

Highlights of Regulation Changes

2018 REGULATIONS

General Regulation Changes

Size Limit Increased for Muskellunge

The Bureau of Freshwater Fisheries sampled 10 waterbodies stocked with muskellunge between 2013-2016, eight waters covered under the general, statewide size limit of 36-inches and two waters regulated as trophy waters with a 40-inch size limit. Data collected—including data from hatchery broodstock collection efforts and data supplied by Muskies Inc., a muskie-focused angling group—indicate that muskies reach, and often exceed, current size limits. Overall, 74 percent (57 of 77 captured individuals) were larger than 36 inches, and 25 percent were at least or greater than 44 inches. As muskie populations are innately sparse, and most individuals captured were larger than 36 inches, the statewide minimum size limit for muskellunge has been increased to 40 inches. This increased size limit aligns regulations more effectively with the current size structure of the population while still allowing harvest.

Data from four waterbodies, Echo Lake Reservoir (Passaic), Greenwood Lake (Passaic), Lake Hopatcong (Morris) and Monksville Reservoir (Passaic) indicate that 40 percent to 70 percent of the muskies captured were at least 40 inches in size and 20 percent to 26 percent exceeded 44 inches. Three of the lakes had muskies over 50 inches. These

waters will be managed as Trophy Muskie Waters with a minimum size limit of 44 inches. This aligns regulations with the exceptional fisheries that has developed while allowing some anglers the opportunity to keep a trophy specimen. As Greenwood Lake is also located in New York State the increased size limit will not take effect until April 1, 2019 to allow NYSDEC to consider a similar regulation change. To find out more about the assessment of the state's Coolwater Fisheries Program be sure to read the article *Managing Monster Muskies* on page 12 and to visit Fish and Wildlife's website for the final results of the three-year assessment.

Statewide Bass Regulations for Lake Audrey

Lake Audrey, a 120-acre borrow pit, limed in 2006 to neutralize pH, was stocked from 2007 to 2012 with smallmouth bass to provide a unique fishery in the southern portion of the state where they are rare. In 2008 the lake was close to all fishing and re-opened in 2010 with catch and release regulations to continue to protect the developing fishery. Unfortunately, catch and release regulations have not provided the intended results due to illegal harvest of smallmouth bass, angler introduction of largemouth bass and declining pH levels. These low pH levels are not conducive to supporting a reproducing bass population. Discussions on future

management strategies concerning Lake Audrey are underway.

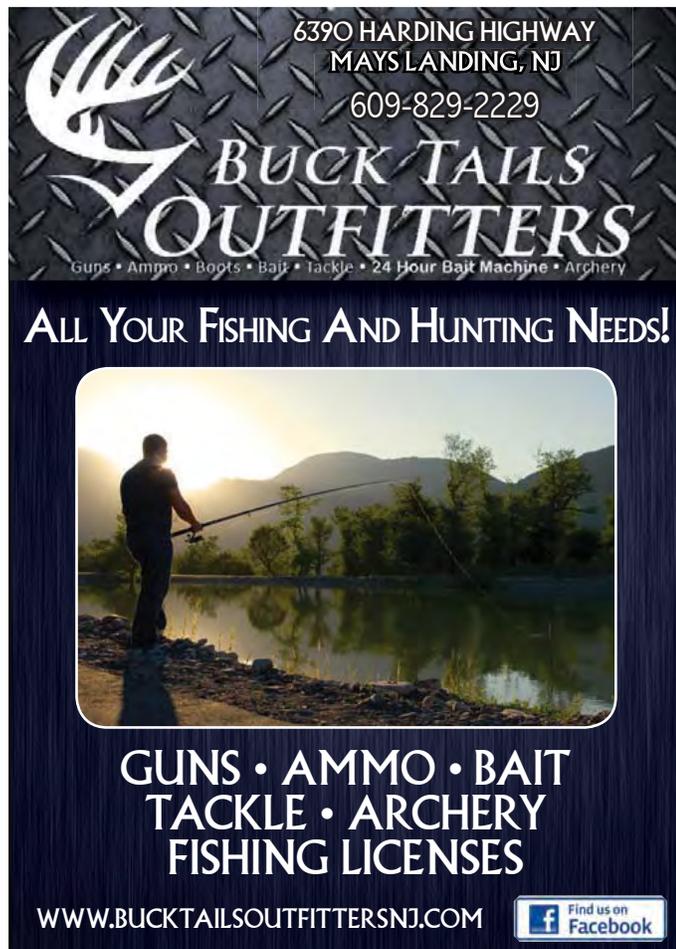
List of Baitfish Species Amended

Several fish species that warrant concern due to a significant decline in their distribution were formerly harvested as baitfish under the general reference of "all shiners, dace and minnows." These fish have been removed from the list of baitfish species. To simplify the list of allowed baitfish, ten species that are common and well-distributed throughout the state, plus landlocked herring in select counties, are specifically identified. Baitfish may be taken recreationally with a limit of 35 per day—or commercially, in excess of that limit—by permit. For compliance with the Atlantic States Marine Fisheries Commission management plans, the minimum size for American eel has been increased from 6 inches to 9 inches. See *Baitfish* regulations on page 31.

