

Angler Opinions About Walleye Fishing And Management In Wisconsin

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Executive Summary

This report details the results of a scientific survey of walleye angler behaviors and attitudes conducted as a part of the Wisconsin Department of Natural Resources (DNR)'s 2021 update of its walleye management plan. The survey was administered in November and December of 2020 using a stratified random sample of annual fishing license holders, including non-residents. The survey was administered using both online and mail methods and generated an overall response rate of 40%. Nearly 3,000 people completed a questionnaire, which replicated some measures last collected in 1996 during the last walleye management planning process.

Some of the key findings include:

- Walleye remain the most preferred sport fish for anglers to catch in Wisconsin and angling effort directed towards walleye is second only to bluegill.
- Anglers in 2020 report similar effort trends for targeting walleye as in 1996 when the last statewide survey was conducted. Sixty-four percent of 2020 license holders spent at least one day targeting walleye.
- The majority of license holders fish for three or fewer days per year and 44% of them fish for anything that bites. Five-year general fishing trends lean slightly toward increased participation.
- A majority of survey respondents identified crowding as the biggest threat to quality fishing in Wisconsin.
- We defined “walleye anglers” as the subset of license holders (78%) who told us they spent at least some effort to catch walleyes (not necessarily in the most recent year). These individuals were asked a series of questions about walleye regulations and management while those who never fished for walleyes answered only some general fishing questions.
- Avid “walleye anglers”—those who identify strongly with that label and fish 10 or more days per year for walleye—made up about 10% of all walleye anglers. The strength of one’s identity as a walleye angler influences behavior and opinions on policy questions.
- There appears to be a marked improvement in angler ratings of the DNR’s efforts in walleye management since 1996; 44% gave the agency an “Excellent” or “Good” rating compared with 26% in the previous survey.
- Angler satisfaction with walleye fishing is highest among those who prefer fishing the Great Lakes and among those who fish the waters of east-central Wisconsin,

including the Winnebago System and Fox River. Walleye angler satisfaction was lowest among those who prefer fishing in northern Wisconsin. The majority of avid walleye anglers were satisfied with their fishing, and southern Wisconsin residents were slightly more satisfied than northern Wisconsin residents.

- In waters where they co-exist, catching saugers produces similar satisfaction as catching walleyes for most anglers (73%).
- Angler preference for which region of the state to fish for walleyes has not changed since 1996 and is primarily influenced by where they live or have vacation property.
- Survey respondents, led by non-residents, report relatively high and somewhat surprising frequencies of catch-and-release of legal sized walleyes of various sizes. We measured size preference for keeping fish (if any sizes were permitted) and 14-18 inches seems to be sweet spot for three-quarters of all anglers.
- There is broad support among walleye anglers for more restrictive bag limits as well as increasing the use of regulations that are tailored to the needs of specific waterbodies. Specifically, there appears to be majority support among anglers statewide for:
 - Walleye bag limits in southern Wisconsin of three fish per day.
 - Expanding the size of the protected slot in the Ceded Territory.
 - Utilizing more protected slots and harvest slots throughout the state.
 - Using an 18-inch minimum walleye length limit in situations where it might promote better pan fishing.
 - Restricting or closing harvest to rehabilitate depressed walleye populations.
- Anglers who fish rivers during the spring spawning runs are split over whether more conservative regulations are needed. Most walleye anglers do not fish rivers in the spring, and in fact, anglers report the highest frequency of river fishing during summer months.
- Most anglers think stocking is “very” or “sometimes” effective. Avid walleye anglers are most likely to think stocking is effective. Anglers prioritized stocking to support formerly self-sustaining lakes and those with ongoing research projects.
- Anglers seem reluctant to reduce stocking to focus effort on completing habitat assessments instead. There were a high number of undecided responses to several questions that traded off current management actions to do more habitat work. There was not a clear consensus among anglers of which strategies to pursue to mitigate climate change.

Study Background And Methods

Walleye (*Sander vitreus*) are among the most popular gamefish in the state of Wisconsin—in fact, they are **the** most popular according to the results provided in this report. Based on license sales and survey data, it is estimated that the number of Wisconsin residents who fish for walleye each year in the state surpasses the number who participate in deer hunting. The popularity of walleyes among anglers, both state residents and non-residents, translates into significant economic contributions for Wisconsin (Erickson, Leis, and Simpson, 2019; Winden et. al 2019; Cook and Neiswender 2007).

We conducted a scientific survey of anglers who fish Wisconsin lakes and rivers to help inform the DNR's revision of its walleye management plan, which was last updated in 1999. The request to conduct the survey came from fisheries staff with the support of the Bureau of Fisheries Management leadership. It should be noted that this study was part of a broader effort to engage stakeholders in the development of an updated walleye management plan. At the same time the scientific survey was conducted, the DNR also collected public comments through a series of 13 virtual town halls, an online comment form and meetings with Tribes.

The questionnaire for the scientific survey was developed by the walleye planning committee of DNR fisheries staff following a review of the instrument utilized in 1996 for the previous walleye management plan. DNR fisheries biologists Max Wolter, Joe Hennessy and Lawrence Eslinger developed the major areas of content. The questionnaire included major sections on angler behaviors (fishing effort, locations, propensity for harvest), satisfaction with walleye fishing and opinions about size limits, bag limits, stocking and habitat work. Though an attempt was made to replicate some of the original items from the 1996 survey, many new questions were developed to address the current issues of concern and regulatory options under consideration. Final decisions on wording, question order and omissions were the responsibility of the author (Dr. Robert Holsman).

Some readers will note—as some of our respondents did in comments—that we did not ask questions related to Tribal exercise of treaty spearing rights in the Ceded Territory. While this issue certainly continues to generate strong opinions among anglers, the bottom line is that federal government-to-government treaties protect and guarantee these rights to Wisconsin Ojibwa Tribes. Since that issue is settled, we chose not to allocate questionnaire space to ask about it.

The population for this study included all adults who purchased an annual fishing authorization in the year 2020 (beginning April 1) inclusive of the following license types:

- Conservation patron license
- Sportsmen's license
- Annual resident
- Annual husband and wife fishing license

- First time buyers' fishing license
- Non-resident annual license

We randomly selected our sample in three strata: residents of the northern and southern halves of Wisconsin and non-residents. From our two resident strata, we oversampled those living in the northern half of the state to compensate for the inherent imbalance in population of license holders which skews heavily toward the more metropolitan areas of the southern half (Figure 1). By oversampling in the north, we ensured that enough responses would allow for north-south comparisons in opinions. Whenever we reference statewide results of survey items, those data have been weighted to correct for our oversampling.

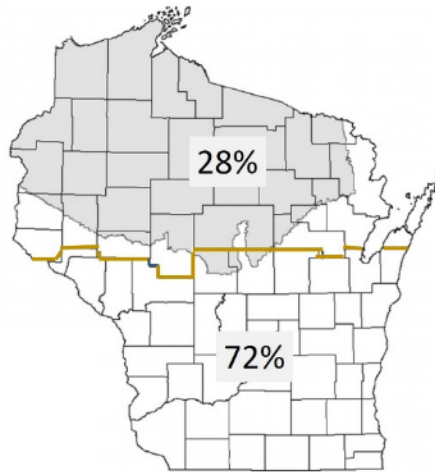


Figure 1. Wisconsin counties divided into Northern and Southern sampling strata. Percentages indicate the proportion of annual fishing license holders residing in each stratum. The shaded area shows Wisconsin's Ceded Territory.

Those in our survey sample with email addresses in our license database were contacted via email with an invitation to complete the walleye questionnaire using a closed access link on Survey Monkey. We preprogrammed reminders to be sent to non-respondents at intervals of two, three and six days following the initial contact, for a total of up to four contacts. Meanwhile, those license holders without email addresses (about 23%) were mailed paper copies of the questionnaire with a return envelope stamped with First-Class postage. We mailed a combined thank you and reminder post card to the entire postal sample a week following the initial mailing. We sent a second complete survey packet to non-respondents approximately one month after the initial contact. Survey administration for both email and postal modes occurred during November and December of 2020. We received completed questionnaires from 2,982 individuals and attained an overall 40% response rate (Table 1).

Table 1. Sample sizes and responses by survey mode.

SAMPLE	ONLINE				MAIL			OVERALL RESPONSE RATE
	Adjusted N	Responses	% Open Rate	% Response Rate	Adjusted N	Responses	% Response Rate	
Residents	6106	1853	63%	30%	1406	623	44%	40%
Non-Residents	1300	506	66%	39%	n/a	n/a	n/a	
Total	7406	2359	64%	32%	1406	623	44%	

Definitions

Since the primary objective of this study was to obtain feedback from walleye anglers on matters pertaining to walleye fishing regulations and other walleye management strategies like stocking, sampling and habitat work, it made sense to ask what makes someone “a walleye angler.” Following a series of general fishing questions on the instrument, we asked respondents to indicate how much of their fishing time was spent trying to catch walleye in Wisconsin. We provided six categories to select from, which included “None” as one of the response options. Those who indicated that they spent no time fishing for walleyes were routed to the end of the questionnaire. Twenty-two percent of the respondents checked “None” and therefore only answered the questions in the general fishing section. Thus, for purposes of this report, the label “walleye angler” applies to anyone who spends at least some time trying to catch walleye.

“Walleye anglers” categories can be further broken down to reflect the degree to which they fit the description, recognizing that time spent on an activity is but one indicator of someone’s overall level of commitment or avidity. Therefore, we also asked walleye anglers to indicate the extent to which they identify as walleye angler. Identity has been shown in other studies to be a useful psychological construct in predicting enduring participation in, and importance of, a recreational activity to one’s life (Landon et. al 2018; Jun et. al 2015; Lute, Gore and Bump 2014; Fedler and Ditton 2001). Walleye angler identity categories are described later and will be used as points of comparison on many of the attitude questions in the results. We consider identity as proxy measure for avidity and use the term “avid walleyes anglers” to refer to those who identify “Very Much” with the walleye angler label.

We used SPSS 27.0 statistical software for the data analysis. We ran crosstabulations to compare survey response on questions across categorical variables (e.g., sampling strata). For these comparisons, we report Chi-square values, Phi coefficients and significance levels. Chi-square measures test whether the row frequencies among categories of the dependent variable are different from one another. The Phi-coefficient is a measure of the relative strength of those differences on a scale from 0 to 1. We applied the standard convention for determining the statistical significance of $P < 0.05$.

SECTION 1 RESULTS- GENERAL ANGLING RESULTS

GENERAL ANGLING POPULATION

Wisconsin sold nearly one million annual fishing authorizations last year for the license period beginning April 1, 2020. Seventy-two percent of resident anglers lived in the southern half of the state where most of the metropolitan areas of Wisconsin are (Figure 1). Men comprised seven out of ten license holders among state residents. Angling participation by women runs slightly higher among residents of northern counties (35% versus 28% in the south). The average age of resident anglers was 50 years old. The proportion of those under the age of 50 is higher among southern Wisconsin anglers, a feature that reflects census data age profiles.

About 12% of annual licenses were sold to non-residents. Non-resident survey responses came from people in 24 different states. The largest segment of non-resident anglers was comprised of people from Illinois (51%) and Minnesota (34%). Non-resident anglers also averaged 50 years of age but included a much lower proportion (10%) of women than state resident license holders. This report will highlight some interesting differences in attitudes and behaviors between resident and non-resident anglers.

FISHING EFFORT

The majority of annual license holders fished for 3.0 or fewer days annually (Figure 2). The average angling effort was 7.7 days annually. As one would expect, residents averaged more days fishing in the state than non-residents did (8.0 days to 3.4), but there was no difference in angling effort between residents of northern and southern Wisconsin. A plurality of anglers (41%) reported that the amount of time they spent fishing in the past five years has stayed the same. More anglers indicated that their fishing effort increased over the past five years than those who said their fishing effort declined (Figure 3).

We asked respondents to characterize their general approach to fishing as going after “anything that bites” or “targeting a particular species.” The majority of resident anglers (56%) said they target particular species. There was no regional difference between residents of northern or southern Wisconsin on this question. Non-residents were more likely than residents to target certain kinds of fish (66%).

Panfish were targeted more frequently by anglers than the other fish choices we posed to respondents (Table 2). Seventy-nine percent of respondents spent at least one day in the past 12 months trying to catch panfish. Walleye were the second most targeted fish; two-thirds of anglers (66%) spent at least one day trying to catch walleye last year.

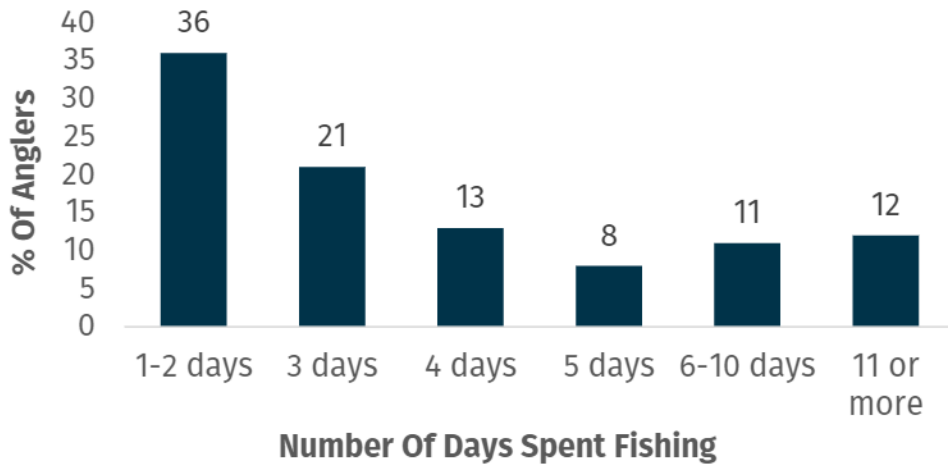


Figure 2. Number of days anglers spent fishing in Wisconsin waters over a 12-month period (January to December 2020). A plurality of anglers (36%) fished for one to two days over the 12-month period.

