



Department of  
Environmental  
Conservation

# Big Panfish Initiative Study Plan 2021 – 2026

Kathy Hochul, Governor | Basil Seggos, Commissioner



# Big Panfish Initiative Study Plan

## 2021 - 2026

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## Preface

This study plan was developed as a follow-up to a draft New York Sunfish and Crappie Management Plan that was released for public review in January 2021 (NYSDEC 2020, NYSDEC 2021). The draft plan included proposals for statewide fishing regulation adjustments as well as experimental fishing regulations for both species groups to manage select waters for larger fish (i.e., the Big Panfish Initiative (BPI)). Based on the largely positive feedback received, the statewide proposals for both sunfish (daily limit of 25) and crappie (10 inches minimum size and daily limit of 25) and the BPI proposal for sunfish (8 inches minimum size and daily limit of 15) appeared to be acceptable to the angling public. The BPI crappie proposal (12 inches minimum size and daily limit of 10) was also viewed positively, but a common concern was it would unacceptably restrict the opportunity to harvest desirable size crappie, effectively turning these fisheries into primarily catch and release or “trophy” fisheries. As such, a more conservative approach involving baseline data collection will be implemented on potential BPI crappie waters. The additional information will help determine future management of these fisheries. This study plan details the investigation program for crappie and the 5-year experimental BPI program for sunfish on select waters in the state.

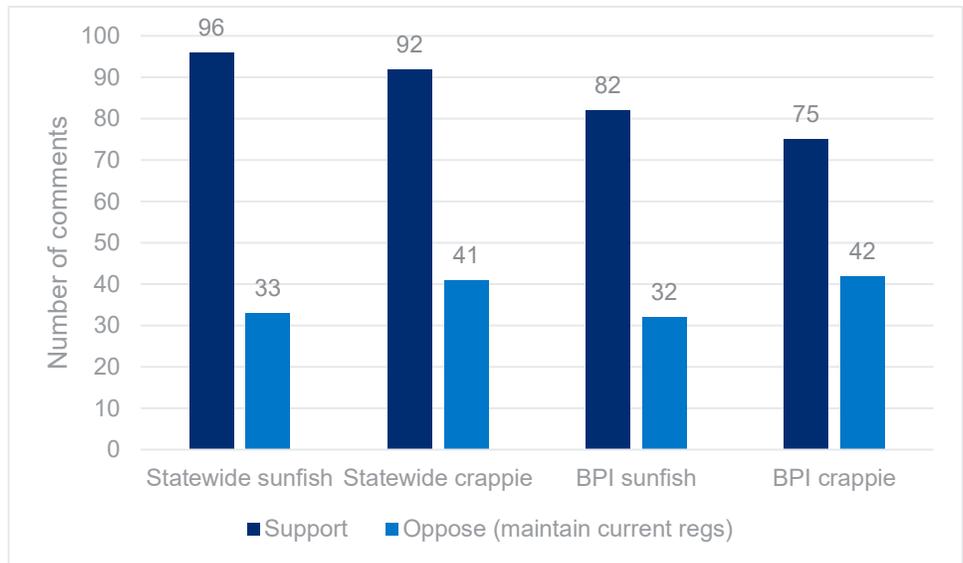


Figure 1. Comments in support and opposition to the four main elements of the draft New York Sunfish and Crappie Management Plan.

## Purpose

This study will be conducted to determine the impacts of more conservative fishing regulations on sunfish (bluegill, pumpkinseed, and redbreast sunfish) population age and size structure in select lakes throughout New York and to evaluate the level of angler satisfaction with this management strategy. The study will also examine crappie (black crappie and white crappie) population age and growth characteristics in select waters to determine if more conservative regulations can shift the age and size structure of populations to yield larger fish. Lastly, the relative effectiveness of Oneida Lake trap nets (Forney et al. 1994) and American Fisheries Society standard fyke nets (Bonar et al. 2009) for sampling sunfish and crappie populations will be assessed.

