New Jersey's

Warmwater Fisheries Management Program

Chronicle Of A (Newly) Retired Biologist

By Bob Papson, Principal Fisheries Biologist

NJ Div. of Fish and Wildlife

Assessing the Fishery—Hybrid striped bass are well-suited for larger waterbodies such as Spruce Run Reservoir, where fisheries biologist Bob Papson sampled this specimen in the late 1980s.

I probably acquired my interest in nature, wildlife and the outdoors while hiking and fishing at Splitrock Reservoir as a Boy Scout at nearby Camp Lewis. Who could have known that attraction would lead to a 36-year career as a fisheries biologist with New Jersey Division of Fish and Wildlife?

It's tremendously rewarding to see decades of progress in the realm of fisheries management, including progressive fish sampling techniques and refined fish culture practices in state-of-the-art hatchery facilities, all of which contribute to making New Jersey a destination for freshwater fishing.

Primitive Equipment

Like the career path of many, my 1972 starting point began at the entry level. As a fisheries worker, most of my time was spent assisting biologists collecting fish for various studies. Although electrofishing gear is still the equipment of choice for many sampling efforts today, back then the contraptions were awfully primitive.

We were young, eager-to-please fisheries workers willing to strap on our backs this equipment and then traipse upstream in a pair of heavy, black rubber waders. (Did I mention we did this during the hot, humid summer?) When shocking for fish, an electrical field is created between two electrodes in the water which will temporarily stun the fish, causing them to float to the surface where they are easily netted for sampling.

These early units were designed simply to get the job done.

Road Trip For Sportfishing

Several years into my career, the wheels began turning on an initiative that would change the course of warm/coolwater fishing opportunities in the Garden State. In those days, New Jersey anglers wet their lines in New York, Pennsylvania or Canada to fish for muskellunge, walleye, northern pike and even smallmouth bass. At that time, Fish and Wildlife's warmwater fisheries project biologist, Bob Stewart, recognized that New Jersey's habitat had the potential to create quality fisheries for these popular trophy sportfish.

1983 marked a pivotal time in the development of the state's warmwater program as trout rearing shifted from the Hackettstown Hatchery to the newly-completed Pequest Hatchery. Now the 200-acre Hackettstown facility could be dedicated entirely to raising warmwater and coolwater species.

Mastering Muskies

Northern pike was the first new warm/coolwater fishery that Stewart wanted to develop, but hatchery rearing techniques for large members of the pike family (esocids) were challenging in that day. Instead, Stewart began rearing tiger muskie which are easier to raise. The plan was to shift to pike production after mastering the rearing of muskie.

Stewart worked closely with personnel at the Hackettstown trout hatchery to develop the facilities (tanks, aeration systems, etc.) for rearing northern pike. Advice on rearing techniques from the Pennsylvania Fish Commission proved invaluable. Pennsylvania also provided eggs and fry from their hatcheries until we could develop an ample northern pike fishery. New Jersey's program became self-sufficient in 1985 when our sole source of eggs was from in-state wild broodfish.

Branching Out

Still a young assistant biologist at that time, I worked with Stewart on broodstock collections and sampling to evaluate the fisheries at both Spruce Run Reservoir and Budd Lake. By the mid-1980s, desirable targeted northern pike fisheries were established in several waterbodies. Fish culture efforts could now be directed toward other species. After working closely with Stewart for years on various warmwater fisheries projects, I took over as the warmwater fisheries project leader in 1986.

Pulling Up Proof

One of the most exciting experiences working with species introductions is capturing that first fish in your sampling gear, knowing a fishery is finally well on its way to being established. Successful experimental stockings in Assunpink and Cranberry lakes, although later dropped from the stocking program, led to the development of three very successful striped bass hybrid fisheries in the larger waterbodies of Spruce Run Reservoir, Lake Hopatcong and Manasquan Reservoir, fisheries that are still enjoyed by anglers today.

Unexplored Territory: Three New Reservoirs

The late eighties and early nineties saw the creation of three new reservoirs, Monksville, Merrill Creek and Manasquan. These entirely distinctive waterbodies provided a unique prospect for a fishery biologist. Monksville Reservoir, a 505-acre water supply impoundment in Passaic, afforded an opportunity to introduce a species that I believed would have great potential in New Jersey—the walleye.

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Fisheries biologist Bob Stewart Releases walleye fry at Monksville Reservoir during the initial stocking in 1988.

The fact that Monksville was a new impoundment added to the walleye's potential for success since there would be little competition from other species as the fishery developed. For the initial 1988 stocking we received 600,000 fry from the Pennsylvania Fish Commission and a generous donation of 2,000 advanced fingerlings from the New Jersey Anglers Sportsmen Association. Over time, the Hackettstown Hatchery staff's consistent success in producing quality fingerlings proved essential to this program.

