



SPORT FISH RESTORATION in North Carolina



10-Year Report of Accomplishments 1999-2009

North Carolina Wildlife Resources Commission
Division of Inland Fisheries
www.ncwildlife.org



Fishing Expenditures in North Carolina in 2006

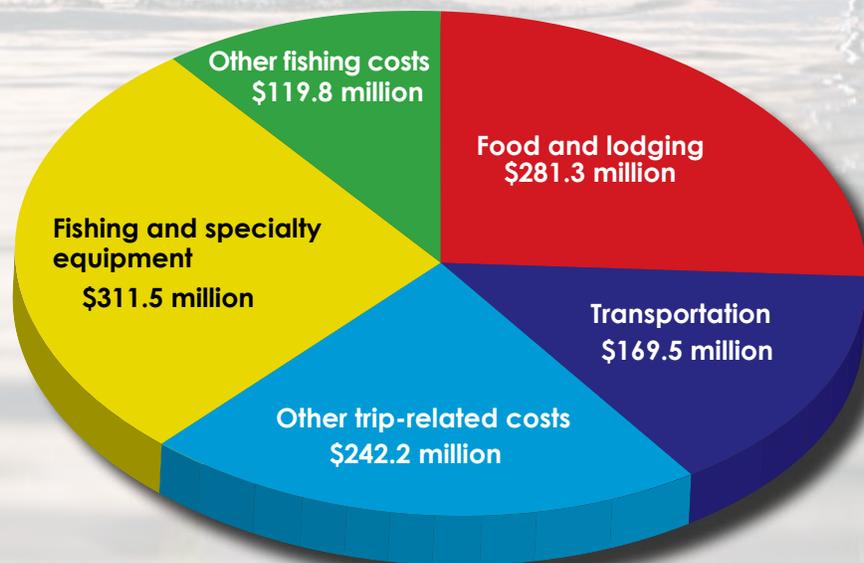
1.2 Million Anglers Spending More Than \$1.1 billion

Whether fishing for trout in a coldwater mountain stream, casting a line for largemouth bass in a neighborhood pond or red drum in Pamlico Sound, the 1.2 million anglers who fish in North Carolina spend big bucks in pursuit of their favorite fish:

- \$4 for a fishing lure;
- \$125 for a rod and reel baitcasting combo;
- \$50 to gas up the boat;
- \$100 for food and accommodations.

All these costs for an overnight fishing trip add up quickly. Multiply individual spending by 1.2 million anglers age 16 and over and it is easy to see why anglers are an economic powerhouse. Factor in the economic ripple effect of angler dollars spent in the state and the total economic impact of sportfishing is more than \$1.9 billion in North Carolina.

The chart below represents the 2006 fishing expenditures of North Carolina anglers as compiled by the U.S. Fish and Wildlife Service in its 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation.



The Sport Fish Restoration Program

A User Pays-User Benefits Approach to Better Fishing

For nearly 60 years, the Sport Fish Restoration Program has helped state wildlife agencies restore and better manage America's fisheries resources. An outstanding example of a "user pays-user benefits" approach, the Sport Fish Restoration Program is a cooperative effort among state and federal government agencies, the fishing tackle and boating industry and anglers and boaters to increase fishing and boating opportunities through the wise investment of anglers' and boaters' excise tax dollars.

The Wildlife Resources Commission has received up to \$7.6 million annually to enhance fishing opportunities, promote youth fishing, manage fisheries resources and provide access to the state's public waters. In 2006, these activities returned more than \$1.9 billion in economic benefits to North Carolina and provided 17.2 million days of recreational enjoyment for 1.2 million anglers.

None of this would be possible without the Sport Fish Restoration Program, anglers and boaters, and the fishing and boating industry. Anglers and boaters support the program through the purchase of fishing licenses, equipment and motorboat fuels, while the fishing and boating industry collects the excise taxes on purchases and passes them on to the U.S. Fish and Wildlife Service. The Service, in turn, allocates revenue to the states based on geographic area and the number of paying fishing-license holders.

