



Jeanie Darrow/NJ Div. Fish and Wildlife

River Fishing Opportunities Not To Be Overlooked

By Shawn Crouse, Principal Fisheries Biologist
Ron Jacobsen, Fisheries Technician
Mark Boriek, Principal Fisheries Biologist

To many, the northeast portion of the Garden State is better known for traffic congestion and honking horns than for our diverse natural resources. But through the eyes of an angler, the view can be much different. Some of New Jersey's most overlooked fishing waters are right before your eyes. Although the lower ends of the Passaic and Raritan rivers flow through the most urbanized and industrialized areas of the state, the fisheries in these underappreciated waters can provide endless hours of lunger-to-lunker traffic for anglers in the know.

The Raritan River

The Raritan River proper is one of the most diverse yet underutilized fisheries in New Jersey. Fresh waters originating from seven northern counties flow downstream past the freshwater fishing license line at the Landing Lane Bridge in New Brunswick, then ultimately into the Atlantic Ocean via the Raritan Bay. Influenced not only by wild fish of both fresh and saltwater origin but also by an assortment of hatchery-reared species, the Raritan has much to offer anglers beyond its pleasant scenery and calming flows. The lower end of this river is a very short ride for many residents of Somerset and Middlesex counties and offers some of the state's finest smallmouth bass fishing, along with over a dozen other species just *begging* to be caught!

The Raritan River is a high-quality and diverse fishery, but anglers wonder, *how can this be without a stocking program?* It is important to know that many sportfish such as largemouth, smallmouth and striped bass, an assortment of panfish, common carp and several catfish species successfully reproduce in the Raritan River because the conditions are suitable for natural reproduction making stocking unnecessary. This is the best of both worlds: a quality fishery that is self-sustainable.

Secondly, many of the river's tributaries and impoundments are stocked with an array of warm and coolwater species which ultimately end up in the main stem river. The two largest contributors are the Millstone River and the Delaware and Raritan Canal (D&R Canal) and to a lesser degree Carnegie Lake, Spruce Run Reservoir and Budd Lake. These waters are collectively stocked with muskie (occasionally tiger muskie), northern pike and/or channel catfish. Countless other waters serve as a source for wild and hatchery-raised fish. The presence of walleye in the Raritan is attributed to the direct pathway provided by

the D&R Canal—as its name implies—from the Delaware River to the Raritan River.

The Raritan River has a recovering American shad population. Due to serious declines, fishing for American shad is prohibited on all New Jersey fresh waters except the Delaware River and its tributaries. As the Raritan River's Calco, Robert Street and Nevious Street dams were removed in consecutive years starting in 2011, a renewed hope emerged for the recovery of the shad's sweet-water migration along each newly opened mile of river. There is optimism that their comeback will one day rival that of the "Big D" where the spring of 2013 brought American shad up the Delaware River in waves. Anglers were quoted as having "the best shad fishing in years!"

