

**Strategic Plan for Management of Trout Fisheries in Pennsylvania
2020-2024**

Pennsylvania Fish and Boat Commission

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Introduction

The *Strategic Plan for Management of Trout Fisheries in Pennsylvania 2020-2024* (Trout Plan) will guide specific goals and objectives of the Pennsylvania Fish and Boat Commission's (PFBC) trout management program through 2024. The goal of this plan is to ensure adequate protection is afforded to Pennsylvania's wild trout resources and that fisheries provided through the management of wild trout and stocking of adult and fingerling trout provide high-quality angling opportunities in Pennsylvania.

To develop this plan, PFBC staff from the bureaus of Fisheries; Hatcheries; Outreach, Education, and Marketing; and Administration reviewed previous trout plans to identify any outstanding priority issues as well as new issues that warrant attention. Additionally, staff met with PFBC Commissioners and a diverse group of anglers to review and discuss trout management and topics to be addressed in the Trout Plan during December 2017 and again during March 2018. The Commissioners were provided a comprehensive overview of the draft Trout Plan in January 2020. Staff then updated the draft plan based on feedback received, and it was posted on the PFBC website from May 26 through June 24, 2020 for public review and comment. Comments were received from 139 individuals. Staff reviewed all public comments received and presented a summary of the comments to the Commissioners at the July 2020 quarterly Commission meeting. After considering all feedback received, final edits were made to the plan.

The Trout Plan is the PFBC's third trout management plan. The previous two plans encompassed the periods of 2010 to 2014 and 2015 to 2017 (available under "Trout" at <https://www.fishandboat.com/Conservation/Plans/Management-Plans/Pages/Species-Management-Plans.aspx>). This plan focuses on issues not completed in the previous plans and adds new issues. It details 43 issues and 137 strategies to address those issues. The Trout Plan is divided into four sections directed to specific resource categories: 1) Management of Wild Trout Streams, 2) Management of Stocked Trout Streams, 3) Management of Stocked Trout Lakes, and 4) Management of Trout in Lake Erie and Tributary Streams. Under each of the resource categories, measurable and time-bound strategies were developed.

In addition to the Trout Plan, the *Operational Guidelines for Trout Management in Pennsylvania, 4th edition* (Operational Guidelines) guides and directs staff activities and standard operating procedures to implement the PFBC's stocked trout, wild trout, and trout special regulation programs, among other trout management activities (available at: <https://www.fishandboat.com/Conservation/Plans/Management-Plans/Documents/OperationGuidelinesTroutMgt.pdf>)

The fifth edition is anticipated to be complete and available on the PFBC website in December 2020.

Management of Wild Trout Streams



The following strategies address the highest priority issues related to threats and opportunities that impact the Commonwealth's wild trout resources. The strategies identified for each of the priority issues are designed to protect, conserve, and enhance Pennsylvania's wild trout resources while optimizing fishing opportunities for the Commonwealth's anglers. These issues will be the primary focus of the PFBC's wild trout management program through 2024.

Issue 1: The PFBC has not assessed all of the 62,725 streams within the Commonwealth and approximately 51,800 streams have not been sampled. Approximately 35,000 of the unassessed streams are greater than or equal to 0.5 stream-miles in length and more likely to support wild trout than streams of smaller length. As a result, the total number of streams that support wild trout populations in Pennsylvania is unknown which leads to inadequate protection of the unassessed streams.

Strategies:

- Between 2020 and 2024, develop and annually update prioritized lists of unassessed streams to be surveyed that are likely to support wild trout and are most at risk from degradation by human activities.
- Between 2020 and 2024, PFBC staff and Unassessed Waters Program partners will survey at least 2,500 priority unassessed streams. Streams that support wild trout populations will be recommended for addition to PFBC's list of stream sections that support natural reproduction of trout.

Issue 2: There are numerous stream sections that may support Class A wild trout populations which have not been identified and appropriately designated as Class A Wild Trout Streams by the PFBC. This leads to inadequate water quality protection for these streams and inconsistent application of fisheries management strategies.

Strategies:

- Between 2020 and 2024, develop and annually update prioritized lists of stream sections to be surveyed that are likely to support Class A wild trout populations. These include streams identified through the Unassessed Waters Program that supported a high biomass of trout, streams where previous PFBC surveys documented a moderate to high biomass of trout, and streams that Area Fisheries Managers determine to be good candidates to support Class A wild trout populations based on local knowledge and/or angler input.
- Between 2020 and 2024, PFBC staff will sample at least 500 priority stream sections to determine if they support Class A wild trout populations. Streams that support Class A wild trout populations will be recommended for designation by the Commission as Class A Wild Trout Streams.

Issue 3: There are currently 13 stream sections that support Class A wild Brown Trout populations which are also stocked with trout by the PFBC. These stream sections receive very high early-season angler use targeted at the stocked trout fishery. Updated data describing the biological and social components of these fisheries are needed to inform management of these streams.

Strategies:

- By 2022, resurvey the wild Brown Trout populations and conduct angler use, harvest and opinion surveys to inform fisheries management of the 13 Class A stream sections stocked with trout.
- Between 2022 and 2024, staff will develop options and make recommendations to the Commission to adjust current management of the 13 Class A stream sections stocked with trout if the data supports alternate management to optimize these fisheries.

Issue 4: The current 25 Pa. Code Chapter 93 Designated Use of some Naturally Reproducing Wild Trout Streams and Class A Wild Trout Streams provides inadequate water quality protection.

Strategy:

- Between 2020 and 2024, continue to work with the Pennsylvania Department of Environmental Protection (DEP) to improve the process of upgrading the Chapter 93 Designated Use of newly identified Naturally Reproducing Wild Trout Streams and Class A Wild Trout Streams that qualify for upgrades. Additionally, coordinate with DEP to expedite and improve the process of tracking and updating the Designated Use for the backlog of streams that qualify for Chapter 93 upgrades previously provided to the DEP by the PFBC.