Trout Regulation Changes

Trout Stocking Boundary Limit Changes

After careful comparison of the delineated boundaries for all 90 trout stocked sections of streams with our current stocking practices and with updated maps, Fish and Wildlife has made numerous changes to upstream and downstream



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Freshwater Fisheries Forums and Trout Meeting

North Jersey Fisheries Forum

January 20, 2018; 10 a.m.,
Hackettstown State Fish Hatchery

South Jersey Fisheries Forum

February 24, 2018; 10 a.m.,
Batsto Village Visitor's Center in
Wharton State Forest

Trout Meeting

March 3, 2018; 10 a.m., 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@dep.nj.gov. E-mails should include name, address, phone number and number of people attending.

Presented by NJ Department of Environmental Protection's Division of Fish and Wildlife.



boundary limits. Most of these changes have little impact to anglers. The more significant changes are depicted in red on pages 18–20. **Although most are technical changes, it is important that anglers review this information carefully as these changes can affect pre-season and in-season fishing closures.** Appropriate municipality information, for trout stocked streams and lakes has also replaced unincorporated towns or local references that do not appear on most maps,

Catch and Release Only for Brook Trout Within the Brook Trout Conservation Zone

Due to growing concern over the plight of New Jersey's state fish and only native salmonid, all brook trout caught within the *Brook Trout Conservation Zone* must be released immediately, unharmed. The zone consists of all waters within the north-west region of the state, where most remaining wild brook trout populations occur. The zone is delineated by Interstate 287 to the east, Route 202 to the south, the New York state border and up to—but not including—the Delaware River. A catch and release regulation protects larger brook trout allowing them to survive, reproduce and perpetuate the species. See the article *Wild Trout Get a Helping Hand* on page 9 for more information.

New Wild Trout Stream Category and Other WTS Changes

(See the article *Giving Wild Trout a Helping Hand*, page 9, for exciting new changes to Wild Trout Stream Regulations.)

New Trout-Stocked Streams—Wild Brown Trout Managed Category

Fish and Wildlife's recent three-year effort to reevaluate the state's Wild Trout Streams identified five streams that provide anglers opportunities for both cultured and wild trout. These streams not only receive generous stockings of rainbow trout but also support an abundance of wild brown trout that can reach an impressive size. To protect the wild brown trout while minimizing impacts to cultured trout fishing opportunities, these streams will be regulated as Trout-Stocked Wild Brown Trout Managed Waters, with a reduced creel and an increased size limit for brown trout. Daily creel limits of six per day from opening day till May 31, and four per day at all other times, except during pre-season closures, still apply, however, only two may be brown trout. The minimum size will be 12 inches for brown trout compared to 9-inch limit for brook and rainbow trout. Conservation measures for brook trout (catch and release) apply on those waters within the designated zone. As brook trout are not present within these stream sections, these protective regulations for exotic

brown trout will not hinder brook trout conservation efforts. Unlike regulations pertaining to designated Wild Trout Streams, anglers fishing these waters will continue to be allowed to use bait and up to nine hook points. All pre-season and in-season fishing closures that apply to the streams as a whole remain in effect.

These streams include: Hakhokake Creek (Little York-Mount Pleasant Rd. to Delaware River); Lopatcong Creek (Rt. 519 to Delaware River); Pophandusing Creek (entire length); Raritan River S. Br., dam just upstream of Schooleys Mountain Rd. to Lake Solitude dam, excluding 2.5 mile catch and release only stretch within Ken Lockwood Gorge WMA; and Saddle River (Lake St. to West Century Rd.)

In-Season Closures Removed for Black and Walkill Rivers

The Black and Walkill rivers were two of sixteen trout-stocked waters closed to fishing from 5 a.m. to 5 p.m. on designated weekdays during the seven-week stocking period that follows opening day. Beginning in 2018, *after opening day*, anglers may now fish these streams on the days they are stocked. The trout-stocked section of the Black River lies primarily within Hacklebarney State Park where parking access to this section is nearly a half mile from the water's edge, hampering proper enforcement of the in-season fishing closure and limiting angler use.

New Buddy Fishing License*



New Jersey Division of Fish and Wildlife is rewarding anglers for introducing a "buddy" to freshwater fishing by offering a nearly half-price license to both qualifying anglers!

License	Regular Price	Fishing Buddy Price
Resident Fishing	\$22.50	\$ 11.75
Non-Resident Fishing	\$34.00	\$ 17.50
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(A new angler is a resident or non-resident who has not purchased a fishing license since 2011.)

For more information, visit www.NJFishandWildlife.com/fishbuddy.htm or scan this QR code:



* **2018 License Fees (page 1) and Information, page 16.**



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- **BOTH** anglers must be present at the time of purchase.
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Stream levels on the Walkill River are often quite low nearing the end of the stocking season. The lower 2.2 miles of the trout-stocked section supports only a seasonal fishery for trout. Fish and Wildlife's trout stocking formula requires waters with in-season closures to be stocked each of the seven weeks following opening day. Removing the in-stream closure will allow our agency to better align stocking with the seasonal nature of the fishery. Now, stocking will be limited to the first few weeks after opening day when water temperatures and stream flows are more conducive to the survival of stocked trout. Stocking frequency for the upper section of the Walkill will occur at a greater frequency than the lower section because the upper supports a year-round trout fishery.

Trout Stocking Discontinued on Three Waterbodies

Beginning in 2018, three waterbodies—Beaver Brook (Hunterdon), Rockaway Creek, S. Br. (Hunterdon), and Trout Brook (Sussex)—will no longer be stocked with trout. These waterbodies are small streams for which there is little angling interest; all have reproducing brown trout populations. Beaver Brook, which has a more robust brown trout population than the other two streams, will be regulated as a Wild Trout Stream. There are many other angling opportunities both for stocked and wild trout within a short distance of all three streams.