One of the most gratifying moments in my career came in the fall of 1989 when I retrieved the first of three gillnets from the reservoir and pulled up a couple dozen walleye averaging 14.1 inches—fish from the initial stocking the previous year! At that moment it was clear the walleye program would be a success. Further proof arrived on the end of my hook several years later when I reeled in a 4-pound walleye during my first fishing trip to Monksville Reservoir.

Smallmouth bass were recommended for introduction to Merrill Creek and Manasquan reservoirs in their early years. Our broodfish source was a private hydrogenerating reservoir. The method of capture was hook and line, a real tough assignment. Today, hatchery production of smallmouth bass fingerling continues on an as-needed basis.

1972

Bob Papson takes an entry-level job with New Jersey's fishery program.

Intensive Fish Culture Techniques

Another true milestone in our warm/coolwater fisheries program came with the 1995 completion of the state-of-the art intensive culture building at the Hackettstown Hatchery. The new facility provided more efficient, consistent and improved production in the quantity and size of fingerlings, assuring that our stocking goals for the present and future could be achieved.

Two years prior, Fish and Wildlife had begun rearing and stocking true-strain muskellunge. We were confident we could develop several quality muskellunge fisheries following the proven success of Muskies, Inc's initial stocking of fingerlings into Greenwood Lake. However, raising true-strain muskellunge is more challenging than either northern pike or tiger muskies. The completion of the Hackettstown intensive culture building helped to propel forward the success of New Jersey's muskellunge program.

The Hackettstown State Fish Hatchery remains a major component of the state's warm/coolwater fisheries program. There are few facilities of its kind in the country that raise such a diversity of species—14 in all. The hatchery has been a consistent producer, providing the quantity and size of fish to meet stocking goals and to maintain these quality fisheries for Garden State anglers.

Quality Fisheries Close to Home

It is gratifying to have been involved in the development of the quality warm/coolwater fisheries management program. The slogan "New Jersey's Freshwater Fishing Has Never Been Better" is absolutely true. Dozens of quality new fisheries have been created for species that New Jersey anglers traveled out-of-state to enjoy 20 years ago. Fisheries that routinely produce muskellunge over 48 inches, northern pike over 15 pounds, tiger muskie over 20 pounds, plus walleye and striped bass hybrids over 8 pounds now inhabit New Jersey waters along with channel catfish and smallmouth bass.

1983
After Pequest Trout Hatchery Opens (1982), Hackettstown shifts focus to warm- and coolwater species.

1986
Bob Papson becomes the new warmwater fisheries project leader.

1989
The Monksville walleye stocking program, founded by Bob Papson, is a success.

1995
A new intensive culture facility at Hackettstown boosts the warmwater team's productivity.

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Reaping the Benefits—Bob Papson holds a prized walleye he caught fishing the Delaware River in March 2006.

Pride In Your Work

It has been especially rewarding to work with the development of the Monksville Reservoir fishery from its inception—beginning with planning the reservoir's fish habitat, stocking the various species, collecting brood fish, assessing the fishery—and finally, developing the management plan. I am most proud of my involvement in creating the quality walleye fishery that some anglers say compares favorably with those found in Canada. In more recent years, there was great satisfaction from being involved in obtaining public fishing access at Splitrock Reservoir, the waterbody which was the inspiration for this fisheries biologist's career.

You Were Paid To Do *What*?

Aspects of this job that I loved the most include working with folks who are so truly dedicated to New Jersey's freshwater resources—biologists, fisheries workers, anglers and conservationists, alike. How fortunate to have the chance to create new fishing opportunities for New Jersey and to work with anglers and sportsmen's groups to make that happen. Certainly there was the benefit of field work: being paid to traipse around streams, lakes and rivers on an almost daily basis for several months of the year, after 36 years, is still just as rewarding as when my career began.

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True New Jersey Natives

By **SHAWN CROUSE**
Principal Fisheries Biologist
Photos by author

New Jersey anglers know a lot about fishing the Garden State. Most avid fishermen can distinguish a largemouth from a smallmouth bass. Many of us catch our limit of stocked trout on opening day while others have wet enough lines to have mastered techniques for catching lake trout, walleye or muskie. But many anglers may not know that each of these species, including most of our popular gamefish, were introduced to our state for recreational purposes. That's right, northern pike, channel catfish, rainbow and brown trout, hybrid stripers, common carp, crappie and even bluegill are not native to New Jersey.

bluespotted sunfish

Of the nearly 100 freshwater fish species that swim in our waters, only 65 of them are native. The term native is often misused to describe an individual fish that was born in the wild. The most common misuse among anglers is when we claim to catch *native* brown trout in New Jersey streams. Actually, brown trout are native to the British Isles and the European mainland. What we catch here are *wild* brown trout.

