An Adaptive Management Project for Panfish

Wisconsin Department of Natural Resources Panfish Management Team
February 2015

Approval of Plan:

Approved: _____

Steven Hewett, Management Section Chief, Bureau of Fisheries Management

An Adaptive Management Project for Panfish:
Identifying regulations to increase Bluegill and Black Crappie average size in Wisconsin

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<u>Background</u>

Panfish are arguably the most important fish species we manage evidenced by more anglers targeting, catching, and harvesting panfish than any other species or species group. In a 2006-2007 survey, anglers reported catching 58 million panfish, the majority of which were bluegills (Weigel, unpublished data). Moreover, utilizing a choice based model to understand angler preferences, a DNR survey found that, given the inherent tradeoffs in fish communities, bluegills are more influential than walleye or largemouth bass when anglers were asked where they would prefer to fish (Hansen, unpublished data).

Interest in managing panfish to improve size structure has gained attention over the last few decades as angler reports of increasingly poor size structure surface. Beard and Kampa (1999) documented a decline in multiple size structure metrics for bluegill, yellow perch, and black crappie between 1980 and 1991. Rypel (unpublished) also documented a similar negative trend in size (mean size and maximum size) over a longer time period (1940s – 2012) for all panfish species.

Due to these observed trends and angler-driven management goals for larger size structure in panfish populations, DNR fisheries biologists have repeatedly requested additional management options, usually

in the form of harvest regulations. Currently, the only special regulatory option is a daily bag limit of 10 panfish in aggregate, although there are a handful of other special regulations on individual lakes. Evaluations on the effectiveness of restrictive panfish regulations have revealed somewhat encouraging results. Modelling exercises using creel data from northern Wisconsin suggest that bag limits would have to be below 10 fish to substantially reduce harvest for bluegill (Nate, unpublished) as well as black crappie (Mosel et al. 2015). However, empirical studies in Minnesota and Wisconsin have suggested that a reduction in the bluegill bag limit from 25 or 30 to 10 (either in aggregate or just for bluegill) provides modest (i.e. ~0.8 inches on average) increases in mean length (Jacobson 2005; Rypel, *in press*).

The DNR Panfish Management Team is charged with developing a statewide Panfish Management Plan. An integral step in developing a management plan was soliciting public input on varied panfish related issues. Much of the attention focused on gauging interest in efforts to increase average size of panfish using restrictive regulations. Public input was gathered through a self-selected survey, public meetings were held throughout the state, a panfish stakeholder group held a focus meeting, and a set of advisory questions were asked during the 2014 Conservation Congress spring hearings.

According to the survey, the public has split views on whether panfish regulations should be used to improve our panfish fisheries, however anglers did indicate a preference to size over numbers (Table 1). During the 2014 Conservation Congress spring hearings two sets of panfish-related questions were asked: one set focused on the need for statewide management actions and one set focused on willingness to take action on specific problem lakes (Table 2). Attendees at the spring hearings reflected the survey responses in a split response to whether there is a need to increase statewide panfish average size. Respondents did not support statewide reductions to the bag limit but they did support separate bag limits for the various species. However, when asked about regulations for specific "problem waters" there was a majority of support for reducing bag limits and an approximate split in using high minimum length limits.

Table 1. Summary of responses to panfish survey (self-selected survey offered online and in person at public meetings) to various questions related to panfish management.

→ *How satisfied are you with the size of your favorite panfish?*

Response	Percent Response
Dissatisfied	31%
Neither dissatisfied nor satisfied	33%
Satisfied	36%

→ *Would you like to see the daily bag limit of 25 panfish increased, decreased or kept at 25?*

Response	Percent Response
Increased	6%
Kept at 25	47%
Decreased	47%

→ *Would you prefer to catch and keep fewer panfish but larger in size or more panfish of average or smaller size?*

Response	Percent Response
Catch fewer but larger panfish	61%
No change in number or size of panfish	33%
Catch more but panfish size is average or smaller	6%

Table 2. Summary of responses to panfish-related questions during the 2014 Conservation Congress spring hearings. Statewide questions in italics.

Question	Votes Yes	Votes No	Majority	Counties Approving	Counties Rejecting
General statewide need to increase average size of panfish	*2792*	*2837*	*No*	*31*	*39*
General statewide need to spread out panfish harvest	*2237*	*3216*	*No*	*11*	*57*
Keeping general panfish combined daily bag limit of 25 fish	*3680*	*1945*	*Yes*	*68*	*2*
Reduce the general panfish daily bag limit from 25 to 15 fish	*2274*	*3374*	*No*	*8*	*64*
Reduce the general panfish daily bag limit from 25 to 10 fish	*1024*	*4573*	*No*	*0*	*72*
Reduce the general panfish daily bag limit from 25 to 5 fish	*443*	*5154*	*No*	*0*	*72*
Separate angling bag limits for bluegill, crappie, and perch	*3484*	*2162*	*Yes*	*60*	*12*
High minimum length limits on panfish in specific waters	2639	2893	No	24	47
Reduce bag limits for panfish to determine effects on populations	3169	2396	Yes	54	18

Additional Conservation Congress questions on predator and habitat management to improve panfish populations were generally supported, showing anglers are interested in long-term comprehensive management approaches. Those long-term approaches are vital in setting forth a vision for where panfish management is going in Wisconsin, however they are challenging as they require more resource investment and are less direct than harvest regulations. Nonetheless, long-term strategies utilizing predator and habitat management for the benefit of panfish will be addressed in the statewide management plan. This document is focused on the more direct and short-term approach through harvest regulations. The drafting of this document and regulatory approach prior to the management plan does not reflect priorities but simply a response to the reality of regulation change cycles and associated deadlines.

Proposed Approach

There are both biological and social challenges in developing a regulatory approach to improve panfish size structure—mostly because of the high level of uncertainty involved. Previous studies indicate that average length can be improved with a reduced bag limit of 10 but these studies included relatively few lakes (<10), the response was variable by lake, and the gains were modest (Jacobson 2005; Rypel, *in press*). Modeling efforts suggest that bag limits must be reduced lower than 10 to see a notable reduction in exploitation for both crappie and bluegills (Mosel et al. 2015; Nate, unpublished). No empirical studies have reduced bag limits on a meaningful number of lakes (>10) nor have any reduced bag limits lower than 10. Thus, regulations offer hope yet many questions remain. The most important question potentially being angler response; anglers may be unwilling to accept the sacrifice necessary to make a regulation successful (e.g. not willing to measure fish or making large sacrifices in harvest opportunity; Reed and Parsons 1999).

While there is clearly no support to change the statewide panfish regulation (from aggregate bag of 25), there is interest in improving size structure on selected underachieving lakes—which are abundant and scattered throughout the state. The most effective tools to improve size structure are not apparent, reflected both by previous evaluations and the surprisingly varied input on preferred regulations received from WDNR biologists. Considering all of these factors, we propose an adaptive management approach (Walters and Holling 1990) where different regulations would be employed on a meaningful number of underperforming lakes in a structured manner and compared against similar reference lakes.

