

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

Pennsylvania Fish and Boat Commission
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Goal of the Strategic Plan

The goal of this strategic 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.

The *Strategic Plan for Management of Trout Fisheries in Pennsylvania 2010-2014* identified 25 issues and 71 strategies to address those issues, while the 2015-2017 version of the plan identified 22 issues and 52 strategies to address those issues. These plans are available on the Pennsylvania Fish and Boat Commission's (PFBC) website at <http://www.fishandboat.com/Fish/Fisheries/TroutPlan/Pages/default.aspx>. The 2020-2024 update focuses on issues not completed in the previous plans and adds new issues. This plan identifies 40 issues and 127 strategies to address those issues. These issues will be the primary focus of PFBC trout management through 2024. Under each of the resource categories, measurable and time-bound strategies were developed.

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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 providing enhanced 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.

Approximately, 51,800 streams have not been sampled, of which about 35,000 are greater than or equal to 0.5 miles in length and more likely to support wild trout. 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. The PFBC does not currently have the staff resources needed to assess these streams at a rate that outpaces the rate of degradation.

Strategies:

- By 2021, establish a stable, long-term funding source for the Unassessed Waters Program at or above current funding levels.
- 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.
- Given the importance and value of surveying unassessed streams and accurately describing wild trout populations, increase the Division of Fisheries Management's seasonal personnel capacity to its former levels of 1-2 seasonal Fisheries Biologist Aides per work unit by 2021. This would greatly increase the PFBC's ability to survey, enter data, report on, and appropriately designate priority unassessed streams.

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 historic 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 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 PFBC as Class A Wild Trout Streams.

Issue 3: 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, encourage 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 DEP by the PFBC.

Issue 4: Maintaining free public access to Pennsylvania's wild trout fisheries is important to provide trout angling opportunities.

Strategies:

- Improve public access to at least four priority wild trout streams between 2020 and 2024. 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. Given the importance and value of public access to priority wild trout streams, increasing staff capacity beyond the current compliment of one individual for the entire state would greatly increase the PFBC's ability to secure additional public 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.
- Through 2024, work to develop a dedicated source of funding to improve public access on priority wild trout streams throughout the Commonwealth.

Issue 5: 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 improvement, overall condition of populations, and a comprehensive status of wild trout resources is unknown.

Strategy:

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

Issue 6: Gill lice (*Salmincola edwardsii* and *S. californiensis*) are nonnative parasites that can cause negative impacts to Pennsylvania's wild Brook Trout (*S. edwardsii*) and wild Rainbow Trout (*S. californiensis*) populations. This is of great concern, given the recent discovery of gill lice (*S. edwardsii*) in watersheds where wild Brook Trout reside. Gill lice were first documented by PFBC biologists in wild Brook Trout in 2016 in waters that were stocked with hatchery Brook Trout infected with gill lice from non-PFBC hatcheries.

Strategies:

- Between 2020 and 2024, continue to require all PFBC Special Activity Permit events that stock trout to obtain trout from hatcheries that are certified to be gill lice free and/or have lots or shipments that are certified gill-lice free.

- By 2021, develop and implement a statewide stocking permit. All other states surrounding Pennsylvania and throughout the northeast require stocking permits. The permit 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 permit process and will include a condition that trout stocked in the waters of the Commonwealth are obtained from hatcheries that are certified to be gill lice free and/or have lots or shipments that are certified gill-lice free. This condition will facilitate the elimination of the primary vector for gill lice infestations in wild trout populations; unregulated stocking from non-PFBC hatcheries.
- 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 PFBC continuing its no tolerance policy of gill lice in PFBC cooperative nurseries.
- Between 2020 and 2024, the Division of Fisheries Management will work with Bureau of Hatcheries to substantially reduce the production of Brook Trout at all PFBC state fish hatcheries and eliminate the distribution of Brook Trout to cooperative nurseries. See Issue 30 for more information.

Issue 7: 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 (SRBC), Delaware River Basin Commission (DRBC), and non-governmental organizations such as The Nature Conservancy.

Issue 8: 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, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Forest Service, among 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 help to inform future 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 implemented on Big Spring Creek, Cumberland County.

Issue 9: 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:

- Conduct at least 35 instream and/or riparian habitat enhancement projects on wild trout streams between 2020 and 2024. This may include selecting a wild trout stream with the appropriate water quality and biomass attributes and develop an instream habitat project which aims to increase the density of large adult fish and can be promoted as a demonstration project.
- Through 2024, work with major funders (e.g., National Fish and Wildlife Foundation and Department of Environmental Protection) to ensure grant funds are focused on providing maximum benefit to priority wild trout streams, especially those with greater 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 seek additional grant funding for habitat enhancement projects on priority wild trout streams, especially those with greater 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 assist the PFBC 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 proactively 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 in close proximity to Class A and B wild trout streams will receive the highest priority.