Hook Restrictions for Catch and Release Areas

Due to continued angler interest in limiting the number of hook points and use of barbs when targeting wild trout, a new regulation is in effect. Lures used when trout fishing in the state's two designated *Catch and Release Only* areas may have no more than three hook points, all of which must be barbless. These areas are limited to the use of artificial lures and flies only. This hook restriction also reduces the potential for injury to fish that continually will be caught and released. In the absence of specific hook restrictions back when these areas were first designated in 2014, the default statutory hook point limit applied: three treble hooks for a maximum of nine hook points. A 4.2 mile stretch of the Big Flat Brook, and a 2.5 mile stretch of the Raritan River S. Br., known as the Ken Lockwood Gorge, are the state's two catch and release-only areas for trout. Both areas support wild trout populations and are also stocked weekly with trout.

Claremont TCA Now Part of Raritan River S. Br. Wild Trout Stream Section

The 1.1-mile section of the Raritan River S. Br. known as the Claremont Stretch will no longer be regulated as a Year-Round Trout Conservation Area. The Claremont is one of New Jersey's most productive stream sections for wild brook and brown trout and is not stocked with trout. Regulating it as a Wild Trout Stream is consistent with the fisheries present and streamlines regulations pertaining to this popular river. This section of the river will continue to be open year-round to fishing; the use of bait is still prohibited. As most wild trout within the Claremont Stretch are less than 9 inches, the minimum

size decrease from 15 to 9 inches, along with a creel increase to two per day, will have little impact on the fishery. As the Claremont is located within the Brook Trout Conservation Zone, all brook trout must be released immediately and unharmed.

Trout Stocking on Rahway River Extended an Additional Two Miles Downstream

Trout stocking on the Rahway River has been extended an additional two miles, from St. Georges Ave. to Lawrence St. in Rahway. This section of the Rahway River offers great angler access along the Rahway River Park greenway. It is one of the more scenic sections of the river with an abundance of pools that can be fished easily.

Trout Stocking Discontinued on Uppermost Section of the Raritan River S. Br.

The Raritan River S. Br., from Flanders-Drakestown Road downstream to the Bartley Wildlife Management Area, will no longer be stocked with trout. Although the stretch encompasses a three-mile section of the river, only five stocking points are now removed. The Raritan River S. Br. is one of the state's most productive areas for wild trout. The most upstream section, from Budd Lake to the dam just above Flanders-Drakestown Rd., is a stronghold for native brook trout, with the mainstem and most tributaries supporting exclusively brook trout. The dam above Flanders-Drakestown serves as a protective barrier to these populations. This section will be regulated as a Native Brook Trout Stream.

The section of the river from the dam 400 ft. above Flanders-Drakestown Rd. to the dam 200 ft. above Schooleys Mountain Rd., including the former Claremont TCA, will be regulated as a Wild Trout Stream. It supports a more diverse wild trout population dominated by brown trout, intermixed with brookies with a few wild rainbows scattered in as well. These sections are better suited to be managed for wild trout.

The remaining section of the river, from the dam 200 feet above Schooleys Mtn. Rd. downstream to the confluence with the N. Br., will continue to be stocked. Due to the impressive wild brown trout found between Schooleys Mtn. Rd. to Lake Solitude, there will be a 12-inch minimum size limit for brown trout. See Trout-Stocked Streams—Wild Brown Trout Managed, above. Also, see the map of the Raritan River S. Br. on page 6.

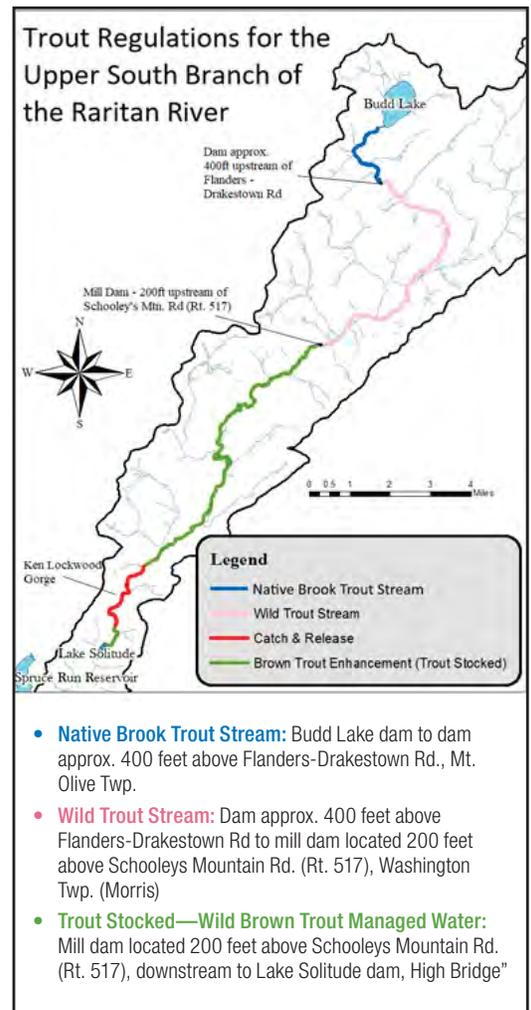
15-inch Size Limit for Landlocked Atlantic Salmon for Trophy Trout Waters

The state's two Trophy Trout Lakes were stocked with both rainbow and brown trout until 2014 when Fish and Wildlife discontinued rearing and stocking brown trout due to a disease at the Pequest Trout Hatchery. Landlocked Salmon are closely related to brown trout. The stocking of salmon in one or both of the Trophy Trout Lakes fills a void left from the discontinuation of brown trout stocking, expanding recreational opportunities for anglers interested in catching this novel sportfish. In keeping with the "trophy trout" strategy for these reservoirs, the 15-inch minimum size and daily

creel/possession limit of two in total for brown and rainbow trout was expanded to include landlocked Atlantic salmon.