Goal and Objectives

Goal

The goal of this effort is to improve size structure in bluegill and black crappie populations. There are multiple objectives that are somewhat nested and are prioritized as follows:

Objectives

- Within at least one treatment group, improve mean length of bluegill and black crappie populations by 0.5 to 1 inch. Performance evaluations will first take place in 2022 and if intent is to continue, again in 2027
  - Identify which regulation treatment provides the greatest increase in mean length
  - Identify whether certain lake and habitat characteristics and/or predator abundance is a significant factor in whether a regulation is successful at achieving the primary objectives
  - Identify which regulation is most palatable for anglers
  - Identify angler behavior in response to the regulation, specifically whether anglers shift effort away from treatment lakes

Study Design and Development

This effort is intended to improve panfish size structure using regulations and thus includes lakes that have size structure problems due to angler harvest. We are defining bluegill and black crappie populations with size structure problems due to angler harvest as exhibiting mean lengths less than the

AFS standards "Quality" size but have moderate to fast growth (Table 3). Accordingly, this effort is not intended to address "stunted" populations that exhibit slow growth because of excessive recruitment, limited food resources, and/or insufficient predator mortality. Table 3 criteria were not prescriptive and some lakes were included based on expert judgment or strong public support. Moreover, initial Black Crappie criteria were based on SEII survey data however protocols going forward will rely on spring fyke netting (see below in *Monitoring and Evaluation Plans*).

Table 3. Criteria for lakes having a size structure problem due to angler harvest based on spring electrofishing (SEII) protocols.

Species	Mean length (in)	Mean length at age-3 (in)
Bluegill	<6	≥ 4.2
Black Crappie	<8	≥ 6.6

A proposed set of regulations were determined by the Panfish Management Team (PMT). Fisheries biologists from across the state were invited to offer preferred regulation options, which were highly variable. Informed by the body of available literature and expert judgment the PMT identified commonalities, combined the options into similar groups, and selected 3 options that were both disparate in their hypothesized functionality yet offered some novelty relative to past studies (Table 4). Moreover, social acceptance was an inherent consideration in selecting the regulation options such that regulations the PMT viewed as socially unacceptable were not considered (i.e. complete closures, spawning area closures, ice fishing closures, highly restrictive minimum length limit, and technological restrictions or primitive fishing techniques only).

Table 4. Original set of proposed regulation options for lakes.

Regulation Abbreviation	Regulation
5 over 7"	A total of 25 panfish may be kept but only 5 of the sunfish may be over 7"
10 bag	Only 10 of any panfish species may be kept
5 bag	Only 5 of any panfish species may be kept
Reference	Reference: A total of 25 panfish may be kept

During the summer of 2014, biologists identified potential lakes using the above criteria and initially came up with over 300 lakes, mostly with bluegill as the primary species of interest but many focusing on black crappie as either a primary or complimentary species of interest. Approximately half of the lakes were removed after internal review. Internal review focused on sampling feasibility and verifying growth data. Ultimately, approximately 150 lakes were then identified as fitting the above criteria. One quarter of the lakes were randomly assigned as reference lakes, the remaining lakes were assigned to lakes generally in a random manner but with some deference to social acceptability.

Public Feedback on Original Proposal

Public feedback was sought on the proposal to change regulations on 110 lakes (not counting the reference lakes) across the state (Appendix A – First factsheet) through various venues including a statewide press release, three public meetings, an online chat, an online voluntary survey, a public comment period, and numerous presentations by staff to various stakeholder groups. Generally, there was support for the broad concept (particularly among lake riparian owners) but numerous concerns were voiced (particularly among non-riparian owners). Many simply did not want any changes to panfish regulations, while others were concerned about the increased regulation complexity, angler confusion, and enforcement challenges. There was considerable confusion surrounding the 25/5 over 7" proposed regulation. Many anglers offered suggestions as well, the most common being to focus restrictive regulation on the spawning season, when large bluegills and crappies are highly vulnerable to angling.

The PMT decided not to focus on the spawning season because the regulations discussed included full closure, catch and release only, or spawning area closures, which all offered an unacceptable loss in opportunity, particularly for novice anglers. However, following public comment a seasonal bag limit reduction was considered and exploratory analyses conducted. Utilizing available creel data, the PMT found that of the large bluegills (>8") and black crappie (>10") harvested in Wisconsin's creeled lakes every year, 38% of each species are caught in May and June (Figure 1). These findings echo anglers' concerns that large centrarchid panfish may only be available to most anglers during spawning and focusing restrictive regulations in a limited time period may be fruitful. Admittedly, this was not an exhaustive analysis – further creel data analysis and other research into the implications of fishing centrarchid panfish during their spawning period may be warranted. However, given angler support, experimental spawning period regulations are worth pursuing as part of the adaptive management approach.
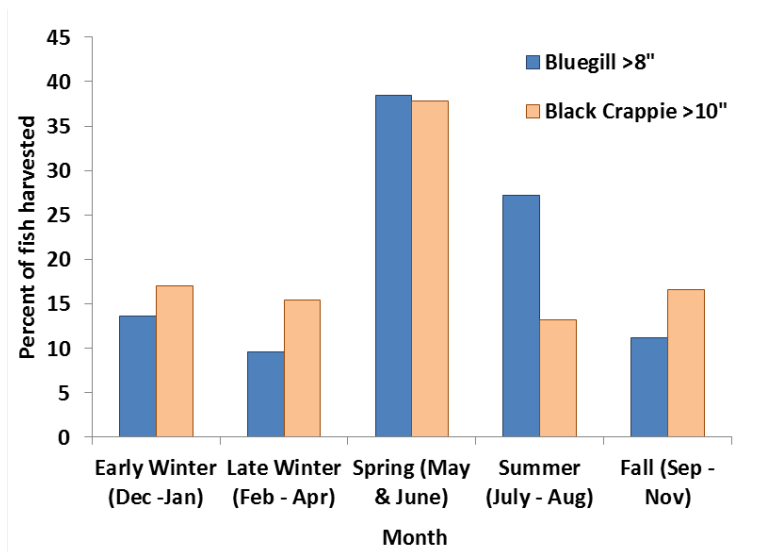

Figure 1. Percent of all bluegill over 8 inches and black crappie over 10 inches harvested in each "season". Percentages calculated using all creel data from all years.

Updated Proposal

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Based on public feedback and the additional analyses, the regulation proposal package was modified to exclude the 25/5 over 7" option and include an option that would restrict harvest during the spawning period. Specifically, the regulation would limit anglers to 5 of each species (15/5) during May and June and revert to the statewide bag limit of 25 in aggregate for the rest of the year. However, a number of biologists and team members are keenly interested in seeing the 25/5 over 7" in place as it offers a unique and likely effective approach to bluegill management by encouraging anglers to function as natural predators (i.e. harvest small fish). Moreover, based on discussions with stakeholders during the public comment period, many biologists believe a handful of lake associations are eager to utilize this option and may be engaged as partners in a data collection effort. Therefore, 4 lakes (Shishebogama and Gunlock in Oneida; Big Sand in Vilas; Cloverleaf Chain in Shawano) will remain under a 25/5 over 7" regulation and stakeholders will be engaged to partner in data collection (i.e. angler diaries and effort counts).

After removing lakes with no support for a regulation change the population of waters totaled 136 (mostly individual lakes but some chains), including 36 reference waters (Table 5). Most waters (90%) have bluegill as the dominant panfish but a smaller percent (32%) included black crappie as a either an equal or more dominant part of the fishery. Lakes included in the plan are spread across the state and reflect the density of lakes across Wisconsin (Figure 2) with the exception of the northwest part of Wisconsin. Available data and public opinion in many counties of northwest Wisconsin (e.g. Barron, Burnett, Polk, Washburn) suggest panfish populations are satisfactory and thus no waters were included. A factsheet was distributed to the public with the list of specific waters with each lake's proposed regulation (Appendix B). The distribution of lakes across the three regulations and treatment options is not evenly balanced yet sufficient numbers are found in each option to facilitate an evaluation that will far exceed any previous regulation evaluation effort.