Issue 5: Maintaining free public access to Pennsylvania's wild trout fisheries is needed to provide trout angling opportunities.

Strategies:

- Between 2020 and 2024, improve public access to at least four priority wild trout streams. Access improvements may include, but are not limited to improved parking areas, long-term access easements, and purchase of riparian lands. Highest priority will be placed on streams with high-quality fisheries to maintain high angler use and on streams that can support increased use resulting from improved access.
- Through 2024, on all wild trout streams with PFBC assisted habitat improvement projects, ensure public access, parking, and signage that encourages use of the site and provides information on the benefits of the project.

Issue 6: The PFBC currently does not have a formal monitoring program to annually track the status and trends of wild trout populations across Pennsylvania. As a result, the rate of population loss or growth, overall population condition, and the comprehensive status of wild trout resources are unknown.

Strategy:

- Between 2020 and 2024, work with the Pennsylvania Cooperative Fish and Wildlife Research Unit to develop an appropriate monitoring design to systematically assess the status and trends of wild trout populations across Pennsylvania and at a minimum, implement on a pilot basis. The survey design will include a fish health component as a means of establishing baseline fish health data for our wild trout fisheries.

Issue 7: Gill lice (*Salmincola edwardsii* and *S. californiensis*) are parasites that can negatively impact Pennsylvania's wild Brook Trout (*S. edwardsii*) and wild Rainbow Trout (*S. californiensis*) populations. This is of great concern, given the recent documentation of gill lice (*S. edwardsii*) in watersheds where wild Brook Trout reside.

Strategies:

- Between 2020 and 2024, continue to require all Special Activity Permit applicants to obtain gill lice-free trout via the PFBC Gill Lice-Free Certification Program for events that request to stock trout.
- Between 2020 and 2024, continue monitoring gill lice-infected wild Brook Trout populations along with uninfected reference streams. As more information is learned, the gill lice monitoring program will be refined and expanded upon as needed.
- Between 2020 and 2024, continue to implement strategies to eliminate the spread of gill lice from stocked trout into watersheds where wild trout populations exist. This will include the continuance of PFBC's no-tolerance policy of gill lice in PFBC cooperative nurseries.
- Between 2020 and 2024, the Division of Fisheries Management (DFM) will work with the Bureau of Hatcheries to substantially reduce the production of Brook Trout at all PFBC state fish hatcheries and cooperative nurseries. See Issue 33 for more information.

Issue 8: Pennsylvania does not have a stocking authorization program and as such, the PFBC receives no information regarding the location, species, number, and/or condition of trout stocked into Commonwealth waters. This confounds the PFBC's ability to comprehensively manage the Commonwealth's fishery resources.

Strategy:

- By 2023, develop and implement a statewide stocking authorization for all species of fish introduced into the waters of the Commonwealth. All other states surrounding Pennsylvania and throughout the northeast require stocking permits or authorizations. The authorization will be required for all fish stocked in the Commonwealth, including trout. This will greatly improve the PFBC's ability to manage the Commonwealth's fishery resources. A fish health certificate will be required as part of the authorization process to ensure priority pathogens are not transmitted to Commonwealth waters.

Issue 9: Address cumulative effects of human development on coldwater resources and their relevance to permitting actions.

Strategies:

- Between 2020 and 2024, work with natural resource management agencies, conservation organizations, municipalities, and regulatory agencies to address the cumulative impacts of

development and how these might be better addressed in future permit decisions.

- Between 2020 and 2024, develop additional instream flow methods and criteria, including the need for a revised low flow protection policy for statewide application in concert with the DEP, Susquehanna River Basin Commission, Delaware River Basin Commission, and non-governmental organizations such as The Nature Conservancy.

Issue 10: Climate change will negatively affect all species of wild trout in Pennsylvania, but Brook Trout are likely to be the most impacted. Wild trout require cold, clean water and optimal instream habitat to survive and flourish. Brook Trout are the only trout species native to the Commonwealth's inland waters and are especially vulnerable to increased water temperature, siltation, and habitat degradation.

Strategies:

- Between 2020 and 2024, the PFBC will work with partners including Trout Unlimited (TU), U.S. Fish and Wildlife Service (USFWS), U.S. Geological Survey, U.S. Forest Service, and other partners in the Eastern Brook Trout Joint Venture, to identify areas where wild trout are most likely to persist over time (areas of increased resiliency) so that future conservation efforts and habitat enhancement projects can be focused in these areas. Special emphasis will be placed on identifying areas of increased Brook Trout resiliency. Additionally, the PFBC will work to determine which management actions may be most beneficial to wild trout populations, especially Brook Trout, so that programs, projects, and techniques can be tailored to maximize persistence and resiliency.
- Between 2020 and 2024, the PFBC will assess the density and occurrence of wild Brook Trout and Brown Trout between historic and contemporary surveys to determine if changes have occurred in the distribution and ratios of these species. Results of this project will inform management actions and may identify issues such as impacts of increasing water temperature, habitat degradation, among others, along with areas of greater wild Brook Trout resiliency.
- Through 2024, when practical, the PFBC will preferentially manage for wild Brook Trout, such as the management approach applied to Big Spring Creek, Cumberland County where habitat improvements were successfully designed to favor wild Brook Trout over wild Rainbow Trout.

Issue 11: The expansion of wild trout populations is impeded in streams where habitat is the primary limiting factor. Furthermore, better knowledge of the effects of habitat manipulations on wild trout populations is needed.

