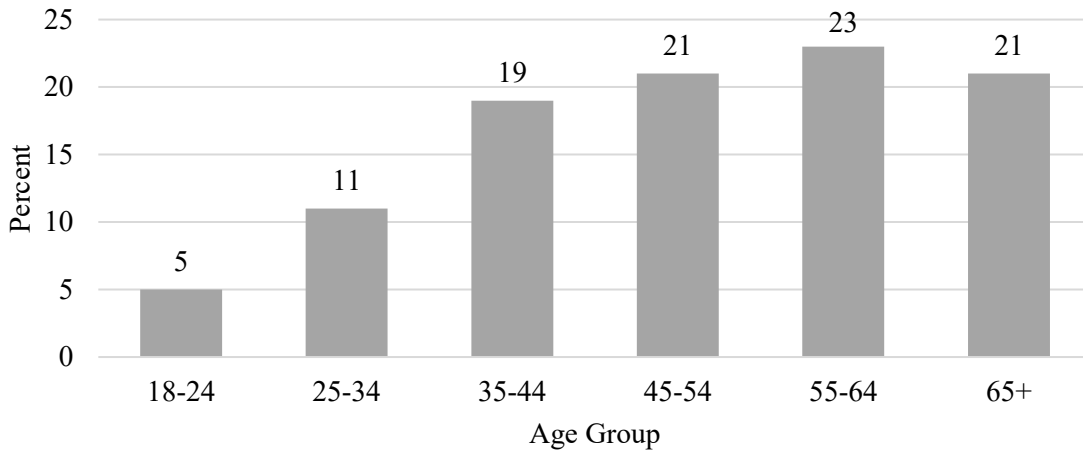


Figure 9. Great Lakes angler age distribution.

We also asked anglers about their race/ethnicity and found that the overwhelming majority (92%) of Great Lakes anglers are white or Caucasian. Other represented ethnicity groups include Hispanic/Latino (1%), Asian/Pacific Islander (2%), American Indian or Alaska Native (1%), multiple ethnicity (4%) and 1% identified as Black or African American. Notably, we hypothesize that some checked the ‘multiple ethnicity/something else’ option as a reactionary response. Those respondents were provided space to describe their race/ethnicity and written responses include examples such as “I’m not a racist. I’m an American,” “doesn’t matter,” and “American.”

Most Great Lakes anglers (86%) were not members in any type of fishing or fishery management focused organization or association. Among the 14 percent who did maintain membership in one or more organization(s), common responses were: Trout Unlimited, Salmon Unlimited, Muskies Inc. and numerous local sportsman and fishing clubs (See Appendix B for full list).

References

Beardmore, B. 2022. Results of the 2021-2022 Conservation Patron License Holder Survey. PUB-EA-020. Bureau of Environmental Analysis & Sustainability, Wisconsin Department of Natural Resources, Madison, WI.

Bradshaw, L. and N. Legler. 2023. A Profile of Behaviors, Awareness and Management Opinions of Wisconsin's Lake Michigan Salmonid Anglers. Fisheries Management Report Series No.163. Wisconsin Department of Natural Resources, Madison, WI.

Appendix A: Questionnaire

Section 1: General Experiences

This section asks generally about your experiences fishing in Wisconsin.

1. In the last *five years*, have you done any fishing for salmon or trout on Wisconsin's Great Lakes (including tributaries)?

- ☐ Yes, on Lake Michigan only
- ☐ Yes, on Lake Superior only >>**skipped to section 4**
- ☐ Yes, on both Lake Michigan and Lake Superior
- ☐ No >>**skipped to section 5**

2. How many years of experience do you have fishing for salmon or trout in the Great Lakes? If 2023 was your first experience, please write zero.

Section 2: Lake Michigan Salmon and Trout Fishing

This section asks about your collective salmon and trout fishing experiences during the 2023 season. Questions in this section that refer to the waters of Lake Michigan are inclusive of Green Bay and any tributaries (below the first dam).

3. Have you done any fishing for salmon or trout on the waters of Lake Michigan in 2023?

- ☐ Yes
- ☐ No >>**skip to section 3**

4. On average, approximately how many salmon and trout did you catch and harvest per trip? Please enter a whole number rather than entering a range. If you fish with many people in a boat or operate a charter fishing business, please only include personal recreational fishing.

Salmon & Trout Caught Per Trip _____
 Salmon & Trout Harvested Per
 Trip _____

5. On average, how satisfied or dissatisfied were you with the number of salmon or trout you caught per trip in 2023?

☐ Very dissatisfied ☐ Neither satisfied ☐ Satisfied
☐ Dissatisfied ☐ nor dissatisfied ☐ Very satisfied

6. On average, how satisfied or dissatisfied were you with the general size and condition of the salmon or trout you caught per trip in 2023?