Private Fishing Clubs Located on Publicly Stocked Waters May Fish During the Three-Week Pre-Season Closure.

Beginning in 2018, private fishing clubs located within the boundaries of publicly stocked sections of rivers (see trout-stocked water listings on pages 18–20) may now fish during the pre-season closures provided all fish are released immediately and unharmed. The exemption applies to only sections of river where the club leases—or owns—both sides of the river, where club boundaries (upstream and downstream limits) are clearly marked and when the club has obtained fish stocking permits for trout. Clubs wishing to participate must submit a written request to the Fish and Wildlife's Bureau of Freshwater Fisheries each year by March 1. The request shall include copies of previous year's stocking permits, map of the club property where catch and release fishing will occur and a letter of intent to practice catch and release during the pre-season fishing closure. This regulation change does not result in any revision to our existing stocking practices.



Giving Wild Trout a Helping Hand

By Pat Hamilton,
Principal Fisheries Biologist

► Wild Trout in New Jersey

Some anglers may be surprised to learn that the most densely populated, urbanized state in the nation has *three* species of wild trout inhabiting our streams. Wild brook, brown and rainbow trout usually lurk in small tributaries or headwater areas cradled primarily in the forested hills and mountains of north Jersey, that flow into popular trout-stocked rivers. Of the three species, only the brook trout is truly native to New Jersey. Browns and rainbows, stocked over the last century to provide additional sport fishing opportunities, have managed to establish wild populations. These wild populations—comprised mainly of small, wary individuals that complete their entire life cycle naturally within a stream—offer unique opportunities to those anglers who enjoy a challenge while immersed among some of the Garden State’s finest, most scenic landscapes.

The nearly 200 streams where wild trout call home are scattered across eight counties—Sussex, Warren, Passaic, Morris, Hunterdon, Somerset, Bergen and Camden. While the abundance of wild trout streams is impressive for a small, urbanized state, brook trout populations have declined as impacts from urbanization, sedimentation, dams and other forms of land and water disturbances alter stream conditions. As such, this most-vulnerable of our trout species serves as a valuable indicator of excellent habitat with high water quality.

Only remnant populations of brook trout exist, with populations slowly retreating towards

less-disturbed headwater areas (See map). Competition from more tolerant, non-native trout species poses additional stressors to these struggling wild brook trout populations.

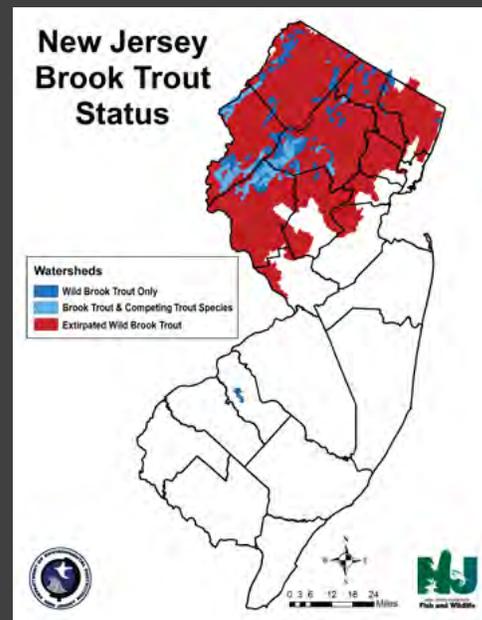
Over the past thirty years, New Jersey Division of Fish and Wildlife has been adjusting freshwater fisheries management practices and implementing regulatory actions not only to highlight our unique, wild trout populations but to protect them as well. 2018 brings some of the most significant regulation changes governing our wild trout resources since the Wild Trout Stream regulation was first implemented.

Conservation Milestones

The Wild Trout Stream regulation, established in 1990, gave added protection to wild trout in 29 streams. Over the years, seven additional streams were added to the program. A statewide 7-inch minimum size for trout (both wild and stocked) was established in 1997 to protect wild trout less than 7 inches from being harvested. This minimum size was increased to 9 inches in 2008, further protecting wild trout from harvest while not impacting the harvest of hatchery trout, typically 10–11 inches or larger when stocked. From 2005 to 2010, trout stocking was discontinued in eight streams containing wild trout, eliminating competition between wild and stocked varieties, thereby allowing these wild populations to flourish and to provide recreation.

In 2014, Fish and Wildlife initiated a two-year Wild Trout Stream Assessment to evaluate the status of wild trout populations occupying our

designated Wild Trout Streams. Ninety-five surveys were conducted in 2014 and 2015 on 59 streams inhabited by wild trout. The data, of surveys where trout were found, revealed that in many cases, wild trout were not overly abundant nor very large. The number of trout per 150-meter survey averaged 69, with 25 percent of the surveys revealing 23 trout or less. Only 4 percent of the almost 6,200 trout captured measured over 9 inches!