Strategies:

- Between 2020 and 2024, conduct at least 35 instream and/or riparian habitat enhancement projects on wild trout streams. This may include selecting a wild trout stream with good water quality and biomass and developing an instream habitat project intended to increase the density of large adult fish while functioning as a demonstration project.

- Through 2024, work with major funders (e.g., National Fish and Wildlife Foundation and DEP) to ensure grant funds are focused towards priority wild trout streams, especially those with the greatest resiliency to increased water temperatures from climate change.
- Through 2024, work with project partners (e.g., Western Pennsylvania Conservancy; Northcentral Pennsylvania Conservancy; county conservation districts; and other federal, state, and local agencies and non-profit groups) to focus habitat enhancement projects on priority wild trout streams, especially those with the greatest resiliency to increased water temperatures from climate change.
- Through 2024, continue to implement a grant program using Peach Bottom Settlement funds to improve wild trout habitat in York and Lancaster counties.
- Through 2024, continue to implement the Sinnemahoning Creek Watershed Restoration Grant Program using legal settlement funds for resource damages from Norfolk Southern Railway to improve wild trout habitat in Elk, Cameron, McKean, and Potter counties. This will include at least one additional request for proposals from internal and external applicants.
- Through 2024, implement recommendations of the Habitat Improvement Prioritization Workgroup and utilize findings to provide technical assistance to project partners to identify and prioritize projects that most effectively enhance and restore habitat in priority wild trout streams. Adaptively manage and update recommendations of the Habitat Improvement Prioritization Workgroup as needed.
- Through 2024, continue to monitor the response of wild trout populations and physical habitat conditions to various habitat treatments at select projects.
- Between 2020 and 2024, work with the Pennsylvania Department of Conservation and Natural Resources (DCNR) and other partners to expand the use of large woody debris addition in wild trout streams to improve instream habitat in at least 10 priority wild trout streams.
- Between 2020 and 2024, work with DCNR and the Center for Dirt and Gravel Roads to implement driving surface aggregate projects on low-volume roadways that have negative impacts to high quality wild trout populations. Roads near Class A and B wild trout streams will receive the highest priority.

Issue 12: Through their ability to impede fish movement and alter physical, chemical, and biological processes in streams, manmade barriers remain a deterrent to fully functional wild trout streams.

Strategies:

- Between 2020 and 2024, remove barriers and/or improve wild trout passage on at least five wild trout streams where deemed biologically beneficial.
- Through 2024, continue coordination to convene regular meetings of the Pennsylvania Aquatic Connectivity Team to effectively and efficiently guide collaboration among partners from across the Commonwealth focused on improving aquatic connectivity at dams and

road/stream crossings on wild trout streams.

- Between 2020 and 2024, work proactively with DCNR, TU, and the Center for Dirt and Gravel Roads to implement wild trout-friendly culvert designs on low-volume roads as a priority of this program. Roads near Class A and B wild trout streams will receive the highest priority.

Issue 13: The current wild trout list format is organized based on the county of a stream's mouth. As such, it is confusing and difficult to determine whether a waterway is listed as a wild trout stream, especially when streams flow through multiple counties. Additionally, the current format does not include tributaries to wild trout streams which, by definition, are also wild trout streams. This has led to inadequate protection of wild trout streams.

Strategy:

- During 2021, implement an updated statewide wild trout list based on State Water Plan drainage basins that clearly identifies which streams and their tributaries are designated as wild trout streams. The new format will be consistent with DEP's Chapter 93 basin format and will be much improved for anglers, consultants, and permit reviewers to use when determining whether a stream is designated as a wild trout stream.

Issue 14: Impairment of the natural flow regime through water withdrawals and reservoir operations threatens the quality of wild trout populations and some of the state's best wild trout fisheries.

Strategies:

- Through 2024, work with the DEP and other governmental agencies to develop improved water withdrawal policies and reservoir operation procedures that limit the alteration of natural flow regimes to levels that maintain or improve critical species including wild trout, habitats, and high-quality ecological conditions.
- Through 2024, continue to work closely with the New York State Department of Environmental Conservation (NYSDEC) and the Parties to the 1954 U.S. Supreme Court Decree (Decree Party) to improve knowledge of current tailwater fisheries and water management operating rules to protect, conserve, and enhance the upper Delaware River basin trout fishery.
- Through 2024, work closely with the DCNR, DEP, utilities, the U.S. Army Corps of Engineers, and other reservoir owners to maintain and improve tailwater fisheries through flow, temperature management, and stocking strategies.

Issue 15: The current Trophy Trout Regulation program (2 trout/day greater than or equal to 14 inches from opening day of trout season through Labor Day with catch and release for the remainder of the year) provides inadequate protection to the largest trout in populations regulated with this rule. These regulations were established decades ago when a 14-inch trout was substantially larger than an average-sized hatchery fish. Given that a 14-inch trout no longer constitutes a "trophy" fish for most anglers and that these regulations focus harvest on the largest fish in the population, there may be an alternative regulation that still allows anglers to harvest a large wild trout but provides increased protection to the majority of large fish in populations.

Strategy:

- During 2021, staff will develop a recommendation to implement an updated Trophy Trout regulation that would allow the harvest of one trout/day greater than or equal to 18 inches from opening day of trout season through Labor Day with catch and release for the remainder

of the year. This size and creel limit were intensively researched by staff through evaluation of PFBC data, review of trout regulations in other states, and discussions among fisheries managers in Pennsylvania and elsewhere. It received strong support during previous wild trout workgroups, was supported by the results of a survey conducted at the 2017 Wild Trout Summit and is supported biologically through PFBC data. Implementing a larger size restriction beyond 18 inches would essentially equate to catch-and-release regulations. Staff will evaluate the 10 waters currently managed with Trophy Trout regulations and recommend the appropriate management program for each individual water moving forward as part of this process.