Non-native fish such as brown trout and largemouth bass reproduce in New Jersey waters, but that does not make them native. A *native* species is one naturally occurring within the geographical region in which it evolved, whereas *non-native* species have been dispersed by humans (intentionally or unintentionally) beyond their original geographical region.

With the exception of our native sportfish such as chain pickerel, brook trout, pumpkinseed, redbreast sunfish, yellow perch, American shad, American eels, white catfish and bullheads—the majority of our native fishes are relatively unknown. Some of the most interesting, rare and important fishes are those native species that may never take a hook.

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NATIVE NEW JERSEY FISHES

One of New Jersey's most interesting species is the American brook lamprey. They spend the first four to five years of their life blind, buried into the substrate, filter-feeding upon small particles. During the last year-and-a-half of their lives, functional eyes develop and their hood-like mouth transforms into a toothed, disk-like structure, similar to their relative the sea lamprey. However brook lamprey are not parasitic; they neither eat nor have a functioning digestive system in this adult stage, where they reach a maximum length of just over 12 inches. Because they require specific water conditions with a silt-free substrate, the American brook lamprey also serves as an indicator species, acting as a marker for this particular habitat feature.


American brook lamprey


slimy sculpin

Often tied by fly fishermen, the muddler minnow imitates a small native fish known as the slimy sculpin, a well-camouflaged swift-moving fish. Fluke fishermen may see the sculpin's resemblance to a sea robin. The sculpin serves as the ultimate indicator species of clean, cold water and pristine habitat quality.


John Bunnell
pirate perch

Although not a true perch, the pirate perch may appear to have no unique characteristics, until viewed from its underside. This fish has a migrating anus. (Really!) As a juvenile, the anatomic arrangement of this fish resembles that of most other species, but as a pirate perch matures, its vent moves forward until it finds a permanent residence under the throat.


bridle shiner
Dr. Joseph Colosi, DeSales University


ironcolor shiner

Minnows such as the ironcolor shiner and bridle shiner were once found in many clear, vegetated waters throughout more than 20 states. Now rarely encountered, these fish appear on several states' threatened and endangered species lists. Never larger than 2.5 inches, these straw-colored shiners are vulnerable to habitat loss and predation from non-native species.


dace
longnose
blacknose

A master of swift waters, blacknose and longnose dace are two of the most common minnows found in streams of the northern portion of the state. They are frequently found in trout streams.


cutlips minnow

The cutlips minnow seems harmless enough, but this fish has been known to pluck out the eyes of other fish. But there is no reason to fear; this native fish has evolved and coexists with other New Jersey fishes since the last Ice Age.


blackbanded sunfish

Possibly the most beautiful group of all New Jersey freshwater fish, the acid-tolerant family of sunfish includes the bluespotted, banded, blackbanded and mud sunfish. Apart from the mud sunfish, these tiny sunfish rarely attains even four inches in length. With the exception of the bluespotted sunfish, these species are primarily restricted to minimally-disturbed lakes and slow-moving streams in south Jersey inhabited by few non-native sunfish and bass, as found in the Pinelands.


bluespotted sunfish


banded sunfish
John Bunnell


mud sunfish

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Beyond the value we enjoy from having a fish on the end of a rod, on the dinner plate or in an aquarium, native fishes—both large and small—are an important piece of a complex, ecological puzzle. Over millions of years, evolutionary processes resulted in an uncountable variety of fish species worldwide, all with a different appearance, behavior and tolerance for environmental changes. Each native species forms a strand in the food web, sharing their preferred waterbody with other aquatic life as an integral component in a dynamic ecosystem. The presence (or absence) of a particular native species—or groupings of species—can serve as a biological health indicator, reminding us of the fragile nature of our aquatic resources.