It is through this cooperative effort that the Wildlife Resources Commission offers some of the highest quality fishing opportunities on the East Coast. From the renowned striped bass fishery on the Roanoke River to the blue ribbon trout fisheries of western North Carolina, fishing opportunities are plentiful in North Carolina.

The Wildlife Resources Commission thanks the fishing tackle and boating industry and the millions of anglers and boaters in North Carolina for their continued support of the program. By working together, we can continue to manage North Carolina's diverse fisheries resources, enhance fishing opportunities and provide fishing and boating access for years to come. A few of the Wildlife Resources Commission's projects funded through the Sport Fish Restoration Program in the last 10 years are highlighted in this booklet.



RESEARCH AND SURVEYS

Biologists with the Division of Inland Fisheries conduct research and surveys to monitor inland fish populations, assess their habitats, and gather angler input to develop and improve inland fisheries management in public waters. For example, results from surveys on Lake James in Burke County and B. Everett Jordan Reservoir in the Piedmont have helped biologists develop new approaches for providing quality reservoir fishing opportunities.

Lake James Walleye Surveys *Improving the fishing on reservoirs*

Results from a 3-year study of walleye have helped the Commission manage the state's walleye fisheries more efficiently. The study, completed in 2004, examined the contribution of stocked walleye in Lake James and found that less than 5 percent of the walleye population were from state fish hatcheries. As a result, biologists discontinued the supplemental stocking of walleye in Lake James, a practice that had been ongoing since the 1970s. Walleye fingerlings are now stocked only in reservoirs with documented reproductive or survival problems, such as Lake Hiwassee, where they are more likely to benefit anglers.



Walleye surveys on Lake James have helped biologists better manage walleye fisheries in reservoirs throughout western North Carolina.



Crappie surveys on B. Everett Jordan Reservoir have helped biologists save the potential collapse of a popular fishery.

B. Everett Jordan Reservoir Crappie Surveys ***Correcting a troublesome trend***

Division of Inland Fisheries personnel have been conducting surveys of crappie on B. Everett Jordan Reservoir since 1986. For years, the fishery was excellent, with crappie growing quickly and averaging 8 to 10 inches long at harvest. However, beginning in 2000 and 2001, biologists noted the number of older crappie had diminished significantly — a troublesome trend that indicated the fishery could collapse if regulations were not put in place to limit harvest. In 2004, the agency implemented a 10-inch minimum size limit and a 20 fish-per-day creel limit. Subsequent surveys have shown that fish are surviving longer and growing bigger, adding to increased angler satisfaction.