Issue 16: There may be an opportunity to provide anglers with increased opportunity to harvest intermediate-size trout while having the dual benefit of improving the size structure of the wild trout populations on some waters.

Strategy:

- During 2020, the PFBC will complete the evaluation of the experimental harvest slot limit regulation on Penns Creek, Section 03. This regulation was developed and implemented on an experimental basis in 2014. The harvest slot limit regulation (two fish/day at least seven inches and less than 12 inches in length may be harvested from opening day of trout season through Labor Day with catch and release for remainder of the year) was developed to provide anglers the opportunity to harvest intermediate-size trout that are in greater abundance in some populations while providing increased protection to and maximize the number of large trout in the population that are most targeted and valued by anglers. Information gained through the Penns Creek evaluation will inform management decisions regarding whether to continue, discontinue, and/or formally adopt and potentially expand harvest slot limit regulations to other waters in the future.

Issue 17: The sublethal effects (e.g., reduced growth rates, physical deformities, and reduced population size structure) of repeated catch and release of wild trout on Pennsylvania's high use wild trout fisheries are not fully understood.

Strategy:

- Between 2020 and 2024, staff will review scientific literature, PFBC data, consult with fisheries managers in other states, and conduct a study, if warranted, to evaluate the effects various terminal tackle types may have on the size structure of trout populations in Pennsylvania's high use wild trout fisheries. Should the potential for substantial negative impacts be identified, staff will develop a recommendation regarding terminal tackle restrictions in special regulation areas and high angler use Class A wild trout streams.

Issue 18: Angler use, harvest, opinion, and economic data pertaining to Pennsylvania's wild trout fisheries are lacking and/or outdated. These data are critically important to inform water-specific and statewide wild trout management.

Strategies:

- During 2020, continue to partner with the NYSDEC to analyze data from an angler use, harvest, opinion, and economic evaluation of the West Branch Delaware and mainstem Delaware rivers conducted during 2018 and 2019. A final report detailing the results and recommendation of this study will be completed in 2021 and used to inform management of the upper Delaware River tailwaters.
- During 2020, analyze data collected from an angler use, harvest, and opinion survey at Penns Creek, Section 03, conducted during 2019 to evaluate the efficacy of harvest slot limit

regulations and assess potential for expanded use of these regulations at other waters. These data will inform future angling regulations on this water as well as considerations of expanded use of this experimental regulation to other waters.

- Between 2020 and 2024, develop a plan and implement a statewide wild trout angler use, harvest, opinion, and economic survey. The last statewide survey was conducted in 2004.
- Between 2021 and 2024, plan and conduct a trout angler telephone survey to assess preferences and opinions to inform future programs and regulations. The last statewide survey was conducted in 2007.

Issue 19: Invasive species, pathogens, and parasites such as didymo, gill lice, New Zealand Mudsnails, viral hemorrhagic septicemia (VHS), among others, threaten our wild trout fisheries.

Strategies:

- Between 2020 and 2024, staff will review the Fish and Boat Code and the PFBC's fishing regulations pertaining to introduction, propagation, and transportation of fish in Pennsylvania's waters and recommend changes to help prevent the spread of invasive species, pathogens, and parasites.
- By 2024, implement effective outreach and education programs to better educate anglers, private aquaculture, and the general public regarding aquatic invasive species, pathogens, and parasites that may be readily transmitted from various anthropogenic pathways to the wild.
- Through 2024, continue to implement PFBC biosecurity protocols to help protect wild trout from aquatic invasive species, pathogens, and parasites.
- Through 2024, the Fish Health Unit (FHU) will continue to collaborate with the DFM regarding fish health issues and evaluation of strains of trout produced at each PFBC hatchery to minimize the impact they may have on wild trout populations.
- Through 2024, the Division of Environmental Services (DES) will establish and/or update Aquatic Invasive Species (AIS) Action Plans for priority AIS found throughout the state.

Issue 20: The current wild trout list does not provide the trout biomass category of a stream. Streams that support moderate to strong wild trout populations but do not meet the criteria for Class A designation are excellent candidates for priority habitat improvement projects and conservation efforts by the PFBC and other groups. Additionally, these waters can provide anglers with quality wild trout angling opportunities.

Strategies:

- During 2021, develop and annually update Class B and Class C biomass lists that can be used to promote priority habitat improvement projects and conservation efforts.
- By 2024, develop a Class B and Class C biomass list for angler use.

Issue 21: The Wilderness Trout Streams Program was last updated in 2002. As a result of the Unassessed Waters Program and many wild trout stream re-inventories over the past two decades, numerous streams have been identified that meet the criteria for inclusion in the Wilderness Trout Streams Program.

Strategy:

- Between 2021 and 2024, the PFBC will develop listing packages and designate qualifying streams as Wilderness Trout Streams.

Issue 22: The PFBC's marketing and promotion of wild trout angling opportunities and conservation is limited.

Strategy:

- By 2022, the PFBC will develop focused marketing programs to better promote wild trout fisheries, their value as unique natural resources, and the angling opportunities they provide. Additional public information campaigns will also focus on best practices to employ when fishing for wild trout (e.g., proper fish handling and release techniques, best conditions to fish for wild trout).

Management of Stocked Trout Streams



The following strategies address the highest priority threats and opportunities to the provision of high-quality trout angling opportunities on the Commonwealth's stocked trout streams. These priorities are designed to protect, conserve, and enhance stocked trout streams while optimizing fishing opportunities for the anglers of the Commonwealth.

Issue 23: Fish culture practices and hatchery effluent management need to be continually adjusted to improve effluent water quality to ensure protection of aquatic resources downstream from PFBC trout hatcheries.