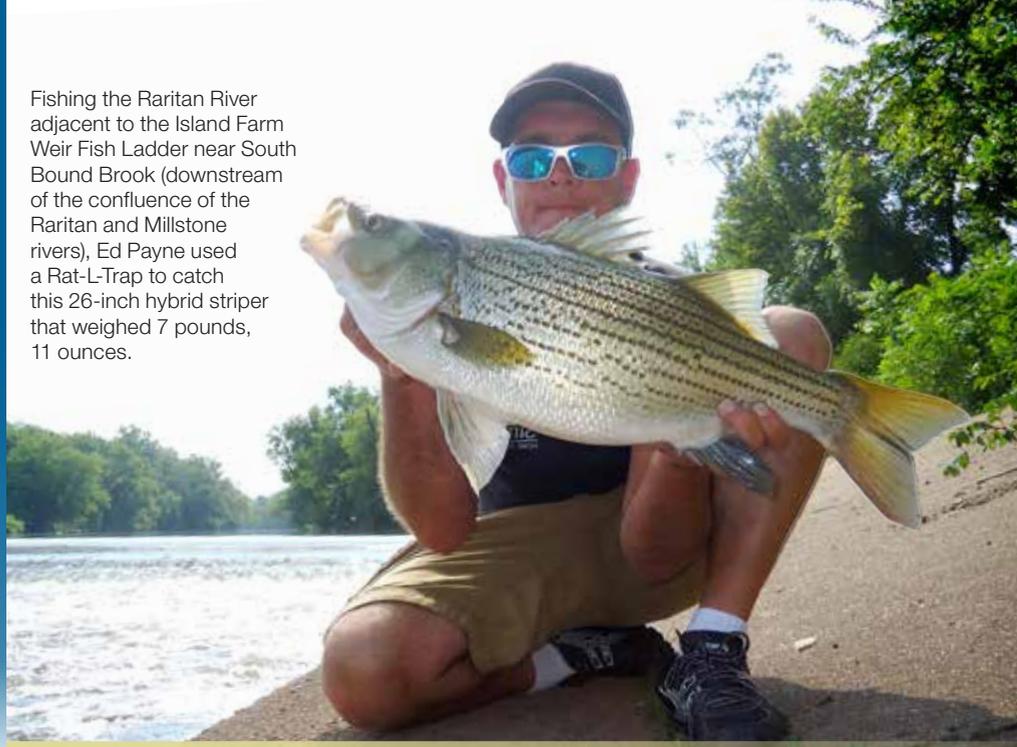


Redbreast sunfish

Lori Crouse

Noting the Raritan's relatively small shad population coupled with the existing rich fishery resource, Fish and Wildlife is satisfied with the management of this river's recreational fishery, knowing that the additional stocking of piscivorous (fish-eating) predators in the Raritan River is not only unnecessary, but potentially harmful to the recovery efforts of the "poor man's salmon." Flooding the system with species such as walleye, pike or muskie may be risky as they would likely consume large quantities of young shad, a threat that this vulnerable species cannot afford.

Fishing the Raritan River adjacent to the Island Farm Weir Fish Ladder near South Bound Brook (downstream of the confluence of the Raritan and Millstone rivers), Ed Payne used a Rat-L-Trap to catch this 26-inch hybrid striped that weighed 7 pounds, 11 ounces.



The Raritan is one of the state's most diverse rivers. Game species are present in sufficient numbers with over 21 species documented to be traversing the Island Farm Weir fish ladder every year. More than a dozen of these are commonly sought by anglers in the Raritan's waters including not only bass and panfish but also hatchery-supported species such as walleye, northern pike, muskie and channel catfish. Visit some of the popular New Jersey fishing websites to find numerous enthusiastic angler reports on fishing the Raritan River.

Trout in the Raritan

New Jersey Division of Fish and Wildlife's prolific and well-documented three-season trout stocking program touches nearly every corner

of the state. Our stocked waters are incredibly diverse and managed individually based on their unique qualities. Many coldwater streams—primarily located north of Route 78 and west of Route 287—are suitable for wild trout reproduction which is no secret to the skilled angler who likes to fish off of the beaten path.

Stocking many of these waters is unnecessary as the next generation of sac fry will emerge annually, guided only by the hand of Mother Nature. Since not all waters are natural fish factories, we turn to our Pequest Trout Hatchery to provide that service. Waters that stay cool enough for trout to survive year-round (the Pequest, Musconetcong, and Toms rivers, for example) are perfect candidates for trout stocking. Here, anglers have an enhanced fishing opportunity from those

stocked fish as they are available year-round.

The remainder of our waters become too warm in the summer and are managed to provide only seasonal trout fishing opportunities beginning in April often tailing off at some point in June (the Rahway and Pompton rivers plus small warm-water park ponds). These put-and-take fisheries (stock and harvest) are best-suited for very popular and/or smaller systems where angler harvest is encouraged before the trout succumb to high summertime water temperatures. Fish and Wildlife spreads these locations throughout the state by selecting popular fishing destinations, geographically distributed, with good public access.