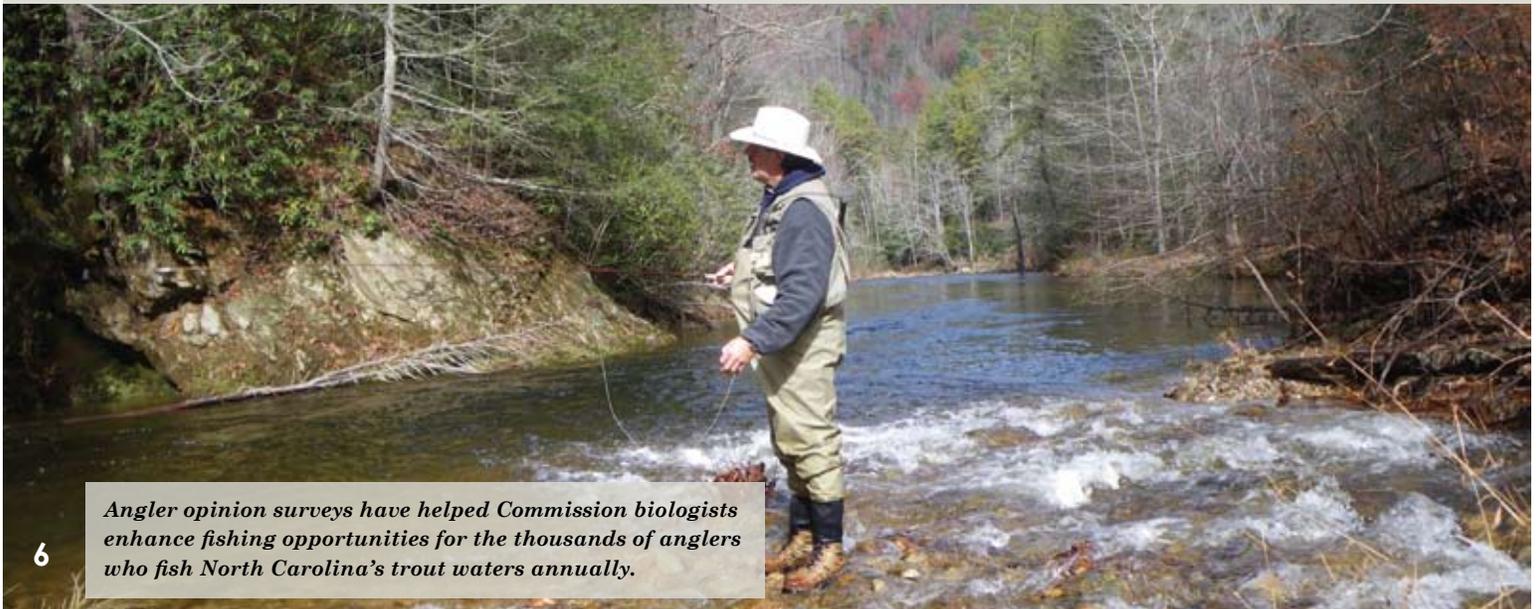
RESEARCH AND SURVEYS - Human Dimensions

In addition to using survey and results to monitor and assess fish populations and their habitats, biologists use results from angler opinion and socioeconomic surveys to set fisheries program priorities and design new projects to better address angler expectations. For example, results from recent trout angler surveys are being used to update the North Carolina trout management plan.

Mountain Trout Socioeconomic Projects

Using angler opinions and economic impacts to shape trout management

A mountain trout angler opinion survey was conducted in 2007 to assess the preferences, satisfaction and participation of trout anglers in North Carolina. Anglers identified native brook trout protection, trout production/stocking, angler access and information, and reservoir trout management as important program areas for future Commission efforts. Following the opinion survey, an economic impact study quantified the economic contributions of the Commission's mountain trout management program to North Carolina's economy in 2008. Nearly 93,000 anglers fishing in the state spent an estimated \$146 million on trout fishing trips and equipment. When the secondary effects of these dollars were calculated, the total economic contribution of the Commission's trout management program exceeded \$174 million. Results from the two studies will be used along with biological and habitat data to develop a comprehensive mountain trout management plan and to enhance public fishing opportunities.



6 *Angler opinion surveys have helped Commission biologists enhance fishing opportunities for the thousands of anglers who fish North Carolina's trout waters annually.*

RESEARCH AND SURVEYS - Partnerships

Support Fish Restoration funds have allowed the Division of Inland Fisheries to partner with universities on more complex research projects. Partnerships and collaborations vary widely, from a reservoir striped bass assessment in the Piedmont to examining land use changes in the mountains that are positively affecting the distribution of wild trout.

Reservoir Striped Bass Management *Increasing opportunities for striped bass fishing*

In the Piedmont region, the Commission has enjoyed a very successful partnership with N.C. State University. In recent years, projects conducted by the university using Sport Fish Restoration funds have given Commission staff a better understanding of reservoir striped bass populations and reservoir food webs. One project, which utilized bioenergetics modeling to evaluate growth and condition in reservoir striped bass, has helped reshape the way Commission staff manage this fishery. The project found that striped bass can live in warmer water temperatures than previously thought if a lake is productive enough to meet their energy (food) requirements. This research has allowed biologists to consider stocking striped bass into lakes previously considered unsuitable to enhance fishing opportunities for this popular game fish.



A partnership with N.C. State University on reservoir food webs has helped Commission biologists determine which lakes are suitable for stocking striped bass.