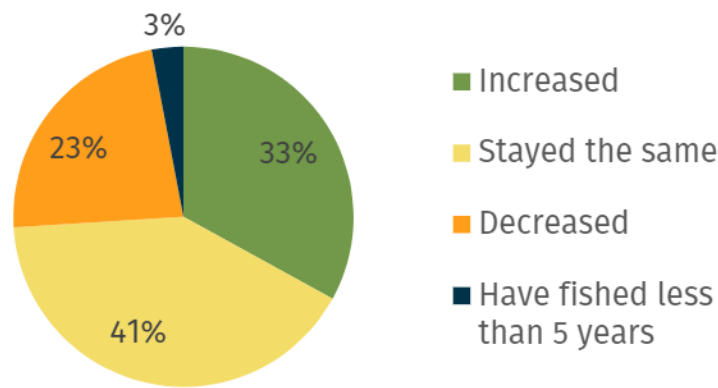


Figure 3. Five-year (2015-2020) fishing effort trends in Wisconsin among all anglers. Fishing effort for most anglers stayed the same (yellow; 41%) or increased (green; 33%).

Table 2. Frequency of angler-days targeting select species of fish in Wisconsin over a 12-month period (January to December 2020).

SPECIES	ZERO DAYS	1-5 DAYS	6-10 DAYS	11-20 DAYS	MORE THAN 20 DAYS
Panfish	21	49	12	8	11
Walleye	34	38	9	8	11
Bass	40	39	8	5	8
Northern Pike	57	31	5	4	4
Musky	78	16	2	1	3
Inland Trout	82	14	2	1	1
Catfish	87	10	2	1	1

Walleye ranked as the most preferred fish to catch among all respondents of the survey. Sixty-two percent of anglers selected walleye in their top three fish that they prefer to catch (Figure 4). The popularity of walleye and relative ordered rank of other preferred species parallel results in other recent angler surveys conducted in Wisconsin (Holsman, Bradshaw and Rowe 2020; Holsman et. al 2017).

In fact, these findings matched the same relative order of preferences for the top four species (walleye, bluegill, crappie and largemouth bass) as the 1996 study. The percentage of angler preferences differed statistically across all fish species except for inland trout species (Table 2). Non-residents were slightly more likely to have chosen walleye in their top three than resident anglers (Table 2). Muskellunge (“musky”) may be the official state fish, but non-residents selected it as one of their preferred fish to catch nearly twice as frequently as state anglers did. The biggest gap in species preferences between resident and non-resident anglers was observed with bluegills, which were more highly preferred by residents than non-residents (Table 3).

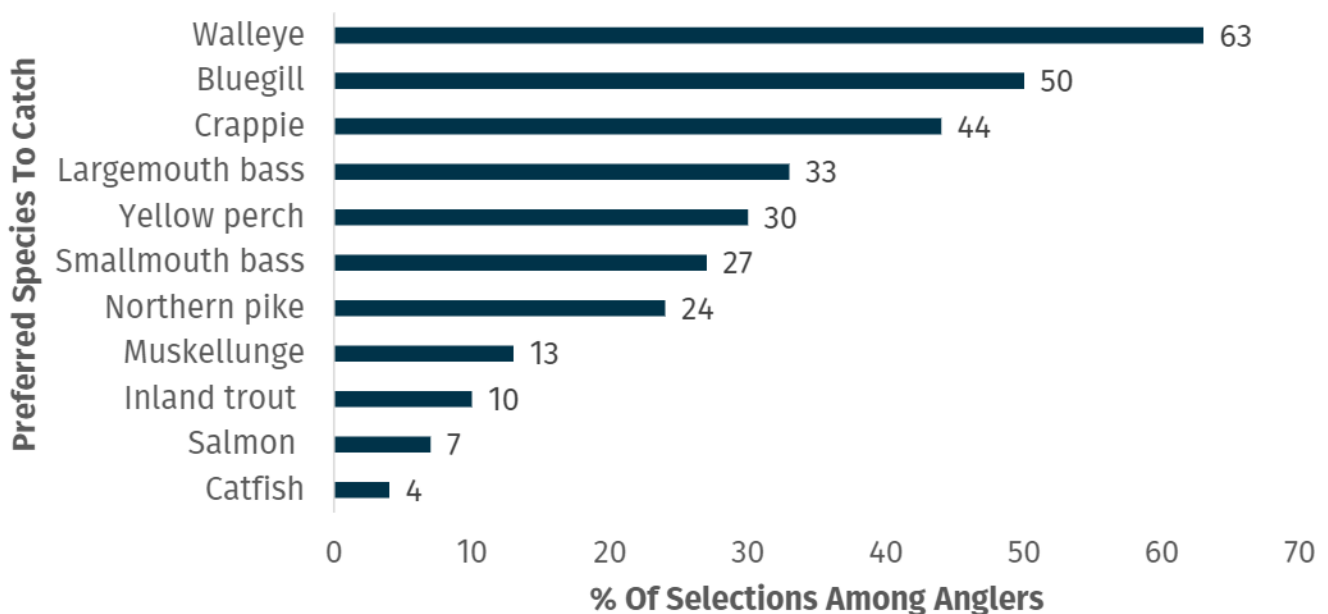


Figure 4. Popular fish species as indicated by the percentage of anglers who ranked them as a “top three” preferred species to catch. Walleye was the most preferred fish species (63%), followed by bluegill (50%), crappie (44%) and largemouth bass (33%).

Table 3. Popular fish species among northern and southern Wisconsin residents and non-residents as indicated by the percentage of anglers who ranked them as a “top three” preferred species to catch.

PREFERRED FISH TO CATCH	% WHO INDICATED FISH WAS AMONG THEIR PREFERRED CATCH			SIG.
	Northern WI Residents	Southern WI Residents	Non-residents	
Walleye	64	61	68	0.05
Bluegill	57	56	26	0.001
Crappie	56	41	38	0.001
Largemouth bass	30	33	40	0.001
Yellow Perch	26	36	15	0.001
Smallmouth bass	24	26	35	0.001
Northern Pike	21	24	28	0.05
Musky	12	11	21	0.001
Inland trout	10	10	13	Not sig
Salmon	5	7	11	0.001
Catfish	3	6	2	0.001

FISHING QUALITY

Sixty-three percent of the survey respondents rated the quality of fishing in Wisconsin as “Excellent” or “Good,” an increase from the 1996 survey (Figure 5). Non-resident anglers rated fishing quality higher than residents, and southern Wisconsin residents rated fishing quality slightly higher than residents of northern counties (Figure 6).

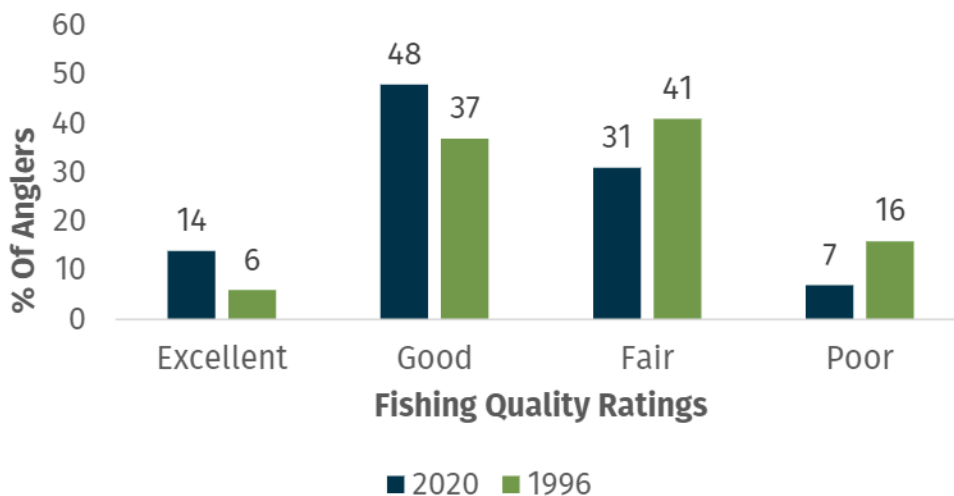


Figure 5. Overall quality of fishing in Wisconsin as rated by surveyed anglers in 2020 (blue) and 1996 (green). The percentage of anglers that rated fishing quality as “Excellent” or “Good” increased in 2020 (63%) from 1996 (43%).

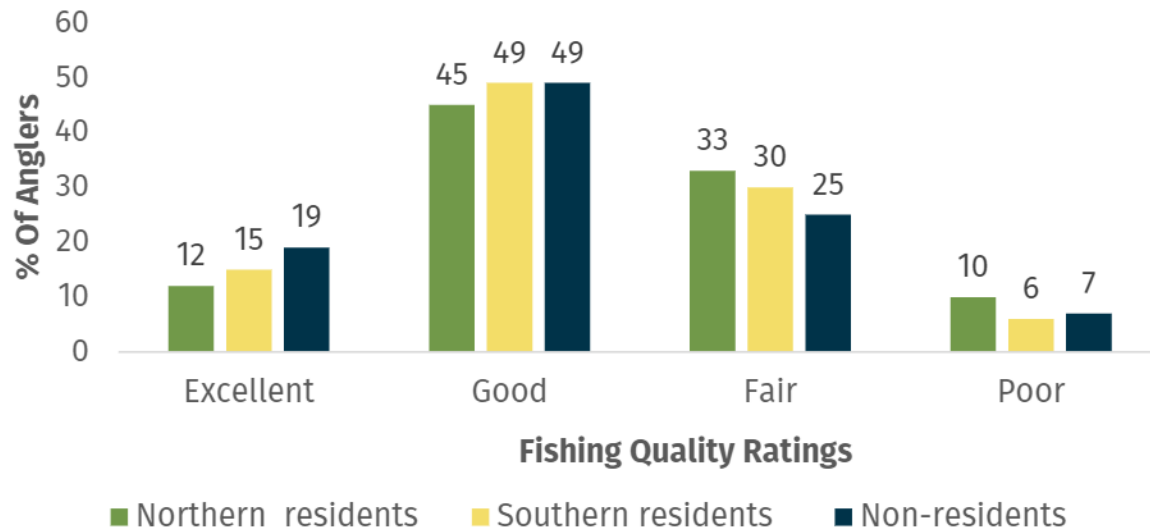


Figure 6. Overall quality of fishing in Wisconsin in 2020 as rated by surveyed anglers who are residents of northern (green) and southern (yellow) Wisconsin as well as non-residents (blue) ($\chi^2=27.7$, Sig=0.001).

THREATS TO FISHING QUALITY

We asked survey respondents to indicate (up to) their three biggest threats to fishing quality in Wisconsin from a closed-ended list of options shown in Table 4. Crowding was the top-rated threat and was selected by most respondents in all three sampling strata. It was the only threat to be rated in the top three by anglers in all strata. The selection of “Crowding” was similar to the number one threat that survey respondents picked during the last walleye questionnaire in 1996, which was then referred to as “user conflicts.” This finding poses implications for the agency’s marketing efforts to promote fishing, especially in the context of the recruitment, retention and reactivation (R3) program, as most current anglers think there are enough people on the water already.

Poor water quality, perception of overharvested fisheries and loss of fish habitat were in the second tier of threats selected by survey respondents (Table 4). A little more than one in three anglers cited overharvested fisheries as a top threat to fishing quality. This sentiment was slightly greater among northern Wisconsin residents and non-resident anglers. Most fisheries are not overfished in the literal or technical sense, even if fishing quality is not what people may want it to be.

There were other statistically significant differences in the frequency of selection of threats among strata. For example, residents of southern Wisconsin were more likely to cite water quality, invasive species and pollutants in fish as threats than members of other strata. Non-residents were significantly more likely to recognize the threats posed to walleye by climate change than state residents; albeit, few respondents in any category selected this threat.

Research has shown that the public often prioritizes risks that are visible and concrete, as opposed to ones that are less visible and abstract. That general tendency appears to play

out in anglers' selection of fishing threats. The relatively small percentage of anglers who identified climate change and contaminate issues as threats is interesting given that those issues received a lot of attention in the state in the year prior to the survey.

A common refrain often directed at the agency is that regulation complexity is reducing public enjoyment of and participation in activities like fishing. However, this study does not support this narrative, as a relatively small percentage of anglers identified regulation complexity as a top concern (Table 4). Later in this report, the data specific to walleye regulations will show that anglers support a variety of additional, and some may argue, more restrictive regulations to promote good walleye fishing.

Table 4. Primary threats to the quality of fishing in Wisconsin as identified by the percentage of anglers who ranked a threat as a “top three” concern. Crowding was the top-rated threat among residents of northern and southern Wisconsin and non-residents.

THREATS TO FISHING QUALITY	% WHO INDICATED ITEM WAS A THREAT TO FISHING QUALITY			SIG.
	Northern WI Residents	Southern WI Residents	Non-residents	
Crowding (boaters, jet skis, anglers, etc.)	57	54	55	Ns
Poor water quality (e.g. algae blooms, smell)	33	46	34	0.001
Overharvested fisheries	38	33	37	0.05
Loss of fish habitat (e.g., shoreline development, wetland loss)	34	34	39	NS
Introduction of invasive species	25	29	24	0.01
Lack of public access	17	19	9	0.01
Bag and size limits are too restrictive	18	13	9	0.001
Pollutants in fish (PFAS, mercury, PCBs, etc.)	12	16	11	0.05
Complicated regulations	14	12	12	NS
Loss of cold-water habitat driven by climate change	8	9	14	0.01

SECTION 2 RESULTS: WALLEYE ANGLER PROFILE AND BEHAVIORS

SEGMENTING WALLEYE ANGLERS

We asked respondents, “How much of your fishing time is spent fishing for walleyes in Wisconsin?” Twenty-two percent of respondents said “None” and terminated the remainder of the questionnaire. Ten percent of respondents indicated that they spend “Most” or “All” of their time fishing for walleyes (Figure 7). There were no statistical differences in time spent walleye fishing among the three sampling strata.