Additional information from wild trout anglers was gathered through a 2015 online survey to better understand their motivations and preferences. The data was coupled with a review of scientific studies that compared hooking mortality associated with various types of terminal tackle. (See *The Truth about Hooks and Lures* in the 2017 *New Jersey Freshwater Fishing Digest*.)

A comprehensive data review by Fish and Wildlife biologists led to public meetings designed to give anglers an early opportunity to weigh-in on potential regulation changes. The Fish and Game Council then adopted regulation changes for 2018. These changes include several key measures geared to protect this distinctive resource.

Brook Trout Conservation Zone

Due to growing concern over the plight of New Jersey's State Fish, all brook trout caught within the newly designated "Brook Trout Conservation Zone" must be immediately released unharmed. This zone consists of all waters in the northwest region of the state where most of our remaining wild brook trout populations are found. The zone is bounded by easily discernable boundaries: two major roadways (Interstate 287 and Route 202), the Delaware River, and the New Jersey-New York state line (see map on page 11). This regulation protects all brook trout within the zone, including those that may move from small tributary streams to the mainstem of larger rivers and grow larger than 9 inches, allowing them to survive, reproduce and perpetuate the species.

A component of the catch and release regulation for brook trout is that hatchery brook trout will no longer be stocked within this zone, both because hatchery fish can no longer be harvested legally but also to prevent interbreeding with wild brook trout. A genetics study completed in 2007 indicated that there are wild brook trout populations in New Jersey streams that are likely descendants of fish that colonized our area after the last glacier retreated. Preventing interbreeding helps safeguard our wild brook trout gene pools, preserving their genetic variability and potential to evolve in response to environmental change.

Fish and Wildlife's current trout stocking program is unaffected by this restriction as only rainbow trout are reared and stocked statewide. If brook trout are restored to the Division's stocking program, these fish will only be stocked outside of the Brook Trout Conservation Zone. In addition, no private fishing clubs or others who apply for fish stocking permits will be permitted to stock brook trout within this zone. In 2017, only 11 stocking applications requested brook trout within the conservation zone. These permittees have been contacted and most are supportive of this conservation-driven approach.

Ultimately, as a result of this fisheries management regulation change, every brook trout caught within the zone will be a wild brook trout!

A Facelift for the Wild Trout Stream Regulation

Wild Trout Stream regulations now have three designations that highlight the variety of wild trout fishing opportunities while aligning with specific

management strategies. These three regulation categories are:

Native Brook Trout Streams—This new category highlights 11 streams that are almost exclusively inhabited by native brook trout—or will be as part of Fish and Wildlife's active management efforts. One of these streams (Rinehart Brook) had primarily wild brown and just a few brook trout, and our agency is currently restoring brook trout by actively removing and relocating the brown trout. This effort and these regulations are aimed at preventing or reducing competition between brook trout and non-native trout species. For this reason, there is no minimum size limit on brown and rainbow trout and anglers are encouraged to harvest these two species. All brook trout, however, must immediately be released unharmed.

Wild Trout Streams—This regulation is still in effect and not altered in terms of limitations on harvest or minimum size (9 inches, two per day). The change occurs in the streams now managed under this regulation. The trout species in these streams are mixed, with brown trout and/or rainbow trout being very abundant. All streams in this category either have—or are connected to—streams with brook trout. However, for *Wild Trout Streams* located within the Brook Trout Conservation Zone, all brook trout must immediately be released unharmed.

Brown Trout Enhancement Streams—Previously, three *Wild Trout Streams* carried an increased size limit (12 inches, 2 per day) for brown trout. These streams—the Pequannock, Van Campens and the Wanaque—are now joined by ten additional streams offering anglers similar opportunities to fish

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for wild browns. An absence of wild brook trout in these streams—or nearby—eliminates the concern of species competition. Brown trout in these streams can reach *impressive* sizes.

Other aspects of the wild trout regulations remain unchanged: these waters are not stocked and are open to fishing year-round, there is no harvest allowed from September 15 to opening day the following April, and only artificial lures and flies may be used. Hooks, however, are now limited to no more than a total of three hook points, all of which must be barbless. When allowed, harvest is limited to two brown trout and/or rainbow trout per day.

Five streams are no longer regulated as *Wild Trout Streams* due to the extremely low abundance of trout. These include Black Brook (Clinton WMA), Hance's Brook (Penwell), Mill Brook (Montague), Merrill Creek (above Merrill Creek Reservoir) and Parker Brook (Montague). Two additional waters, Bear Creek (Southtown) and Dark Moon Brook (Johnsonburg) are no longer included in the regulation as these streams flow almost entirely through private property and afford little, to no, angling access.

Changes to *Wild Trout Stream* regulations typically have little impact on Fish and Wildlife's trout stocking program. An exception is the section of the Raritan River South Branch from its source below Budd Lake down to Lake Solitude. This popular section of river supports opportunities for both stocked and wild trout. The most upstream section (above the old YMCA dam in Mt. Olive Twp.) is now managed under the new *Native Brook Trout Stream* category.