Courtesy of Fisheries Ecology and Aquatic Sciences Lab at N.C. State University

State Fish Hatcheries

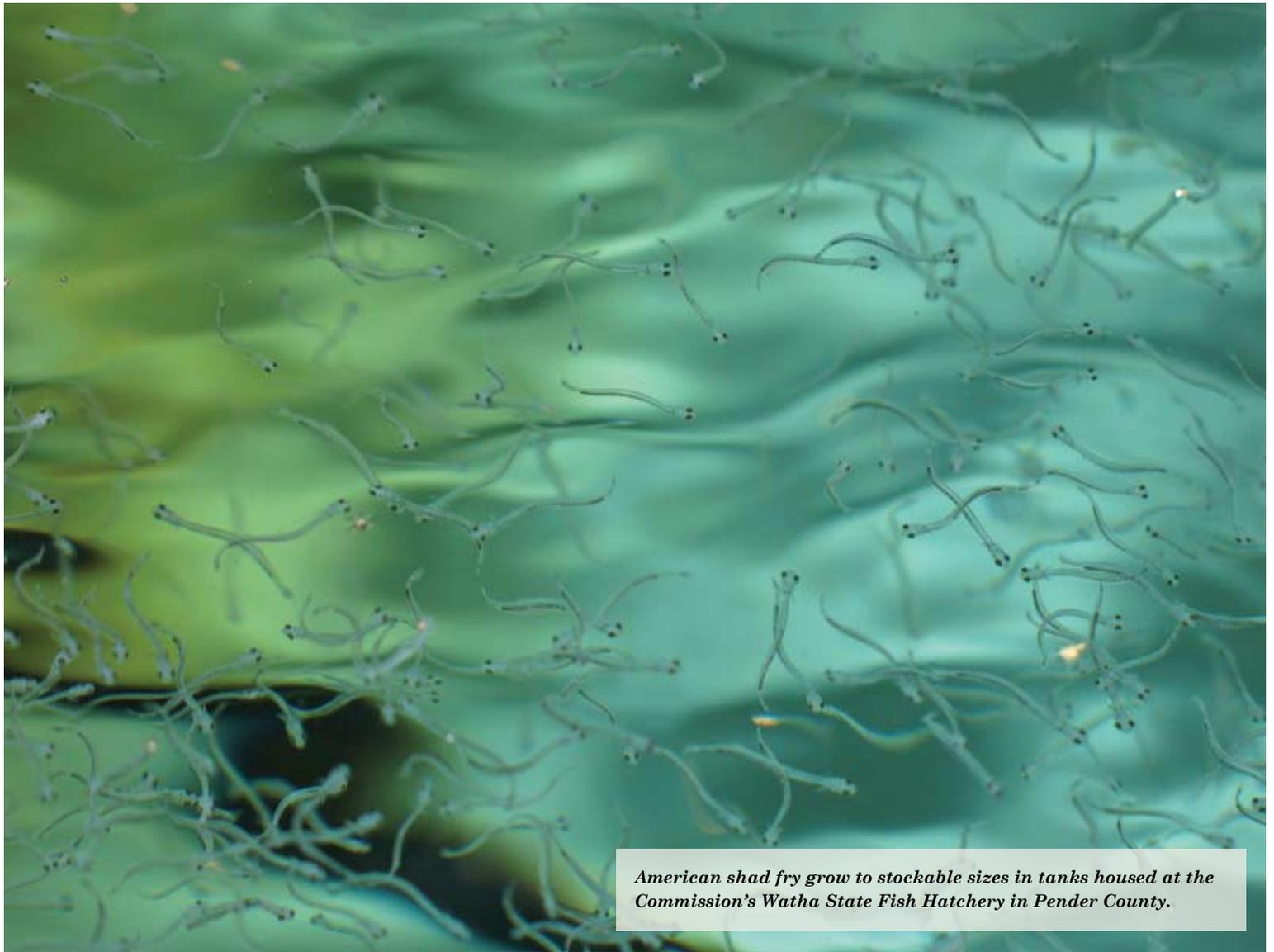
From 1999 to 2009, Sport Fish Restoration money funded extensive renovations at five of the Commission's six fish hatcheries. Renovations to the Watha, Marion, Table Rock, Armstrong and Bobby N. Setzer fish hatcheries have greatly increased the Commission's ability to produce a variety of fish for fishing programs, such as catchable-sized channel catfish for its Community Fishing Program sites and American shad fingerlings for the American shad restoration project on the Roanoke River.