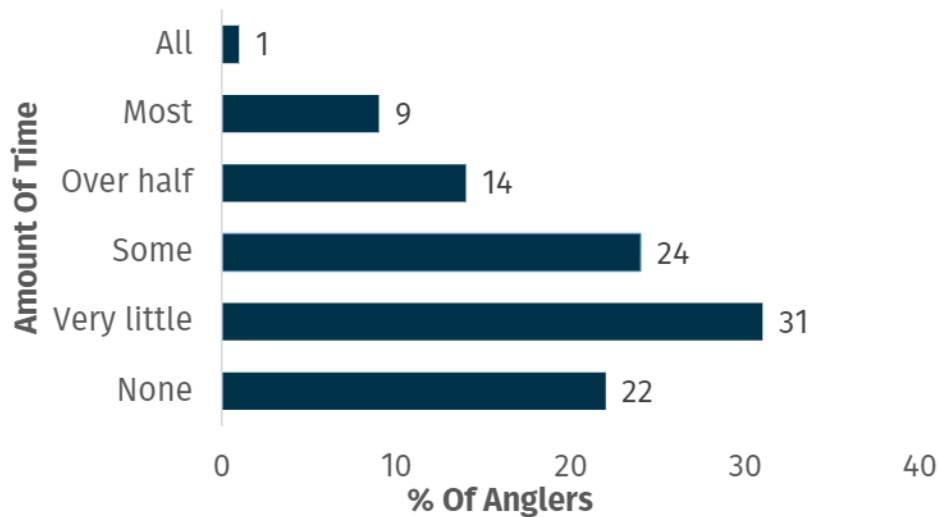


Figure 7. The categorical amount of time anglers allocated to fishing for walleye from their overall fishing effort in 2020.

When asked how their angling effort for walleye compared to five years ago, most respondents (49%) indicated that the number of days they fished stayed the same. About one-quarter of respondents said that their walleye fishing decreased, while 22% said it had increased over the past five years (Figure 8). One in twenty anglers said they have fished in Wisconsin less than five years. The percentages of those fishing more and fishing less for walleye do not appear to have changed from the 1996 survey results.

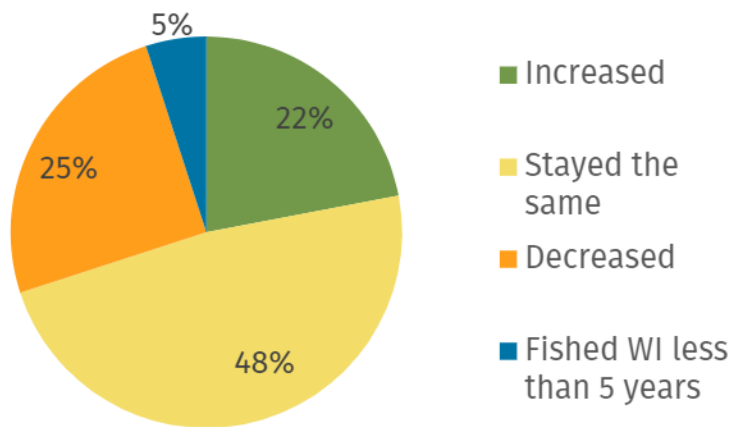


Figure 8. Five-year (2015-2020) fishing effort trends for walleyes in Wisconsin among all anglers (northern and southern Wisconsin residents and non-residents).

About one in ten respondents identified with the walleye angler label “Very much” (Figure 9). Most walleye anglers can be considered more casual (label “Somewhat”). More than half of surveyed anglers (63%) said they did not identify as a walleye angler at all or did so only “A little.” There were no statistical differences in walleye identity by sampling strata.

However, there is a strong relationship between time spent fishing for walleye and walleye angler identity (Table 5). Two-thirds (66%) of anglers who identified “Very much” as walleye angler, spent 10 or more days fishing for them in the past 12 months. A majority (56%) of those who said they “Somewhat” identified as a walleye angler targeted walleye during at least five days in the past year.

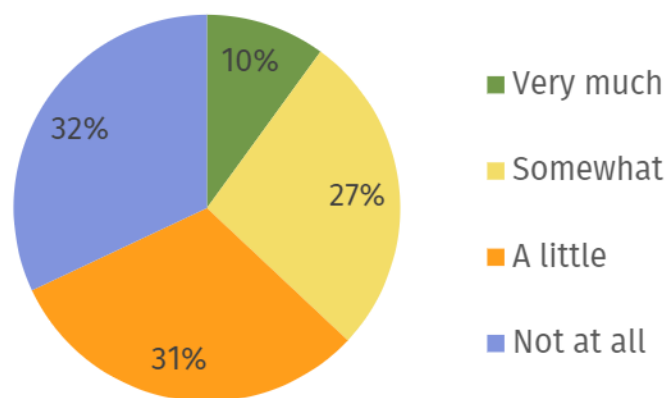


Figure 9. Percentage of anglers who categorized the strength of their self-identity as a “walleye angler.” Most respondents did not identify as strong walleye anglers (63%), 27% had moderate associations with this identity and 10% strongly identified as walleye anglers.

Table 5. A comparison of walleye fishing effort in the past 12 months (January to December 2020) by the strength of respondent identity as a walleye angler ($\chi^2=651.6$ Sig=000 Phi=0.64).

IDENTITY AS WALLEYE ANGLER	ZERO DAYS	1-5 DAYS	6-10 DAYS	11-20 DAYS	>20 DAYS
Very much	3	19	12	16	50
Somewhat	4	40	17	18	20
Very little	13	59	14	7	8
Not at all	33	52	6	4	6

SAUGER

We wanted to know how sauger compare to walleye in terms of angler satisfaction. Forty-five percent of walleye anglers said they don't ever catch them. Of those that do, most (73%) say they derive similar satisfaction from catching a sauger as they do from catching a walleye. One quarter of those who catch both species prefer walleyes. Only 2% said they get more satisfaction from catching sauger.

WHERE PEOPLE FISH FOR WALLEYE



- Area 1 (Southern waters)
- Area 2 (Lower Wisconsin River & surrounding area)
- Area 3 (Fox, Wolf, Winnebago System)
- Area 4 (Mississippi River)
- Area 5 (Northeastern waters)
- Area 6 (Northwestern waters)
- Area 7 (Great Lakes)

Figure 10. Delineation of regions (areas) of the state that anglers were asked to select from as their most preferred area to fish for walleye.

Using the map depicted in Figure 10, we asked walleye anglers to indicate in which area of the state they most preferred to fish for walleye. Lakes in northeastern Wisconsin were selected by one in four of the state resident respondents, a slightly larger share than the 23% that selected the Winnebago System region in east-central Wisconsin that features the Fox and Wolf Rivers and Winnebago chain (Table 6). Only 2% of state residents selected area number 7 (Lakes Michigan and Superior) as their favorite area to fish for walleye. The frequencies of most preferred areas were nearly identical for state residents as they were in the 1996 walleye survey (Table 6). Most non-resident anglers chose areas in northern Wisconsin (35% in northwestern, 22% in northeastern) as their favorite places to fish for walleye.

Table 6. Percentage of walleye anglers who preferred different areas of Wisconsin for walleye fishing. Areas of the state are delineated in Figure 10.

AREA	NON-RESIDENTS 2020	RESIDENTS	
		2020	1996 Survey
1. Southern Wisconsin	11	14	17
2. Lower Wisconsin River	11	12	8
3. Winnebago System	10	23	23
4. Mississippi River	8	9	9
5. Northeast Wisconsin	22	25	27
6. Northwest Wisconsin	35	16	15
7. Great Lakes	3	2	1

A growing body of evidence from the Bureau of Environmental Analysis and Sustainability's surveys suggest that, for most people, hunting and fishing locations are chosen based on proximity to their residence or cabin (second home) location, rather than the real or perceived abundance of fish or game in a particular region (Holsman, Bradshaw and Rowe 2020; Petchenik, Holsman and Bradshaw 2019; Bradshaw, Petchenik and Holsman 2018; Holsman, Beardmore, Bradshaw and Petchenik 2018). We find some support for that concept in these data as well.

All told, 69% of survey respondents, including non-residents, picked their most preferred walleye fishing zone based on residence or owning a second home in that zone. Only one in ten respondents said that quality of the walleye fishing was the primary determinant for choosing their preferred zone in the state to fish for walleye. Most state residents picked their preferred walleye fishing area as the one they live in (Figure 11). Having a cottage in the preferred area was the most frequently selected driver (36%) of preferred area for non-residents (Figure 11). The reputation of an area for walleye fishing was the most important consideration among a relatively small proportion on anglers in all three strata ($\leq 13\%$; Figure 11).

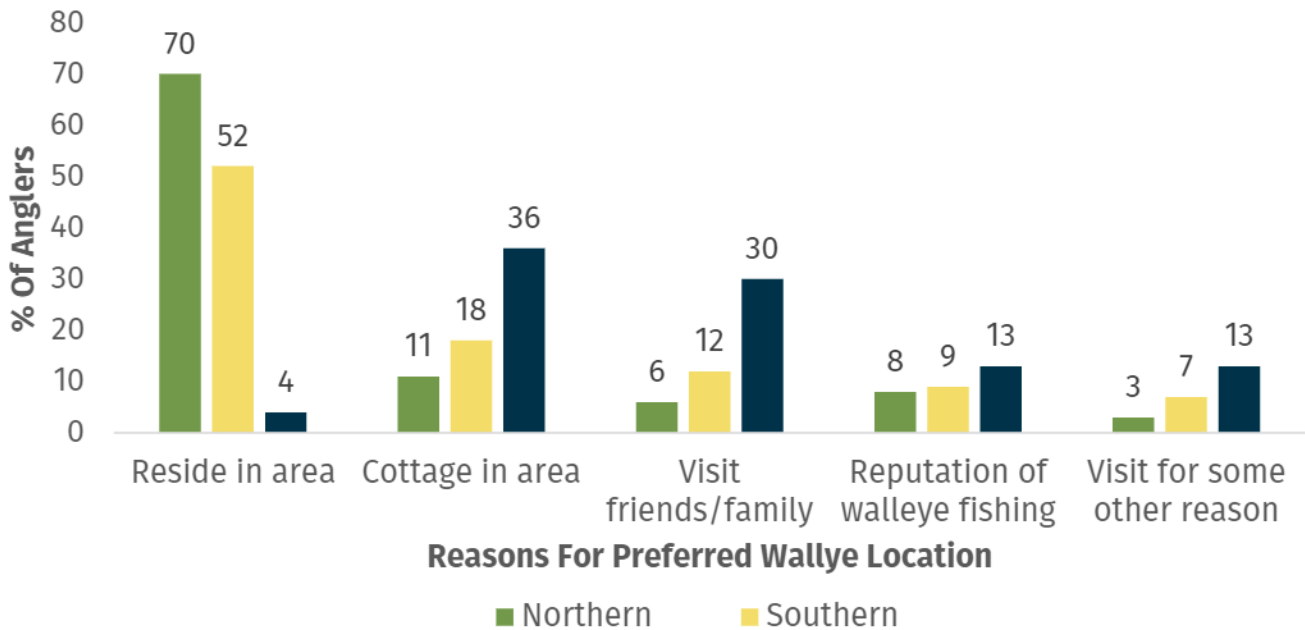


Figure 11. Reasons for preferring areas to fish for walleie in Wisconsin as reported by northern and southern Wisconsin residents and non-residents ($\chi^2=392.9$, Sig=0.001, Phi=0.42). (Small percentages of respondents also selected “other” category).

It is worth revisiting the most frequently selected areas of the state (Areas 3 and 5) in light of the importance of residency or cabin ownership. Area 3 includes arguably the best walleie fishing currently in the state, but it also includes a number of metropolitan areas (Green Bay, Appleton, Oshkosh, Fond du Lac, etc.) where a large number of anglers live. In contrast, northeast Wisconsin (Area 5) draws a disproportionate amount walleie fishing interest given its low population density as a result of two factors—a high proportion of area residents who stay close to home, and a relatively high proportion of southern Wisconsin residents and non-residents who own vacation property in that area or have friends and family who do.

The weight of influence of population centers on fishing numbers can be seen in Table 7, which is the reciprocal of Table 6 and breaks down fishing area preferences by residency composition. Notably, most of the anglers who prefer Area 5 (Northeast) reside in southern Wisconsin (53%). By contrast, the largest proportion of anglers who prefer Area 6 (Northwest) also reside in the north (47%). Among those who selected the northwest area as their preference, one in three were non-residents (33%), the highest composition of non-residents among the seven areas. While southern residents are more apt to travel to most areas of the state, northern Wisconsin residents comprise only 1% of anglers who most prefer fishing walleie in the south.

Table 7. Percentage residency composition of anglers who prefer different areas of Wisconsin to fish for walleye (as indicated in Table 6) ($\chi^2=510.4$, Sig=0.1 Phi=0.46). Of respondents who indicated a preference for fishing in Area 6 (Northwest Wisconsin), 47% were residents of northern Wisconsin and 33% were non-residents.

PREFERRED AREA	% OF EACH STRATA COMPRISING THOSE WHO PREFER EACH AREA			TOTAL
	Northern Wisconsin	Southern Wisconsin	Non-residents	
1. Southern Wisconsin	1	84	15	100%
2. Lower Wisconsin River	16	69	16	100%
3. Winnebago System	8	83	9	100%
4. Mississippi River	37	46	16	100%
5. Northeast Wisconsin	31	53	16	100%
6. Northwest Wisconsin	47	20	33	100%
7. Great Lakes	31	44	26	100%

In addition to asking where anglers most prefer to fish walleye in the state, we also asked respondents how often they fished some high-profile walleye waters and regions of the state in the past five years. Response options ranged from “Never” to “Frequently.” Half of all anglers said they fished northern Wisconsin lakes “Occasionally” or “Frequently” in the past five years (Table 8). About 38% of respondents fished the Lake Winnebago System in past five years (Table 8).

We asked resident walleye anglers if they traveled to another state or to Canada to fish for walleye in past five years, and if so, what factors led them to do so. Overall, 64% of state resident walleye anglers fished only in Wisconsin—very similar to the 68% who said so during the 1996 survey.

Among resident walleye anglers, 23% said that they fished in another state in the past five years; another 19% traveled to Canada to fish. Five percent indicated that they fished in both Canada and another state for walleye in the past five years. The reasons for traveling outside of Wisconsin were primarily driven by perceived quality of walleye fishing in terms of both numbers and size of fish, as well as less competition from other anglers and recreational boat traffic (Table 9). Catching more walleye was the most frequently selected response for respondents heading to Canada (85%) and those fishing in another state (63%). These results paralleled the 1996 study, which also found catching more (64%) and catching larger (50%) walleye were the top cited reasons for traveling. There was a relatively small proportion of anglers who selected reasons related to regulations.