Issue 10: 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:

- When deemed biologically appropriate, remove barriers and/or improve wild trout passage on at least five wild trout streams between 2020 and 2024.
- 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, Trout Unlimited, 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 in close proximity to Class A and B wild trout streams will receive the highest priority.

Issue 11: 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 identify 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 12: 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 achieve improved knowledge of current tailwater fisheries status and water management operating rules to protect and improve the upper Delaware River trout fishery.
- Through 2024, work closely with the DCNR, DEP, utilities, the U.S. Army Corps of Engineers (USACE), and other reservoir owners to maintain and improve tailwater fisheries through flow and temperature management, and stocking strategies.

Issue 13: 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 size 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 1 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 was intensely 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 distributed 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 under the Trophy Trout regulation program and recommend the appropriate management program for each individual water moving forward as part of this regulation change process.

Issue 14: 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 regulations on Penns Creek, Section 03. These regulations were developed and implemented on an experimental basis in 2014. The Harvest Slot Limit regulations (2 fish/day at least 7” and less than 12” in length may be harvested from opening day of trout season through Labor Day with catch and release for remainder of the year) were 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 the largest 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 the Harvest Slot Limit regulations to other waters in the future.

Issue 15: 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 needed to determine if the use of barbed and/or multiple point hooks may have the ability to negatively impact the size structure of Pennsylvania's high use wild trout fisheries. Should the potential for substantial negative impacts be identified, staff will develop a recommendation regarding their use in special regulation areas and high angler use Class A wild trout streams.

Issue 16: 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 informing water-specific and statewide wild trout management decisions.

Strategies:

- During 2020 continue to partner with the NYDEC to conduct an angler use, harvest, opinion and economic evaluation of the West Branch Delaware and mainstem Delaware rivers.
- During 2020, analyze data collected from angler use, harvest, and opinion survey at Penns Creek, Section 03, that was conducted to evaluate the efficacy of the Harvest Slot Limit Regulations and assess potential for expanded use of these regulations at other waters. This data will be critically important to inform future angling regulations on this water as well as whether to expand the use of this experimental regulation at other waters.
- Between 2020 and 2024, develop a plan, secure funding, 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 17: Invasive species, pathogens, and parasites such as didymo, gill lice, New Zealand Mudsnaills, 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 educate the public and private hatcheries regarding aquatic invasive species, pathogens, and parasites that may be readily transmitted from hatcheries into 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 will collaborate with the Division of Fisheries Management regarding fish health issues and strains of trout at each PFBC hatchery and the possible impact they may have on wild trout fisheries.

Issue 18: The current wild trout list does not indicate 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, can still provide anglers with quality wild trout angling opportunities. These streams need to be identified for anglers.

Strategy:

- During 2021, develop and annually update a Class B and Class C biomass list that can be used to promote wild trout fishing and allow anglers to target moderate to strong wild trout populations that do not meet the criteria for Class A designation. This list will be developed and published in the same format as the current Class A Wild Trout Streams list.

Issue 19: The Wilderness Trout Streams Program has not been updated since 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.

MANAGEMENT OF STREAMS WITH TROUT FISHERIES MAINTAINED BY STOCKING

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 waters while providing enhanced fishing opportunities for the anglers of the Commonwealth.

Issue 20: 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.
- A flocculation effluent treatment system has been on-line at the renovated Reynoldsdale State Fish Hatchery since spring 2016. Water treatment efficiency data from this system will continue to be collected through at least 2020 to determine the feasibility and cost effectiveness of future systems to be implemented at other hatcheries pending funding availability.

Issue 21: 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 Division of Fisheries Management to determine the appropriate allocation rate of cooperative nursery stocked trout per water using the PFBC's stocked trout allocation system 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. Due to budget limitations there are no plans to increase funding to improve nursery effluent water quality.
- Between 2021 and 2024, accurately track cooperative nursery stockings and supply to Division of Fisheries Management as requested and update the Resource First Portal (RFP) database to more efficiently track cooperative nursery stockings.
- By 2021, the CNU will work with IT staff to publish the tentative nursery stocking schedules on the PFBC website.
- Between 2020 and 2024, annually update the CNU Policy as needed to address any changes in CNU operating procedures, stocking procedures, and disease treatment and awareness.