Strategies:

- Through 2024, continue to evaluate and revise hatchery management practices to optimize fish production and continually improve aquatic habitats downstream from all hatchery discharges.
- By 2021, complete the 5-year evaluation of the flocculation effluent treatment system at Reynoldsdale State Fish Hatchery to determine the feasibility and cost effectiveness of implementing these systems at other hatcheries.

Issue 24: Cooperative nurseries provide considerable support to the PFBC's stocked trout program and the program must be maintained and improved.

Strategies:

- Between 2020 and 2024, the Cooperative Nurseries Unit (CNU) will provide recommended production levels to the individual cooperative nurseries and work with them to meet those goals and increase operational efficiency. This will help to improve fish health, fish growth, and water quality in the receiving streams.

- Between 2020 and 2024, the CNU will work with the DFM to determine the appropriate allocation rate of cooperative nursery trout stockings using the PFBC's stocked trout allocation system as a guideline to improve efficiency of both PFBC and cooperative nursery stocking programs and provide improved angling opportunities.
- Between 2020 and 2024, provide technical assistance to all cooperative nurseries when discussing wastewater handling. Prioritize hatcheries that require support to improve nursery effluent water quality.
- Between 2021 and 2024, accurately track cooperative nursery stockings, publish tentative stocking schedules on the PFBC's website by the opening day of trout season, and update the Resource First Portal database to more efficiently track cooperative nursery stockings.
- Between 2020 and 2024, annually update the CNU Policy as needed to address any changes in CNU operating procedures, stocking procedures, and disease treatment/awareness.

Issue 25: The cost to operate the stocked trout program is substantial and as such, the PFBC must investigate ways to optimize hatchery operations and program efficiency.

Strategies:

- Through 2024, continue to use the computerized trout production modeling and tracking program to improve the efficiency of fish feed use at all trout rearing facilities. As new hatchery managers and foreman are hired, periodic training sessions pertaining to the operation of the computerized program will be provided.
- By 2024, purchase mechanical egg pickers and fish pumps to reduce labor costs associated with incubating trout eggs and moving fish between rearing units. Two fish pumps and three mechanical egg pickers are currently being used at various PFBC hatcheries.
- Through 2024, continue to analyze post-stocking data to determine the percentage of trips made with distribution trucks at full capacity and reconfigure stocking assignments and schedules to maximize full capacity truck trips.
- By 2020, begin replacing stocking trucks or tanks at a rate of two or three trucks per year. The average age of PFBC's stocking trucks is approximately 20 years old. The aging fleet and deteriorating trucks and tanks reduce efficiency, result in regular breakdowns, costly repairs, and have a negative impact on the program.
- Through 2024, implement stocked trout efficiency improvements, including removal of waters with low use and/or a negative cost-benefit ratio.
- By 2021, evaluate the feasibility of increasing trout production at PFBC hatcheries within permit limits. This would focus on increasing brood and catchable size trout numbers to increase trout angling quality and opportunities at limited cost.
- By 2022, evaluate the potential for expanded use of sterile (triploid) trout in the stocked trout program. Benefits may include increased survival of trout in the hatchery due to reduced spawning stress and increased growth rates, as well as eliminating the possibility of hatchery trout introgression with wild trout.

- By 2024, devote more staff effort to applied fish culture and research including effluent management technology, improving hatchery efficiency, evaluating new strains, and efficacy of expanded use of triploid trout.
- By 2021, update the trout Operational Guidelines document to account for changes in the stocked trout program.

Issue 26: The success of the stocked trout program is contingent upon trout stocked into streams being available to anglers in the vicinity of stocking locations and throughout the Stocked Trout Water (STW) stream section during the period of highest angler demand in spring.

Strategies:

- Between 2020 and 2024, continue to improve the concentration of preseason stockings during the three weeks prior to opening day of trout season to maximize the number of trout available to anglers on opening day of trout season and reduce transportation costs.
- Between 2020 and 2024, continue to improve the concentration of inseason stockings during the first three weeks of trout season to maximize the number of trout available to anglers during the period of highest angler use and cooler water temperatures while reducing transportation costs.
- Between 2020 and 2024, annually update the Trout Stocking Procedures and Fish Distribution Instructions – Standard Operating Procedures prior to the preseason stocking period as needed.
- Between 2020 and 2024, improve the distribution of stocked trout throughout stream sections to stock as many locations as logistically possible to maximize angler use and increased opportunities to catch fish over a greater length of stream.
- By 2023, evaluate the cost and feasibility of increasing stocking rates and/or frequency on a subset of high use waters.
- Between 2020 and 2024, the PFBC will continue to investigate reports of stocked trout residency problems (long-distance movement away from initial stocking location) and make necessary management adjustments as needed.
- By 2021, review trout hatchery assignments to optimize the timing of trout stocking, especially during the preseason period to allow more streams to be stocked closer to opening day and enhance angling quality.

Issue 27: The stocked trout program is the PFBC’s most popular program, and the PFBC must work to improve stocked trout stream angling opportunities and experiences to best meet the preferences of anglers.

Strategies:

- Between 2020 and 2024, staff will review the Delayed Harvest Artificial Lures Only (DHALO) program. The DHALO program is one of the PFBC’s most popular stocked trout regulation programs. Some existing DHALO areas are relatively short and would benefit from length extensions while there are other stream sections that are excellent candidates for

addition to this program. Staff will identify and act upon opportunities to improve and expand this program.