Table 8. Percentage of walleye anglers reporting frequency of fishing at select locations throughout the state in the past five years.

FISHING LOCATIONS	% WHO RESPONDED...			
	Never	Rarely	Occasionally	Frequently
Northern Wisconsin lakes (Zones 5 and 6 in Figure 10)	26	23	30	20
Lake Winnebago system (including Fox and Wolf rivers)	62	14	11	13
Green Bay and its tributaries	69	14	11	6
The Wisconsin River from Lake Wisconsin upstream to Stevens Point Flowage (including Castle Rock and Petenwell flowages)	74	13	9	4
The Wisconsin River upstream of the Stevens Point Flowage (north of Dubay dam)	81	11	6	2
Mississippi River upstream from La Crosse	84	8	6	2
Mississippi River downstream from La Crosse	85	8	6	2
The Wisconsin River downstream of the Prairie Du Sac dam	87	7	4	1

Table 9. Reasons anglers traveled to Canada or another state to pursue walleye in the last five years (2015-2020). Catching more walleye was the most frequently selected reason for anglers traveling to Canada (85%) and other states (63%); catching larger walleye was the second most frequent reason (57% for Canada and 40% for other states).

REASON FOR TRAVEL	% AMONG THOSE TRAVELING TO...	
	Canada	Another State
I catch more walleye	85	63
I catch larger walleye	57	40
There is less angling pressure	51	23
There is less recreational boat and jet ski traffic	51	24
Better scenery/ more solitude	38	18
Family vacation, fishing is a bonus	21	35
The daily bag limit is larger	6	12
The regulations are simpler	9	11
I reside or own property in another state or province	3	6
The size limit is smaller	3	3

CATCH AND RELEASE VERSUS CATCH AND HARVEST OF WALLEYE

We asked anglers to select the single factor that made for a successful walleye fishing outing from a list of five catch-related options. “Catching keeper sized walleye” was the most common response at 46% (Figure 12). One in three walleye anglers selected “lots of action” as the primary factor in a successful walleye trip. “Catching large walleye” was selected by only a handful of anglers as making a trip successful.

Despite the relative importance of catching keeper-sized walleye to many anglers, respondents also reported relatively high rates of catch and release for legal sized fish (Figure 13). While self-reported harvest and release propensity did not differ between northern and southern Wisconsin residents, non-residents were significantly more likely to say that they would release a legal walleye than resident anglers. Thirty-one percent of residents said that they keep “most” or “all” of their legal sized fish compared with 23% of non-residents.

The relatively high percentage of anglers reporting that they practice catch and release at least part of the time is curious given what are assumed to be relatively high exploitation rates across the state. Those who said that catching keeper sized walleye was the most important component of a successful trip were statistically more likely to report keeping legal fish than respondents who selected other factors (Table 10).

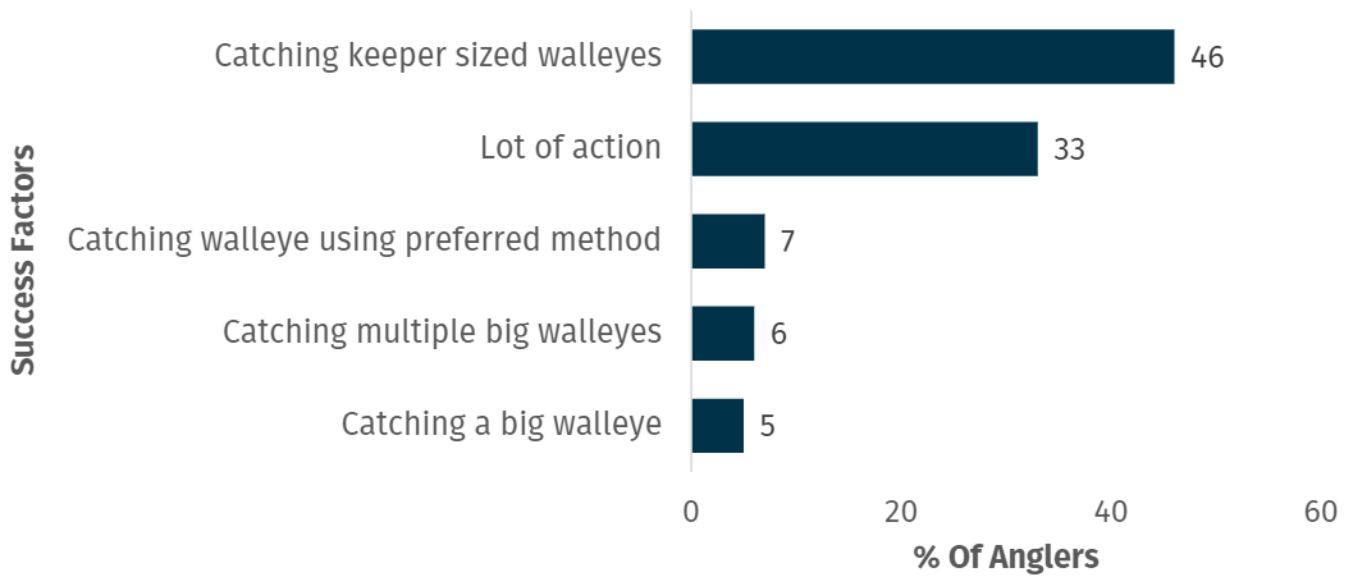


Figure 12. Percentage of walleye anglers indicating which attribute was the most important factor in a successful walleye fishing trip. The most selected reason was catching keeper sized walleye (46%), followed by lots of action (33%).

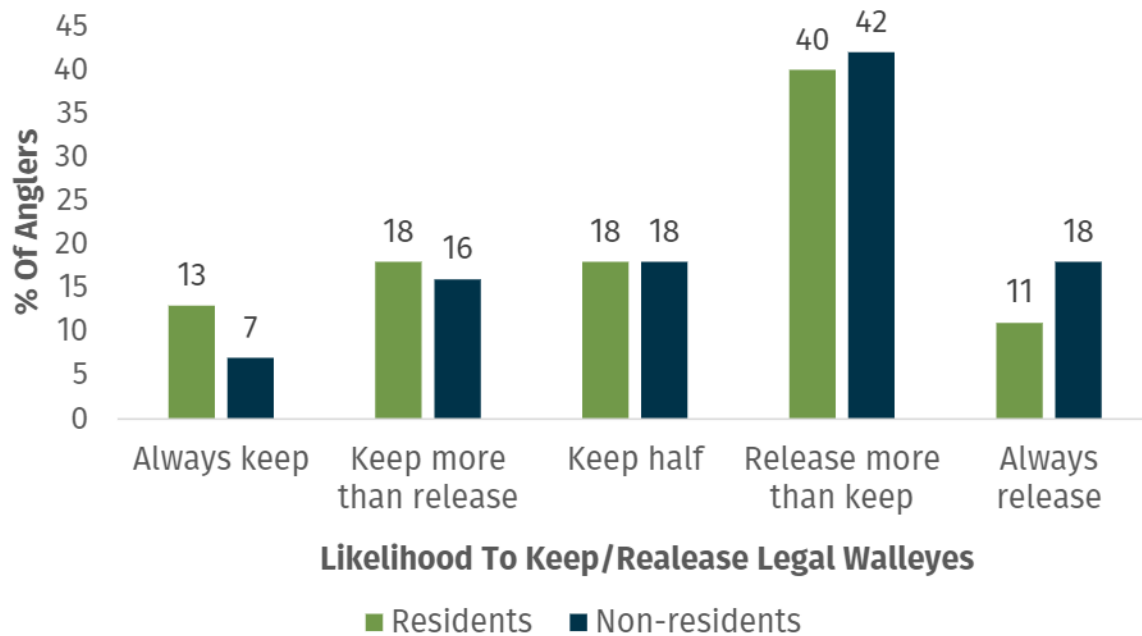


Figure 13. A comparison of Wisconsin resident and non-resident anglers on their self-reported likelihood to keep or release walleye that are in season and meet minimum length requirements ($\chi^2=24.1$, Sig.=0.001, Phi=0.12).

Table 10. A comparison of walleye harvest and release likelihoods based on criteria determining fishing trip success as reported by walleye anglers (Figure 12) ($\chi^2=177.4$, Sig=0.001, Phi=0.31).

THOSE WHO SAID FACTOR WAS PRIMARY TO A SUCCESSFUL TRIP	% CATEGORIZATION OF HARVESTING VS. RELEASING LEGAL CAUGHT WALLEYE				
	Always Keep	Keep More Than Release	Keep Half/ Release Half	Release More Than Keep	Always Release
Catching keeper sized fish	18	24	21	33	5
Lots action	7	14	15	46	18
Catching a big walleye	8	8	18	48	19
Catching multiple big walleyes	8	10	15	46	21
Using a preferred method to catch walleye	7	13	19	51	10

Harvest and release patterns among anglers with differing walleye identities presents mixed findings. Those who identify less strongly as walleye anglers were both more likely to always keep fish and more likely to always release fish than those with stronger walleye identities (Table 11). About one in three of those who do not identify as walleye anglers were likely to keep most or all walleye that meet legal sized requirements. By comparison, 26% of avid walleye anglers were likely to keep most or all their fish.

Table 11. A comparison of walleye harvest and release likelihoods based on strength of walleye angler identity ($\chi^2=89.2$, Sig=0.001, Phi=0.22).

IDENTIFY AS WALLEYE ANGLER	AMONG THOSE WHOSE HARVEST PROPENSITY IS...				
	Always Keep	Keep More Than Release	Keep Half/ Release Half	Release More Than Keep	Always Release
Very much	9	17	25	45	5
Somewhat	9	19	22	42	8
A little	12	19	17	42	10
Not at all	17	15	13	36	20

We also asked how likely anglers would be to harvest walleye of particular sizes, assuming that the regulations allowed them to do so. Nearly half of walleye anglers (49%) said they would frequently or always keep a 17-18-inch walleye, making that size of fish the most likely to be harvested (Table 12; Figure 14). Fish in the 15-16-inch size class would be kept “frequently” or “always” about 46% of the time. Generally, frequency of harvest declined between 19 inches through 30 inches, with a slight uptick in frequency of harvest among walleye over 30 inches. Nearly a majority (49%) of anglers indicated that they would never

or rarely keep a walleye of 21-22 inches and that percentage increased stepwise for larger fish.

These results suggest that many anglers have developed a norm of releasing larger fish that are generally deemed important for reproduction. In some places in the state, regulations already protect those size classes of fish, and respondents may have been reflecting compliance with those rules rather than providing speculative likelihood of behavior as the question directed.

Table 12. Percentage anglers classifying their likelihood of harvest for walleye of various lengths in a regulatory system where all fish above 15 inches were legal. Walleye between 17-18 inches were most likely to be harvested (49%).

SIZE	% LIKELIHOOD OF WALLEYE HARVEST				
	Never	Rarely	Occasionally	Frequently	Always
15-16 inches	11	14	29	26	20
17-18 inches	10	11	31	28	21
19-20 inches	15	19	29	21	16
21-22 inches	28	21	25	13	13
23-24 inches	37	24	17	10	12
25-26 inches	48	20	13	8	11
27-28 inches	53	19	11	6	12
29-30 inches	51	20	10	6	13
Over 30 inches	44	24	9	5	19

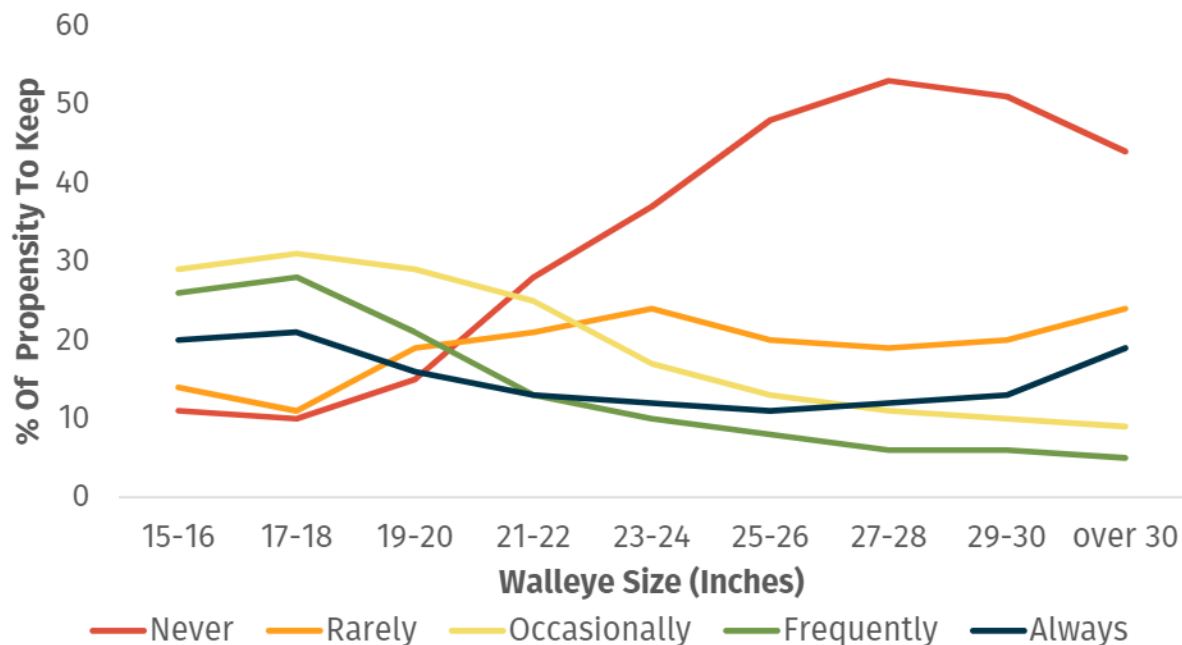


Figure 14. The percentage of anglers' reporting the likelihood of keeping walleye of various sizes under the assumption that it would be legal to do so.

RATING THE DEPARTMENT OF NATURAL RESOURCES

Respondents to this questionnaire gave the DNR more favorable ratings for walleye management than were recorded during the 1996 survey (Figure 15). Forty-four percent of respondents rated the DNR's management of walleye as "Excellent" or "Good" compared to 26% who did so in 1996. Performance rating of the DNR varied statistically by sampling strata, specifically by where respondents preferred to fish and by strength of walleye angler identity (Table 13). Generally speaking, non-residents rated the DNR more favorably than state residents did, and southern residents gave more favorable ratings than northern residents (Table 13).