Table 5. Proposed number of lakes in each treatment group by target species. Some lakes intended to target both species, thus rows and columns do not add up.

Species	25/10	Seasonal 15/5	15/5	Reference	Total
Bluegill	37	24	23	34	122
Black Crappie	14	10	9	11	44
Total Lakes	43	27	26	36	136
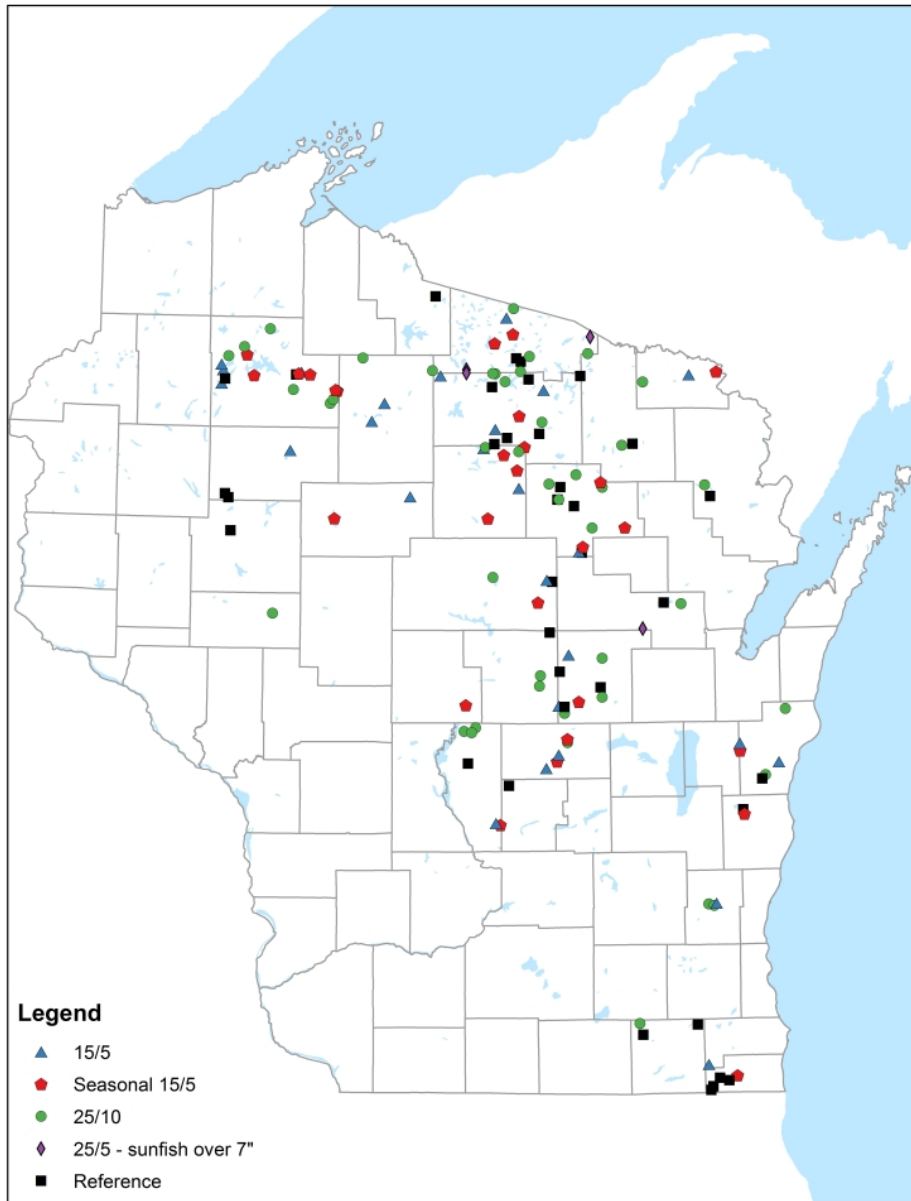
Figure 2. Lakes and associated experimental regulations.

One common concern and previous challenge with experimental regulations is statistical power. We conducted power analysis simulations based on observed variation of mean length in Bluegill populations (including all lakes sampled between 2008 and 2013) to determine the monitoring requirements to see a change in mean length of one inch. Assuming three treatments and one reference group, if each group was sampled 30 times once the response has occurred (e.g. 30 lakes in one year or 15 lakes in two years, etc…) 88% of the time we would observe a significant response with α = 0.10. Fewer samples from each group results in a lower likelihood of observing a change (Table 6).

Table 6. Results of power analysis simulations showing the percent of time a 1 inch change in mean length would be observed given a varying number of surveys conducted within each group (3 treatments + reference). Significance level set at α=0.10.

Sample Size (per group)	Total sample size (3 trts + ref)	Proportion significant (α=0.10)
10	80	0.52
20	160	0.74
30	240	0.88
50	400	0.95

Fish Population Monitoring and Evaluation Plans

To be included, all lakes must have at least one mean length estimate (the primary response variable) from surveys conducted between 2008 and 2016, which would qualify as pre-treatment data. The post-treatment data collection period will be divided into two periods. Previous analyses (Rypel, *in press*) suggest that the likelihood of observing a response to a regulation change increases with time post-treatment. However, Jacobson (2005) did find positive responses in Bluegill mean length after the fourth and fifth year following a bag limit reduction. The objective set forth intends to complete an evaluation of the regulations in the sixth year following implementation, thus all lakes should be sampled at least once in between 2019 and 2021; however, if opportunities exist to acquire additional mean length estimates in 2017 and 2018, biologists are encouraged to do so but these surveys will not replace scheduled post-treatment monitoring. Every lake must have at least one post-treatment sampling event within a time period that allows for responses to manifest but is short enough to retain public interest and support (3 – 6 years post-treatment). Some lakes will hopefully have two post-treatment sampling events which greatly increases the power of the overall analysis. All reference lakes should be surveyed at least once (preferably twice) between 2017 and 2021. A final list of specific waters and existing survey years or planned survey years is available in Appendix C.

Sampling shall include

- Bluegills – Standard late spring electrofishing (SEII) protocols will be used and at least 50 (preferably 100) individual fish over 3" must be measured. Mean length will be the primary response variable. Per SEII protocols, all gamefish should be collected and measured to acquire a relative abundance (CPE) estimate of various predator species to be used as a covariate in the analysis.
- Black crappie – spring fyke netting (SNI or SNII: water temperatures between 50 and 65 degrees) will be used and at least 50 (preferably 100) individual fish over 5" must be measured. The measured fish should be randomly selected and, if possible, sampled from various nets (e.g. measure the first 25 black crappie encountered from four randomly selected nets).
    o If possible SEII should be conducted in conjunction with spring fyke netting to evaluate potential for utilizing SEII data via a conversion.

- Age and growth
  - Age data will be required on a subset of lakes (at least two lakes per biologist—one for those with only one lake) which will entail collection of 5 otoliths per half inch length bin for all fish over stock size (3" for bluegills and 5" for black crappie). Each biologist will preferably process and age all structures collected however if they are unable to, fish can be submitted to Dr. Dan Isermann at UWSP for processing and aging.

