

Pennsylvania Fish and Boat Commission

Position Statement Regarding the Closure of Coldwater Tributary Stream Mouths to Angling During Summer Months

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Concerns have been raised about fishing for and harvesting trout congregating during the summer at spring seeps and at the mouths of coldwater tributaries to a number of the larger trout streams within Pennsylvania. This issue is not new but receives renewed interest during summers that are on the hot and dry end of the spectrum of Pennsylvania's variable weather conditions. Little was heard about this issue during the cool, wet summers of 2003 and 2004, but the situation was more apparent during the summer of 2005 when stream flows were relatively low and high water temperatures occurred.

Decreased stream flow and increased stream temperature are characteristic of the temperate climate of Pennsylvania. These changes occur on all waters throughout Pennsylvania and aquatic life is adapted to respond to these changes. The preferred temperature range for trout is between 50 and 60 degrees Fahrenheit (F). The upper temperature limit is about 78 F for brown and rainbow trout and 72 F for brook trout (Piper et al. 1982). As water temperatures increase above the preferred levels, trout move into cooler tributary streams and spring seeps. As trout seek cooler waters, concentrations of fish, at times, become conspicuous, especially when movement into tributaries is prevented by low flows or crowded conditions.

Trout metabolism increases as temperatures rise resulting in more feeding and greater activity. Temperatures rising into the stress level for trout will lead to weight loss regardless of how much they eat. As water temperatures continue to rise beyond a certain point, feeding activity will decline and eventually cease. Research conducted by McMichael and Kaya (1991) found that catch rates for wild brown and rainbow trout in sections of the Madison River declined to levels considered unsatisfactory by anglers at water temperatures of 66.2 F or higher. Similarly, a review conducted by Elliot (1994) reported that the maximum brown trout feeding limits range from 65.7 to 67.1 F. Ultimately, extended periods of temperature stress where upper thermal tolerance limits are exceeded will cause fish to die.

An example of where the congregation of trout at the mouths of tributaries has been observed is Penns Creek, which supports a high abundance of wild trout. Long-term monitoring of this stream has shown that the wild brown trout populations have been stable or improved despite the relatively warm water temperatures that occur during the summer months. These results demonstrate the ability of trout to successfully utilize the available thermal refuge areas in these stream sections. Some research has shown that wild trout can withstand higher water temperatures than hatchery trout. For example, Vincent (1960) found that wild brook trout could endure higher water temperatures than a domestic strain of brook trout. Carline and Machung (2001) found that wild strains of brook, brown and rainbow trout had significantly higher critical thermal maximums than did domestic strains of all three species with differences ranging from 0.9 to 2.7 F.

Congregation of trout at the mouths of tributaries can also occur on waters managed with stocked trout. These fisheries, termed “put-and-take” fisheries, are typically managed for trout to be caught relatively soon after they are stocked. Trout that survive and are not harvested eventually seek coolwater refuges if they are available, since temperatures that are unsuitable for portions of the year often characterize waters stocked with trout. Therefore, few stocked trout are expected to survive from one year to the next. Allowing anglers to harvest these fish, rather than allowing the fish to die of natural causes, is consistent with the goals of fisheries management on stocked trout waters. Also, these waters are typically replenished with new stockings each year. Only limited numbers of trout can be supported in coolwater areas during times when the stream temperatures are generally high and flows are relatively low. These trout are crowded and thermally stressed, which usually means that they are difficult for anglers to catch; however, under periods of favorable conditions with lower temperatures, the opportunity to catch trout can occur. Closing portions of the streams when trout are crowded at tributary mouths can limit fishing opportunities without discernable trout population benefits. Guidelines for anglers to follow when practicing catch and release are attached (Appendix 1).

Closing portions of these streams would also create major law enforcement problems. Limits would need to be defined for closed areas and criteria would need to be established to determine which areas would be closed. It would be difficult and impractical to define all of the potential refuges and establish temporary, enforceable regulations, let alone adequately post them so that anglers would know they cannot fish in these areas. Additionally, a change in weather, such as a cold front and precipitation event, could improve conditions. Thus, the agency would need to be able to determine when angling could continue in a timely manner or risk losing more angling opportunities.

Pennsylvania Fish and Boat Commission (PFBC) staff did not find any peer-reviewed reports in the literature related to the use of seasonal closures to address trout congregation at coldwater refuges. To examine the practices followed by other states regarding the use of seasonal stream refuges or closures, information was compiled from responses provided by fish and wildlife agency professionals from 20 states and one Canadian province (Table 1). Seventeen of these 21 agencies do not practice the use of stream closure to address trout congregation at coldwater refuges during periods of elevated summer water temperatures. None of the agencies apply the use of stream closures during summer on a statewide basis. In the four states where some form of seasonal refuge is used, it is applied on a water specific basis for a period of time or a time of day. For example, New York prohibits fishing on a portion of the Beaverkill River from July 1 to August 31 and Massachusetts and Connecticut prohibit fishing within 100 feet of the mouth of tributary streams to the Housatonic River from June 15 to August 31. Montana appears to have the most in-depth policies regarding stream closure. Their policies are implemented on a stream-specific basis during critical drought conditions and are aimed at protecting species of special concern and wild salmonids. Voluntary restrictions may be recommended before threshold levels are reached. Once thresholds are reached, closure options include a half-day closure (noon – midnight) and full closure. Closures are lifted on September 15th unless an earlier date is designated by the Montana Fish, Wildlife and Parks Commission for a specific water. Montana’s stream closure policy may be viewed online at <http://fwp.mt.gov/drought/closurepolicy.html>. Policies used to address this issue can become

quite complex and PFBC staff believe this may result in angler frustration with trying to determine when and where they may go fishing.