The most favorable ratings by fishing location came from anglers preferring the Great Lakes (Area 7), with 59% rating the agency as "Excellent or Good." The next most favorable area included anglers who preferred the Winnebago/Wolf River zone (Area 3), with nearly half (49%) giving an "Excellent or Good" rating. Those who preferred to fish in northern Wisconsin (Areas 5 and 6) were more likely than others to rate the DNR's management of walleyes as "Poor"; however, even in those areas, more respondents rated the agency "Excellent or Good" than "Poor" by a wide margin (Table 13). Those anglers who most strongly identified as walleye anglers had a higher percentage of respondents who rated the DNR as "Excellent" (12%) as well as a higher percentage who said "Poor" (19%).

More anglers (43%) said they were satisfied with their recent walleye fishing than were dissatisfied (22%) (Table 14). Categorical comparisons across segments of walleye anglers' satisfaction ratings mirrors the pattern of findings for the rating of DNR performance. For example, most non-resident anglers (51%) were satisfied, and southern residents were more likely to report satisfaction (45%) than northern residents (34%). Anglers who preferred the Great Lakes (Area 7) or the Winnebago System (Area 3) reported the highest satisfaction levels, and those preferring to fish waters in northern Wisconsin (Areas 5 and 6) had the highest frequency of dissatisfied anglers (Table 14). Anglers who most strongly identified as walleye fishermen had both the highest frequency of satisfied (56%) and dissatisfied anglers (33%) compared to those who less strongly identified as walleye anglers.

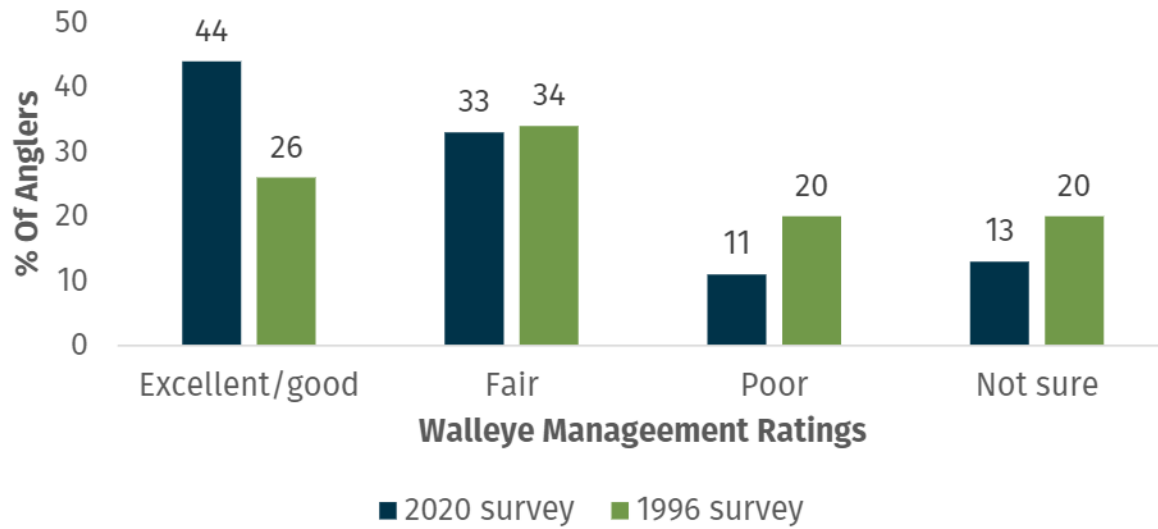


Figure 15. A comparison of angler opinions on walleye management by the DNR between the current survey (2020) and one implemented in 1996.

Table 13. Comparisons of angler ratings of DNR performance with walleye management by strata (residency), preferred areas to fish and strength of identity as a walleye angler.

SEGMENT	% WHO INDICATED ...					SIG.
	Excellent	Good	Fair	Poor	Not Sure	
All walleye anglers	7	37	33	11	13	n/a
Sampling strata						
Northern Residents	4	30	36	17	13	$\chi^2=52.6$ Phi=.16 Sig.=001
Southern Residents	6	38	34	9	13	
Non-residents	10	44	27	8	11	
Preferred area to fish						
Area 1	6	40	34	6	14	$\chi^2=64.2$ Phi=0.18 Sig.=001
Area 2	8	39	35	8	11	
Area 3	10	39	34	8	9	
Area 4	6	37	34	8	15	
Area 5	4	34	32	16	14	
Area 6	6	35	31	14	15	
Area 7	13	46	26	13	3	
Identification as walleye angler						
Very Much	12	28	37	19	4	$\chi^2=188.5$ Phi=0.30 Sig.=001
Somewhat	6	38	39	12	4	
A little	5	41	33	10	10	
Not at All	6	35	27	8	25	

Table 14. Comparisons of angler satisfaction levels with their walleye fishing by sampling strata (residency), preferred areas to fish and strength of identity as a walleye angler.

SEGMENT	% WHO INDICATED THEY WERE...					SIG.
	Very Satisfied	Satisfied	Neither Satisfied Nor Dissatisfied	Dissatisfied	Very Dissatisfied	
All walleye anglers	8	35	34	17	5	n/a
Sampling strata						
Northern Residents	6	28	34	24	8	$\chi^2=45.7$ Phi=.16 Sig.=001
Southern Residents	8	37	36	16	4	
Non-residents	11	41	30	13	5	
Preferred area to fish						
Area 1	5	36	44	11	3	$\chi^2 =156.7$ Phi=0.27 Sig.=001
Area 2	8	39	36	15	2	
Area 3	14	43	31	11	1	
Area 4	12	33	37	16	3	
Area 5	5	31	28	26	10	
Area 6	6	31	38	19	6	
Area 7	16	38	27	11	8	
Identification as walleye angler						
Very Much	17	39	13	21	11	$\chi^2=213.2$ Phi=0.32 Sig.=001
Somewhat	8	45	22	18	6	
A little	7	37	33	19	4	
Not at All	6	24	53	13	4	

SECTION 3 RESULTS: ATTITUDES TOWARD WALLEYE REGULATIONS & MANGAGEMENT

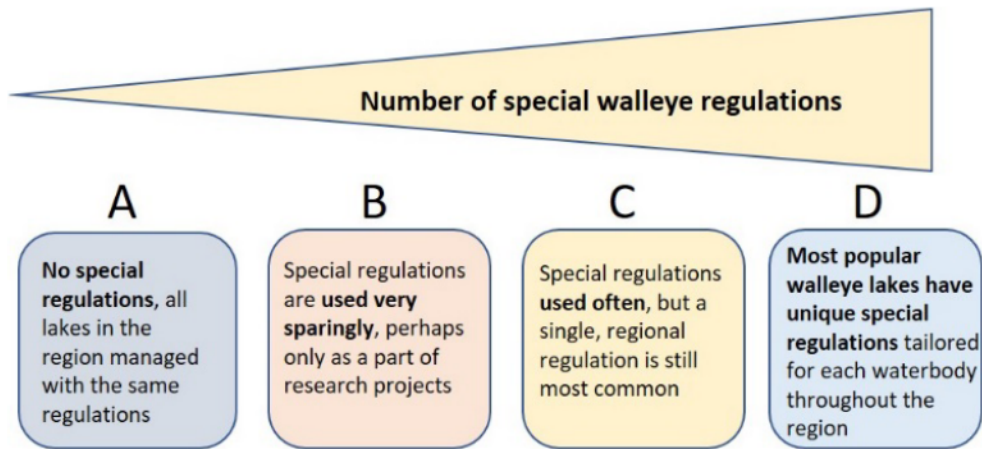


Figure 16. A continuum of general to specialized walleye regulations as policy options for survey respondents.

Considering the four generalized approaches (A, B, C & D) to regulations depicted in Figure 16, above, we asked respondents which approach best represented their view for how walleye should be managed. The complexity of walleye regulation choices advanced from options A through D. Anglers were asked to select their management preference for both northern and southern Wisconsin. Preferences for managing northern Wisconsin waters did not differ statistically between residents of northern and southern counties, though non-residents selected the most complex option at a slightly higher frequency than state residents (Table 15). Approximately one in ten state resident walleye anglers preferred Option A—a “one size fits all” approach to regulations on northern waters. Option D, where regulations may be tailored to specific walleye lakes, was the most popular response for both state residents (37%) and non-residents (44%).

Opinions about applying regulations in southern waters varied more widely among sampling strata (Table 15). Northern residents were more likely to select “Not sure” than to choose any of the four policy approaches. These results make sense considering that northern residents were much less likely to travel south to fish for walleye than southern residents were to go north (Table 6, 7). Like results pertaining to northern waters, Option A was least preferred by all groups. Meanwhile, southern Wisconsin residents preferred Option D for southern waters at rates similar (33%) to their preference for the northern part (37%) of the state. Anglers who “Very much” or “Somewhat” identified as walleye anglers supported the tailored approach to walleye regulations (Option D) at higher frequencies than other anglers did (Table 16).

Table 15. Comparison of management option preferences among the sampling strata (residency) and applied to northern and southern waters of Wisconsin.

REGULATION BY REGION	CHOICES	% PREFERENCE AMONG SAMPLING STRATA		
		Northern Residents	Southern Residents	Non-Residents
Northern Half	Option A	11	10	7
	Option B	14	12	11
	Option C	25	27	24
	Option D	38	37	44
	Not sure	12	13	14
Southern Half	Option A	8	12	7
	Option B	11	12	11
	Option C	17	25	22
	Option D	25	33	35
	Not sure	39	19	26

Table 16. Comparison of management option preferences across identity categories (strength of identity as a walleye angler) and applied to northern and southern waters of Wisconsin.

STRENGTH OF IDENTITY	OPTION A	OPTION B	OPTION C	OPTION D	NOT SURE	SIG.
Applied to the north						
Very much	11	12	23	44	10	$\chi^2 = 35.2$ Sig=0.001
Somewhat	10	12	24	44	10	
A little	10	13	30	35	12	
Not at all	9	12	25	35	19	
Applied to the south						
Very much	7	12	20	40	21	$\chi^2 = 22.4$ Sig=0.01
Somewhat	11	11	23	34	22	
A little	10	13	24	30	24	
Not at all	10	11	21	28	30	

BAG LIMITS

The current standard daily bag limit for walleye in southern Wisconsin is five fish (though some notable exceptions occur, e.g., Winnebago System). We asked walleye anglers to identify the lowest bag limit they would find acceptable on southern Wisconsin waters, and a majority (51%) reported three per day (Figure 16). Only 16% indicated that the status quo option of five fish was the lowest number they would accept; 84% of respondents picked something more conservative than the current five fish limit. Given that many southern residents report a preference for fishing in northern waters, some of the support for a three fish bag limit in the south may reflect their experience/acceptance of that rule in the north.

In the northern half of the state, most of which is governed by Ceded Territory regulations of three walleye per day, most anglers (52%) said the status quo presented their “floor” for acceptability (Figure 17). About four in ten (39%) said they were willing to go down to two fish per day for the bag limit. The general acceptance of a three fish daily bag limit across the state echoes the findings of the 1996 angler survey which produced similar results on this question.

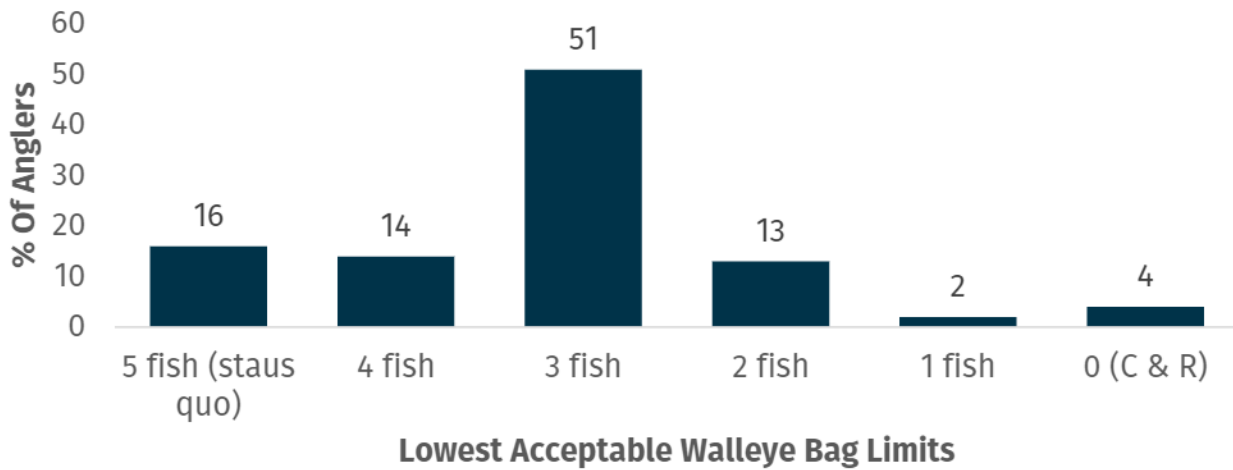


Figure 16. Percentage of anglers indicating “lowest acceptable bag limits” for southern Wisconsin waters. Most anglers (51%) identified three fish per day as the lowest acceptable bag limit.