- Between 2020 and 2024, continue to implement and evaluate the Keystone Select STW program. Staff will continue to seek expansion opportunities of this extremely popular program along with considering length extensions for some existing waters.
- Through 2024, to continue to meet the large, brood trout allocations to the Keystone Select STWs and accommodate expansions of this program, as well as increase statewide distribution of large stocked trout in standard STWs, the PFBC will produce approximately 60,000 large 14 to 20-inch brood fish annually.
- By 2022, consider announcing “week of stocking” rather than “day of stocking” dates for preseason and/or inseason stockings at some or all STWs to increase staff and public safety; reduce public conflict; and improve angling opportunities, quality, and equitable availability of stocked trout to anglers.
- By 2022, the PFBC will refine focused marketing programs to better promote stocked trout fisheries, their value as renewable commodities, and the seasonal angling opportunities they provide. Additional public information campaigns will also focus on best practices to employ when fishing for stocked trout (e.g., proper fish handling and release techniques, best conditions to fish for stocked trout).
- By 2021, add at least one new water to the Keystone Select STW program in central Pennsylvania that would allow the use of all tackle types as a pilot project. If a suitable stream section is identified and this pilot project implemented, it would be managed under a Miscellaneous Special Regulation and evaluated for efficacy and potential expansion.
- By 2020, begin allocating trophy golden Rainbow Trout during the preseason and/or inseason stocking periods to DHALO and stocked catch-and-release stream sections, and during the inseason stocking period to STWs that currently receive Rainbow Trout during the inseason stocking period. To meet these needs, the PFBC will produce approximately 15,000 golden Rainbow Trout annually. Golden Rainbow Trout are very popular with anglers and this will substantially increase angling opportunities for these fish.
- By 2020, add a golden Rainbow Trout category to the stocking schedules on the PFBC website to identify which waters receive these fish so that anglers can better identify angling opportunities for golden Rainbow Trout.
- Through 2024, continue to provide high quality fish food to all brood trout to maximize color and condition.
- By 2021, develop a destination category for small river sections (waters greater than 66 feet but less than or equal to 99 feet in width). Some small river sections receive high angler use and angling opportunities may be improved by increasing the allocation of stocked trout to some of these stream sections.

- By 2024, conduct a study in cooperation with the USFWS Northeast Fishery Center to genetically identify current brood strains used at PFBC hatcheries. Results will be used to plan future production with available brood lines and/or introducing new strains into the trout production system as part of a comprehensive brood stock management plan for adult and fingerling trout stocking programs.
- By 2022, add the section limits for select stocked trout streams to the PFBC Summary of Fishing Regulations and Laws booklet. Most stocked trout streams are not stocked throughout their entire length and many of these streams also have sections that are managed for wild trout. Detailing section limits will: 1) clearly identify where stocking occurs to increase angler participation, especially for anglers unfamiliar with a stream; 2) provide increased protection to the stream sections managed for wild trout during the extended season; 3) increase angling opportunities for wild trout in sections that are open to year-round fishing; 4) increase angling opportunities downstream of STW sections; and 5) provide an opportunity to simplify regulations.

Issue 28: Stocked trout angling opportunities are limited in streams where adult trout habitat (e.g., pools and overhead cover) is the primary limiting factor.

Strategies:

- Between 2020 and 2024, conduct at least 15 instream and/or riparian habitat enhancement projects on priority stocked trout streams.
- Through 2024, implement recommendations of the Habitat Improvement Prioritization Workgroup and utilize findings to provide technical assistance to project partners to identify and prioritize projects that most effectively assist the PFBC in enhancing and restoring habitat in priority stocked trout streams. Adaptively manage and update recommendations of the Habitat Improvement Prioritization Workgroup as needed.
- Through 2024, continue to work with project partners (e.g., Western Pennsylvania Conservancy, Northcentral Pennsylvania Conservancy, County Conservation Districts and other federal, state and local agencies and non-profit groups) to focus habitat enhancement efforts on priority stocked trout streams.

Issue 29: The maintenance of free public access to Pennsylvania's stocked trout fisheries is important to maintain Pennsylvania's angling heritage.

Strategies:

- Between 2020 and 2024, improve public access to at least four priority stocked streams. Access improvements may include, but are not limited to improved parking areas, long-term access easements, and purchase of riparian lands.
- Through 2024, work with the PFBC Division of Property Services to create greater public awareness of the need to secure public access and be proactive in pursuing landowner easements along priority stocked trout streams.
- Through 2024, on all stocked trout streams with PFBC-assisted habitat improvement projects, ensure public access, parking, and signage that encourages use of the site and provides information on the benefits of the project.

Issue 30: Relative to statewide demographics, women, youth, young adults, and minorities are under-represented in the fishing license and trout stamp buying population. Therefore, recruiting, retaining, and reactivating these demographics is important to stabilize license and trout permit sales and sustain participation in trout fishing.

Strategies:

- Through 2024, utilize education, marketing, and outreach initiatives to increase the diversity of participants in trout and coldwater resource-oriented education programs and events. Outreach strategies will be evidence-based and designed to meet specific needs of under-represented demographics.
- Through 2024, continue to collaborate with TU to increase the number of participants in Trout in the Classroom and to expand the role of trout fishing and trout management in the curriculum.
- Through 2024, continue to provide Mentored Youth Trout opportunities on all STWs, and complete an evaluation of the effectiveness of this approach on youth recruitment and retention.
- Through 2024, continue to support and expand programs which are extremely popular with under-represented demographics and have potential for expansion (e.g., family fishing and women's fly-fishing programs).

Issue 31: Fingerling trout stocking may provide an opportunity to provide fisheries of high quality at lower costs than stocking with adult trout in some limited circumstances. Our knowledge of the success of fingerling trout stocking programs in some streams to meet management objectives is insufficient.