Watha State Fish Hatchery in Pender County *Doubling fish production capacity*

After renovations at the Watha State Fish Hatchery in Pender County were completed in 2006, fish production capabilities doubled — from 3 million fish to 6 million fish annually. That's a lot of fish going into public waters across the state and affording anglers more opportunities to reel in their favorite catches, such as largemouth bass, striped bass and American shad. Among the improvements were the installation of a water re-use system and the construction of a 12,000 sq.ft. fish production building. Additionally, production ponds were reshaped and harvest kettles — concrete structures that collect fish when ponds are drawn down prior to stocking — were installed so that staff could harvest the ponds more efficiently.



Harvest kettles at Watha State Fish Hatchery concentrate bluegill fingerlings to make collection easier.



American shad fry grow to stockable sizes in tanks housed at the Commission's Watha State Fish Hatchery in Pender County.

American Shad Restoration Program on the Roanoke River ***Restoring a once-thriving commercial and recreational fishery***

At one time, annual “shad runs” supported important commercial and recreational fisheries along the East Coast as millions of American shad came in from the sea and up North Carolina rivers to spawn each spring; however, overfishing, water quality degradation and dam construction contributed to depleting these populations. In 1998, Commission biologists, fearing a population crash, partnered with the U.S. Fish and Wildlife Service to restore the Roanoke River American shad population. From 1999 to 2009, the two agencies stocked more than 27 million shad in the Roanoke River. Ongoing research shows some success, with biologists finding stocked shad returning as adults to their spawning grounds near Weldon.

Program Outreach

Floating fish feeders, loaner rods and reels, and universally accessible piers are just a few projects funded through Sport Fish Restoration money in the last 10 years that improve and increase fishing opportunities for anglers of all ages and abilities throughout the state. The mobile aquarium, a fish-exhibit-on-wheels, helps increase public awareness and appreciation of North Carolina's fisheries resources and their habitat requirements while generating an interest and participation in recreational fishing.

Community Fishing Program *Providing fishing opportunities in urban settings*

An innovative new floating fish feeder is the newest feature of the Community Fishing Program. Through the Community Fishing Program, the Commission works with local parks to improve fishing opportunities in urban settings by providing reduced-cost fish stockings, fish feeders and feed, fishing piers, fish attractors and other amenities. Communities participating in the program pay 25 percent for program costs and the Commission pays the remaining 75 percent through the Sport Fish Restoration Program. Since the program began in 1989, it has grown to include 36 parks and more than 40 ponds and lakes in 2009.



Floating fish feeders, placed in Community Fishing Programs sites throughout the state, rise and fall with water levels, correcting problems officials had with conventional stationary feeders that often flooded during heavy rains.



Participants at a Fish-for-Fun event in Raleigh learn about popular warmwater game fish, their habitat requirements and fishing tips by visiting the Mobile Aquarium.

Mobile Aquarium **Bringing fish to people**

The Division of Inland Fisheries designed and built a mobile aquarium in 2001 to give fisheries staff a marquee visual aid when interacting with the public at outreach events. The mobile aquarium features two 300-gallon tanks, each equipped with separate life-support and cooling systems, allowing fisheries staff to display trout in one tank and largemouth bass and other sunfish in the other. An estimated 500,000+ people have seen the mobile aquarium at more than 200 single- and multi-day events since its debut.