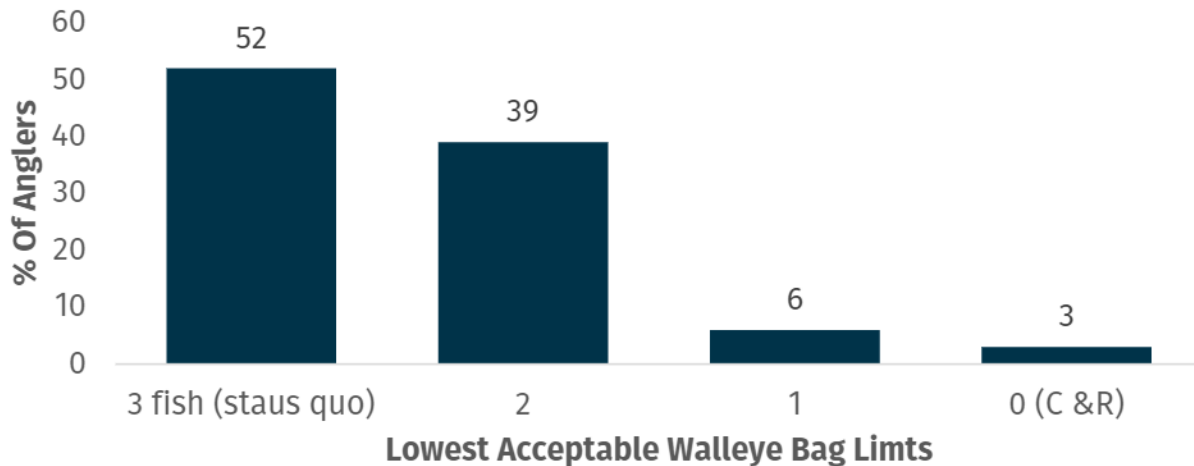


Figure 17. Percentage of anglers indicating different “lowest acceptable bag limits” for northern Wisconsin waters. Most anglers (52%) identified three fish per day as the lowest acceptable bag limit.

ANGLER PREFERENCES FOR SIZE REGULATIONS

One way we measured size preference for walleye harvest was to ask anglers to write-in the size of their “ideal” keeper walleye. Responses ranged from 10 to 30 inches (Figure 18). The average size was 16.7 inches and the most common response was 18.0 inches. These values are consistent with the results presented earlier regarding the likelihood of harvest (Table 12). It is worth noting that the ideal keeper length fell between 14 and 18 inches for three out of four of the walleye anglers in the survey. The average ideal size was slightly, but significantly, lower among anglers who “always” keep legal sized fish compared to those to claim to release all their legal fish (16.0 inches versus 17.7 inches).

We also asked people the size of the smallest walleye they would willing to keep *if there were no minimum size limits*. This question provided response options that were capped at 15 inches to correspond to the current statewide minimum length limit; this value received the highest frequency of selection (39%; Figure 19). Fourteen inches was the next highest choice for smallest walleye (27%). Twelve percent said 12 inches or less and 11% indicated a length greater than 15 inches (Figure 19).

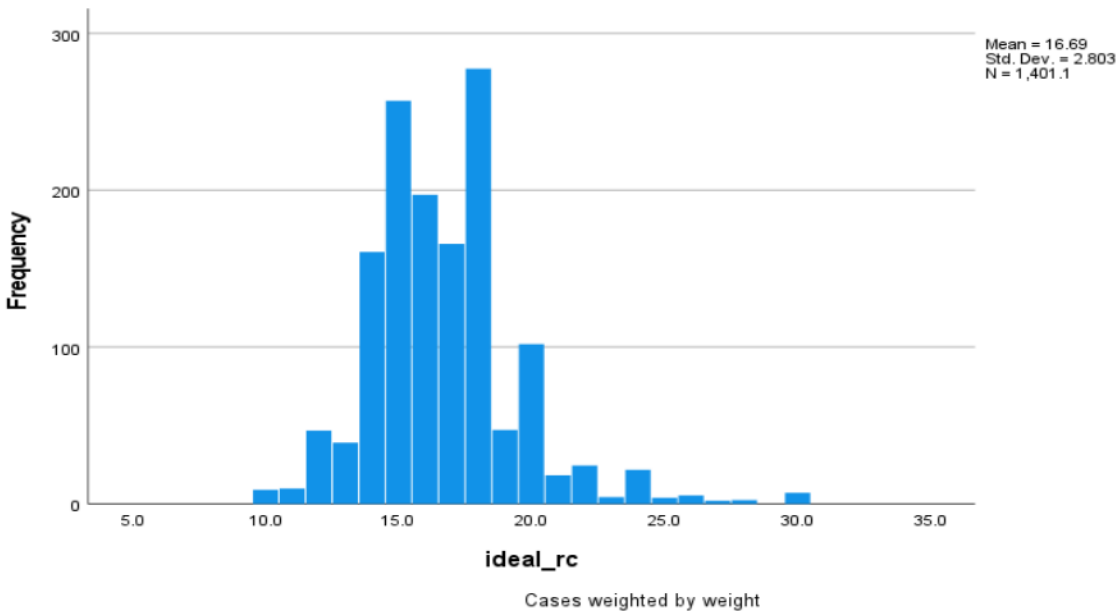


Figure 18. Frequency of write-in responses for ideal length of a walleye to keep if there were no minimum size limits.

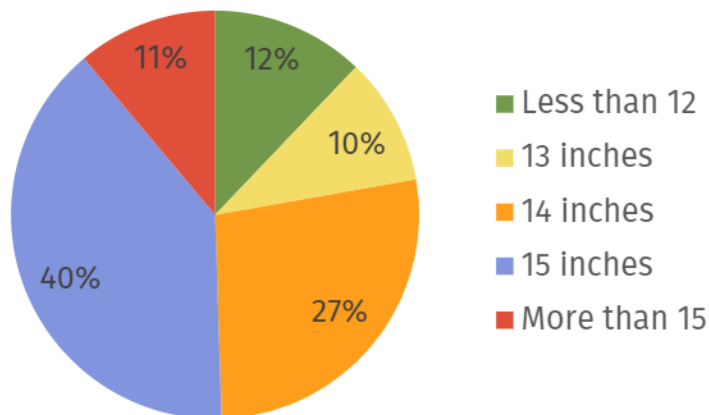


Figure 19. Percentage of anglers indicating the smallest walleye they would consider keeping, assuming no size limits.

The most used size regulation for walleye in the state currently is a 15-inch minimum that prescribes that fish less than 15 inches long must be released. Sometimes that minimum rule is used in conjunction with a protected harvest slot such as one used across the Ceded Territory lakes (20-24 inches) or another one on the Wisconsin River (20-28 inches). We asked respondents what their preference was for a minimum length limit on walleye and found 69% preferred something 15 inches or less. The most common response was 15 inches, selected by 36% of walleye anglers (Figure 20). Fourteen inches was the next most frequently (24%) selected length for a minimum limit. These frequencies closely align with the lengths anglers provided for the smallest walleye they would keep (Figure 19). Less than 10% of anglers preferred a minimum size limit of 12 or less inches. Furthermore, when asked about removing minimum size limits in lakes with an abundance of small walleye, preferences were somewhat mixed (Figure 21.) Thirty-nine percent were opposed to removing minimum size limits and 36% supported the idea. One in four anglers was undecided.

We also asked about tailoring size limits to different regions or for specific management objectives. Most of the respondents (40%) were not sure about the idea of having different minimum size limits in northern and southern Wisconsin (Figure 22). Among those with an opinion, proponents of different regional size regulations outnumbered opponents by a three to one margin. Other options for alternative walleye size limits produced support among most of the respondents. Most walleye anglers (56%) supported putting in place 18-inch minimum size limits for walleye as a management strategy to improve panfish size structure (Figure 23). Only 15% opposed this higher size limit to benefit panfish. Implementing harvest or protected slots were both supported by most walleye anglers, garnering 57% and 55% support respectively (Figure 24, 25).

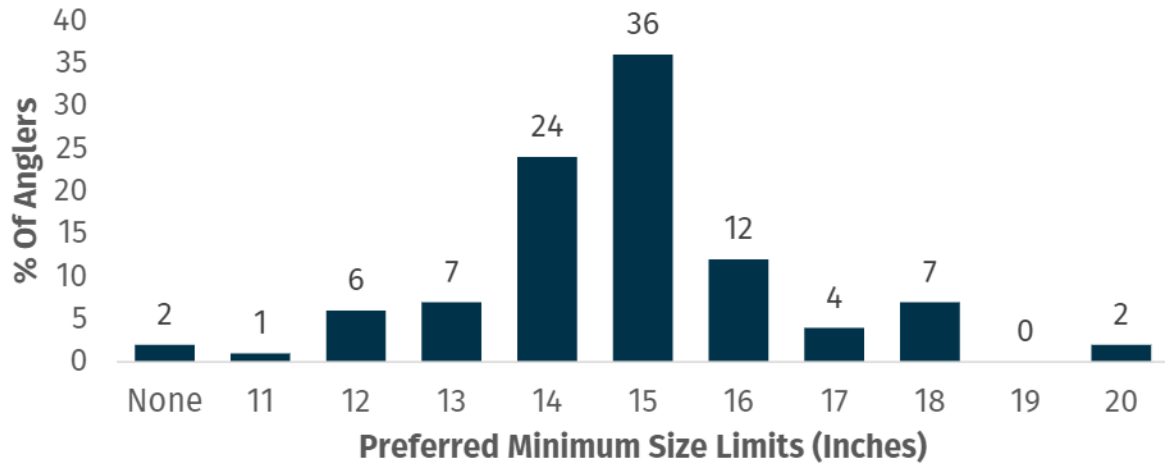


Figure 20. Percentage of walleye anglers favoring various minimum size limits (in inches) for walleye in Wisconsin applied as a general statewide regulation. Most anglers supported a 15-inch statewide minimum size limit.

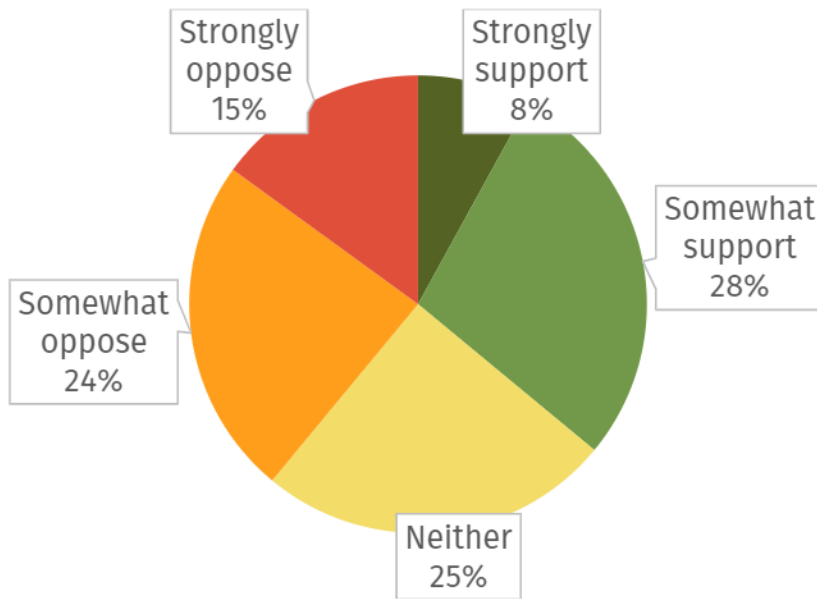


Figure 21. Percentage of walleye anglers supporting and opposing removing the minimum size limits on walleye in waters shown to have a large number of younger fish. One in four anglers was undecided.

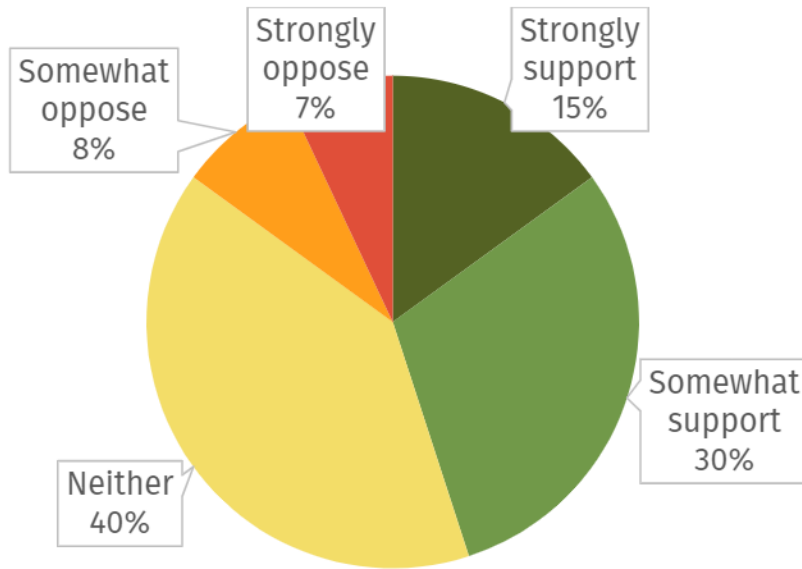


Figure 22. Percentage of walleye anglers supporting and opposing establishing different minimum size limits on walleye in the northern and southern regions of the state. Forty-five percent of anglers supported different regional limits and 40% were undecided.

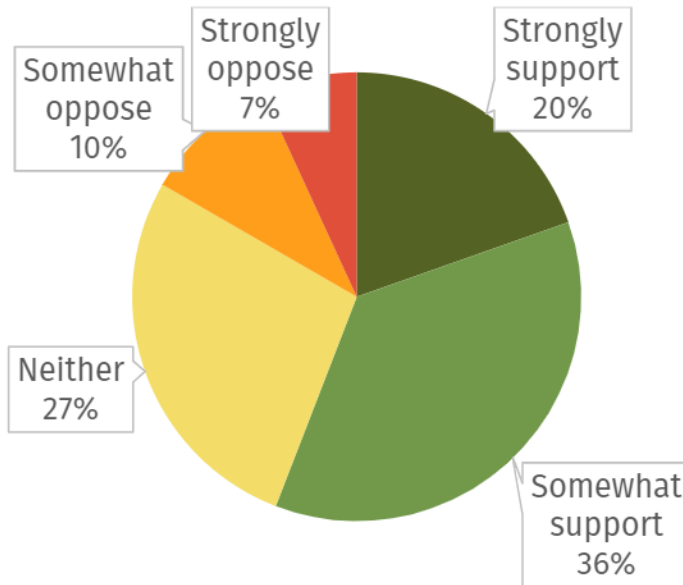


Figure 23. Percentage of walleye anglers supporting and opposing an 18-inch minimum size limit on select waters for the purpose of improving the panfish fishery. These targeted size limits were supported by 56% of anglers.