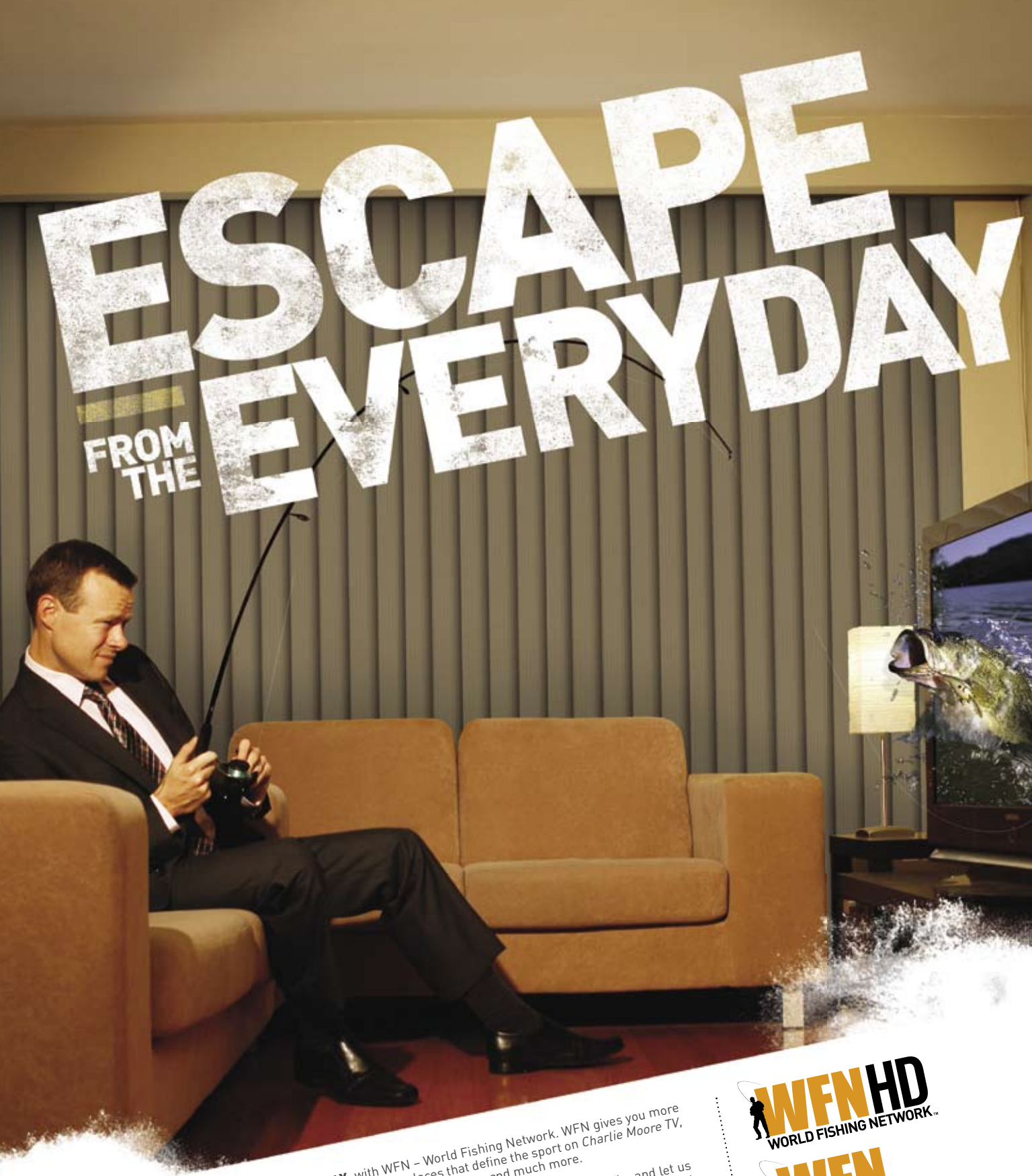
On a global scale, numerous native fishes have gone extinct and many more are declining.

On a global scale, numerous native fishes have gone extinct and many more are declining. Human population growth has caused drastic land use changes resulting in degradation of both terrestrial and aquatic habitat (including water quality), reducing the number of suitable waterbodies for their survival. Cumulative effects from dams, stormwater runoff, fertilizers, pesticides, water supply depletion and sewage discharge—to name just a few—impact our fisheries resources. The influx of invasive plants, animals and diseases threatens the existence of native fishes. Widespread distribution of many non-native species exerts tremendous competition and predation pressures, unlike any our natives have faced in their evolutionary history. In addition, if global warming results in a rapid change in conditions, these pressures may exceed the ability of native fishes to adapt in time.

Back in New Jersey, the Division of Fish and Wildlife's Bureau of Freshwater Fisheries conducts hundreds of fisheries surveys, providing valuable data to better understand the status and distribution of our native fishes. Fish and Wildlife is working toward creating species distribution maps, formally evaluating our native fishes resource and developing management strategies to guide research and management activities into the future.

Our waters give rise not only to sport fish that tip the scales, but also to an assortment of miniature wonders. On your next trip, take a closer look. Be curious. Several native species may scurry among the cobble with your next wading step. You may find it intriguing to identify and learn more about a less-familiar fish. While many may be common species, others might be brilliantly-colored, absurdly unique or increasingly rare. Whether in your bait bucket, on the end of your line or in the waters below, ask yourself if this fish is a true New Jersey native.

For a checklist of New Jersey freshwater fishes, visit www.NJFishandWildlife.com/chkfish.htm.



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