For chains of lakes, all lakes in the chain will have the same regulation (where some are applied to the chain as one management unit, others are applied to the individual lakes in the chain as separate management units) yet only one lake needs to be chosen as the representative for monitoring. Whichever lake is chosen should continue to be the representative lake monitored throughout the duration of the study. Data analysis will be done using a Before-After Control-Impact (BACI) ANOVA to evaluate the response in mean length. Additional variables will be included to identify interactions (e.g. predator CPE, lake size, starting mean length, productivity, macrophyte index, etc…).

Angler Dynamics Monitoring and Evaluation Plans

Anglers, biologists, and researchers have suggested that restrictive panfish regulations may redistribute effort away from the target lake and simply move the problem elsewhere (Jacobson 2005). While this is a legitimate concern, documenting this phenomenon requires full creel surveys on the treatment lakes and presumably all lakes nearby, which is unreasonable. However, on a subset of lakes (~10) within each treatment option and the reference group, car counters will be deployed to index effort. Effort data will be coarse but substantial reductions in effort from before to after the treatment can be observed and presumably attributed to the regulation. The car counter aspect of the project will be carried out by partners at UW-Stevens Point's Fisheries Analysis Center.

Documenting changes in angler harvest and satisfaction is a critical component of this project. A modified bus-route creel will be employed to collect creel interview data on a subset of lakes during popular panfish angling time periods. The UW-Stevens Point's Fisheries Analysis Center will oversee creel staff that will both validate the counters and opportunistically interview anglers on lakes. The modified creel will be conducted in 2015 and again in 2020. Clerks will conduct interviews on AMPP lakes across the state during three 3-week time periods (late spring, late summer, late winter). Clerks will measure harvested fish and ask anglers their level of satisfaction on their fishing experience and perceptions on the regulation change. Additionally, on-site intensive creels have already been conducted on 20 lakes and more are scheduled for AMPP lakes (see Appendix C).

A voluntary online survey will be developed and offered to anglers to comment and offer their feedback on the regulations starting in 2019. If funding is available, a random mail survey will also be developed and mailed to a subset of anglers in areas where a high density of lakes with regulation changes are located.

Adaptive Management Cycle

A number of lakes were identified by fisheries biologists as potential AMPP lakes but sufficient data were not available to meet the inclusion criteria. Thus, some biologists requested later addition of lakes (in the 2018 regulation cycle). Adding lakes to the experimental at varying times may strengthen our ability to properly assess transient responses to the regulation changes (Walters et al. 1988). Thus, adding lakes to the AMPP is encouraged provided there is public support. These later additions will be added to the evaluation following the initial evaluation period.

The Adaptive Management process is intended to be iterative, thus the initial evaluation period should be considered the end of the first iteration. The PMT will evaluate the initial response of the regulations in the fall of 2021. Results of the initial evaluation will be shared with the public via a press release and public meetings. Feedback on the regulation experiment will be collected through the winter. The evaluation will determine whether the primary objective has been met (a positive response in mean length attributable to a regulation is observed). If the primary objective is met by all regulations, the regulation with the most social appeal will be recommended to be utilized on all waters not meeting Bluegill and Black Crappie size structure goals because of overharvest. If the results are variable, the PMT will gather public feedback and make a recommendation (e.g. continue with no adjustments for two more years, make adjustments to the regulations, etc…). The iterative process is expected to entail adjustments to the management actions as informed by what has been learned to that point.

Timeline

Early summer 2015 and 2016 – SEII sampling to acquire pre-treatment data

Summer 2018 – Opportunity for additional lakes to be included in the treatment options via rule proposal process

Spring and Early Summer 2017 & 2018 – Sampling period for post-treatment data on reference lakes begins and optional sampling opportunity for treatment lakes

Winter 2018 – 2019 – Develop angler survey to characterize support for various regulations

Spring and Early Summer 2019 -2021—Required sampling period for post-treatment data on treatment lakes and reference lakes

Fall/Winter 2021—Panfish Team analyzes data, conducts initial evaluation, and holds public meetings sharing information and seeking feedback

2021-2026 –Additional sampling continues to enable second round of evaluations

Summer 2022—Any necessary regulation changes submitted

Summer 2024 – If appropriate, submit permanent rule change proposal (see sunset in 2026)

April 1, 2026 – Regulation sunsets and reverts back to statewide unless regulation proposal is submitted

Summer and Fall 2026 – Second round of evaluation completed

Acknowledgements

Citations

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Mosel, K. J., D. A. Isermann, and J. F. Hansen. 2015. Evaluation of daily creel and minimum length limits for black crappie and yellow perch in Wisconsin. North American Journal of Fisheries Management 35:1-13.

Reed, J. R., and B. G. Parsons. 1999. Angler opinions of bluegill management and related hypothetical effects on bluegill fisheries in four Minnesota lakes. North American Journal of Fisheries Management 19:515-519.

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List of Appendices

Appendix A: Initial AMPP fact sheet

Appendix B: Updated AMPP fact sheet following adjustments to regulations proposed

Appendix C: List of lakes in AMPP with years scheduled for monitoring

In search of larger panfish
Biologists propose regulation options to bring better panfishing to Wisconsin anglers.

Over the past three years, fisheries biologists with the Department of Natural Resources have solicited public input on all aspects of panfish management. They found that although anglers are not interested in sweeping changes to statewide panfish regulations, they are interested in addressing specific lakes with overharvest issues. With this in mind, the department is proposing regulation options to increase panfish size on selected lakes where harvest appears to be a problem.

What we know

1) Restrictive regulations can improve the average size of bluegill and crappie.

2) Evaluations in Wisconsin and Minnesota show that a reduced bag limit could increase mean length of bluegills.

3) For a regulation to be effective, it has to be restrictive enough to affect harvest.

4) There is a challenging balance in finding a regulation that is both sufficiently restrictive but also socially acceptable.

What we propose

The department is proposing three different harvest regulations on selected "problem" lakes and evaluating their performance over time.

The goal of this proposal is to increase the average size of bluegill and crappie on select lakes that are currently overharvested.

A total of 110 lakes from across the state were identified by the state's fisheries biologists as "problem" lakes where mean size of bluegill or crappie is less than desirable, most likely due to overharvest (Figure 1 for map and Table 2 for complete list on back).

Regulation options

One of three regulations will be applied:

1 A total of 25 panfish but no more than 10 of any one species (25/10).

2 A total of 15 panfish but no more than 5 of any one species (15/5).

3 A total of 25 panfish but no more than five of the **sunfish** (bluegill and pumpkinseed) may be over 7" (25/5 over 7").

All regulations will be evaluated for effectiveness and acceptance starting in 2019.

More for the frying pan

Even though anglers would take home fewer fish from some lakes, the expected increase in average size should result in the same amount of, or more, meat for the frying pan.

Anglers can get to a half pound of bluegill meat a lot of different ways. For example, the fillets from 25 5-inch bluegills weigh the same as fillets off of eight 7-inch bluegills (Table 1).

Table 1. Number of fish (by length) it takes to equal 1/2 pound of meat.

Length (inches)	Number of Fish
5	25
6	14
7	8
8	3.5
9	2

Let your voice be heard

Attend one of the three scheduled public meetings:

MINOCQUA
Minocqua Public Library
415 Menominee St.
August 26th - 6:30 to 8:30 p.m.

WAUPACA
Waupaca Public Library
Room B, 106 S. Main St.
September 3rd - 6:30 to 8:30 p.m.

WAUKESHA
Waukesha DNR Service Center
Room 151, 141 NW Barstow Road
September 4 - 6:30 to 8:30 p.m.