Strategies:

- By 2024, evaluate select remaining fingerling stocked streams and provide recommendations regarding the continuation, expansion, or reduction of the program.
- By 2024, complete the evaluation of the potential for improved survival of advanced fall fingerling trout in the Allegheny River and Youghiogeny River tailwaters.
- Through 2024, continue to conduct water quality and habitat evaluations on additional waters with potential to be managed using stocked fingerlings. For those waters that meet adequate year-round water temperatures, physical habitat, and/or biological characteristics, attempt to establish new fingerling stocked fisheries where appropriate.
- Through 2024, continue to implement a minimum target size of five inches for all PFBC allocated fingerling trout stockings so that the DFM can consistently evaluate the survival rate and efficacy of the fingerling stocking program.
- Between 2020 and 2024, work to identify new strains and evaluate life stages, time of stocking, and other stocking strategies of Rainbow Trout and Brown Trout fingerlings that produce successful put-and-grow programs in other states to improve fingerling survival in Pennsylvania waters. If one or more of the new strains meet PFBC fish health requirements, begin to utilize these strains for fingerling stocking on a trial basis.

Issue 32: Angler use, harvest, opinion, and economic data is lacking and/or outdated on Pennsylvania's stocked trout streams.

Strategies:

- Between 2020 and 2024, develop a plan for a statewide stocked trout angler use, harvest, opinion, and economic survey to assess angler catch, harvest rate, preferences, and opinions to inform programs and regulations. The last statewide survey was conducted in 2005.
- Between 2020 and 2024, plan and implement a trout angler telephone survey to assess preferences and opinions to inform future programs and regulations. The last statewide survey was conducted in 2007. Similar to the 2007 survey, a component of this survey will include determining the importance of destination waters. The survey will help determine where to best use stocked trout, stocking allocations, guidelines, and regulations.

Issue 33: Invasive species, pathogens, and parasites such as didymo, gill lice, New Zealand Mudsnails, and VHS threaten our stocked trout fisheries.

Strategies:

- Between 2020 and 2024, staff will review the Fish and Boat Code and the PFBC's fishing regulations concerning introduction, propagation, and transportation of fish in Pennsylvania's waters and recommend changes to help prevent the spread of invasive species, pathogens, and parasites from stocked trout.
- By 2024, implement effective outreach and education programs to educate the public regarding aquatic invasive species, pathogens, and parasites.
- Through 2024, continue to work with the Department of Agriculture to implement an effective gill lice-free certification process, which includes offering courses certifying qualified individuals for the inspection of gill lice.
- Through 2024, continue to implement PFBC biosecurity protocols to help protect stocked trout hatcheries from aquatic invasive species, pathogens, and parasites.
- Through 2024, the FHU will continue to collaborate with the DFM regarding fish health issues and evaluating the strains of trout produced at each PFBC hatchery to minimize the impact they may have on wild trout populations and maximize the success of the adult and fingerling trout stocking programs.
- Through 2024, the DES will establish and/or update AIS Action Plans for priority AIS found throughout the state.

Issue 34: Stocking hatchery Brook Trout into watersheds where wild Brook Trout are present can potentially have a negative impact on wild Brook Trout populations. Potential negative impacts include introgression of hatchery genes into wild trout populations, increased angling mortality of wild Brook Trout, spread of diseases and pathogens, and displacement of wild Brook Trout.

Strategies:

- By 2020, cease distribution of Brook Trout fingerlings to the 22 cooperative nurseries located in and/or stock fish into watersheds where wild Brook Trout reside.

- Between 2020 and 2022, Area Fisheries Managers will eliminate the stocking of Brook Trout in watersheds where wild Brook Trout reside. Rainbow Trout will primarily be stocked in place of Brook Trout.
- Between 2020 and 2024, the DFM will work with Bureau of Hatcheries to substantially reduce the production of Brook Trout at all PFBC state fish hatcheries and cooperative nurseries. Additional Rainbow Trout, golden Rainbow Trout, and/or Brown Trout will be produced to replace the Brook Trout. No reduction in total number of trout produced at state fish hatcheries is planned.
- Through 2024, as needed, update the trout stocking fact sheet and outreach plan to explain the benefits of reduced Brook Trout production and increased use of Rainbow Trout and/or Brown Trout in the catchable trout program.

Management of Stocked Trout Lakes



The following strategies are designed to address the highest priority threats and opportunities to the Commonwealth's lakes as they pertain to the management of trout. These priorities are designed to protect, conserve, and enhance stocked trout lakes while optimizing fishing opportunities for the anglers of the Commonwealth.

Issue 35: The maintenance of free public access to Pennsylvania's stocked trout lakes is important to uphold Pennsylvania's angling heritage.

Strategies:

- Between 2020 and 2024, improve public access to at least two priority stocked trout lakes. Access improvements may include, but are not limited to improved parking areas, long-term access easements, and purchase of riparian lands.

Issue 36: The cost to operate the stocked trout program on lakes is substantial. As such, the benefits of providing recreational angling opportunities with stocked trout should, at a minimum, equal the costs.

Strategies:

- Through 2024, continue to analyze post-stocking data to determine the percentage of trips made with distribution trucks at full capacity and reconfigure stocking assignments and schedules to maximize full capacity truck trips.

- By 2024, implement stocked trout efficiency improvements, including removal of waters with low use and/or a negative cost/benefit ratio.

Issue 37: The stocked trout program is the PFBC's most popular program, and the PFBC must work to improve stocked trout lake angling opportunities and experiences to best meet the preferences of anglers.

Strategies:

- By 2020, begin allocating trophy golden Rainbow Trout during the preseason and/or inseason stocking period to lakes less than six acres and during inseason stocking period on stocked trout lakes that currently receive Rainbow Trout during the inseason stocking period. To accommodate this increase along with increased allocation of golden Rainbow Trout to stocked trout streams, the PFBC will produce approximately 15,000 golden Rainbow Trout annually. Golden Rainbow Trout are very popular with anglers and this will substantially increase angling opportunities for these fish.
- Through 2024, continue to provide high-quality fish food to all brood trout to maximize color and condition.