☐ Very dissatisfied ☐ Neither satisfied ☐ Satisfied
☐ Dissatisfied ☐ nor dissatisfied ☐ Very satisfied

7. Anglers may access the water in different ways throughout the year and with different groups of friends or family. Which of the following means of access do you usually use when targeting trout or salmon on waters of Lake Michigan? (check all that apply)

☐ Shorelines of tributary streams/rivers
☐ Shorelines of open water
☐ Docks or piers on open water
☐ A boat that I own
☐ A friend or family member's boat
☐ A charter boat company

8. Which ONE way do you use most often to target trout or salmon on Lake Michigan waters? (check one)

☐ Shorelines of tributary streams/rivers
☐ Shorelines of open water
☐ Docks or piers on open water
☐ A boat that I own
☐ A friend or family member's boat
☐ A charter boat company

9. Think about all of your Lake Michigan salmon/trout fishing trips in 2023. Which Wisconsin county do you primarily use to fish from shore/piers or to launch a boat? (select one)

- | | |
|------------------------------------|------------------------------------|
| ☐ Brown | ☐ Milwaukee |
| ☐ Door | ☐ Oconto |
| ☐ Kenosha | ☐ Ozaukee |
| ☐ Kewaunee | ☐ Racine |
| ☐ Manitowoc | ☐ Sheboygan |
| ☐ Marinette | |

10. Do you own a boat that is used for recreational or charter fishing purposes on waters of Lake Michigan? (check one)

- ☐ No, I don't own a fishing boat for use on Lake Michigan. **>>skip to section 3**
- ☐ Yes, primarily recreational fishing
- ☐ Yes, primarily charter fishing

11. If applicable, which statement best describes how you store your boat during the season (March-October) (check one)?

- ☐ I keep my boat docked at a private residence.
- ☐ I keep my boat docked at a marina.
- ☐ I keep my boat trailered and transport it for use
- ☐ NA; I don't own a fishing boat for use on Lake Michigan

Section 3: Angler Preferences

This section asks about your preferences and management opinions regarding the Lake Michigan fishery. Even if you did not fish on Lake Michigan in 2023 or did not fish for salmon or trout, we would still like to understand your preferences and opinions. Questions in this section that refer to the waters of Lake Michigan are inclusive of Green Bay and tributaries (below the first dam).

12. Consider *all the salmonid fishing* you do or have done on Lake Michigan waters. Which of the following different salmon or trout have you spent at least one day targeting in the last three years? Feel free to include a fish even if you only spent a portion of a day targeting them.

- ☐ Brown trout
- ☐ Chinook salmon
- ☐ Coho salmon
- ☐ Lake trout
- ☐ Steelhead/rainbow trout
- ☐ None of these

13. Which statement below best describes the conditions under which you would choose to harvest lake trout on Lake Michigan waters, if at all.

- ☐ I would never harvest lake trout, even if other salmonids were not accessible to me.
- ☐ I would only harvest lake trout if other salmonids were not accessible.
- ☐ I would harvest lake trout under any conditions.

14. For each of the Lake Michigan salmonids below, how would you rate your preference for catching each kind?

	Low Preference	Moderate Preference	High Preference	Extremely High Preference	Makes No Difference To Me
Brown trout	☐	☐	☐	☐	☐
Chinook salmon	☐	☐	☐	☐	☐
Coho salmon	☐	☐	☐	☐	☐
Lake trout	☐	☐	☐	☐	☐
Steelhead/rainbow trout	☐	☐	☐	☐	☐

15. The current bag limit on Lake Michigan waters is five combined salmon or trout. How often would you say you harvest a full bag (5 fish) in an outing?

- ☐ Never
- ☐ Rarely
- ☐ Occasionally
- ☐ Often
- ☐ Always

16. When you harvest salmonids on water of Lake Michigan, how often would you say your bag contains:

	Never	Rarely	Occasionally	Often	Always
1 Lake trout	☐	☐	☐	☐	☐
2 Lake trout	☐	☐	☐	☐	☐
3 Lake trout	☐	☐	☐	☐	☐
4 Lake trout	☐	☐	☐	☐	☐
5 Lake trout	☐	☐	☐	☐	☐

17. Salmon and trout stocking is commonly adjusted to maintain a healthy sport fishery. Using the stocking goals table as a reference, what is your opinion of the recent stocking goals?