The stretch from the YMCA dam down to the small dam above Schooley's Mountain Rd., one of

the most productive wild trout areas in the state, is now managed under the *Wild Trout Stream* category. This includes the former Claremont Trout Conservation Area, now incorporated into the *Wild Trout Stream* regulation. As a result, five stocking points—from Flanders-Drakestown Rd. downstream to the Bartley Wildlife Management Area—will no longer be stocked with trout. This section of the South Branch is considerably smaller than other downstream sections. Stocking here has been suspended several times in the past due to low water flow conditions. This stream section is better-suited to be managed for wild trout.

The section of the Raritan River South Branch, from Schooley's Mountain Rd. downstream to Lake Solitude will continue to be stocked, however, due to the impressive size of wild brown trout inhabiting this section a 12-inch minimum size limit for brown trout applies—excluding the Catch & Release Only area in the Ken Lockwood Gorge (See map of the Raritan River S. Branch, page 8). From the Lake Solitude dam, downstream to its confluence with the North Branch, the Raritan River South Branch will be stocked as usual with trout and the fishing regulations remain the same.

Helping Wild Trout Thrive

The new Wild Trout Stream regulation designations not only fine-tune our fisheries management approaches, they also serve as a compass, guiding anglers toward wild trout fishing opportunities in the Garden State. For those who prefer the opportunity to catch multiple trout species, wet your line in any one of the Wild Trout Streams. If you love



BROOK TROUT CONSERVATION ZONE

All Brook Trout caught within the zone must be immediately released

fishing for impressive wild browns—choose one of 13 *Brown Trout Enhancement Streams*. Do you enjoy targeting brook trout—our colorful native beauties? Then one of the *Native Brook Trout Streams* is the place to start.

The conservation effort continues on behalf of New Jersey's wild trout. Anglers, take pride in knowing that you have a vital role in conserving wild trout resources, especially our native brook trout.

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— MANAGING —

Monster Muskie

By **Scott Collenburg**, Senior Fisheries Biologist

Coolwater Assessment Project Leader, Scott Collenburg, holds a 46-inch muskie taken from a trap net at Monksville Reservoir.



From its humble beginnings in 1983, the muskie fisheries in New Jersey inland waters has changed considerably. A small group of avid muskie anglers formed a New Jersey chapter of the national organization called Muskies Inc. Through fundraising—and with approval from New Jersey Division of Fish and Wildlife—the chapter purchased and stocked 300 fingerling muskellunge in Greenwood Lake in 1985.

Since then, the program has expanded, muskie introductions have occurred across the state, and now Fish and Wildlife raises and stocks over 10,000 10-inch fall fingerlings annually. Quality muskie fishing and the excitement of catching this fast, powerful, mean-looking fish attracts anglers to fish in these stocked waterbodies.

Assessing Suitable Waterbodies

While some waterbodies have been successful in producing quality muskie fisheries in New Jersey, others were subsequently discontinued due to minimal success. Recently, a three-year initiative was completed to assess the stocking of coolwater species such as muskies, northern pike, walleye and hybrid striped bass. These species do not readily reproduce in New Jersey waters and are maintained by annual stocking programs from Fish and Wildlife's Hackettstown State Fish Hatchery. The initiative included a review of management goals and objectives plus an assessment of current fisheries. The assessment also included an online angler survey concerning angler opinions and experiences on their warmwater/coolwater fishing opportunities in New Jersey. Over 1,000 anglers participated.

A significant part of the coolwater assessment was data collection. To assess the status these populations, biologists from our Bureau of Freshwater Fisheries set trap nets, the most efficient means of capturing these species. Over the three-year study, the Bureau set 273 trap nets, 13 gill nets and conducted 17 days of electrofishing—a total of over 251 man-days of work. Sampling for muskies was conducted primarily between the spring of 2014 and 2016 on Carnegie Lake, Echo Lake Reservoir, Furnace Lake, Greenwood Lake, Lake Hopatcong, Little Swartswood Lake, Manasquan Reservoir, Mercer Lake, Monksville Reservoir and Mountain Lake.

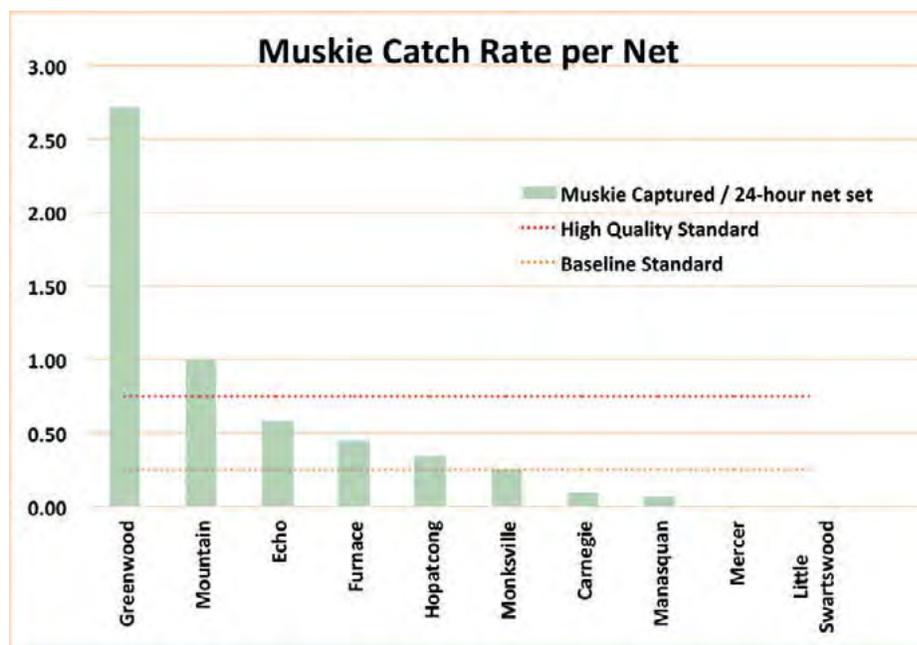
Sampling Findings: Greenwood and Mountain Lakes