## Background

Sunfish and crappie are widespread and abundant throughout New York and are popular with anglers, collectively accounting for approximately 900,000 days fished in 2017 (Duda et al. 2019). These species generally provide harvest-based fisheries, and anglers can have significant impacts on population structure where bag limits are liberal and harvest is intense (Coble 1988, Olson and Cunningham 1989, Green and Brooking 1994, Parsons and Reed 1998, Beard and Kampa 1999). Despite their widespread prevalence and popularity, sunfish and crappie have historically received less

management attention than other species such as black bass, walleye, and trout. Although declining sizes of panfish available to New York anglers has been a longstanding concern (Green and Brooking 1994), little management effort has been focused on improving the size structure of populations. Managing for larger panfish is gaining interest, largely due to successful and expanding management programs in Minnesota and Wisconsin. There are likely some sunfish and crappie fisheries in New York where similar management may result in population size structure improvement.

Angler harvest is typically considered the most important factor in sunfish size structure in exploited populations (Goedde and Coble 1981; Coble 1988; Beard and Essington 2000). However, the traditional belief among anglers that sunfish populations can be improved by “thinning them out” (i.e., harvesting large numbers) has been largely disproven, as more conservative harvest regulations have been effective in improving or maintaining sunfish population size structure (Paukert et al. 2002, Jacobson 2005, Weitzel 2013, Rypel 2015). Paukert et al. (2002) evaluated the effects of an 8-inch minimum size limit on bluegill size structure in 18 Nebraska lakes and found an overall increase in the proportion of preferred size ( $\geq 8$  inch) fish, with the highest increases in lakes with the fastest growth and lowest natural mortality. Jacobson (2005) found that reducing the daily limit for sunfish from 30 to 10 in eight small Minnesota lakes resulted in increased male size at maturity and significantly improved population size structure. Rypel (2015) discovered that a reduction in the sunfish daily limit from 25 to 10 in seven Wisconsin lakes resulted in higher mean lengths, with an average increase of 0.8 inches and a maximum increase of up to 2 inches. Weitzel (2013) documented improvements in sunfish population age and size structures in 2 northern Minnesota lakes following a reduction in the daily limit from 20 to 5.

Crappie populations are often affected by inconsistent reproduction and recruitment, resulting in unbalanced year classes and variable angler success (Parsons et al. 2004). Improvements in angler success during population peaks are often short lived, as a high proportion of acceptable sized individuals may be harvested in a short time period. Conservative harvest regulations can have a positive impact on crappie population size structure, with increases in the minimum length limit likely being more effective than reductions in the daily limit (Webb and Ott 1991, Parsons and Reed 1998, Iserman et al. 2002, Mosel et al. 2015). Iserman et al. (2002) simulated the effects of 9 inch and 10 inch minimum size limits on Tennessee reservoir crappie populations and found that, while harvest would predictably decline, numbers of 12 inch crappie would increase, with the largest size increases resulting from a 10 inch minimum size in lakes with low natural mortality. Parsons and Reed (1998) found that angler exploitation negatively affected crappie size structure in three of four west-central Minnesota study lakes. On the lake where angler harvest was highest (Maple Lake), they determined that implementing a 10-inch minimum size limit (from no size limit) or a reduction in the daily limit from 30 to 5 would reduce harvest by at least 45%, but felt that the minimum size limit would be more effective as it would reduce the temptation for illegal sorting and culling (i.e., replacing smaller caught fish with larger ones). Webb and Ott (1991) found that implementation of a 10 inch minimum size limit (from no size limit) resulted in a significant increase in preferred size ( $\geq 10$  inches) crappies in lakes with high harvest rates. They concluded that minimum length limits may moderate or eliminate age class variability that is common in crappie fisheries and help maintain a more stable population of larger crappies. Mosel et al. (2015) simulated the effects of 9 inch, 10 inch and 11 inch minimum size limits and found that these strategies always predicted reductions in harvest (22–93% reductions) and increases in mean length of harvested crappies (0.5 – 2.4 inches) compared with no minimum length limit. The 10 inch and 11 inch minimum length limits were predicted to improve mean lengths of harvested fish by  $>1$  inch.