Wisconsin DNR Lake Michigan Stocking Goals			
Species	2021 Goal	2022 Goal	2023 Goal
Chinook salmon	1,200,000	1,200,000	1,300,000
Coho salmon	500,000	500,000	500,000
Steelhead	460,000	460,000	460,000
Brown trout	450,000	450,000	450,000
Lake trout	45,000	45,000	45,000
Brook trout	50,000	50,000	50,000

Species	I Think The 2021-2023 Stocking Goal Is...			No Opinion/ Unsure
	Too Low	About Right	Too High	
Chinook salmon	☐	☐	☐	☐
Coho salmon	☐	☐	☐	☐
Steelhead	☐	☐	☐	☐
Brown trout	☐	☐	☐	☐
Lake trout	☐	☐	☐	☐
Brook trout	☐	☐	☐	☐

18. How important or unimportant do you feel the following considerations should be in management decisions for Lake Michigan?

	Very Unimportant	Somewhat Unimportant	Neither Important Nor Unimportant	Somewhat Important	Very Important
Maintaining Lake Michigan as a top-level sport fishery	☐	☐	☐	☐	☐
Restoration of native fish species (e.g. lake trout)	☐	☐	☐	☐	☐
Lake Michigan productivity capabilities (balancing prey and predators)	☐	☐	☐	☐	☐
Diversity of predator species	☐	☐	☐	☐	☐
Collaboration with other agencies across the lake (ensure stocking goals maintain fish size and harvest goals)	☐	☐	☐	☐	☐
Public input and feedback (for diversity of species, average size caught, etc.)	☐	☐	☐	☐	☐
Science and data	☐	☐	☐	☐	☐
Hatchery capabilities (staffing and production)	☐	☐	☐	☐	☐

19. Overall, how satisfied or dissatisfied are you with the Wisconsin DNR's management of the Lake Michigan fishery over the past 3 years?

- ☐ Very dissatisfied ☐ Neither satisfied nor dissatisfied ☐ Satisfied
☐ Dissatisfied ☐ Very satisfied

Section 4: Communication and Information Sources

This section asks about communications from the Wisconsin DNR on the Lake Michigan fishery and management. Even if you have not recently fished on Lake Michigan, we would like to know your opinion of and engagement with these communications.

20. During the past 3 years, to what extent have you been following news about Lake Michigan salmon and trout stocking efforts?

- ☐ None >> **skip to Q22**
- ☐ A little
- ☐ Some
- ☐ A lot

21. We are curious which outlets anglers utilize to obtain information about Lake Michigan salmon and trout stocking. During the past 3 years, which of the following resources have you used to follow news? (Check all that apply)

- ☐ I have attended a DNR fisheries management public meeting
- ☐ I have watched an online presentation by the DNR
- ☐ I attended a meeting or watched online presentation(s) with the Great Lakes Fishery Commission
- ☐ I have attended a local fishing club meeting
- ☐ I have read fishing club newsletters
- ☐ I subscribe to and read DNR updates via email
- ☐ I searched on DNR websites
- ☐ I follow information on social media (e.g. Facebook, Twitter)
- ☐ I have participated in the Lake Michigan Fisheries Forum
- ☐ I have read newspaper or magazine articles
- ☐ Conversations with other anglers (e.g., friends, guides, at bait shops)
- ☐ Other (please specify)

22. In early 2023 the department hosted a series of meetings with representatives from groups such as commercial fishers, processors, charter captains, Sea Grant, and others in the Lake Michigan community to share data and understand the range of opinions regarding a potential commercial fishery for lake trout on Lake Michigan. What best describes your awareness of this series of discussions regarding the potential development of a commercial fishery for lake trout on Lake Michigan?

- ☐ I was not aware.
- ☐ I heard about it but have not followed the news or participated.
- ☐ I heard about it and followed the news or participated.
- ☐ I can't recall.

23. Over the past 3 years, how would you rate communications from the Wisconsin DNR regarding the science and data that informs management decisions on Lake Michigan?

- ☐ Very poor ☐ Poor ☐ Unsure ☐ Good ☐ Very good

24. Overall, what level of concern do you have for the long-term sustainability of the Lake Michigan salmon fishery?

- ☐ Very unconcerned
- ☐ Somewhat unconcerned
- ☐ Neutral
- ☐ Somewhat concerned
- ☐ Very concerned

25. Wisconsin has a dedicated stamp for Great Lake salmon and trout (\$10). Revenue generated from the sales of these stamps is dedicated by state statute to supplement and enhance the existing trout and salmon rearing and stocking program for the Great Lakes watershed. If a proposal was brought forward as part of the state budget, would you oppose or support an increase in this stamp fee in order to maintain stocking efforts?