PANFISH STUDY LAKES

Figure 1. *Distribution of 110 study lakes identified through fisheries biologists and angler surveys with populations of panfish that exhibited poor size, average growth and high fishing pressure.*

Table 2. Panfish study lakes and the designated regulation option randomly assigned to each.

County	Lake/Chain Name	Regulation[1]
Adams	Crooked	15/5
Adams	Parker	15/5
Adams	Arrowhead	25/10
Adams	Camelot	25/10
Adams	Sherwood	25/10
Ashland	Butternut	25/10
Eau Claire	Eau Claire	25/10
Florence	Halsey	25/10
Florence	Sea Lion	25/10
Florence	Spread Eagle Chain (Bass)	25/10
Forest	Wabikon & Riley (Wabikon)	25/10
Iron	Gile Flowage	25/10
Kenosha	Paddock	25/5 over 7″
Langlade	Big Twin	25/10
Langlade	Long (T33N R10E S35)	25/10
Langlade	Moose	25/5 over 7″
Langlade	White	25/5 over 7″
Langlade	Crystal	15/5
Langlade	Lower & Upper Post	25/10
Langlade	Dynamite	25/10
Langlade	Meyer	15/5
Langlade	Mueller	25/10
Lincoln	Clara (T34N R8E S10)	15/5
Lincoln	Crystal	25/5 over 7″

County	Lake/Chain Name	Regulation[1]
Lincoln	Hilderbrand	25/5 over 7″
Lincoln	Echo	15/5
Lincoln	Rice Reservoir Chain	25/10
Lincoln	Hilts	25/10
Lincoln	Clara (T35N R07E S14)	25/5 over 7″
Lincoln	Pesabic	25/5 over 7″
Manitowoc	Bullhead	15/5
Manitowoc	English	15/5
Manitowoc	Harpt	25/10
Manitowoc	Pigeon	25/10
Marathon	Pike	15/5
Marinette	Caldron Falls Reservoir	25/10
Oneida	Boom-Rhinelander Chain	15/5
Oneida	Gilmore	25/10
Oneida	Hasbrook	15/5
Oneida	Muskellunge	15/5
Oneida	Oneida	15/5
Oneida	Squaw	15/5
Oneida	Gunlock	15/5
Oneida	Shishebogama	15/5
Oneida	Moen Chain	25/10
Oneida	Three Lakes Chain	25/10
Oneida	Two Sisters	25/10
Oneida	Carrol	25/10
Oneida	Madeline	25/10
Oneida	Bear	25/5 over 7″
Oneida	Clear	25/5 over 7″
Oneida	Indian	25/5 over 7″
Oneida	North Nokomis	25/5 over 7″
Portage	Emily	15/5
Portage	Lime	25/10
Portage	Collins	25/5 over 7″
Portage	Helen	25/5 over 7″
Price	Phillips Chain	15/5
Price	Solberg	25/5 over 7″
Price	Pike Chain	25/10
Price	Butternut	25/10
Racine	Bohners	15/5
Rusk	Lower Flambeau River Flowages	25/5 over 7″
Sawyer	Black Dan	15/5
Sawyer	Blueberry	15/5
Sawyer	Evergreen	15/5
Sawyer	Loretta	15/5
Sawyer	Mason	15/5
Sawyer	Osprey	15/5
Sawyer	Windigo	15/5
Sawyer	Connors	25/10
Sawyer	Lake of the Pines	25/10
Sawyer	Lost Land and Teal (Lost Land)	25/10
Sawyer	Round (in chain)	25/10
Sawyer	Spring	25/10
Sawyer	Winter	25/10

County	Lake/Chain Name	Regulation[1]
Sawyer	Barber	25/5 over 7″
Sawyer	Durphee	25/5 over 7″
Sawyer	Lower Holly	25/5 over 7″
Sawyer	Spider	25/5 over 7″
Shawano	White Clay	25/10
Shawano	Cloverleaf Chain	25/5 over 7″
Sheboygan	Crystal Lake	15/5
Taylor	Rib	15/5
Taylor	Chequamegon Waters (Miller Dam)	25/5 over 7″
Vilas	Allequash	25/10
Vilas	Kentuck	25/10
Vilas	Little Saint Germain	25/10
Vilas	Palmer	25/10
Vilas	Pickerel	25/10
Vilas	Big Sand	25/5 over 7″
Vilas	High & Fishtrap	25/5 over 7″
Vilas	Partridge	25/5 over 7″
Walworth	Tripp	25/10
Washington	Big Cedar	25/10
Washington	Little Cedar	25/10
Washington	Silver	25/5 over 7″
Waupaca	Graham	15/5
Waupaca	Hartman	15/5
Waupaca	School Section	25/10
Waupaca	Stratton	25/10
Waupaca	White	25/10
Waupaca	Pigeon	25/5 over 7″
Waupaca	Shadow	25/5 over 7″
Waushara	Witters	15/5
Waushara	Big Hills	25/10
Waushara	Irogami	25/5 over 7″
Waushara	Kusel Lake	25/5 over 7″
Waushara	Porters	25/5 over 7″

[1] *Regulation:*

25/10 - a total of 25 panfish but no more than 10 of any one species.

15/5 - a total of 15 panfish but no more than 5 of any one species.

25/5 over 7″ - a total of 25 panfish, but no more than 5 of the sunfish (bluegill and pumpkinseed) may be over 7 inches.

For more detailed information and to keep up-to-date on panfish management in Wisconsin visit **dnr.wi.gov** and search "panfish plan."

In search of larger panfish
Biologists propose regulation options to bring better panfishing to Wisconsin anglers.

UPDATE

Over the past three years, fisheries biologists with the Department of Natural Resources have asked for public input on all aspects of panfish management. They found that although anglers are not interested in sweeping changes to statewide panfish regulations, they are interested in addressing specific lakes with overharvest issues. With this in mind, the department proposed regulation options to increase panfish size on selected lakes where harvest appears to be a problem. The department has received input and is suggesting revisions to the initial proposal.

What we know

1) Restrictive regulations can improve the average size of bluegill and crappie if the fish have fast growth (as opposed to stunted and slow-growth).

2) For a regulation to be effective, it has to be restrictive enough to affect harvest.

3) Finding a regulation that strikes a balance between effectiveness and angler acceptance is challenging.

What we propose

The department has proposed applying three different harvest regulations on selected lakes and evaluating their performance over time.

The goal of this proposal is to increase the average size of bluegill and crappie on select lakes that are currently overharvested.

A total of 95 lakes from across the state were identified by the state's fisheries biologists as candidates for improvement (i.e., lakes where mean size of bluegill or crappie is less than desirable, most likely due to overharvest). See Figure 1 for map and Table 2 for complete list on back of page.

Original proposed regulations

During late summer of 2014 the department held 3 public meetings, an online survey, an online chat, and took public comment to see what anglers thought of the proposal with the following regulations:
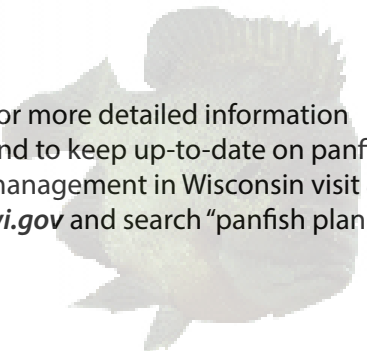
1 A total of 25 panfish but no more than 10 of any one species (25/10).