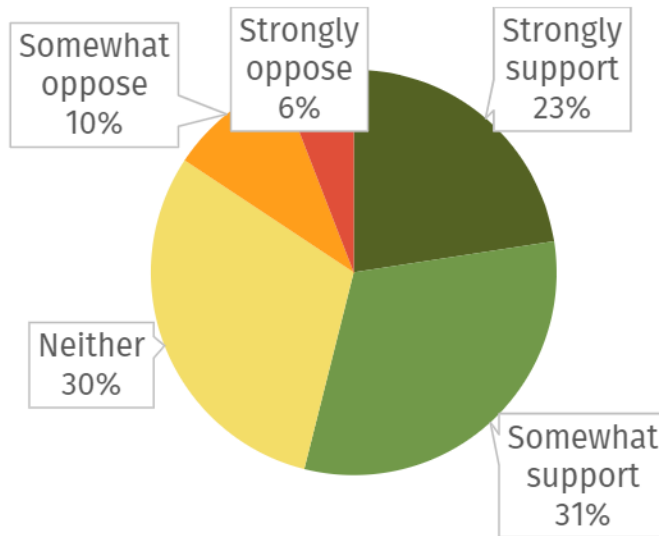


Figure 24. Percentage of walleye anglers supporting and opposing regulations to create protected slots of certain size ranges of walleyes that must be released. Fifty-four percent of anglers supported these regulations.

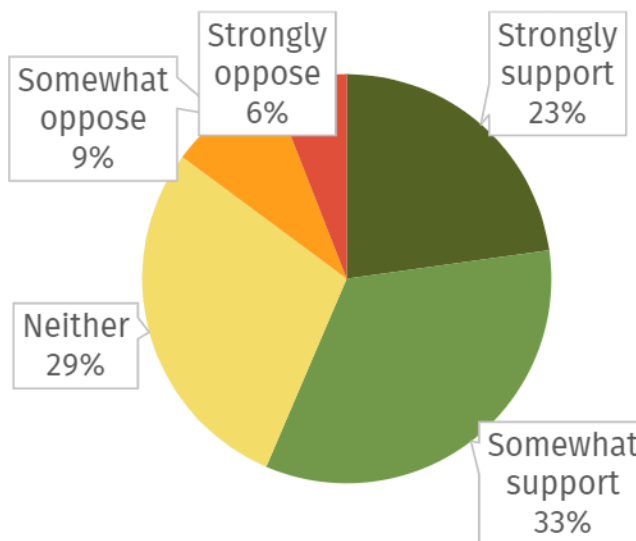


Figure 25. Percentage of walleye anglers supporting and opposing regulations to create harvest slots that specify a range of sizes in which fish may be kept. Fifty-four percent of anglers supported these regulations.

Since 2015, most waters in the Ceded Territory have had a 15-inch minimum size limit in conjunction with a 20-24-inch protected slot and a daily bag limit of three fish. Prior to 2015, there was no slot regulation and daily bag limits on individual lakes could vary from year to year depending on tribal harvest, in some cases being reduced to one or two fish. We asked walleye anglers about their support or opposition to this change and a sizeable majority in each strata told us they supported the current regulation (Figure 26). In fact,

nearly seven out of ten (69%) northern Wisconsin residents indicated they support the current regulation package.

We also wondered whether anglers would support an expanded harvest slot in the north moving forward. Fifty-four percent of northern Wisconsin residents supported an expansion and 25% opposed the idea (Table 17). The frequency of support was highest among non-residents, a group that expressed a higher propensity to release fish anyway. On that matter, support for expanding the protected slot in the north was higher among walleye anglers who purport to release more legal fish than they harvest (Table 18). Strongly identified walleye anglers supported an expansion of the protected slot at the highest frequency—57%—among respondents, but they also had the highest percentage of those who strongly opposed the idea (13%; Table 19).

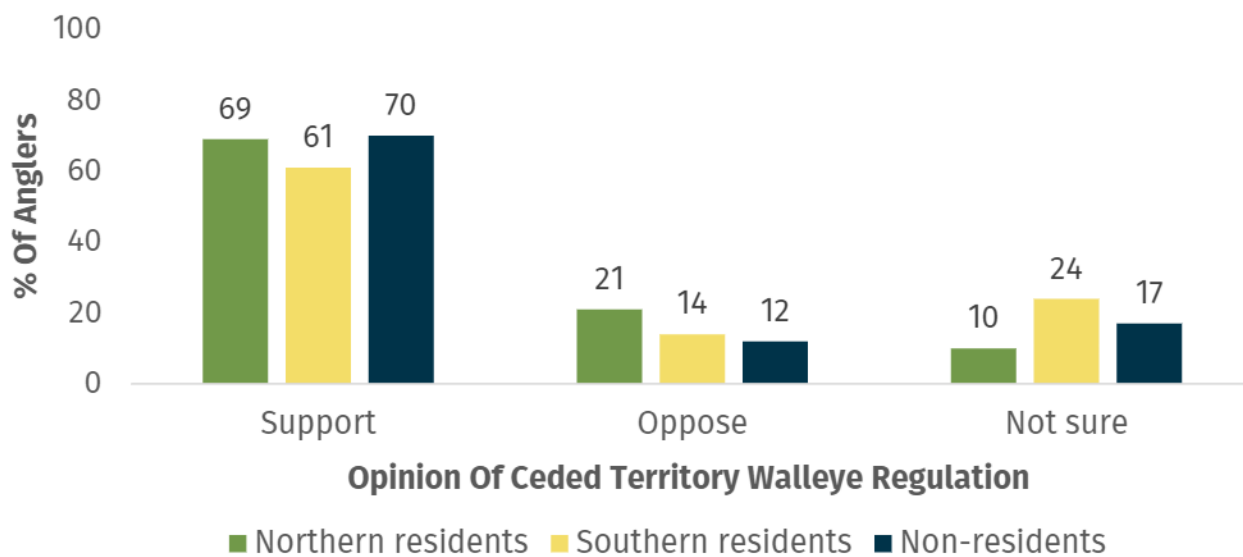


Figure 26. Percentage of walleye anglers supporting and opposing the current Ceded Territory walleye regulations (bag limit tied to size regulations) by sampling strata (residency).

Table 17. Percentage of walleye anglers supporting or opposing expanding the size of the protected slot in conjunction with the Ceded Territory walleye regulations, by sampling strata (residency) ($\chi^2=21.3$ Sig=0.05 Phi=0.11).

STRATA	STRONGLY SUPPORT	SOMEWHAT SUPPORT	NEITHER SUPPORT NOR OPPOSE	SOMEWHAT OPPOSE	STRONGLY OPPOSE
Northern residents	23	31	22	16	9
Southern residents	23	28	29	15	5
Non-residents	30	27	26	13	5

Table 18. Percentage of walleye anglers supporting and opposing expanding the size of the protected slot in conjunction with the Ceded Territory walleye regulations, by propensity to keep or release fish ($\chi^2=81.5$, Sig=0.001, Phi=0.23)

PROPENSITY FOR KEEPING LEGAL FISH	STRONGLY SUPPORT	SOMEWHAT SUPPORT	NEITHER SUPPORT NOR OPPOSE	SOMEWHAT OPPOSE	STRONGLY OPPOSE
Always keep	13	25	32	20	10
Keep more than release	15	30	30	20	5
Keep about half, release about half	26	31	21	15	6
Release more than keep	30	30	24	10	5
Always release	32	27	33	6	2

Table 19. Percentage of walleye anglers supporting and opposing expanding the size of the protected slot in conjunction with the Ceded Territory walleye regulations, by strength of identity as a walleye angler ($\chi^2=110.1$, Sig=0.001, Phi=0.25).

STRENGTH OF IDENTITY	STRONGLY SUPPORT	SOMEWHAT SUPPORT	NEITHER SUPPORT NOR OPPOSE	SOMEWHAT OPPOSE	STRONGLY OPPOSE
Very Much	37	22	17	11	13
Somewhat	31	28	22	14	5
A little	23	31	24	18	4
Not at all	14	29	39	13	6

These data show general support for both a reduction of bag limits in southern Wisconsin waters to three fish a day (Figure 16) and for greater use of protected slots across the state (Figure 24). Both results portend the next question which asked respondents about “exporting” the Ceded Territory size and bag rule to waters in southern Wisconsin. Northern residents—again, with a lower propensity to fish in the south (Table 6, 7)—were largely undecided on the matter; 46% neither supported nor opposed the idea (Table 20). Meanwhile, a majority (54%) of the residents of southern Wisconsin supported the idea. However, one in four residents of southern Wisconsin opposed implementing the “15-inch minimum, 20-24 slot, 3 fish bag” in southern Wisconsin, including 16% that were strongly opposed. Those who supported using the Ceded Territory rule in the south were more likely to be anglers who regularly release half or more of their legal fish (Table 21). Frequency of support for the concept was highest among those most strongly identifying as walleye anglers, with levels of support fading into more neutral opinions as strength of identity declined (Table 22).

Table 20. Percentage of walleye anglers supporting and opposing exporting the Ceded Territory regulation package to waterways in southern Wisconsin, by sampling strata (residency) ($\chi^2=30.0$ Sig=0.001 Phi=0.13).

STRATA	STRONGLY SUPPORT	SOMEWHAT SUPPORT	NEITHER SUPPORT NOR OPPOSE	SOMEWHAT OPPOSE	STRONGLY OPPOSE
Northern residents	18	24	46	7	6
Southern residents	24	30	32	9	6
Non-residents	24	26	38	7	4

Table 21. Percentage of walleye anglers supporting and opposing exporting the Ceded Territory regulation package to waterways in southern Wisconsin, by strength of identity as a walleye angler ($\chi^2=84.7$, Sig=0.001, Phi=0.22).

STRENGTH OF IDENTITY	STRONGLY SUPPORT	SOMEWHAT SUPPORT	NEITHER SUPPORT NOR OPPOSE	SOMEWHAT OPPOSE	STRONGLY OPPOSE
Very Much	34	26	23	8	10
Somewhat	29	26	30	10	5
A little	20	32	37	7	4
Not at all	14	27	47	7	6

Table 22. Percentage of walleye anglers supporting and opposing exporting the Ceded Territory regulation package to waterways in southern Wisconsin, by propensity to keep legal fish ($\chi^2=74.8$, Sig=0.001, Phi=0.22).

PROPENSITY FOR KEEPING LEGAL FISH	STRONGLY SUPPORT	SOMEWHAT SUPPORT	NEITHER SUPPORT NOR OPPOSE	SOMEWHAT OPPOSE	STRONGLY OPPOSE
Always keep	11	23	43	11	11
Keep more than release	14	32	39	10	6
Keep about half, release about half	22	28	37	11	3
Release more than keep	29	29	32	6	5
Always release	28	25	40	3	4

REHABILITATING WALLEYE POPULATIONS

In situations where walleye populations may require complete or near-complete protection from exploitation to promote a population rebound, we posed survey respondents with three regulation options. Two of these options, catch-and-release-only fishing or a daily bag limit of one fish over 28 inches, garnered support from a majority of anglers (56% each; Figure 27). The frequencies of response on these two options were almost identical, perhaps because in practical terms they would function similarly for anglers who experience them. Forty-seven percent of anglers opposed implementation of a closed fishery and only 30% supported it.

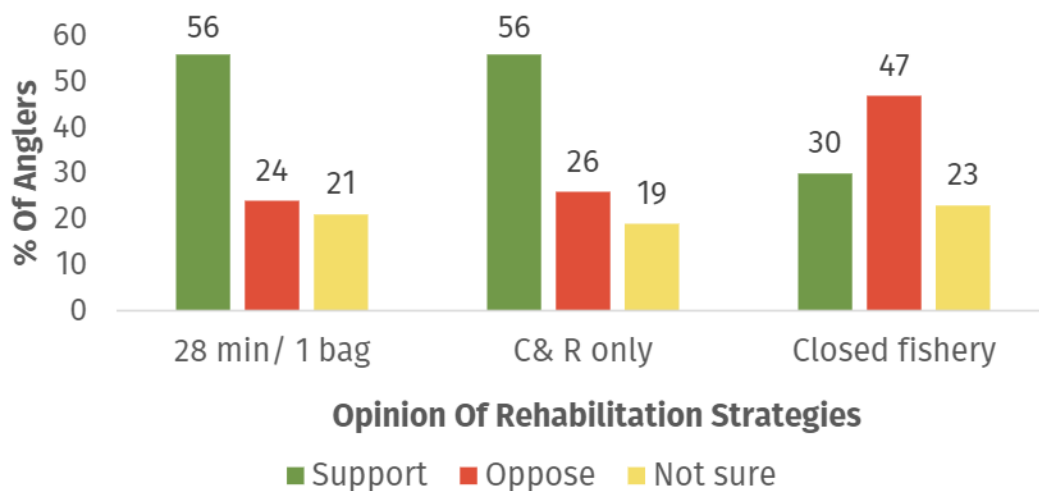


Figure 27. Percentage of walleye anglers supporting or opposing strategies to rehabilitate walleye populations, including a daily bag limit of one fish more than 28 inches long, catch-and-release-only, and a closed fishery. Responses to a more restrictive daily bag limit and catch-and-release-only were almost identical.

MAJOR RIVERS

Many of the large river systems in Wisconsin experience significant spawning runs of walleye that peak in March and April. These systems subsequently attract heavy angling pressure, which may be due in part to remaining open to walleye harvest during the months where inland lakes are closed to walleye (and other gamefish) harvest. We asked walleye anglers about their seasonal fishing on Wisconsin's large rivers that are open year-round.

Just under half (48%) of survey respondents indicated that they fished Wisconsin rivers that have year-round seasons for walleye, yet somewhat surprisingly, the participation rates were highest for summer angling among those who did fish the major rivers (Figure 28). The highest observed rate of summer river fishing among walleye anglers was among southern Wisconsin anglers (39%). Southern Wisconsin residents fished rivers at statistically higher rates in each season than anglers from the other two strata, which is likely a function of residential proximity to larger stretches of the Wisconsin and Mississippi Rivers, as well as

the Fox, Wolf and Rock Rivers. Fall angling on major rivers appeared similar to reported participation rates during the spring among state residents. Non-residents reported that they fished major rivers less frequently in spring compared to the fall season.

When it comes to regulation of walleye fishing during the spring spawning runs, those who participate in spring river fishing were split in their opinions. Thirty-nine percent did not see a need for change and 38% selected a more restrictive regulation than the current approach, including 12% who thought that the season should be closed during March and April like it is for inland lakes (Table 23). Most walleye anglers in the survey did not fish rivers in the spring and about one in three (35%) of that group was undecided about how to handle spring river regulations. Seventeen percent of non-spring-river participants thought that the spring season should be closed, and one in four thought that more restrictive harvest regulations should be put in place (Table 23).