- ☐ Strongly oppose
- ☐ Oppose
- ☐ Neither support nor oppose
- ☐ Support
- ☐ Strongly support

Section 5: About You

This section is about you! These last few questions will help us to determine how well our survey data represents the population of Lake Michigan salmon and trout anglers as a whole. Rest assured, this information will not be identifiable to you personally.

26. In which Wisconsin county do you live? If your primary residence is not in Wisconsin, which state do you live in? _____

27. What best describes your age?

- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65+

28. What best describes your gender?

- ☐ Female
- ☐ Male
- ☐ Non-binary
- ☐ Prefer not to say

29. Which race or ethnicity best describes you? Check one.

- ☐ American Indian or Alaskan Native
- ☐ Asian/Pacific Islander
- ☐ Black or African American
- ☐ Hispanic
- ☐ White/Caucasian
- ☐ Multiple ethnicity/ Other (please specify)

30. Are you a member in any organizations, associations or clubs that have an interest in fishing or fisheries management?

- ☐ No >> done with survey.
- ☐ Yes (please describe)

APPENDIX B: Angler listed fishing organizations, associations or clubs

American Fisheries Society
Backcountry Hunters and Anglers
Badger Flyfishers
Barter. Kay association
BASS
Bass Club, musky club, soil and water
Bass Fishing
Bass master, lakelink
Bassmasters , local kayak clubs
Beaver dam lake association
Board Member of Friendship Fishing Club (Lake Winnebago)
Brule River Sportsman Club
Brule River Sportsmen Club
Brule River Sportsmens Club
Butternut, Schnur Lake Association
Cape Fear Anglers Club, Wilmington, NC
Ducks Unlimited
Duluth/Superior power squadron
Emails from WDNR
Fish lake conservation club
Fishing For The Heart
Fly Fishers International
Glfs
Glsf

GLSF
glsf-Milwaukee
Glsf-oz
GLSF, Muskies Inc, Walleyes Unlimited
GLSFC
Great Lakes Pier & Shore Fishing on Facebook
Great Lakes sports fishermen
Greenpeace
Hoosier Coho Club
I am a DNR employee that works in fisheries management and regularly communicates with fishing clubs and organizations.
I own a business that sells fishing boats
Illinois salmon unlimited fishing club
Illinois smallmouth alliance
In Fisherman
Isac Walton
lake association
Lake Hilbert
Lake Link
Lakeshore Trout Unlimited
Lifetime TU member. Brule River Sportsmans Club
Lost Lake preservation association
M&M Fishing Club
Manitowoc County Fish and Game
Marinette Menominee Great Lakes fishing
Marquette University Fishing Club
Michigan Steelheaders

Milwaukee chapter Muskie Inc.
Milwaukee GLSF
MN Fish
MUCC, MCBA
Muskie club
Muskies Inc
Muskies Inc.
Muskies Inc., Consolidated Musky Club,
Muskies, Inc.
Musky Inc Hayward Chapter
Namakagon Walleye Project
NEWGLSF
North Wisconsin Rod & Gun
Northeast WI Sport Fisherman
not sharing
Online forums
Otter Street Fishing Club
Ozaukee Great Lakes Sportfishing
Ozaukee sportgishing
Previously trout unlimited
PRIOR MEMBER Salmon Unlimited for many years
Retired fishery biologist
River Alliance
Rock Valley Anglers
Rockton sportsmen's club
Salmon Unlimited IL
Salmon Unlimited

Salmon Unlimited
Salmon Unlimited of Illinois
Salmon Unlimited WI
Salmon Unlimited Wisconsin
Salmon Unlimited Wisconsin
Salmon Unlimited
saxon, black river boat clubs
SCI
Scouts BSA
Sheboygan Area Great Lakes Sportfishermen
Sheboygan County Conservation Association
Sheboygan Fishing Club
Sheboygan Great Lakes fishing club
Sheboygan Great Lakes Fishing Club,
Sierra Club
Southern Wisconsin Trout Unlimited
Spirt Lake Improvement Association
Spooner Musky Club
Sport Fishing club - Ashland
Tcwc
The company I work for has contracts with USEPA and USFWS doing invasive species monitoring.
Titletown Muskies Inc
Trap clubs
Trout Unlimited
Trout Unlimited
Trout Unlimited

Trout Unlimited MN and Minnesota Steelheader
Trout Unlimited, Clear Waters WI chapter
TU
Two Sisters Lake Property Owners Association
Wabta
Wallets for ever
Walleye federation
Walleye Unlimited
Walleyes for tomorrow, northeast sport fisherman
Walleyes Unlimited USA
We Really Care fishing club
West shore sportsmen club
Western Lake Superior trolling association
WI Muskies
WI Trout and Salmon
WI Trout Bums
WIwomenfish
WNRF