Turning to the lower Raritan River, its main stem and the two rivers that are its namesake (the



Ed Payne's 32-inch tiger muskie, caught in the same area as the hybrid above, shows the diversity of fish awaiting anglers in the lower Raritan.

Contributors to the Raritan Fishery

The Delaware & Raritan Canal

The Delaware and Raritan Canal—along with bordering lands—became a state park in 1974 and offers a wide array of sportfishing opportunities. This includes a spring trout fishery along the Mercer County stretch plus stocked muskie and channel cats from Griggstown to its terminus at the Raritan near the Route 18 bridge. This fishery spills into the Raritan River, enhancing that angling experience well.

The downside of this *connection* between the state's two largest rivers is that it also serves as a fast lane for the spread of invasive species from one watershed to the next. Such was the case with the discovery of a 14-inch flathead catfish—the first in New Jersey documented *outside* of the Delaware River Watershed—electrofished during a 2013 survey in the lower Millstone River just upstream from the Island Farm Weir.

Millstone River

The Millstone River is a central Jersey tributary of the Raritan. Annually stocked with northern pike, the lower Millstone River offers an array of gamefish including both largemouth and smallmouth bass, a ton of panfish and trophy-sized carp.

A brief electrofishing survey conducted during July of 2013 in the lower Millstone River produced five walleye, the largest of which was nearly 24 inches in length. (See photo). Access on the Millstone is hit-and-miss but the river can be fished easily by boat from primitive boat launches on either side of the Wilhousky Street bridge.

South Branch and North Branch Raritan rivers) receive a total of more than 66,000 trout each spring, which is 12 percent of the entire state's supply. The uppermost stocking points of the Raritan's north and south branches are stocked from Far Hills Borough and Mt. Olive Township, respectively, down to their confluence at the junction of Branchburg Township, Hillsborough Township and Raritan Borough. The main stem of the Raritan is stocked from this confluence at Duke Island Park to the Route 206 Bridge.

Watersheds typically follow a predictable pattern, as they flow downstream where waters warm along the way. The Raritan Watershed is no different. The coldest waters in these rivers are upstream of Ravine Lake on the North Branch and upstream of Lake Solitude on the South Branch. Once below the confluence with Peapack Brook on the North Branch and Packers Island on the South Branch, these waters are much less likely to support trout through late summer although a token number of fish may find refuge in a spring or cool tributary—not enough to provide a significant fishery.

The lower end of the Raritan gets progressively warmer and wider until it is no longer appropriate for stocking trout. The currently stocked section represents the best trout habitat and water quality within the system. Nonetheless, trout still inhabit the lower Raritan during the spring as proven at the Island Farm Weir fish ladder where in recent years up to 200 trout were recorded by video cameras as they travelling up the ladder.

With no known wild trout populations within 15 miles and the two closest stocking points located approximately five miles upriver and four miles downstream in Middle Brook, one thing is proven... fish move. Imagine them traveling through a watershed as if it were a highway system complete with interstates (rivers), exits (confluences), and side roads (tributaries), all of which serve as pathways that connect one town (waterbody) to the next. Those trout demonstrate the ability to travel beyond the scope of their individual stocking point and in this case, enhance the lower Raritan River fishery—at least until the heat of summer prevails.

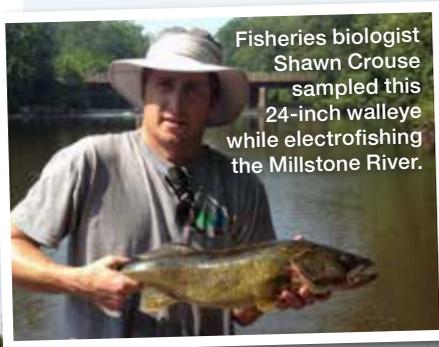
Most of the river is wadable or can be fished from its banks, but the best approach is drifting in a kayak, canoe or small john boat. Be sure to scope out the river in advance and plan your access and portage locations wisely as you will encounter a combination of shallow water, dams and rapids that can endanger your outing. Good options to launch exist below the Headgates Dam at Duke Island Park, Roberts Street in Bradley Gardens, Johnson Park in Piscataway or even in the Millstone River just below the Weston Causeway Dam in Manville. Shoreline access points are frequent along the river such as along Weston Canal Road in Somerset. Seek out a map of the river and venture off the beaten path to find your own slice of paradise.