2 A total of 15 panfish but no more than 5 of any one species (15/5).

3 A total of 25 panfish but no more than five of the **sunfish** (bluegill and pumpkinseed) may be over 7" (25/5 over 7").

What we heard

Generally anglers were supportive of the above proposal but had some suggestions.

The two major suggestions were to:

1) simplify the proposal and
2) focus regulations on the vulnerable spawning period.

Consequently, the proposal was revised to address those two suggestions:

NEW! Proposed regulations

The department is removing the 25/5 over 7" from the proposal and replacing it with a spawning season bag limit reduction so the new regulation proposal now includes the following three options:

1 A total of 25 panfish but no more than 10 of any one species (25/10).

2 A total of 15 panfish but no more than 5 of any one species (15/5).

3 A total of 15 panfish but no more than 5 of any one species during May and June, (15/5-seasonal) - 25 panfish in total the rest of the year.

NEXT STEPS

Spring 2015 – Proposed as Conservation Congress question

Spring 2016 – If passed, regulations go into effect

Winter 2022-2023 – First round of evaluation completed and results distributed

Summer 2023 – Adjustments considered and public feedback sought

PANFISH STUDY LAKES

Figure 1. *Distribution of 95 study lakes identified through fisheries biologists and angler surveys with populations of panfish that exhibited poor size, average growth and high fishing pressure.*

Table 2. Panfish study lakes and the designated regulation option randomly assigned to each.

County	Lake/Chain Name	Regulation[1]
Adams	Crooked	15/5 Seasonal
Adams	Parker	15/5 Seasonal
Adams	Arrowhead	25/10
Adams	Camelot	25/10
Adams	Sherwood	25/10
Eau Claire	Eau Claire	25/10
Florence	Halsey	25/10
Florence	Sea Lion	25/10
Florence	Spread Eagle Chain of Lakes	15/5 Seasonal
Forest	Wabikon & Riley (Wabikon)	25/10
Kenosha	Paddock	15/5 Seasonal
Langlade	Big Twin	25/10
Langlade	Long (T33N R10E S35)	25/10
Langlade	Moose	15/5 Seasonal
Langlade	White	15/5 Seasonal
Langlade	Crystal	15/5 Seasonal
Langlade	Lower & Upper Post	25/10
Langlade	Dynamite	25/10
Langlade	Meyer	15/5
Langlade	Mueller	25/10
Lincoln	Clara (T34N R8E S10)	15/5 Seasonal
Lincoln	Crystal	15/5

County	Lake/Chain Name	Regulation[1]
Lincoln	Hilderbrand	15/5 Seasonal
Lincoln	Echo	15/5
Lincoln	Rice Reservoir Chain	25/10
Lincoln	Hilts	25/10
Lincoln	Clara (T35N R07E S14)	15/5 Seasonal
Lincoln	Pesabic	15/5 Seasonal
Manitowoc	Bullhead	15/5 Seasonal
Manitowoc	English	15/5
Manitowoc	Long	15/5
Manitowoc	Harpt	25/10
Manitowoc	Pigeon	25/10
Marathon	Pike	15/5 Seasonal
Marathon	Lake Wausau	15/5 Seasonal
Marathon	Mud	15/5
Oconto	Caldron Falls	25/10
Oneida	Boom-Rhinelander Chain	15/5 Seasonal
Oneida	Gilmore	25/10
Oneida	Oneida	15/5
Oneida	Squaw	15/5
Oneida	Moen Chain	25/10
Oneida	Carrol	25/10
Oneida	Madeline	25/10
Oneida	Indian	15/5
Portage	Emily	15/5 Seasonal
Portage	Lime	25/10
Price	Wilson	15/5
Price	Solberg	15/5
Price	Butternut	25/10
Racine	Bohners	15/5
Rusk	Lower Flambeau River Flowages	15/5
Sawyer	Black Dan	15/5 Seasonal
Sawyer	Blueberry	15/5
Sawyer	Evergreen	15/5
Sawyer	Loretta	15/5 Seasonal
Sawyer	Mason	15/5 Seasonal
Sawyer	Osprey	15/5 Seasonal
Sawyer	Windigo	15/5 Seasonal
Sawyer	Connors	25/10
Sawyer	Lake of the Pines	25/10
Sawyer	Lost Land & Teal	25/10
Sawyer	Round (in chain)	25/10
Sawyer	Spring	25/10
Sawyer	Winter	25/10
Sawyer	Barber	15/5
Sawyer	Durphee	15/5
Sawyer	Lower Holly	15/5
Sawyer	Spider	15/5 Seasonal
Shawano	White Clay	25/10
Sheboygan	Crystal	15/5 Seasonal
Taylor	Rib	15/5
Taylor	Chequamegon Waters	15/5 Seasonal

County	Lake/Chain Name	Regulation[1]
Vilas	Allequash	25/10
Vilas	Kentuck	25/10
Vilas	Little Saint Germain	25/10
Vilas	Palmer	25/10
Vilas	Pickerel	25/10
Vilas	Big Sand	15/5 Seasonal
Vilas	High, Fishtrap & Rush	15/5
Vilas	Partridge	15/5 Seasonal
Vilas	Turner	25/10
Walworth	Tripp	25/10
Washington	Big Cedar	25/10
Washington	Little Cedar	25/10
Washington	Silver	15/5
Waupaca	Graham	15/5
Waupaca	Hartman	15/5
Waupaca	School Section	25/10
Waupaca	Stratton	25/10
Waupaca	White	25/10
Waupaca	Shadow	15/5 Seasonal
Waushara	Witters	15/5
Waushara	Big Hills	25/10
Waushara	Irogami	15/5 Seasonal
Waushara	Kusel Lake	15/5 Seasonal
Waushara	Porters	15/5
Wood	Nepco	15/5

[1] Regulation:

25/10 - *a total of 25 panfish but no more than 10 of any one species.*

15/5 - *a total of 15 panfish but no more than 5 of any one species.*

15/5 Seasonal - *A total of 15 panfish but no more than 5 of any one species during May and June, 25 panfish in total the rest of the year.*

For more detailed information and to keep up-to-date on panfish management in Wisconsin visit *dnr. wi.gov* and search "panfish plan."