Fishing Education

Fishing can be as simple as putting a worm on a hook and tossing a line in the water. Learning good fishing skills, however, can go a long way toward making fishing more enjoyable. Through Sport Fish Restoration funds, the Division of Inland Fisheries and the Division of Conservation Education operate four education centers that offer a variety of aquatic programs and clinics designed to teach anglers of all ages, abilities and skill levels about North Carolina's aquatic resources. Division of Conservation Education outreach specialists provide workshops for educators including CATCH (Caring for Aquatics Through Conservation Habits), Project WILD Aquatic, and Advanced Aquatic WILD topics. Women are the target audience for Aquatic Resources Education (ARE) aquatic habitat and fishing sessions in Becoming an Outdoors-Woman (BOW) weekend workshops and special topic workshops on Flyfishing and Outdoor Skills.

John E. Pechmann Fishing Education Center *Providing fishing fun and aquatic education in a natural setting*

The John E. Pechmann Fishing Education Center in Fayetteville leads the Commission's efforts to recruit and retain anglers through participation in Fish-for-Fun events. In the past 10 years, Commission fisheries staff has supported approximately 100 children's fishing events annually, with the average jumping to more than 160 fishing events per year when the fishing education center opened in 2006. Featuring a 4,800-square-foot building with classroom and exhibit hall, the former fish hatchery now serves as a destination for school groups, special-needs anglers, scout troops, and other groups of anglers wanting to learn about conservation, aquatic habitats, fish anatomy, and safety before casting their lines in more than six acres of ponds at the facility. The Dave Varndoe Greenwings event, conducted in partnership with Ducks Unlimited, draws close to 1,500 young anglers and their families every third Saturday in September for a day of fishing fun. The center received the 2009 Sport Fish Restoration outstanding project award in the aquatic education category from the Fisheries Administration Section of the American Fisheries Society.





Nearly 8,000 anglers of all ages and abilities visit the John E. Pechmann Fishing Education Center (photo opposite page) each year to learn about conservation, aquatic habitats, fish anatomy, and safety before casting their lines in more than six acres of ponds.

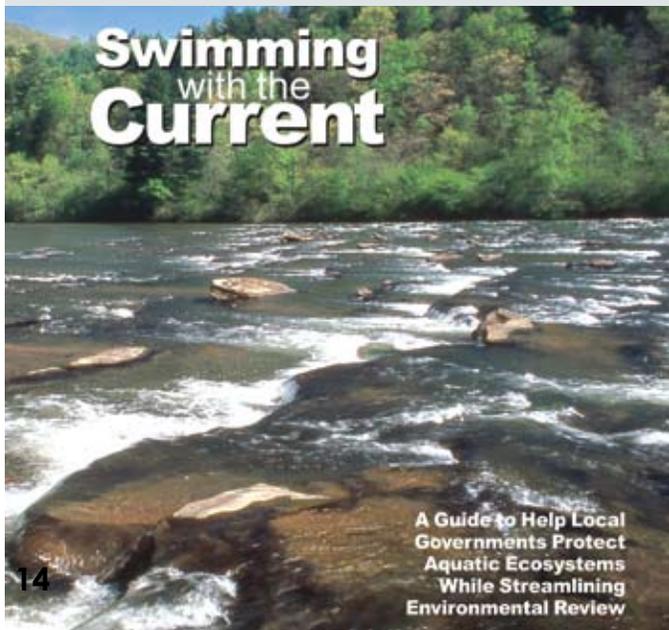
Technical Guidance

Division of Inland Fisheries biologists provide free advice to pond and lake owners and managers on fisheries management issues like stocking rates, harvest, water quality, habitat, fish kills and vegetation control. Commission staff also collaborates with state and federal agencies to ensure that wildlife resource impacts are considered in development projects that may affect terrestrial and aquatic habitats and resources.

Aquatic Resources Protection

Working with communities on environmental reviews

In 2006, Division of Inland Fisheries personnel, working cooperatively with the N.C. Department of Environment and Natural Resources, conducted three regional workshops and developed a complementary booklet titled “Swimming with the Current — How to Protect Aquatic Resources and Reduce Delays in Infrastructure Projects,” to show municipal and county officials how to design development around natural features and facilitate the permit-review process. At the workshops, attendees heard presentations that explained the process of a permit review, the necessity of these reviews and their benefits to the community. Attendees included town managers, county commissioners, mayors and other elected officials, as well as, planners, engineers and regulatory personnel. The Commission continues to support a website (ncwildlife.org/planningforgrowth/) that describes the “Swimming with the Current” brochure and how to request a copy.