Passaic River

The Passaic River is another northeast river that offers varied fishing experiences for New Jersey anglers. The river is as diverse as the 80 miles of land it traverses, crossing through seven northeastern counties. Too often overshadowed by its long-standing contaminant issues (lower section) and chronic flooding issues, many anglers will be surprised to learn that the Passaic River—from its southern Morris County source in Mendham through Morristown National Historical Park (Jockey Hollow) to Osborne's Pond in Basking Ridge—has New Jersey's highest water quality designation, with rainbow and brown trout reproducing naturally within this stretch.

Few would recognize this rock cobble-lined trout stream as the humble beginning to the large river that has fueled New Jersey industry for so long. Similar to the Raritan, the cold, clear waters warm as the river flows downstream and wild trout opportunities give way to hatchery-supported trout fishing. However, from the outlet of Osborne's Mill Pond to the Dundee Dam in Garfield, the river is classified as Non-Trout (where trout cannot survive high summer temperatures). In this stretch trout are stocked at nine locations, as far downstream as Chatham, for a "put and take" fishery in the spring when the water is colder.

Below Chatham the river continues to meander then widens where its current slows creating



Fisheries biologist Shawn Crouse sampled this 24-inch walleye while electrofishing the Millstone River.

Scott Coltenburg / NJ Div. Fish and Wildlife

Avid northern pike anglers Rob Jasonek and Barry Walsky (unseen in trailing kayak) fish the Passaic River for their favorite quarry.

perfect habitat for northern pike and channel catfish that are now stocked at more than 25 locations from the Lower Chatham Bridge at the Morris-Essex County line to Pennington Park in Paterson. Locations from Hawthorne to Garfield, above the Dundee Dam on the Bergen County side of the river, are also stocked.

Much of the river from Chatham to Fairfield is accessible only by canoe or kayak. However, numerous city riverside parks are havens for shoreline anglers. To explore the Passaic River, small watercraft can be launched at the McCormick Bridge off South Orange Avenue, Livingston and at the Swinefield Bridge near the intersection of Eagle Rock Avenue and River Road in Morris County. The Great Piece Meadow Natural Area stretch from Horseneck Bridge Road downriver to Two Bridges Road has consistently produced large pike for anglers fishing from kayaks. Anglers have reported catching pike weighing up to 20 pounds and measuring into the low 40-inch range.

Motorboats can be launched at John Suchorsky Park in Little Falls Township. This location has limited parking and shoreline access to the river. Pennington Park in Paterson (closed for renovation in 2013) offers an expansive shoreline from which to fish. There is a boat ramp at Memorial Park in Fairlawn; riverside fishing and boat launching is possible off River Road in Elmwood Park near the town's high school. Note: The Passaic River is prone to flooding so watercraft fishing trips should be limited to times of normal flow.

Largemouth bass, smallmouth bass and carp can also be caught in the Chatham to Dundee Dam stretch. Recently there have been several reported catches of walleyes—undoubtedly escapees from upstream impoundments, such as Monksville Reservoir and Greenwood Lake. *Fish have fins...* so whatever is in those impoundments—along with the inhabitants of the Whippany, Rockaway, Pequannock, Wanaque, Ramapo, Pompton and Saddle rivers—can move downstream to the Passaic River. Below Dundee Dam the river is tidal freshwater to the freshwater license line (railroad bridge between Newark and Kearney) and ends at Newark Bay. Here,

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northern pike have been caught as far downstream as Belleville and striped bass are caught on their spring spawning run up to the base of the dam. White catfish and white perch are plentiful and there have been occasional reported catches of smallmouth bass, largemouth bass and channel catfish.