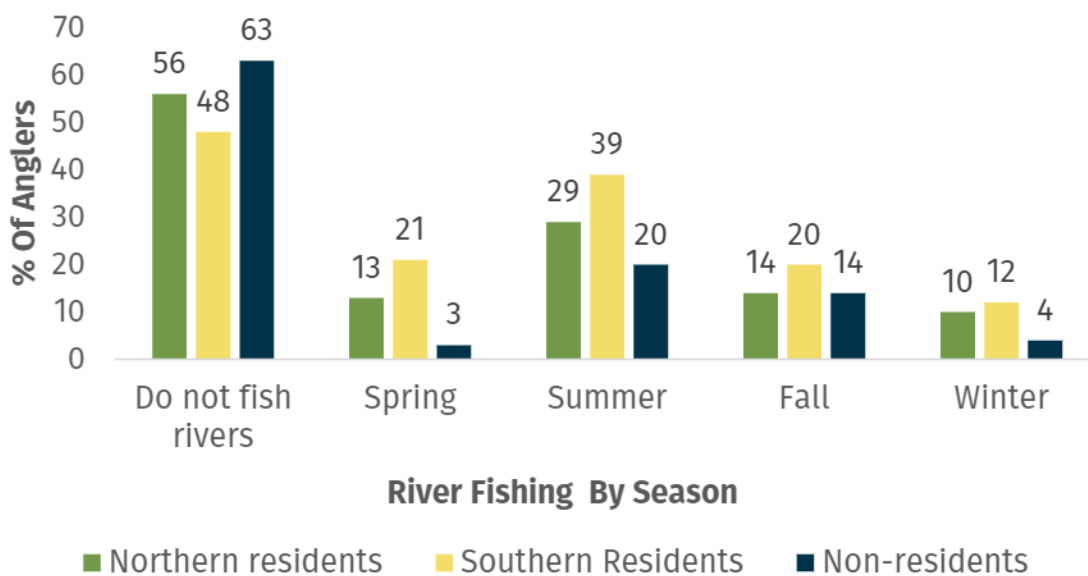


Figure 28. Percentage of walleye anglers fishing large river system during each season by sampling strata (residency).

Table 23. Percentage of walleye anglers reporting opinions about options for changing or retaining current regulations on major rivers in the spring.

FISH RIVERS IN SPRING	NO CHANGES NECESSARY	PUT IN PLACE MORE RESTRICTIVE HARVEST DURING MARCH AND APRIL	PUT IN PLACE LESS RESTRICTIVE HARVEST DURING MARCH AND APRIL	CLOSE SEASON TO BE CONSISTENT WITH INLAND LAKES	NO OPINION
Yes	39	26	6	12	18
No	21	25	3	17	35

STOCKING

Most walleye anglers (57%) said that stocking is “Sometimes” an effective management strategy (Figure 29). Twenty-three percent thought that it was “Very” effective. The tendency to think walleye stocking was very effective increased with strength of identity as a walleye angler. Four of ten anglers identifying “Very much” as walleye anglers said that stocking was “Very effective” (Table 24). There was no statistical difference in opinion of stocking effectiveness between northern and southern Wisconsin residents.

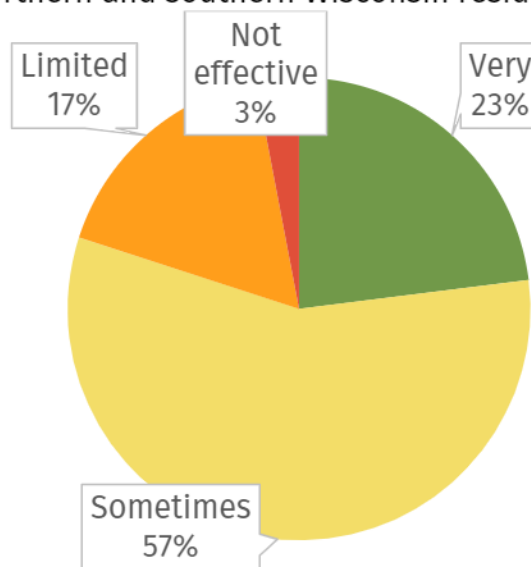


Figure 29. Percentage of walleye anglers rating the effectiveness of walleye stocking. Most walleye anglers rated stocking as “sometimes” effective (57%).

Table 24. Percentage of walleye anglers rating the effectiveness of walleye stocking, by strength of identity as a walleye angler ($\chi^2=64.9$, Sig=0.001, Phi= 0.20). Most anglers who identified strongly as walleye anglers believe that stocking is very or sometimes effective (81%).

IDENTITY	VERY EFFECTIVE	SOMETIMES EFFECTIVE	LIMITED EFFECTIVENESS	NOT EFFECTIVE
Very Much	40	41	15	4
Somewhat	28	56	15	2
A little	19	61	18	3
Not at all	15	62	20	4

We also asked respondents to assign ranks for how the DNR should approach stocking priorities given limited resources. Among the four options, two clearly emerge as the priorities for anglers (Table 25). Forty-three percent of anglers ranked their top choice for stocking as rehabilitation for walleye populations that used to be self-sustaining. An additional 33% ranked this item as their second choice. The second most frequently ranked priority was stocking lakes where ongoing research can evaluate stocking strategies (Table 25).

We also attempted to ask respondents to select a dollar estimate from a list of options for how much is an acceptable amount of money to spend to produce an adult walleye. Over half (52%) of the respondents left the question unanswered indicating that the question was not clear to most anglers. The respondents who did answer choose three or five dollars per adult fish, but the results are not reliable given the high proportion of non-response and indicate most anglers are not used to thinking about management decisions in dollars.

Table 25. Priority ranking for stocking strategies among all walleye anglers. The top two priorities for anglers were rehabilitating formerly self-sustaining walleye populations and supporting ongoing research to evaluate stocking strategies.

STOCKING OPTIONS	MEAN RANK	% RANKING			
		First	Second	Third	Fourth
Formerly self-sustaining walleye lakes, where stocking might help rehabilitate walleye populations.	1.9	43	33	17	8
Lakes with ongoing walleye research projects, where valuable information on stocking effectiveness can be obtained.	2.1	36	32	21	11
Lakes that have never had self-sustaining walleye populations, but stocking is successful in creating a walleye fishery and without stocking walleye would not likely exist in the waterbody.	3.0	12	20	26	42
Lakes where walleye are stocked to increase the quality of the panfish present. (Walleye may also provide a quality fishing opportunity, but harvest opportunities for walleye will be more limited).	3.0	10	18	36	36

HABITAT WORK

To gauge angler support for initiating more habitat improvement work as a management strategy, the questionnaire posed respondents with a couple of simple trade-off questions. Two habitat strategies were tested—conducting an inventory of critical habitat by agency staff and developing an easement program that would help riparian owners protect critical shoreline spawning habitats. Each of these strategies were “traded off” against two existing management approaches—fish surveys and fish stocking. Most anglers (56%) supported shifting resources from doing fish surveys to performing habitat assessments; only 5% opposed this shift. Support for doing habitat assessments at the cost of fish stocking received considerably less support (36%) and higher opposition (21%), but the most common response (44%) was not sure (Figure 30).

Angler opinion about the landowner easement habitat program was moderate; 46% supported shifting resources from fish surveys to support it (Figure 31). Only 34% favored reducing stocking to implement the easement program. In general, a relatively high percentage of anglers were “not sure” about the habitat tradeoffs, especially as it pertained to the landowner program. This suggests that they would need more information to evaluate each choice relative to the costs and benefits of each strategy. The fact that anglers appear somewhat more likely to “trade in” fish surveys for habitat work than they are for stocking may also suggest a need to provide more education about the important role of fish surveys in walleye management. Conversely, an argument can be made that anglers would also benefit from a deeper understanding of real versus perceived benefits of walleye stocking.

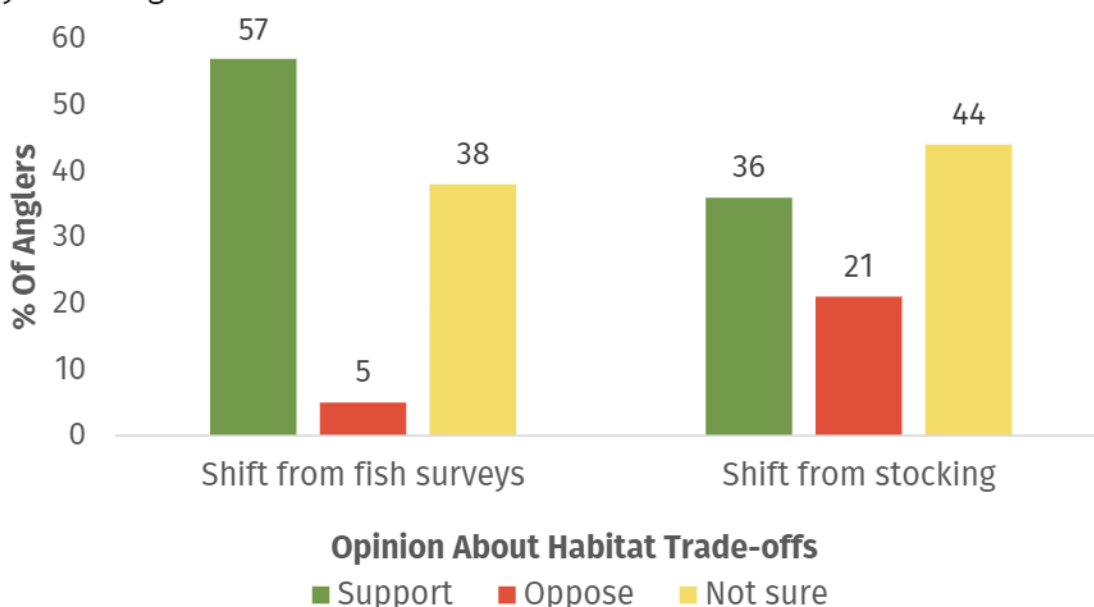


Figure 30. Percentage of walleye anglers supporting and opposing agency trade-offs from standard fish management practices (fish surveys and fish stocking) to do more critical habitat assessments. Anglers supported shifts from fish surveys (57%) but were not sure about shifts away from fish stocking (44%).

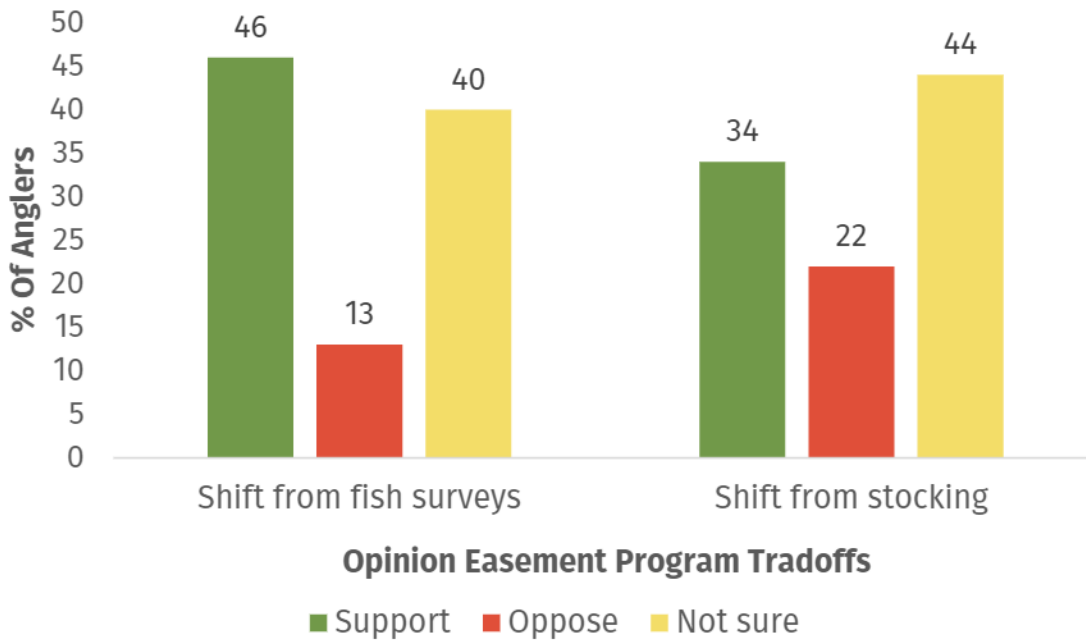


Figure 30. Percentage of walleye anglers supporting and opposing agency trade-offs from standard fish management practices (fish surveys and fish stocking) to create a landowner easement program to protect spawning habitat. Anglers supported shifts away from fish surveys (46%) but were not sure about shifts away from fish stocking (44%).

CLIMATE CHANGE ACTIONS

The final question on the survey asked anglers to select up to three actions they would like to see the DNR pursue to make walleye populations more resilient to climate change. Of the nine actions provided as options, none of them were selected by a majority of walleye anglers (Table 26). The most frequently selected options—both at 43%—were to reduce harvest on lakes with reduced walleye productivity and to shift to managing for other species on lakes where interventions are not likely to work.

Table 26. Percent of anglers supporting various management options to make walleye more resilient to climate change. The two most population management options included reducing walleye harvest on lakes with reduced walleye productivity and to shift to managing for other species on lakes where interventions are not likely to work.

PERCENTAGE OF ANGLERS	POTENTIAL CLIMATE CHANGE MANAGEMENT ACTIONS
43%	Reduce walleye harvest on lakes that have already shown reduced walleye productivity
43%	Identify lakes where interventions are not likely to work and shift to managing for other species on those lakes
35%	Partner with lake groups to minimize introduction of aquatic invasive species
35%	Carry out outreach and education to help the general public understand climate impacts on walleye
34%	Partner with lake groups to minimize nutrient inputs and shoreline disturbance
32%	Research efforts to better understand climate impacts
29%	Liberalize harvest regulations on bass to reduce competition with walleye
26%	Reduce walleye harvest on lakes that are resilient to climate change to protect high quality fishing opportunities
22%	Stock more walleyes even where there is no natural reproduction

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