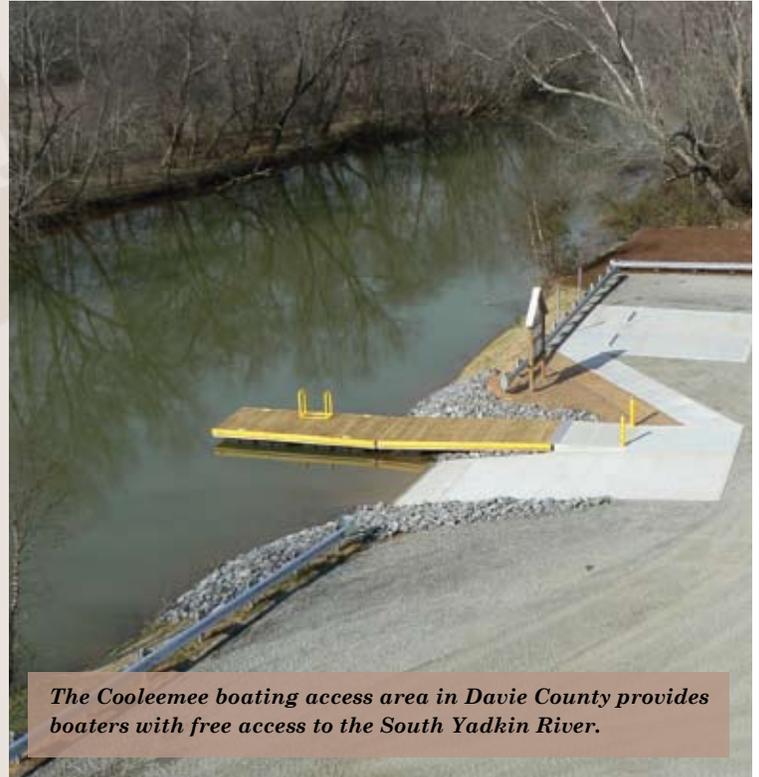


Public Access Areas

Staff with the Division of Engineering Services utilizes Sport Fish Restoration funding to maintain more than 250 boating and fishing access areas that provide free access to public waters across the state — from the mountains to the coast. In addition to the maintenance of access areas, Sport Fish Restoration funds are also used to construct new access areas, parking expansions, ramp replacements and universally accessible fishing piers.



Lake Rim public fishing area is a popular fishing site for Cumberland County anglers of all ages.



The Coolemee boating access area in Davie County provides boaters with free access to the South Yadkin River.



Every spring, thousands of striped bass anglers access the Roanoke River using the Commission's boat ramp at Weldon in Halifax County.



N.C. Wildlife Resources Commission

Established in 1947, the N.C. Wildlife Resources Commission conserves the state's wildlife resources and provides programs and opportunities that allow hunters, anglers, boaters and other outdoor enthusiasts to enjoy wildlife-associated recreation.

Division of Inland Fisheries

The N.C. Wildlife Resources Commission's Division of Inland Fisheries manages, conserves, and restores the freshwater public-trust aquatic resources of the State of North Carolina.

More Information

For more information on the Sport Fish Restoration Program, visit the U.S. Fish and Wildlife Service's website, www.fws.gov. For additional copies of this booklet or for more information on the projects featured in this booklet or other projects and programs funded through the Sport Fish Restoration Program, call the Division of Inland Fisheries at (919) 707-0220. For information on fishing in public, inland waters, visit the N.C. Wildlife Resources Commission's website, www.ncwildlife.org.



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1,500 copies of this booklet were printed on recycled paper at a cost of \$1,676 using Sport Fish Restoration funds. 