



## **Trout Unlimited Fisheries Management Position Paper**

### **Stocking Over Native Brook Trout**

**By Larry Harris, Chair**

The Fisheries Management Committee of the West Virginia State Council has addressed the question of stocking fingerling or catchable-sized trout in streams containing reproducing populations of wild or native brook trout. During these discussions some concerns were raised that hatchery trout would inadvertently harm the native trout population. Similar concerns were noted by TU in Pennsylvania where State fisheries biologists found that the brook trout populations increased when stocking was ceased. During our discussions others stated that no harm to native fisheries have been documented in West Virginia. In fact, the WV DNR simply does not stock most native brook trout streams in the State. Wild trout streams that are stocked with fingerlings include Laurel Fork of the North Fork of the South Branch of the Potomac, Slatyfork and the Elk C & R at Elk Springs. There was no consensus reached in these discussions, although I was asked to research this issue with experts in the field and using literature reviews.

The following information is the result of this search and is by no means an exhaustive or complete account of the literature or opinions of all experts. However, a very consistent view is seen which will be summarized below.

#### **Definitions:**

**Native brook trout:** Refers to reproducing populations of *S. fontinalis*, fish which are native to our streams.

**Wild trout:** Includes native brook trout, rainbow and brown trout whose population in the stream is maintained by natural reproduction.

#### **Findings:**

In **Robert J. Behnke's "Trout and Salmon of North America"** he discusses instance after instance of native trout species that are impacted by stocking of non-native fish. Cutthroat species are replaced by rainbows or lake trout, wild salmon are disrupted by introduction of hatchery stock, and in many other examples when hatchery trout are

stocked in wild trout waters the wild trout often lose. Is this the case in brook trout waters? Behnke discusses this in the section on brook trout where he concludes that in the Appalachians, brook trout have been displaced from much their range by introduction of brown and rainbow trout and by habitat destruction. Interestingly, when brook trout were stocked in the cold, pure streams of the west they generally prospered, leading to the extinction of the native species. Clearly, throughout Behnke's book, the stocking of hatchery trout is noted to negatively impact all salmonid species.

I asked National TU for advice on who to contact to get information on this issue, specifically, would stocking of brown trout fingerlings in native brook trout streams have a negative effect? They suggested Ray White, fisheries biologist, as a source of information, and I contacted him and visited him on the web at <http://www.flyfishamerica.com/Conservation/WildFish/WFContents.html>.

There are several articles of great interest and I quote from them to summarize the problems caused by hatchery trout:

“The general problems: hatchery fish perform poorly in nature, and hatchery programs and their fish harm wild fish. Hatchery fish are inevitably flawed for life in streams. Thus, hatcheries seldom work as expected to offset failure to protect habitat and properly control harvest. Also, deformities and dull color (especially in put-and-take-stocked fish) make the hatchery product less appealing than wild fish. Hatchery fish can be inferior to wild fish in some 30 ways...and harm to wild populations can take at least 24 forms. Competition, disease infection, and genetic pollution from stocked fish tend to be the main ones; predation being a lesser concern”.

I summarize here some of the rest of the 24 problems:

- Stocking causes the mixed-stock harvest problem weakening the wild population.
- Hatchery wastes pollute streams and lakes.
- Hatcheries divert funds from more effective measures, such as habitat protection.
- Hatcheries give people a false sense of security-it makes them complacent about over fishing and habitat destruction.
- Disruptive behavior: Hatchery-reared fish tend to be unnaturally antagonistic, partly from being raised in unnatural crowding. [This was also noted by Bob Bachman, where he observed how hatchery trout disrupted wild brown trout in Spruce Creek, PA]

In summary, while the use of hatchery trout has its beneficial uses, this practice harms wild fish in many ways. Perhaps the most serious is competition. This from Ray White: “Scientists deem this [competition] a far greater hatchery-induced problem than predation. When hatchery fish are stocked among wild fish and succeed in defending spaces and catching food, they reduce the availability of space and food for the wild population. Overcrowding with new fish having similar space and food needs can upset life in the confines of a stream. A long-term Montana study found that wild trout increased when stocking halted, and the reverse. A host of studies elsewhere show the

same. A Pennsylvania researcher observed conflict between wild and hatchery brown trout [Bachman]. Newly stocked trout also disrupt wild trout simply by mal-directed over-activity. They wander about excessively, like first-week freshmen at college. The pointless roving and fighting wastes the energy of all fish involved, both hatchery and wild fish survive poorly, and the stream's population can fall to less than the original number of wild fish”.