Popular and expanding programs in Minnesota and Wisconsin that use conservative harvest regulations to improve the size structure of sunfish and crappie populations are showing how beneficial

these types of management strategies can be for these fisheries. There are now over 150 waters being managed for larger sunfish in Minnesota. There are lakes in New York that have the potential to support high quality sunfish and/or crappie populations under more conservative regulations, and there appears to be a high level of public support for this type of management approach, particularly for sunfish (NYSDEC 2021). As such, the Bureau of Fisheries has developed an experimental program designed to test the efficacy of employing more restrictive harvest regulations to improve the size quality of sunfish populations. The study will also collect baseline information on crappie populations in select waters that may have the potential to yield larger size fish with appropriate management. The goals and objectives of the experimental program, and the approach and timeline of implementation and evaluation are detailed below.

## Study Goals, Objectives, and Approach

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**Goal 1:** Determine if the experimental BPI regulation for sunfish (8 inch minimum size limit and a daily possession limit of 15 fish) results in improved population age and size structure based on sampling of selected lakes.

*The implementation of a minimum size limit and a reduced daily limit is expected to improve sunfish population age and size structure (See Appendix A for definitions of the following fish population metrics and other terms).*

- **Objective 1:** Achieve a population size structure such that for all sunfish that are at least 3 inches long: 70% will be at least 6 inches long, 30% will be at least 8 inches long, and 5% will be at least 10 inches long (70 PSD, 30 RSD<sub>8</sub>, 5 RSD<sub>10</sub>).
- **Objective 2:** Maintain or improve growth rates such that sunfish will reach 7 inches in length by age 5.
- **Objective 3:** Maintain fish in good condition (100 Wr).

### Approach

- Lakes with the potential to provide opportunities for anglers to catch memorable size sunfish were selected for assessment (Appendix B). Criteria considered for lake selection included productivity, growth, angler use, and presence of large fish. Fisheries survey data from the Statewide Fisheries database, angler use information from the 2017 Angler Survey (Duda et al. 2019), and input from Regional Bureau of Fisheries biologists responsible for managing these lakes were used in lake selection.
- Apply experimental BPI sunfish regulation (8 inch minimum size, 15/day) on 11 waters
  - Blydenburgh Lake (Region 1),
  - Lake Welch (Region 3),
  - Canadarago Lake and Goodyear Lake (Region 4),
  - Saratoga Lake (Region 5),
  - Sixtown Pond and Red Lake (Region 6),
  - Cazenovia Lake and Otisco Lake (Region 7),
  - Honeoye Lake (Region 8), and
  - Silver Lake (Region 9).

- Conduct annual surveys to measure changes to the age and growth structure of these populations. Standard sunfish netting protocols will be followed to collect the data necessary to assess sunfish population size structure, age structure and growth (Loukmas 2020).
- Surveys will be conducted annually on each water from 2021 – 2025, which will provide for two years of data prior to any anticipated population changes (2021 and 2022) and three years where potential population trends related to the regulation changes can be tracked (2023 – 2025).

**Goal 2:** Determine if the new statewide regulation for crappie (10 inch minimum size limit and a daily possession limit of 25 fish) results in improved population age and size structure based on sampling of selected lakes.

*The increase in the crappie minimum size limit is expected to improve population size structure, provides the potential for one additional year of spawning, and should help stabilize year class variability that is typical in crappie populations.*

- **Objective 1:** Achieve a population size structure such that for all crappie in a given waterbody that are at least 5 inches long 60% will be at least 8 inches long and 20% will be at least 10 inches long (60 PSD, 20 RSD<sub>10</sub>).
- **Objective 2:** Maintain or improve growth rates such that crappie will reach 10 inches in length by age 4.
- **Objective 3:** Maintain or improve the age structure such that 20% of all crappie that are at least 5 inches are age 4 and older.
- **Objective 4:** Maintain fish in good condition (100 Wr).