Climatic events are naturally occurring and the PFBC finds it impossible to forecast these situations. Closing areas to fishing during periods of potential thermal stress would only serve to limit angling opportunities and it would be very difficult for law enforcement personnel to enforce the regulations. It would be unreasonable to enforce any regulation short of no fishing or no harvest and the PFBC finds it economically and operationally imprudent to close down summer fishing on some of our most popular trout fishing waters in the state. We acknowledge and understand the concerns that some constituents have with the loss of fish, but from a practical, biological, and enforcement standpoint, it is not prudent to restrict angling. Therefore, the PFBC does not recommend closing spring seeps and mouths of tributaries to angling when trout congregate in these areas.

Literature Cited

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Table 1. Summary of State and Canadian Province responses to summer stream closure.

State	Summer Closure?	Rationale/Comments
Arizona	No	Has used closures in conjunction with re-establishment of sensitive species.
Colorado	No	Voluntary in 2002 during daylight hours on C&R waters.
Connecticut	Yes	Case specific - limited to Housatonic system and two other specially regulated streams. No fishing within 100 feet of mouth of tribs from June 15 to August 31. Complex policy.
Georgia	No	Closure on striped bass near certain springs.
Hawaii	No	
Idaho	No	Some spring closures on tribs to lakes.
Massachusetts	Yes	Tribs to Housatonic River only, no fishing within 100 feet of mouth from June 15 to August 31. Unsure of the biological effects. Enforcement difficult and limited. Coincides with C&R regulations on river and anglers highly support the concept. Focusing on habitat, not harvest as the main limiting factor in brook trout fisheries.
Michigan	No	Not done mainly to keep regulations simplified.
Minnesota	No	Want to keep regs simple. Some recent die-offs due to unusual warming that was blamed on global warming.
Montana	Yes	Implemented under critical drought conditions. Some voluntary, some half-day (noon - midnight), and some full closure. Specific to species of special concern and salmonids. Complex written policy. http://fwp.mt.gov/drought/closurepolicy.html
Nebraska	No	
New Jersey	No	
New York	Yes	Fishing prohibited on a portion of the Beaverkill from July 1 to August 31.

Table 1 (Continued).

State	Summer Closure?	Rationale/Comments
North Carolina	No	
Ontario, Canada	No	
Oregon	No	Closures at known areas of congregation of migratory fish.
Tennessee	No	3 areas with seasonal closures to protect spawning trout.
Vermont	No	
West Virginia	No	
Wisconsin	No	
Wyoming	No	Some closures to protect spawning migrations.

Appendix 1. How to Release Fish – Catch and Release

Every angler should expect and be prepared to release some portion of his catch. Catch and release has become a popular and preferred method of angling. The number of fish that survive depends on several factors, including the length of the fight, where the fish is hooked, water temperature, and how the fish is handled and released. To give fish released the best chance for survival, the following guidelines are recommended.

1. Use barbless hooks

Barbless hooks can facilitate the quick removal of the hook from a fish and also reduce the risk of hooking injuries to the angler. Pinching down the barb with needle-nose pliers works.

2. Play fish quickly

Try to land your fish as quickly as possible and don't play the fish to exhaustion. This is particularly important when fishing for trout in periods of warmer water temperatures (greater than 70 degrees F), but it is also true for coolwater and warmwater species, when water temperatures are relatively high (greater than 80 degrees F). Keep in mind that as water temperatures warm, dissolved oxygen levels in the water decline. Therefore, fish are subject to stress and exhaustion in a much shorter period of time at 70 degrees compared to 55-degree water temperatures. If it takes you a long time to land fish, your drag may be set too loosely or your gear may be too light for the fish you are catching.

3. Use a landing net

The use of a fine-mesh landing net may aid in reducing the amount of time required to land a fish and keep it from thrashing about in shallow water or on the shore.

4. Keep the fish in the water

The chance of a fish being injured increases the longer it is held out of water. It is preferable to remove the hook from a fish you intend to release without taking it out of the water, or at least minimize the amount of time a fish is held out of water.

5. Wet your hands

Wet your hands, your net, and other materials that may come in contact with the fish. This reduces the removal of the mucus on the fish and lessens the possibility of bacterial infection.

6. Hold the fish upside down while removing the hook

This can often pacify the fish and reduce handling time.

7. Remove hooks quickly

Hemostats or long-nose pliers are essential tools for quickly removing hooks. Cutting hooks from a lure may facilitate lure removal in some cases; therefore, wire cutters are a valuable addition to an angler's hook removal arsenal.

8. Cut the line

When it is not possible to remove the hook without harming the fish, cut the line. Only a small piece of line should be left on the hook to ease passage through the digestive system. Research has documented that cutting the line can greatly increase the survival of deeply hooked fish.

9. Don't touch the gills

Do not handle fish by placing your fingers in the gill slits. Fish gill filaments are very sensitive and can easily be injured. Fish should be handled by cradling the fish near the head and tail if possible, or by gently holding the fish near the mid-section. Bass can be safely handled by holding the lower jaw, thumb in the mouth and forefinger under the chin.

10. Hold the fish upright underwater after hook removal and allow it to swim away under its own power

If necessary, hold the fish out of the current until it revives.

11. Fish that are bleeding from the mouth or gills due to hook removal and handling indicate your catch and release techniques need to improve

Survival is reduced significantly when damage resulting in bleeding occurs; if regulations allow, fish that are bleeding are the ones that you should consider keeping.