Issue 22: 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. Additional units will be purchased as funds are available.
- 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 at a rate of three trucks per year. The average age of PFBC stocking trucks is approximately 20 years old. The aging fleet and deteriorating tanks reduce efficiency, result in regular breakdowns and costly repairs, and have a negative impact on the program.
- By 2021 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 2021, evaluate the potential expanded use of sterile (triploid) trout in the stocked trout program. In the context of fish culture, benefits may include increased survival of trout in the hatchery due to reduced spawning stress and increased growth rates. An additional benefit includes eliminating the possibility of hatchery trout introgression with wild trout.
- By 2024, increase staff capacity to focus on applied fish culture and research including effluent management technology, improving hatchery efficiency, and evaluate new strains and triploid trout.
- By 2021, update the trout operational guidelines document to account for changes in the stocked trout program.

Issue 23: Success of the stocked trout program requires that a substantial proportion of the trout that are stocked into a stream are available to anglers to catch.

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 stocking 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 and reduce transportation costs.

- Between 2020 and 2024, the PFBC will more evenly distribute stocked trout throughout stream sections at as many stocking locations as logistically possible (up to 4 stops per mile) to maximize angler use and the opportunity to catch fish.
- Between 2020 and 2024, the PFBC will continue to investigate reports of stocked trout residency problems (movement away from initial stocking location) and make necessary management adjustments as needed.
- By 2022, fill vacant Waterways Conservation Officer (WCO) districts. Vacant WCO districts results in officers covering multiple districts resulting in substantial negative impacts to the stocked trout program including fewer stocking points, more stockings occurring at inopportune times further from opening day, and reduced enforcement on stocked trout waters, among others.
- 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 24: 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. As such 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 stocked trout program. Staff will continue to seek expansion opportunities of this extremely popular program along with considering length extensions for some existing waters.
- By 2024, to continue to meet the large, brood trout allocations to the Keystone Select stocked trout waters and accommodate expansions of this program as well as increase statewide distribution of large stocked trout in standard Stocked Trout Waters (STW), the PFBC will increase annual production of large, brood trout by an additional 30,000 14 to 20-inch fish.
- By 2021, consider adding at least one new water to the Keystone Select program in central Pennsylvania that would allow the use of all tackle as a pilot project. If a suitable stream section can be identified and this pilot project is 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 increase the annual production of Golden Rainbow Trout by an additional 5,000 fish. 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 more easily identify angling opportunities for Golden Rainbow Trout.
- By 2020, 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, allocate funding to conduct a study in cooperation with the U.S. Fish and Wildlife Service 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 programs.
- By 2022, add the section limits for all 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. Adding the section limits will: 1) clearly identify where stocking occurs to increase angler participation, especially for anglers unfamiliar with a water, 2) provide increased protection to the 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 stocked trout sections, and 5) provide an opportunity to simplify regulations.

Issue 25: Stocked trout angling opportunities are limited in streams where adult trout habitat (e.g., pools and overhead cover) is the primary limiting factor.

Strategies:

- Conduct at least 15 instream and/or riparian habitat enhancement projects on priority stocked trout streams between 2020 and 2024.
- 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 to seek additional grant funding for habitat work on priority stocked trout streams (e.g., Western Pennsylvania Conservancy, Northcentral Pennsylvania Conservancy, County Conservation Districts and other federal, state and local agencies and non-profit groups).

Issue 26: 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 access coordinator 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.
- Through 2024, work to develop a dedicated source of funding to be used to improve public access on priority stocked trout streams throughout the Commonwealth.

Issue 27: Relative to statewide demographics, women, youth, and young adults are under-represented in the fishing license and trout stamp buying population; therefore, recruiting, retaining, and reactivating these audiences 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 women and youth.
- Through 2024, continue to collaborate with Trout Unlimited 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.
- Continue to provide Mentored Youth Trout opportunities on all stocked trout waters, and by 2024 complete an evaluation of the effectiveness of this approach on youth recruitment and retention.
- Through 2024, continue to support and expand the family fishing and women's fly-fishing programs which are extremely popular and have potential for expansion.

Issue 28: 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 and possible 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 Youghiogheny 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 5 inches for all PFBC fingerling trout stockings. It is important for Bureau of Hatcheries to meet this target so that Fisheries Management 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 29: 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 and dedicate funding for a statewide stocked trout angler use, harvest, opinion and economic survey to assess angler catch, harvest rate, preferences, and opinions to inform future programs and regulations. The last statewide survey was conducted in 2005.
- Between 2020 and 2024, plan, dedicate funding for, 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 should include determining the importance of destination waters. The survey will help determine where to best use stocked trout, stocking allocations, guidelines, and regulations.

Issue 30: 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.
- By 2020, work with the Department of Agriculture to develop and implement an effective gill lice free certification process for private trout hatcheries to eliminate the transmission of gill lice from hatcheries into wild trout populations.
- Through 2024, continue to implement PFBC biosecurity protocols to help protect stocked trout hatcheries from aquatic invasive species, pathogens, and parasites.