### Approach

- Increase the minimum size limit from 9 inches to 10 inches for crappie statewide
- Conduct annual surveys on 10 waters to measure changes to the age and growth structure of crappie populations. Standard crappie netting protocols will be followed to collect the data necessary to assess sunfish population size structure, age structure and growth (Loukmas 2020). Selected waters include:
  - Blydenburgh Lake (Region 1),
  - Muscoot Reservoir (Region 3),
  - Saratoga Lake (Region 5),
  - Delta Lake (Region 6),
  - Cazenovia Lake and Otisco Lake (Region 7),
  - Waneta/Lamoka lakes and Honeoye Lake (Region 8), and
  - Bear Lake (Region 9);
- Surveys will be conducted annually on each water from 2021 – 2025, which will provide for two years of data prior to any anticipated population changes (2021 and 2022) and three years

where potential population trends related to the regulation changes can be tracked (2023 – 2025).

### **Goal 3: Determine the level of angler satisfaction with these sunfish and crappie management strategies**

*Anticipated sunfish and crappie size structure improvements are expected to result in a high level of angler satisfaction.*

- **Objective 1:** Achieve a level of angler satisfaction with this management approach on selected lakes of at least 66%.

#### **Approach**

- Angler satisfaction regarding fishing outcomes associated with the experimental sunfish BPI and the revised statewide crappie regulation will be gauged via online surveys at the culmination of this study (2026).

### **Goal 4: Determine the potential for further crappie population age and size structure improvement in select lakes.**

*Several years of comprehensive crappie population assessments are expected to provide the information needed to gauge the potential of certain waters to provide sustainable angling opportunities for larger fish.*

- **Objective 1:** Identify lakes that meet or exceed the crappie population criteria in Goal 2, Objectives 1-4.
- **Objective 2:** Develop management recommendations to help maintain or improve fishing opportunities for larger fish in those waters.

#### **Approach**

- Management recommendations will be included in the final program assessment report.

### **Goal 5: Determine an effective and efficient sampling protocol for sunfish and crappie populations**

*A pilot study comparing the effectiveness and efficiencies of AFS standard fyke (Bonar et al. 2009) and Oneida Lake trap nets (Forney et al. 1994) is expected to provide insight on appropriate sampling techniques and guide future sampling protocols.*

- **Objective 1:** Determine the viability and future use of AFS standard fyke and Oneida Lake trap nets for sampling sunfish and crappie for this program.

#### **Approach**

- Sunfish and crappie will be sampled using Oneida Lake trap nets and AFS standard fyke nets on the following waters:
  - Blydenburgh Lake (Region 1),
  - Muscoot Reservoir (Region 3),

- Saratoga Lake (Region 5) and
  - Honeoye Lake (Region 8).
- Two or three trap net and fyke net pairs will be set and checked for at least two consecutive nights (minimum effort of 6 trap net nights for each net type). Nets in each pair will be set 50 – 100 feet apart, depending on site characteristics.
  - Catch rates, size and age structures of sunfish and crappie will be compared between net types on each waterbody to determine if there are differences in these metrics. A determination will be made based on a comprehensive comparative review of the catch rates and size and age structures and feedback from Regional staff about the relative merits (effectiveness and ease of use) of each gear type.

## Timeline

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### April 1, 2021 – March 31, 2022

- Sampling of BPI waters to obtain baseline data necessary to evaluate effect of regulations on fish population status 4/1/21 – 6/30/21
- Notice of Proposed Rulemaking filed with Department of State by 9/28/21
- Assessment of public comment on Notice of Proposed Rulemaking for BPI and statewide changes 12/12/21
- NOA filed with Department of State by 1/18/22
- Regional survey reports (technical briefs) due (including net comparison assessments) 1/30/22
- Regulations take effect 3/31/22
- Complete year one survey report (including overall assessment of trap net vs fyke net comparison) 3/31/22
- Promote BPI program waters (NYSDEC Fishing Line newsletter, social media and website) 2/1/22 – 3/31/22

### April 1, 2022 – March 31, 2023

- Sampling of BPI waters to obtain baseline data necessary to evaluate effect of regulations on fish population status 4/1/22 – 6/30/22
- Promote BPI program waters (NYSDEC Fishing Line newsletter, social media and website) 4/1/22 – 3/31/23
- Regional survey reports (technical briefs) due 1/30/23
- Complete baseline assessment of population metrics report (from 2021 and 2022 surveys) 3/31/23