Diverse Fishing Close to Home

The next time the urge strikes to fish new waters and you are considering where to wet your line, remember that diverse fisheries may exist closer to home than you had realized. Both the Raritan and Passaic rivers offer as many species as can be found in more popular waterbodies such as Lake Hopatcong or the Delaware River.

Whether the fish sustain themselves through natural reproduction (like bass, bluegills and carp), or if they are supported by hatchery stocking (such as walleye, pike and channel cats), you can be sure to find a diversity of fishing opportunities in some less-than-obvious places along New Jersey's northeast rivers. 

Links:

Freshwater Fishing information including regulations, stocking programs and access:
NJFishandWildlife.com/fishing_fresh.htm.

New Jersey fish consumption advisories:
www.FishSmartEatSmartNJ.org
 or call (609) 984-6070.



NEW JERSEY'S TROUT PRODUCTION WATERS:

An Exciting Discovery Revealed

By Luke Diglio, Seasonal Fisheries Worker and Montclair State Doctoral Candidate, Environmental Management Program



A tributary of the South Branch of the Raritan River is electrofished by the Freshwater Fisheries crew in search of trout.

New Jersey Division of Fish and Wildlife, along with researchers from Montclair State University, have recently revealed the true identity of the headwaters of the South Branch of the Raritan River. Such an exciting discovery is proof that first impressions can sometimes be deceiving and serves as one example of some of the remarkable findings related to the distribution and occurrence of trout now uncovered as part of a larger study being conducted throughout the inland waters of the Garden State.

Since 2001 biologists have revisited waterbodies that were first sampled 30 to 40 years ago from 1968–1972. This early effort was part of the first program designed to assess the capabilities of New Jersey's lotic waters (streams and rivers) to support naturally reproducing trout and the presence of trout and trout-associated species. During summer base flow conditions (primarily groundwater seeping into stream channels instead of direct run off), fish populations were surveyed using electrofishing techniques at 95 sampling sites. Captured fish were identified to the species level and enumerated. This data was then used to develop the classification system that places waters into the following three categories; 1.) trout production water, used by trout for spawning or nursery purposes during their first summer of life; 2.) trout maintenance water, used for the support of trout throughout the year; 3) non-trout water, not used by trout for production or maintenance purposes. This classification scheme is part of the state's surface water quality standards.

Ancestral Trout

The section of the South Branch of the Raritan River—from its Budd Lake source down to the old YMCA Boy Scout camp dam near the intersection of River and Flanders-Drakestown roads in Mt. Olive Township—has been classified as non-trout waters since its 1968 sampling. Original survey results suggested that this part of the river only contained warmwater fish species such as sunfish, perch and bullhead. However, as a result of the latest re-inspection, approximately 2 miles of the main stem river plus six connected tributaries are now known all to contain waters of truly exceptional quality. A real potential exists for the subpopulation of brookies located there to be direct descendants of those that swam in the region's waters upon the retreat of the last glaciation 10–15 thousand years ago!

These waters are noteworthy due to their proximity to Turkey Brook, a body of water that has demonstrated that isolated New Jersey tributaries may contain ancestral brook trout and also for the fact that a dam isolates this portion of the river from a section currently stocked, making it less likely that hatchery genes have found their way into the system. The discovery of an unknown group of New Jersey's only native salmonid is important, for it bolsters our knowledge regarding this vital and precious natural resource. Further, consider the possibility that the new finds may be genetic relicts of a heritage strain of fish. This is a significant discovery!