County	Name	Biologist	Monitoring WBIC	Acres	Regulation	ChainReg	BG	BLC	PreSEII	PreSN	PostSEII	PostSN	PreCreel
Adams	Arrowhead Lake	Bergman	1377700	295	25/10		x		2010		2019 - 2021		
Adams	Big Roche A Cri Lake	Bergman	1374800	217	reference		x		2009		2017 - 2021		
Adams	Camelot Lake	Bergman	1378100	393	25/10		x		2011		2019 - 2021		
Adams	Crooked Lake	Bergman	102600	48	Seasonal 15/5		x		2015 or 2016		2019 - 2021		
Adams	Lake Sherwood	Bergman	1377900	216	25/10		x		2015 or 2016		2019 - 2021		
Adams	Parker Lake	Bergman	106500	57	15/5		x		2015 or 2016		2019 - 2021		
Chippewa	Marsh-Miller	Gerbyshak	2171200	441	reference		x		2014		2017 - 2021		
Eau Claire	Lake Eau Claire	Gerbyshak	2133200	1360	25/10		x		2008		2019 - 2021		
Florence	Halsey	Matzke	679300	506	25/10		x		2015 or 2016		2019 - 2021	2019 - 2021	
Florence	Sea Lion Lake	Matzke	672300	114	15/5		x	x	2015 or 2016	2012	2019 - 2021	2019 - 2021	
Florence	Spread Eagle Chain Of	Matzke	702700	104	Seasonal 15/5	Chainwide	x	x	2015 or 2016	2015 or 2016	2019 - 2021	2019 - 2021	
Forest	Silver	Matzke	555700	317	reference		x		2015 or 2016		2017 - 2021		
Forest	Wabikon & Riley Lakes	Matzke	556900	513	25/10	Chainwide		x	2015 or 2016	2013		2019 - 2021	
Iron	Long Lake	Lawson	2303500	370	reference			x		2015 or 2016		2019 - 2021	
Kenosha	Elizabeth	Roffler	742800	725	reference		x		2014		2017 - 2021		
Kenosha	Lilly	Roffler	740900	85	reference		x		2013		2017 - 2021		
Kenosha	Mary	Roffler	743000	327	reference		x		2014		2017 - 2021		
Kenosha	Paddock	Roffler	737900	128	Seasonal 15/5		x		2013		2019 - 2021		
Kenosha	Silver	Roffler	747900	516	reference		x		2014		2017 - 2021		
Langlade	Big Twin Lake	Seibel	182200	66	25/10		x	x	2014	2014	2019 - 2021	2019 - 2021	
Langlade	Black Oak Lake	Seibel	1447200	56	reference		x		2012		2017 - 2021		
Langlade	Crystal Lake (Langlade)	Seibel	184200	75	Seasonal 15/5		x	x	2014	2014	2019 - 2021	2019 - 2021	
Langlade	Dynamite Lake	Seibel	1451700	100	25/10		x	x	2015 or 2016	2015 or 2016	2019 - 2021	2019 - 2021	
Langlade	Greater Bass Lake	Seibel	1445500	244	reference		x		2013		2017 - 2021		
Langlade	Hilger Lake	Seibel	187700	23	reference		x		2008		2017 - 2021		
Langlade	Long Lake T33N R10E	Seibel	1000900	69	25/10		x		2014		2019 - 2021		
Langlade	Meyer Lake	Seibel	192500	20	15/5		x		2008		2019 - 2021		
Langlade	Moose Lake	Seibel	337600	113	Seasonal 15/5		x		2008		2019 - 2021		
Langlade	Mueller Lake	Seibel	194000	79	25/10		x		2012		2019 - 2021		
Langlade	North & South Neva	Seibel	1015200	33	reference		x		2013		2017 - 2021		
Langlade	White Lake	Seibel	365500	153	Seasonal 15/5		x		2009		2019 - 2021		
Lincoln	Crystal Lake (Lincoln)	Seibel	979100	105	15/5		x		2012		2019 - 2021		
Lincoln	Echo Lake	Seibel	1488400	55	15/5		x		2013		2019 - 2021		
Lincoln	Hilderbrand Lake	Seibel	990100	59	Seasonal 15/5		x		2011		2019 - 2021		
Lincoln	Hilts Lake	Seibel	1564600	61	25/10		x		2010		2019 - 2021		
Lincoln	Pesabic Lake	Seibel	1481600	147	Seasonal 15/5		x		2013		2019 - 2021		
Lincoln	Rice Reservoir Chain	Seibel	1519600	150	25/10	Chainwide	x	x	2013	2012	2019 - 2021	2019 - 2021	2012
Manitowoc	Bullhead Lake	Hogler	68300	70	Seasonal 15/5		x		2011		2019 - 2021		
Manitowoc	English Lake	Hogler	68100	48	15/5		x		2014		2019 - 2021		
Manitowoc	Harpt Lake	Hogler	84600	32	25/10		x		2012		2019 - 2021		
Manitowoc	Long Lake	Hogler	77500	127	15/5		x		2011		2019 - 2021		
Manitowoc	Pigeon Lake	Hogler	64000	80	25/10		x		2014		2019 - 2021		
Manitowoc	Spring Lake	Hogler	63700	9	reference		x		2010		2017 - 2021		
Marathon	Lake Wausau	Meronek	1437500	1851	25/10		x		2015 or 2016		2019 - 2021		
Marathon	Mayflower	Meronek	310500	99	reference		x		2015 or 2016		2017 - 2021		
Marathon	Mud Lake	Meronek	193800	69	15/5		x		2015 or 2016		2019 - 2021		
Marathon	Pike	Meronek	1406300	204	Seasonal 15/5		x		2015 or 2016		2019 - 2021		

County	Name	Biologist	Monitoring WBIC	Acres	Regulation	ChainReg	BG	BLC	PreSEII	PreSN	PostSEII	PostSN	PreCreel
Marinette	High Falls Reservoir	Long	540600	1471	reference		x		2010		2017 - 2021		
Marquette	School Section	Bartz	107500	31	reference		x		2015 or 2016		2017 - 2021		
Oconto	Caldron Falls Reservoir	Long	545400	1063	25/10		x		2012		2019 - 2021		
Oneida	Boom-Rhinelander	Kubisiak	1580100	1372	Seasonal 15/5	Chainwide		x		2011		2019 - 2021	
Oneida	Carrol	Kubisiak	1544800	330	25/10		x		2015 or 2016		2019 - 2021		2005
Oneida	George	Kubisiak	1569600	443	reference		x		2010		2017 - 2021		2010
Oneida	Gilmore	Kubisiak	1589300	314	25/10			x		2015 or 2016		2019 - 2021	
Oneida	Gunlock	Kubisiak	1539700	264	25/5 sunfish over		x		2012		2019 - 2021		
Oneida	Indian	Kubisiak	1598900	354	15/5		x		2015 or 2016		2019 - 2021		
Oneida	Madeline	Kubisiak	1544700	172	25/10		x		2015 or 2016		2019 - 2021		2005
Oneida	Manson	Kubisiak	1517200	236	reference		x		2015 or 2016		2017 - 2021		2006
Oneida	Minocqua Chain	Kubisiak	1542700	3462	reference		x		2015 or 2016		2017 - 2021		2009
Oneida	Moen Chain	Kubisiak	1573800	461	25/10	Chainwide		x		2015 or 2016		2019 - 2021	2007
Oneida	Oneida	Kubisiak	1518200	255	15/5		x		2015 or 2016		2019 - 2021		
Oneida	Sevenmile	Kubisiak	1605800	518	reference		x		2008		2017 - 2021		2008
Oneida	Shishebogama	Kubisiak	1539600	700	25/5 sunfish over		x		2012		2019 - 2021		
Oneida	Squash	Kubisiak	1019500	398	reference		x		2015 or 2016		2017 - 2021		
Oneida	Squaw	Kubisiak	2271600	736	15/5		x	x	2015 or 2016	2015 or 2016	2019 - 2021	2019 - 2021	
Oneida	Sugar Camp Chain	Kubisiak	1596900	732	reference			x		2015 or 2016		2019 - 2021	
Portage	Emily	Meronek	189800	108	25/10		x		2015 or 2016		2019 - 2021		
Portage	Lime	Meronek	190100	45	25/10		x		2015 or 2016		2019 - 2021		
Portage	Tree	Meronek	289400	73	reference		x		2015 or 2016		2017 - 2021		
Price	Butternut	Scheirer	2283300	983	25/10			x		2009	2017 - 2021	2019 - 2021	
Price	Phillips Chain	Scheirer	2239400	348	25/10	Chainwide	x	x	2008	2008	2017 - 2021	2019 - 2021	
Price	Pike Chain	Scheirer	2268500	159	25/10	Chainwide		x	2012	2015 or 2016		2019 - 2021	2005
Price	Solberg	Scheirer	2242500	844	25/10		x	x	2008	2008	2017 - 2021	2019 - 2021	
Racine	Bohners	Roffler	750800	135	15/5		x		2010		2017 - 2021		
Rusk	Island Chain (Mccann)	Scheirer	2350400	126	reference		x	x	2010	2010	2017 - 2021	2019 - 2021	2012
Rusk	Lower Flambeau River	Scheirer	2229200	1871	15/5	Individual		x	2012	2011	2017 - 2021	2019 - 2021	
Rusk	Potato	Scheirer	2355300	540	reference		x	x	2013	2013	2017 - 2021	2019 - 2021	
Sawyer	Barber	Wolter	2382300	138	reference		x	x	2010	2015 or 2016	2017 - 2021	2019 - 2021	2010
Sawyer	Black Dan	Wolter	2381900	121	15/5			x		2013	2017 - 2021	2019 - 2021	
Sawyer	Blueberry	Wolter	1835700	292	Seasonal 15/5			x		2011	2017 - 2021	2019 - 2021	
Sawyer	Connors	Scheirer	2275100	410	25/10		x		2012		2017 - 2021		
Sawyer	Durphee	Wolter	2396800	198	15/5		x		2013		2017 - 2021		
Sawyer	Evergreen	Scheirer	2277600	204	Seasonal 15/5		x		2012		2017 - 2021		
Sawyer	Island	Wolter	2381800	69	Seasonal 15/5		x	x	2012	2015 or 2016	2017 - 2021	2019 - 2021	
Sawyer	Lake Of The Pines	Scheirer	2275300	273	25/10		x		2013		2017 - 2021		
Sawyer	Loretta	Wolter	2382700	130	Seasonal 15/5		x		2014		2017 - 2021		
Sawyer	Lost Land And Teal	Wolter	2418600	1264	25/10	Individual	x	x	2010	2010	2019 - 2021	2019 - 2021	2004
Sawyer	Lower Holly	Wolter	2394700	48	15/5		x		2014		2019 - 2021		
Sawyer	Mason	Scheirer	2277200	197	Seasonal 15/5		x		2015 or 2016		2019 - 2021		
Sawyer	Osprey	Wolter	2395100	214	Seasonal 15/5		x		2011		2019 - 2021		
Sawyer	Round and Little	Wolter	2395600	3294	25/10	Chainwide	x	x	2013	2013	2019 - 2021	2019 - 2021	2010
Sawyer	Spring	Wolter	2724900	202	25/10		x		2012		2019 - 2021		
Sawyer	Whitefish	Wolter	2392000	800	reference		x	x	2013	2013	2017 - 2021	2019 - 2021	
Sawyer	Windigo	Wolter	2046600	503	15/5		x	x	2012	2012	2019 - 2021	2019 - 2021	