Results from sampling ranged from high quality fisheries to low abundance muskellunge populations. Six waterbodies met or exceeded the baseline standard for a quality muskie fishery (see graph), with Greenwood Lake and Mountain Lake exceeding the high-quality standard (three muskellunge in every four nets). Greenwood Lake had the best catch rate for muskellunge out of the sampling period with a total of 38 captured. Not only did the catch rate indicate an abundant population, the sizes of muskellunge captured were impressive.



NJ Div. Fish and Wildlife

Hackettstown State Fish Hatchery Superintendent, Craig Lemon, holds a 38-pound, 49-inch muskie from Greenwood Lake acquired during spring trap netting. The fish was first captured and tagged in 2010 when it weighed just 28 pounds. The fish was returned to the lake.



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Twenty-nine (79 percent) were larger than the minimum size limit of 36 inches, 21 (55 percent) were larger than 40 inches, and 5 (13 percent) were larger than 46 inches. Greenwood Lake has been known to produce giants. The first 50+-inch muskie was caught in this waterbody in 2002 which has continued to produce a trophy fishery. In the spring of 2017 during their annual brood stock collection from of Greenwood Lake, Hackettstown Hatchery staff collected the largest muskie they've ever trapped weighing 38 pounds! This same fish had been captured and tagged by hatchery staff in 2010, then weighing 28 pounds.

Echo Lake Reservoir Results

Not to be out done, Echo Lake Reservoir (Passaic County) boasts an impressive muskellunge fishery as well. It is the second oldest inland waterbody in New Jersey to be stocked with muskie (starting in 1991) and the only waterbody that is stocked exclusively with what is known as the *Leech Lake strain* of muskellunge, identified by having dark spots on a light background. The *Leech Lake strain* genetics can be traced to the Upper Mississippi Watershed (which includes Leech Lake in Minnesota) and are known to achieve impressive sizes. Leech Lake itself boasts of "world-famous" monster muskies.

During the Echo Lake Reservoir assessment, sampling results documented the third best catch rate, with all captured muskellunge exceeding the state minimum size limit of 36 inches, and half of the muskie encountered exceeding 44 inches. One impressive individual achieved 50.2 inches and 33.5 pounds. Hackettstown Hatchery has regularly utilized Echo Lake Reservoir as a source of broodstock, finding consistently impressive catch rates dating back to 2003.

Monksville Reservoir Inventory

When serenity and picturesque beauty are among your key reasons to go fishing, try Monksville Reservoir in Passaic County. Surrounded by Long Pond Ironworks State Park, Monksville Reservoir has continually supported a great Muskellunge fishery as well. Some anglers protest this claim and assert the nickname "Skunksville" as a better fit. However, Fish and Wildlife has sampled time and again, finding quite the opposite. A complete lake inventory in 2003 refuted the Skunksville moniker by revealing—even prior to stocking muskie—that a good population existed, along with an abundant walleye population. The current reservoir assessment echoed similar results. The population here is doing well and according to a recent online survey, it's a popular waterbody for many muskie anglers.

Lake Hopatcong Plus the Smaller Furnace and Mountain Lake Exceptions

Muskellunge are most abundant in large, fertile, shallow lakes with extensive submerged weed beds. Lake Hopatcong fits this bill where a great muskie fishery is found. But there are exceptions to the perfect muskie habitat. Furnace Lake and Mountain Lake, both located in Warren County are 53 and 122 acres, respectively. Both of these small waterbodies have shown abundant populations of muskellunge. Mountain Lake had the second-best catch rate during the assessment. Even during a largemouth bass survey there, seven muskie were encountered—an impressive number in terms of electrofishing surveys. To the shock of the survey crew, *a few muskie even jumped into the boat!*

However, prior to 2018, Mountain Lake had a Trophy Muskie regulation that prohibited anglers from keeping any muskie over 40 inches. Data from the recent lake assessment here revealed evidence that this regulation was falling short, literally. Of the 10 muskie captured, the largest measured 37 inches and it was clear that the lake's fishery has become unbalanced. Two of the muskie-preferred forage fish that were once present—yellow perch and creek chubsuckers—were absent. The forage base is now dominated by a population of small, stunted bluegills. The abundant muskie population at Mountain Lake has become stunted in size due to the inadequate forage base. To restore balance, Fish and Wildlife is reducing the stocking rate and no longer regulating Mountain Lake as Trophy Musky Water which would have increased the size limit to 44 inches.

Science Drives Management

Results from the Coolwater Fisheries Assessment stimulated several key changes to the state's muskie program. Due to the ever-increasing size of muskies caught, the minimum size limit has been increased from 36 inches to 40 inches. Muskellunge are reaching impressive sizes, often exceeding the previous minimum and trophy size limits. In fact, during the assessment period, 57 out of the 77 captured individuals (74 percent) during the four-year sampling period were larger than 36 inches; 48 percent were larger than 40 inches. In addition, the Trophy Musky size limit will be increased to 44 inches and now includes Greenwood Lake, Echo Lake Reservoir, Monksville Reservoir and Lake Hopatcong.