Management of Trout in Lake Erie and Tributary Streams



The following strategies are designed to address the highest priority threats and opportunities to Lake Erie and its tributary streams as they pertain to the management of trout. These priorities are designed to protect, conserve, and enhance Lake Erie and its tributaries while optimizing fishing opportunities for the anglers of the Commonwealth.

Issue 38: Maintenance of disease-free Brown Trout eggs for stocking in the Lake Erie basin within the guidelines of the Great Lakes Fish Health Advisory Committee is critical to the maintenance of the Lake Erie Brown Trout fishery.

Strategies:

- Through 2024, the PFBC will continue to monitor these strains of Brown Trout and inspect for the presence of pathogens of concern. The Lake Erie Brown Trout program will continue to be evaluated and improvements made in production efficiency and to increase returns to tributary streams to enhance angler catch rates.
- Through 2024, continue to partner with Lake Erie area cooperative nursery sponsors to produce Brown Trout and steelhead trout fingerlings and smolts to support the PFBC stocking program.

- Through 2024, adhere to the Great Lakes Fish Disease Control Policy and Model Program developed by the Great Lakes Fish Health Committee in all stocking efforts in Lake Erie and its tributaries.

Issue 39: The maintenance of public access to Pennsylvania’s portion of Lake Erie is important to uphold Pennsylvania’s angling heritage. Since its inception, the Lake Erie Habitat and Access fund has resulted in over 25 miles of stream access and 63 angler access locations such as ADA access points on Presque Isle Bay and Twentymile Creek.

Strategy:

- Between 2020 and 2024, improve public access to at least 10 access points along Lake Erie and its tributaries. Access improvements may include, but are not limited to improved parking areas, long-term access easements, and purchase of riparian lands.

Issue 40: Steelhead and Brown Trout angling opportunities in Lake Erie tributary streams are limited in stream sections where habitat is the primary limiting factor.

Strategies:

- Between 2020 and 2024, conduct at least three instream and/or riparian habitat enhancement projects on Lake Erie tributaries.
- Through 2024, implement recommendations of the Habitat Improvement Prioritization Workgroup and utilize findings to provide technical assistance to project partners to identify and prioritize projects that most effectively assist the PFBC in enhancing and restoring habitat in Lake Erie tributaries. Adaptively manage and update recommendations of the Habitat Improvement Prioritization Workgroup as needed.
- Through 2024, continue to implement the Lake Erie Tributary Fish Passage Plan. This includes maintenance and operation of the two existing fishways on Fourmile Creek, instream habitat alteration to allow upstream fish passage under a wider range of flow conditions, and applying lessons learned to other streams and blockages in the unique geological formations and substrates of the Lake Erie watershed.

Issue 41: Steelhead stocking efforts generate hundreds of thousands of angler trips resulting in millions of dollars of economic impact in local economies around Lake Erie. In recent years, addition of the Brown Trout stocking program has further expanded angling opportunities. Despite the high stocking rate and substantial popularity of the Lake Erie steelhead trout and Brown Trout fishery, little information on population parameters exist. As such, survival and mortality estimates, exploitation rate, age structure, among other population data are needed to develop a population model to inform steelhead management.

Strategies:

- By 2022, develop a proposal to implement mass marking of steelhead trout using coded wire tag technology. This will require coordination among other Lake Erie jurisdictions that stock steelhead trout in Lake Erie tributaries.
- By 2024, begin mass marking all steelhead trout stocked into Lake Erie tributaries. This will require coordination among other Lake Erie jurisdictions that stock steelhead in Lake Erie tributaries.

- Between 2020 and 2022, evaluate the current angling regulations for steelhead and Brown Trout and make recommendations regarding whether a revised creel limit and/or length limit would improve the angling quality on Lake Erie tributary streams, and if such a change would be supported by anglers.
- Through 2024, continue to evaluate returns of Brown Trout to tributary streams and adjust production to maximize the returns.

Issue 42: Lake Trout are an important component of the Lake Erie ecosystem and recreational fishery. As such, ongoing monitoring and management efforts are needed to properly manage this species and fishery.

Strategies:

- Through 2024, continue PFBC's annual monitoring of Lake Trout in Pennsylvania's portion of Lake Erie as prescribed by the Lake Erie Committee.
- Through 2024, continue PFBC's participation in the Lake Erie Committee - Cold Water Task Group to ensure proper management of Lake Trout occurs throughout Lake Erie, including periodic updates of the Lake Trout Management Plan.

Issue 43: Invasive species, pathogens, and parasites such as didymo, Round Goby, Sea Lamprey, Zebra Mussels, gill lice, and VHS threaten our trout fisheries in the Lake Erie basin.

Strategies:

- Through 2024, continue to work with the Great Lakes Fishery Commission to ensure the effective and ecologically sound suppression of the Sea Lamprey population in Lake Erie to allow for the restoration of Lake Trout and improved survival of other resident species and stocked salmonids. Where feasible, barriers that prevent movement of Sea Lampreys into Lake Erie tributaries while facilitating passage of other species, including steelhead, will be investigated.
- Through 2024, continue to work with the Great Lakes Fishery Commission and the Asian Carp Regional Coordination Committee to prevent Asian Carp from entering the Great Lakes.
- Through 2024, continue to work with Great Lakes Fishery Commission and other partners on the suppression and management of other invasive species, disease pathogens, and parasite such as didymo, gill lice (*S. californiensis*), Round Goby, Zebra Mussels, and VHS.
- Through 2024, the FHU will collaborate with the DFM regarding fish health issues and strains of trout produced at each of the PFBC hatcheries that support the Lake Erie program. This will include an annual meeting to discuss fish health issues.
- Through 2024, the DES will establish and/or update AIS Action Plans for priority AIS found throughout the Lake Erie basin.