Re-inventory Surveys

To learn about other unknown or changing populations and ultimately gain a better understanding of the current condition of the state's flowing

ecosystems, previously sampled locations continue to be revisited and undergo re-inventory surveys. Among other things, like assessing overall habitat and general water quality, biologists are searching for young-of-the-year trout, also known as γ -o- γ . The presence of this particular age group of fish is paramount to the aforementioned stream classification system. In order for waters to attain trout production status, surveys must reveal young-of-the-year trout within the sampled section. Individuals can be any of the lotic salmonids known to inhabit New Jersey waters: brook, brown or rainbow trout. Typically trout γ -o- γ determination can be made during July and August by measuring fish length, which is usually less than 4 inches. If γ -o- γ are found, it is likely they came from parents that spawned towards the end of the previous calendar year, making these offspring less than one year old upon their summer capture.

By gathering the second set of data, biologists gain a powerful piece of information regarding changes that may have taken place over the past few decades. Related findings are very important for the presence or absence of any γ -o- γ trout species and provide insight into the condition of the ecosystems located in the watersheds where surveys occur.

Understanding connections of this nature are essential to managing populations of fish; trout serve as biological indicators of the overall health of not only the waters in which they inhabit, but for the surrounding lands as well.

Breeding Trout = Quality Waters

The breeding presence of trout is a strong indicator of high overall water quality and minimally impacted watersheds. In fact, in a separate but related study, work is underway that is taking a very close look at the characteristics of the landscape surrounding the survey locations. By comparing species presence or absence as related to historical and current land use percentages or total acreage, researchers seek to uncover answers as to why some populations have remained stable or why any alterations in γ -o- γ existence may have taken place in others.

Historic and Modern Comparisons

Regarding the re-inventory study, eighty of the original survey locations were re-sampled in the last decade or so. Serving as snapshots of overall fish populations, biologists are armed with a vast amount of information to unravel as comparisons are made between modern and



Wild brown trout

historical data sets. In addition to presence and absence of species, fisheries professionals are also interested in the total composition of gathered species. Specifically, answers to numerous questions are sought, including the following:

- What species (or combination of species) were found in each location in the past?
- What is present now?
- Did any species remain constant, disappear or did another take over?
- Do reasons exist to explain any observations?

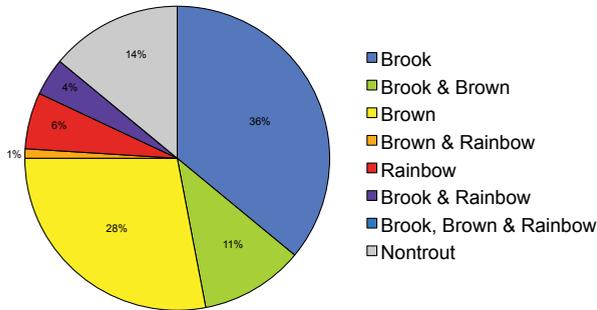
By way of locating the presence of young-of-the-year, reproducing populations of brook trout were found at 52 of the 80 study locations at one time or another. They were present in both time frames at 31 locations, but were not found again in recent surveys on ten waters. "Losses" include surveys on the following waters; Black Brook, Dawson's Brook, Flanders Brook, Herzog Brook, Parker Brook, Pohatcong Creek, Rinehart Brook, Shawanni Creek, Trout Brook (Middleville) and Trout Brook (Tranquility).

In these streams, brown trout have totally replaced the brooks in four instances. In three more of the losses, brook trout were found living with brown trout in the first time frame, but after the second survey only browns were sampled. In the remaining three locations that experienced brook trout losses, no young-of-the-year trout of any species were encountered in the second sampling. Changes such as these beg for answers; a few scenarios quickly come to mind.