Roderick Haig-Brown long ago summed it up: "Hatcheries are the easy way, the politically safe way. Dependence on hatcheries reduces the will to solve the real problems of natural production, and absorbs far too much money that otherwise might be directed to these ends."

Here is a quotation from Dr. White's talk at Wild Trout VIII at Yellowstone Park this year:

“Wild trout—actually, salmonid—science and management have grown much [since]our symposium began bringing together resource professionals and anglers to consider wild trout issues 30 years ago. Our special field has become strongly habitat-oriented, indeed ecology-oriented. By definition, it departs from the tired hatchery tradition of fishery work. The implications of that caused a bit of consternation among some public-agency officials at that first symposium in 1974, also at a few subsequent ones. However, crucial distinctions between wild and artificially bred fish now seem well enough recognized that no such tension arose at the present symposium.

**A further movement: Within the expanded ecological emphasis of our field, we see increasing appreciation that damaged streams, when relieved of human-generated harm (we are almost always the source), can do much to *self-restore* themselves as producers of wild fish.** The same interactions of water, sediments, and vegetation that shaped the pristine stream forms to which fish adapted can often naturally regenerate favorable conditions—and sometimes within only a year or two. Thus, most streams probably do not need the artificial habitat structures we were advocating a few years ago”.

He also pointed out that “ *The genetic make-up of a substantial wild, native population is the record of its ancestors' ecological success*” *If we introduce hatchery trout which may impact the wild trout are we not altering the odds of their ecological success?*”

The following comments are Ray Whites' response to my emails and specifically address the issue of stocking hatchery bred trout on top of native populations.

“Stocking hatchery-bred trout on top of wild trout is sure to harm the wild population. The preponderance of scientific evidence tells us there's no doubt about this. No up-to-date biologist would think otherwise.

The damage is likely to be especially severe where, as you indicate, brown trout are stocked on top of brook trout. Stocking hatchery browns into wild brown trout populations causes behavioral problems (Bachman 1984), and brook trout appear to be even more susceptible to unfavorable interactions with brown trout (Fausch and White 1981, 1986). See also Vincent (1987).

**Stocking fingerling hatchery trout may be little or no less harmful to wild populations than stocking larger trout.** [Ed.: stocking of fingerling or larger

hatchery trout both are harmful to the wild trout population]. **Fingerling hatchery fish would certainly compete with other trout of their size and smaller.**

### **References:**

Bachman, R. A. 1984. Foraging behavior of free-ranging wild and hatchery brown trout in a stream. *Transactions of the American Fisheries Society* 113:1-32.

Fausch, K. D., and R. J. White. 1981. Competition between brook trout (*Salvelinus fontinalis*) and brown trout (*Salmo trutta*) for positions in a Michigan stream. *Canadian Journal of Fisheries and Aquatic Sciences* 38:1220-1227.

Fausch, K. D., and R. J. White. 1986. Competition among juveniles of coho salmon, brook trout, and brown trout in a laboratory stream, and implications for Great Lakes tributaries. *Transactions of the American Fisheries Society* 115:363-381.

Vincent, E. R. 1987. Effects of stocking catchable-size hatchery rainbow trout on two wild species in the Madison River and O'Dell Creek, Montana. *North American Journal of Fishery Management* 7:91-105.

The following is an excerpt from Wild Trout VII which sets out an interesting proposal:

[Excerpt from the Proceedings of Wild Trout VII, Yellowstone National Park, October 1-4, 2000]

## **Manage First for Wild Trout**

**Robert L. Hunt**

Approximate remarks following receipt of the A. Starker Leopold Professional Award

I am optimistic about future possibilities to expand the number and quality of wild trout fisheries in North America; more optimistic than I was when I participated in the first Wild Trout Management conference held here in 1974. Since then, and in large part because of that conference and its predecessor symposia, two significant trends have evolved that have heightened my sense of optimism for the future of wild trout fisheries.