To further enhance the state's muskie program, in 2018 the Hackettstown Hatchery will stock spring yearlings (one year old fish at a size of 12–14") on an alternate-year basis with smaller fall fingerlings which will average 10 inches in length. In the past, fall fingerlings were stocked almost exclusively. Both a literature search and the experiences of other states demonstrate greater success in survival of spring yearlings compared with fall fingerlings.

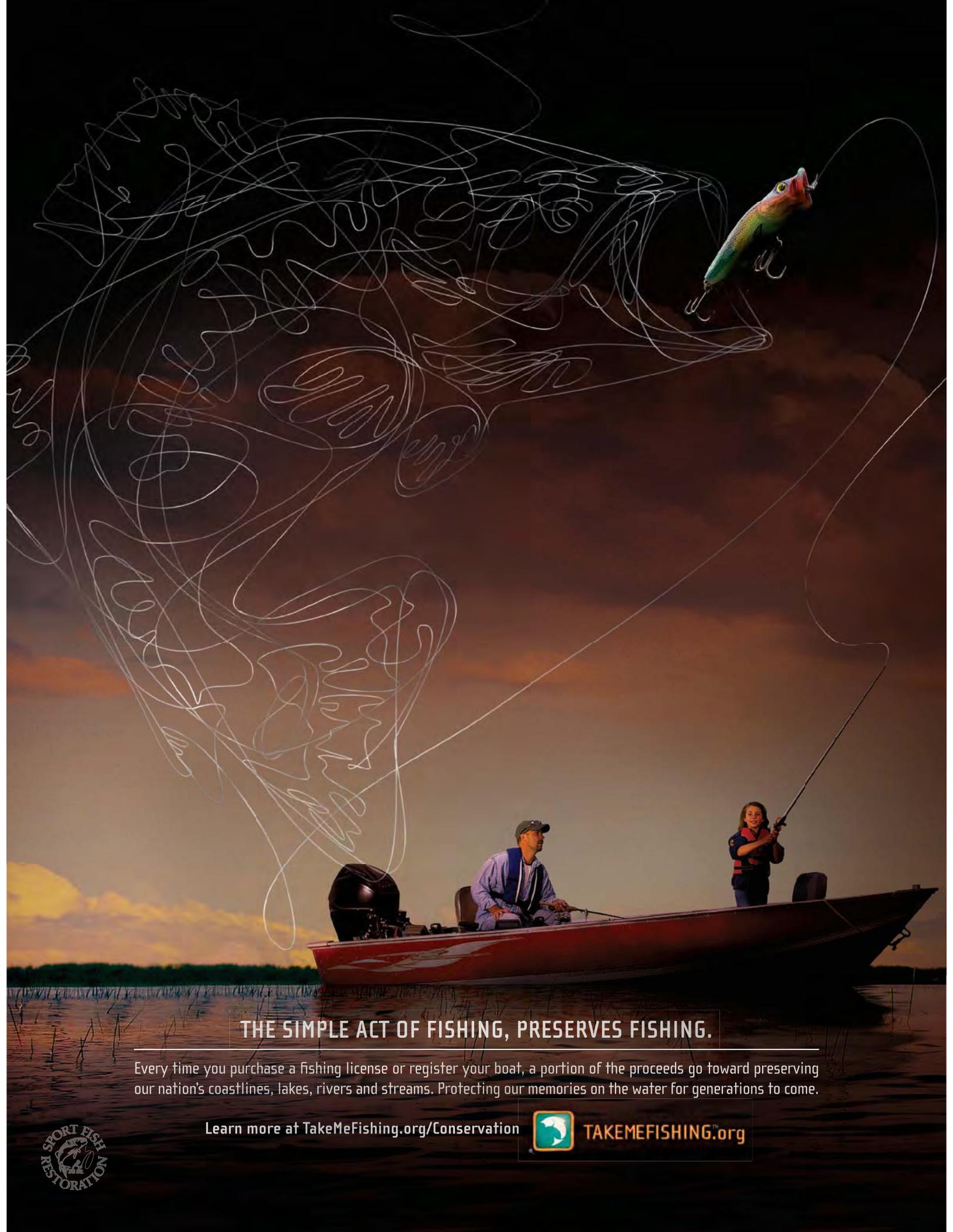
Another change to stocking will be to discontinue annual stockings of waterbodies that were documented as having poor catch rates. This includes Carnegie Lake and Manasquan Reservoir. This doesn't mean they won't be stocked at all; instead, only surplus muskies will be stocked when available. By following consistent stocking rates in a waterbody, it's easier to assess fish populations to determine future stocking strategies. In addition, with the variability in hatch rate success that occurs with certain species, it's necessary to have a waterbody for placing surplus fish where it will have a positive impact. Cooper River Lake in Camden County and the D&R Canal are two other places that will potentially receive surplus.

As fishery managers, New Jersey Division of Fish and Wildlife constantly strives to enhance fishing opportunities for anglers. Waterbody data assessments, examining muskie management goals combined with input from anglers' surveys allows our agency to adjust strategies to create a quality fishing experience for monster muskies.

Biologist Scott Collenburg holds a 41-inch Muskie he netted from Furnace Lake.



NJ Div. Fish and Wildlife



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