County	Name	Biologist	Monitoring WBIC	Acres	Regulation	ChainReg	BG	BLC	PreSEII	PreSN	PostSEII	PostSN	PreCreel
Sawyer	Winter	Wolter	2381100	257	25/10		x		2011		2019 - 2021		2005
Shawano	Cloverleaf Chain	Niebur	299100	217	25/5 sunfish over		x		2013		2019 - 2021		
Shawano	Shawano	Niebur	322800	6215	reference		x		2010		2017 - 2021		
Shawano	White Clay	Niebur	326400	236	25/10		x	x	2009	2009	2019 - 2021	2019 - 2021	
Sheboygan	Big Elkhart Lake	Motl	59300	292	reference		x		2011		2017 - 2021		
Sheboygan	Crystal Lake	Motl	45200	129	Seasonal 15/5		x		2012		2019 - 2021		
Taylor	Chequamegon Waters	Scheirer	2160700	2366	Seasonal 15/5		x	x	2010	2010	2019 - 2021	2019 - 2021	
Taylor	Rib	Scheirer	1469100	301	25/10			x		2008		2019 - 2021	
Vilas	Allequash	Gilbert	2332400	406	Seasonal 15/5			x		2010	2022	2022	2010
Vilas	Big Sand	Gilbert	1602600	1427	25/5 sunfish over		x		2012		2022		1994
Vilas	Found	Gilbert	1593800	336	reference		x		2013		2023		
Vilas	High, Fishtrap & Rush	Gilbert	2344000	741	15/5	Individual	x		2009		2018		1993
Vilas	Kentuck	Gilbert	716800	1001	25/10		x		2015		2025		2007, 2015
Vilas	Little Saint Germain	Gilbert	1596300	972	25/10		x		2015		2025		2007, 2015
Vilas	Lost	Gilbert	1593400	539	reference		x		2011		2021		
Vilas	Palmer	Gilbert	2962900	644	25/10			x		2009		2019	2009
Vilas	Partridge	Gilbert	2341500	235	Seasonal 15/5		x	x	2014	2015 or 2016	2019 - 2021	2019 - 2021	
Vilas	Pickerel	Gilbert	1619700	270	25/10		x		2014		2019 - 2021		
Walworth	Potter	Roffler	753800	155	reference		x		2011		2017 - 2021		
Walworth	Rice	Roffler	816600	144	reference		x		2009		2017 - 2021		
Walworth	Tripp	Roffler	816000	121	25/10		x		2011		2019 - 2021		
Washington	Big Cedar Lake	Motl	25300	937	25/10		x		2013		2019 - 2021		
Washington	Little Cedar Lake	Motl	25100	260	25/10		x		2008		2019 - 2021		
Washington	Silver Lake	Motl	36200	122	15/5		x		2015		2019 - 2021		
Waupaca	Bear	Niebur	279700	200	reference		x	x	2012	2015 or 2016	2017 - 2021	2019 - 2021	
Waupaca	Brekke	Niebur	183000	46	reference		x	x	2009	2015 or 2016	2017 - 2021	2019 - 2021	
Waupaca	Graham	Niebur	279300	54	15/5		x		2010		2019 - 2021		
Waupaca	Hartman Lake	Niebur	263900	18	15/5		x		2011		2019 - 2021		
Waupaca	School Section	Niebur	283600	39	25/10		x	x	2013	2015 or 2016	2019 - 2021	2019 - 2021	
Waupaca	Shadow Lake	Niebur	258600	44	Seasonal 15/5		x		2010		2019 - 2021		
Waupaca	Stratton	Niebur	259600	63	25/10		x		2011		2019 - 2021		
Waupaca	Waupaca Chain	Niebur	261200	112	reference		x	x	2011	2015 or 2016	2017 - 2021	2019 - 2021	
Waupaca	White	Niebur	272900	1064	25/10		x		2012		2019 - 2021		
Waushara	Big Hills	Bartz	182100	125	25/10		x		2015 or 2016		2019 - 2021		
Waushara	Irogami	Bartz	103900	290	Seasonal 15/5		x		2015 or 2016		2019 - 2021		
Waushara	Kusel Lake	Bartz	189600	74	Seasonal 15/5		x		2008		2019 - 2021		
Waushara	Porters	Bartz	246900	76	15/5		x		2009		2019 - 2021		
Waushara	Witters	Bartz	117400	43	15/5		x		2012		2019 - 2021		
Wood	Nepco	Bergman	1389600	496	Seasonal 15/5		x		2015 or 2016		2019 - 2021		