The first trend has been a greatly increased awareness by fisheries management biologists and their angler clientele that hatchery reared, inbred, domesticated strains of trout cannot provide fishing quality comparable to that provided by fisheries sustained by wild trout. Wild trout are now almost universally recognized by anglers as having an inherent experimental value in terms of observing, fishing for, and catching that domesticated trout cannot provide because of genetic and behavioral deficiencies.

The second trend has been an increased awareness of and appreciation for the fragile environmental qualities necessary to sustain wild trout populations. There is a real but hard to quantify add-on value to the experience of fishing a stream or pond that sustains all life stages of wild trout on a year-round basis.

As fisheries management professionals, I believe we need to capitalize more than we have done so far on these two experiential attributes associated with wild trout fisheries. I suggest that one way we could do so would be formulation of and support for a simple foundational principle that could guide management agencies (state, federal, tribal, or private) to more fully implement strategies favoring wild trout fisheries.

I propose the need for a principle similar to that which undergrades another branch of applied science more important and much more complicated than our profession, namely the science of human medicine. From the jungle witch doctors to the most prominent medical clinic specialists, a common ethic determines their treatment of patients seeking their help: First do no harm. These four simple words provide a unifying and universal bond of professional obligations that have contributed immeasurably to the ways in which medical science is applied and to the confidence that patients have in the doctors and nurses they submit to for medical care.

There is more than enough collective talent among us today to think up a comparable foundational directive we could promote to guide our evolving science of trout fisheries management toward greater emphasis on wild trout management simply because it is the right thing to do and best serves our clientele. I offer one such example as a starting point: Manage First For Wild Trout.

Here are three brief scenarios to which this guiding principle could be applied:

First, for the increasing number of fisheries adequately maintained by wild trout populations, management emphasis would be placed on preservation and protection of healthy watersheds and instream habitat qualities that allow wild trout to thrive, plus imposition of angling regulations that prevent excessive harvest. Just continue to vigilantly "manage first for wild trout".

Scenario two would apply my simple directive to those fisheries entirely dependent now on periodic stocking of domesticated trout. Reexamine each such fishery. Is stocking of domesticated trout the only option or is it simply done because it is the easiest and cheapest option? Consider in each case this alternative: Manage first for wild trout by managing first with wild trout. Yes, they are harder and more expensive to culture for a few months, but poststocking survival can be expected to be several fold greater and, more importantly, provide the add-on value that only wild trout can offer.

The third scenario would cover the potentially greatest option for increasing the number and quality of wild trout fisheries—doing what is necessary to restore trout habitat quality so that stocking of domesticated trout is not necessary or desirable. Field tested stream, riparian zone, and watershed rehabilitation techniques are "on the shelf and ready to go". What seems to be lacking is simply management agency fortitude to adopt, fund, and implement policies to "manage first for wild trout".

These three brief examples are not impractical, untried options. I am grateful that I have had a part in contributing to just such implementations in my home state of Wisconsin where the Dept. of Natural Resources now places first priority on managing the public trout streams and spring ponds to provide fishing for wild trout. I challenge each of you to go back to your agency and encourage, as best you can, adoption of a similar SOP. You can be the one to ask, "If not, why not?"

## **SUMMARY**

The data that are available seem to support the concept that stocking hatchery trout in streams with native brook trout populations is not a scientifically sound idea. I could find no published or stated evidence to the contrary. There is no evidence to support the concept that West Virginia's native brook trout would be at less risk due to hatchery stocking than streams elsewhere. Stocking of fingerling or larger hatchery trout would doubtless cause similar problems to our native trout populations. Hence, such stockings should simply not be done. In degraded streams, where no reproducing trout are present and brown trout can survive, introduction of brown trout fingerlings can enhance angling experiences and may help protect that stream from development and pollutants. However, Trout Unlimited recognizes that addressing the habitat issues, which degrade such streams, would be a more important thing to do. The Fisheries Management Committee of Trout Unlimited therefore asks each chapter to reassess its stocking program to be sure that fingerling or other stockings are not being done on native brook trout streams in West Virginia.

Submitted to the Committee: February 5, 2005