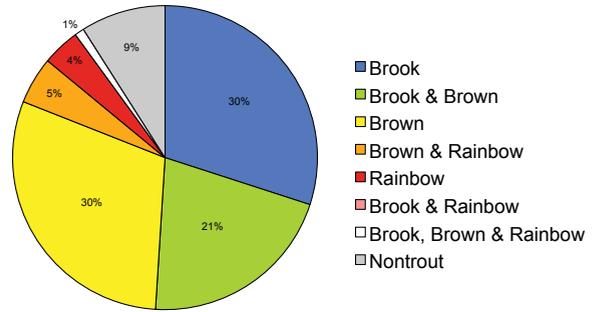
Natural Selection in Progress

Since both species use similar niches to meet their live history needs, perhaps browns replaced brookies through outright competitive interactions. Possibly environmental conditions, such as overall water quality or suitable habitat, became degraded enough to favor brown trout, which can tolerate slightly warmer water temperatures. In the three instances where brooks were located along side browns at first and only browns were encountered at the revisit, it is remarkable to think that biologists might have been witnessing the species replacement as it was actually occurring! Loss of brook trout γ -o- γ presence in the second time frame is higher than either brown or rainbow trout losses.

Trout Production Inventory 1968-1977



Trout Production Re-inventory 2001-2010



Comparisons of reproducing trout species found at 80 stream locations, 1968–1977 vs. 2001–2010.

Study results concerning brown trout show that γ -o- γ were located at 53 of the 80 surveys at some point during either time frame. Browns were found upon both inspections 25 times, and not found in the modern work in seven instances. It is interesting that in three losses no γ -o- γ of any trout species were found in the second survey. Possibly in those instances water quality decreased to a point that no salmonids could survive, or maybe individuals of other fish species were better suited to those particular locations. On the other hand, where no γ -o- γ of any trout species were found historically, in eight situations

browns were found most recently. In total, brown trout γ -o- γ picked up in the second survey after not being found the first time in 21 instances.

Waters where brown trout gained a foothold after no trout γ -o- γ were originally found include sites on Little Brook, Macopin River, Mulhockaway Creek, Pophandusing Creek, the North Branch of the Raritan River, the South Branch of the Raritan River, Stonehouse Brook and the Whippany River. It is plausible that in these cases water quality improved to the point that brown trout were now able to survive there, but

not enough to afford the same opportunity to brookies, which are known to require the coldest and cleanest systems. Regardless, our findings suggest that the range of the brown trout is expanding. Lastly, preliminary findings suggest that the loss of trout, or shift in trout species, is not correlated with the overall percent of land use changes within a specific watershed. More likely, it is the location of these changes in reference to the stream corridor resulting in poor riparian buffers, degraded in-stream habitat, and water quality that have the greatest impact to our aquatic resources. As stream corridors

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become more degraded, increased biological interactions (competition) with more adaptable introduced aquatic species occur resulting in further stressors.

Re-inventory: A Second Chance

The work presented here is by no means a comprehensive list of New Jersey's trout production waters, but this subset of the large number of surveys conducted in the state each year does provide examples of the importance of field sampling. There is an old adage that states, "First impressions are important, but everyone deserves a second chance." The headwaters of the South Branch of the Raritan River, and the numerous other instances where coldwater salmonids have been recently discovered, make a strong case for this thought to hold true for more than just people.

Much has changed in New Jersey in the last 30 or 40 years and these alterations have implications for how the state's freshwater resources are managed. Fish and Wildlife's fisheries professionals are working hard to keep abreast of fish population shifts, adjusting our strategies accordingly as we strive to conserve our native species and provide the best fishing possible to anglers of the Garden State. 

Freshwater Fisheries Forums and Trout Meeting

Trout Meeting
TBA

South Jersey Fisheries Forum
February 22, 2014; 10 a.m.
Batsto Village Visitor's Center
in Wharton State Forest

North Jersey Fisheries Forum
TBA



Shawn Crouse/NJ Div. Fish and Wildlife

Brown trout raised at the Pequest Trout Hatchery.

Come and share your views and recommendations for the future of freshwater fisheries in New Jersey and learn about current research, management and fish culture activities!

The forum at Hackettstown will include a tour of the fish production facilities.

For more information or to pre-register (helpful, but not required) please call (908) 236-2118 or send an e-mail to njfwfish@earthlink.net. E-mails should include name, address, phone number and number of people attending.

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