### April 1, 2023 – March 31, 2024

- Sampling to evaluate effect of regulations on fish population status 4/1/23 – 6/30/23
- Regional survey reports (technical briefs) due 1/30/24
- Complete assessment of population metrics report 3/31/24

### April 1, 2024 – March 31, 2025

- Sampling to evaluate effect of regulations on fish population status 4/1/24 – 6/30/24
- Regional survey reports (technical briefs) due 1/30/25
- Complete assessment of population metrics report 3/31/25

### April 1, 2025 – March 31, 2026

- Sampling to evaluate effect of regulations on fish population status 4/1/25 – 6/30/25
- Collect angler information via online surveys to determine their satisfaction 4/1/25 – 7/1/25
- Angler survey technical brief due from the Warmwater Fisheries Unit Leader 10/1/25
- Regional survey reports (technical briefs) due 1/30/26
- Complete final program assessment report 3/31/26

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**Appendix A.** Definitions of fisheries management terms and size structure index length categories for sunfish and crappie.

**Age frequency distribution:** A graphical representation of the range and frequency of ages of fish in a survey collection.

**Growth rate:** The rate of increase in the length of a fish over time.

**Length frequency distribution:** A graphical representation of the range and frequency of lengths of fish in a survey collection.

**Panfish:** Typically refers to smaller species of fish that are popular with anglers because they are good to eat (e.g., sunfish and perch).

**Relative weight (Wr):** An index used to determine fish condition. This index compares the observed weight of a fish with a standard weight for a fish of the same length. A value of 100 indicates that the observed weight equals the standard weight. Values from 95 - 100 are typically indicative of fish in good condition.

**Stock size:** The size at or near which fish reach maturity as well as a size normally available to gear traditionally used by biologists to sample the species.

**Quality size:** The size of fish that anglers like to catch.

**Preferred size:** The size of fish that anglers prefer to catch.

**Memorable size:** The size of fish that most anglers would remember catching.

**Trophy size:** The size of fish worthy of acknowledgement.

**Size Structure Indices:** Indices that allow for standardized comparisons of size classes of fish and provide measures of fish population balance. Includes PSD (Proportional Stock Density) and RSD (Relative Stock Density).

**Proportional Stock Density (PSD):** The percent of the stock sized population of fish that are quality size.

**Relative Stock Density (RSD):** The percent of the stock sized population of fish that are preferred (RSD<sub>p</sub>), memorable (RSD<sub>m</sub>), or trophy size (RSD<sub>t</sub>).

**Length categories (inches) for size structure calculations of various fish species.**

	<b>Stock</b>	<b>Quality</b>	<b>Preferred</b>	<b>Memorable</b>	<b>Trophy</b>
Crappie	5	8	10	12	15
Sunfish	3	6	8	10	12

**Appendix B.** List of waters selected for the experimental Big Panfish Initiative for sunfish, and statewide 10 inch minimum size limit regulation evaluation for crappie, with notes on program selection.