- Through 2024, the Fish Health Unit will collaborate with the Division of Fisheries Management regarding fish health issues and strains of trout produced at each PFBC hatchery and the possible impact they may have on wild trout populations and/or the success of the fingerling stocking program.

Issue 31: 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 numerous diseases and pathogens, and displacement of wild Brook Trout.

Strategies:

- By 2020, cease distribution of Brook Trout fingerlings to the 40 cooperative nurseries located in and/or stock fish into watersheds where wild Brook Trout reside. This will result in a 33% (115,000 fish) reduction in current Brook Trout distribution to cooperative nurseries. The 40 cooperative nurseries will receive Rainbow Trout and/or Brown Trout in place of Brook Trout.
- Between 2020 and 2022, Area Fisheries Managers will eliminate the stocking of Brook Trout in watersheds where wild Brook Trout are present. Rainbow Trout and/or Brown Trout will be stocked in place of Brook Trout.
- Between 2020 and 2024, the Division of Fisheries Management will work with Bureau of Hatcheries to substantially reduce the production of Brook Trout at all PFBC state fish hatcheries and eliminate the distribution of Brook Trout to cooperative nurseries. All remaining Brook Trout production at PFBC state fish hatcheries will utilize triploid fish. 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.
- During 2020, develop a 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.

LAKES MANAGED FOR STOCKED TROUT

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.

Issue 32: The maintenance of free public access to Pennsylvania's stocked trout lakes is important to uphold Pennsylvania's angling heritage.

Strategies:

- Improve public access to at least two priority stocked trout lakes between 2020 and 2024. Access improvements may include, but are not limited to improved parking areas, long-term access easements, and purchase of riparian lands.
- Through 2024, work to develop a dedicated source of funding to be used to improve public access on stocked trout lakes throughout the Commonwealth.

Issue 33: The cost to operate the stocked trout program on lakes is substantial and 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 34: 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.

Strategy:

- 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 increase annual production of Golden Rainbow Trout by an additional 5,000 fish. Golden Rainbow Trout are very popular with anglers and this will substantially increase angling opportunities for these fish.
- By 2020, provide high quality fish food to all brood trout to maximize color and condition.

TROUT MANAGEMENT IN LAKE ERIE AND ITS 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.

Issue 35: 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:

- PFBC has developed two in-house sources of Infectious Pancreatic Necrosis (IPN)-free Brown Trout eggs for fingerling and yearling production and stocking in Lake Erie. Through 2042, the PFBC will continue to monitor these strains and inspect for the presence of IPN. Adult Brown Trout are reared at Fairview State Fish Hatchery to stock into Lake Erie. We will continue to monitor this production at this facility and increase efficiency.
- Through 2024, Continue to partner with Lake Erie area cooperative nursery sponsors to produce Brown Trout and Steelhead fingerlings and smolts to support the PFBC stocking program.
- By 2024, work to adhere to the Great Lakes Fish Disease Control Policy and Model Program supplied through the Great Lakes Fish Health Committee in all stocking efforts in Lake Erie and its tributaries.

Issue 36: 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 Twenty Mile 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 37: Steelhead trout and Brown Trout angling opportunities in Lake Erie tributary streams are limited in stream sections where habitat is the primary limiting factor.

Strategies:

- Conduct at least three instream and/or riparian habitat enhancement projects on Lake Erie tributaries between 2020 and 2024. This will include the bank stabilization and instream habitat project planned for 2019 on Elk Creek that the PFBC provided \$200,000 towards a \$688,000 overall project cost to decrease erosion and sedimentation and create steelhead and stocked trout holding habitat and improve angling opportunities.
- 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, 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. To implement the program effectively, increased funding from PFBC and other sources will be needed.

Issue 38: Steelhead trout stocking efforts generate hundreds of thousands of angler trips resulting in millions of dollars of economic impact in local economies around Lake Erie. Despite the vast expansion of this fishery, high stocking rate, and substantial popularity of the Lake Erie steelhead fishery, little information on steelhead population parameters exist. As such, survival and mortality estimates, exploitation rate, age structure, among population data are needed to develop a population model to inform a steelhead management.

Strategies

- By 2022, develop a proposal and identify funding to implement mass marking of steelhead trout using coded wire tag (CWT) 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 trout in Lake Erie tributaries.

Issue 39: 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 the Lake Trout in Pennsylvania's portion of Lake Erie as part of the overall monitoring of Lake Trout in 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 40: Invasive species, pathogens, sand 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, 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 including 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 and disease pathogens such as didymo, gill lice (*S. californiensis*), Round Goby, Zebra Mussels, and VHS.
- Through 2024, the Fish Health Unit will collaborate with the Division of Fisheries Management

regarding fish health issues and strains of trout produced at each PFBC hatcheries that support the Lake Erie program. This will include an annual meeting to discuss fish health issues.

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