Waterbody	Species	Region	Acres	Notes
Blydenburgh Lake	sunfish and crappie	1	111	Blydenburgh Lake has an undeveloped shoreline within a county park, is a Regionally significant fishery, and is historically known for good panfish fishing. Large crappie were collected during a recent survey (2017) and there is potential for sunfish size structure improvement.
Lake Welch	sunfish	3	205	Lake Welch is a productive lake in Harriman State Park. Large sunfish up to 9.3 inches were collected during a 2019 Bass and Sunfish survey. Angler use is unknown, but sunfish are likely harvested at least occasionally by park patrons.
Muscot Reservoir	crappie	3	1,263	Muscot Reservoir is a part of the New York City watershed system and is accessible via a permit from the City. There are large crappies caught during regional fishing derbies every year. The Region receives reports of high angler pressure for crappie, especially during spring. Crappie population data is needed.
Canadarago Lake	sunfish	4	1,917	Canadarago Lake is productive, popular lake in Otsego County that well-known as a good panfish fishery, traditionally for yellow perch. Sunfish do well here and are targeted mainly through the ice. A 2017 Centrarchid survey documented a good number of quality and preferred size bluegills and pumpkinseeds.
Goodyear Lake	sunfish	4	235	Goodyear Lake is a productive reservoir in the upper Susquehanna River with a popular sunfish fishery. A special sunfish regulation of 25/day is in place due to concerns about overharvest. Sunfish tend to be somewhat small, but because the reservoir is productive growth is likely to be fast (data are lacking). An 8 inch minimum size limit will help to improve size structure.
Saratoga Lake	sunfish and crappie	5	4,339	Saratoga Lake is the 15 <sup>th</sup> most fished waterbody in New York and is one of the most popular lakes in the state for both crappies and sunfish. To maintain the high-quality sunfish fishery a special regulation 15/day is in place. Large sunfish are abundant (mean lengths >7 inches for bluegills, pumpkinseeds and redbreast sunfish from a 2015 Centrarchid survey). No recent targeted crappie sampling has occurred and data are lacking.
Sixtown Pond	sunfish	6	169	Sixtown Pond is a productive eutrophic lake in Jefferson County that is accessible via a DEC hand launch. Surveys include two General Biological Surveys (1992 and 2013) with trapnetting and electroshocking. Both surveys indicated good numbers of bluegill and pumpkinseed >8 inches. This water is used by commercial fisherman, but so are many others in R6.

Red Lake	sunfish	6	366	Red Lake, one of the Indian River Lakes, is 366 acres and has a DEC beach launch. It is the Indian River Lake known to have larger sunfish which is consistent with data collected during Percid Sampling.
Delta Lake	crappie	6	2,289	Delta Lake is a productive reservoir with a concrete ramp at Delta Lake State Park. Surveys indicate a population of black crappie and to a lesser extent white crappie that can reach sizes of >14 inches. There is an ice fishery for crappie. A concern is that crappie use some of the small ponded areas in Delta Lake State Park to spawn and current water level procedures by NYS Canals lowers the water in these ponded areas in late fall/early winter which results in killing a large number of fish including young of year crappie.
Cazenovia Lake	sunfish and crappie	7	1,164	Cazenovia Lake is a productive, mesotrophic lake in Madison County that was historically a popular destination for crappies. Is a high use water, with a lot of evening and night fishing and ice fishing for crappies. A 2012 gill net survey found good numbers of crappies 10 inches and larger (up to 13 inches) with fast growth.  A 2012 centrarchid survey found abundant populations of bluegills and pumpkinseeds, with a high percentage of large fish (RSD <sub>8</sub> > 45) for both species. Growth was typically fast for both species.
Otisco Lake	sunfish and crappie	7	2,200	Otisco Lake is one of the most popular sunfish and crappie fisheries in the state (Duda et al. 2019). Bluegill are abundant, but there were few over 8 inches in a 2014 survey. Growth was average, thus high angler harvest of larger fish was the likely cause of the lack of large fish. Otisco Lake supports both white crappie and black crappie populations. Good numbers of 10 inch or more crappie were caught in the 2014 survey. Growth was average for both species.
Waneta/Lamoka lakes	crappie	8	1,401	Waneta and Lamoka lakes support popular crappie fisheries. These are highly productive lakes and crappie are abundant. Crappie >12 inches are in both lakes and growth is fast.
Honeoye Lake	sunfish and crappie	8	1,670	Honeoye Lake is one of New York's best waters for both sunfish and crappie. A top ten water for angler effort for both species groups (Duda et al. 2019). Highly productive, with good numbers of large fish and fast growth for both species groups.
Silver Lake	sunfish	9	836	Silver Lake is highly productive with abundant bluegill and pumpkinseed populations, with good numbers of large fish. The sunfish fishery is popular, especially during ice fishing season.
Bear Lake	crappie	9	114	Bear Lake supports an abundant population of crappies, with good numbers of large fish. This relatively small water has good public access and is considered to have the best potential for this program in R9.