CURE for the Cape Fear

WRITTEN BY MIKE ZLOTNICKI // PHOTOGRAPHED BY MELISSA McGAW

The construction of rock arch fish rapids gives more anadromous fish a chance to spawn in the Cape Fear River.

Imagine a river in eastern North Carolina, flowing into the Atlantic with twists and tributaries along the route, and annual runs of American and hickory shad bring anglers to its 120 miles of turbid water. Striped bass also make their way upstream, drawing even more anglers—and their money—to towns up and down the river. River herring, a favorite of humans and piscatorial predators alike, enter the river for their spring spawning. Even endangered sturgeon—some weighing hundreds of pounds—swim upstream to spawn. Now, imagine this isn't the Roanoke River, but the Cape Fear.

One hundred years ago, anadromous fish (those which live in salt water and spawn in fresh water) had a free run up the Cape Fear in the spring. But in the early 1900s three locks and dams were constructed to aid river navigation, particularly for commercial boat traffic. The Cape Fear River Basin has over 6,000 miles of rivers and streams, and prior to the predominance of trains and trucks, boats carried a lot of freight in the region.

Today, the locks and dams are mostly artifacts from another time. The locks still move a few boats, but the dams keep thousands of anadromous fish from preferred spawning environments miles upstream. Help, however, is on the way.

In June 2011 the Army Corps of Engineers started work on rock arch rapids at Lock & Dam No. 1, about 32 miles northwest of Wilmington. When finished, this aquatic stepladder will allow fish of all species a chance to swim past the dam and farther upstream. It's essentially a ramp made out of rocks that allows fish to swim up and over the dam, and to return downstream after the spawn. It's quite a project and has been years in the making.

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"It's a hell of a project," said Keith Ashley, District 4 fisheries biologist with the N.C. Wildlife Resources Commission. "We've been fighting this battle for 14 or 15 years. I think it's going to have some real benefit to it."

The first part of the project, funded by the American Recovery and Reinvestment Act of 2009, repaired a 40-foot-deep scour hole from almost 100 years of water and debris pouring over the low-head dam. The second part will be the rock arch rapids that stretch across the face of the dam. Over 40 of these rock arch fish rapids have been constructed in the Midwest.

I first saw the problem — and potential — first hand in 2008 when Tim Barefoot and Doug Springer of Wilmington, the late Mike Ward and Mike Wicker of Raleigh invited me to boat upstream with them to Lock & Dam No. 3, south of Fayetteville. It was on that trip that I learned about modern fish arch weirs, or fish ladders, for the Cape Fear and some about pros and cons of the locks and dams. The pros — or necessities — are that Wilmington gets its drinking water from behind No. 1, and Fayetteville gets water from behind No. 3, which makes them essential for the towns that grew up after them. (We also saw first-hand military units training for amphibious maneuvers on the river. It's quite a sight to round a river bend and happen upon a camouflage boat bristling with automatic weapons and armed warriors.) The obvious con was the impediment the dams presented to anadromous fish. The dams also raise the level of the river about 8 to 10 feet, something locals have become accustomed to.

The corps, NCWRC and National Marine Service have tried to offset the dam by locking fish through, starting in 1961. A steep-pass fishway was installed in 1997. Since then various species have been tagged and studies have shown that a little more than half the shad and a little more than 60 percent of the striped bass make it past Lock & Dam No. 1. About 35 percent of the shad and 25 percent of the stripers make it past Lock & Dam No. 3, where the preferred spawning grounds are.

The weir is good news to anglers like Rudolph Inman of Elizabethtown. Inman, a spry 88 (which he credits to a lifetime of quail hunting and guiding) caught his first shad in 1951. He ran a service station and tackle shop in town for 37 years and still fishes every chance he can. He keeps a few shad for roe and catfish bait.

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Inman said he'd like to see rock arch rapids at all three locks. He had some other wishes as well: a fishing pier for the bank fishermen and a place to tie up boats once launched. "Some days there are 100 people fishing at Lock and Dam No. 2," he said.

Another local who is pretty psyched about the project is Matt Bierstedt of Wilmington. He's had a fish-eye view of the project as a tug boat captain hauling barges of rock from a loading trestle downriver up to the project.

"I come from a big fishing family," he said. "My dad runs the charter boat *OnMyWay* out of Carolina Beach and my brother is a big S. K. A. [Southern Kingfish Association] angler who works at the pulp mill in Riegelwood. Personally, I think it's great. We're fixing something man messed up a long time ago. I don't get to work on many things that will benefit so many people."

Bierstedt said that while offloading material he could see shad using the partially completed rapids last spring.

"I guarantee you they got twice as many shad up the river than last year," he said. "Everybody I know is excited about it. I've got ties here. It's been exciting working on it."

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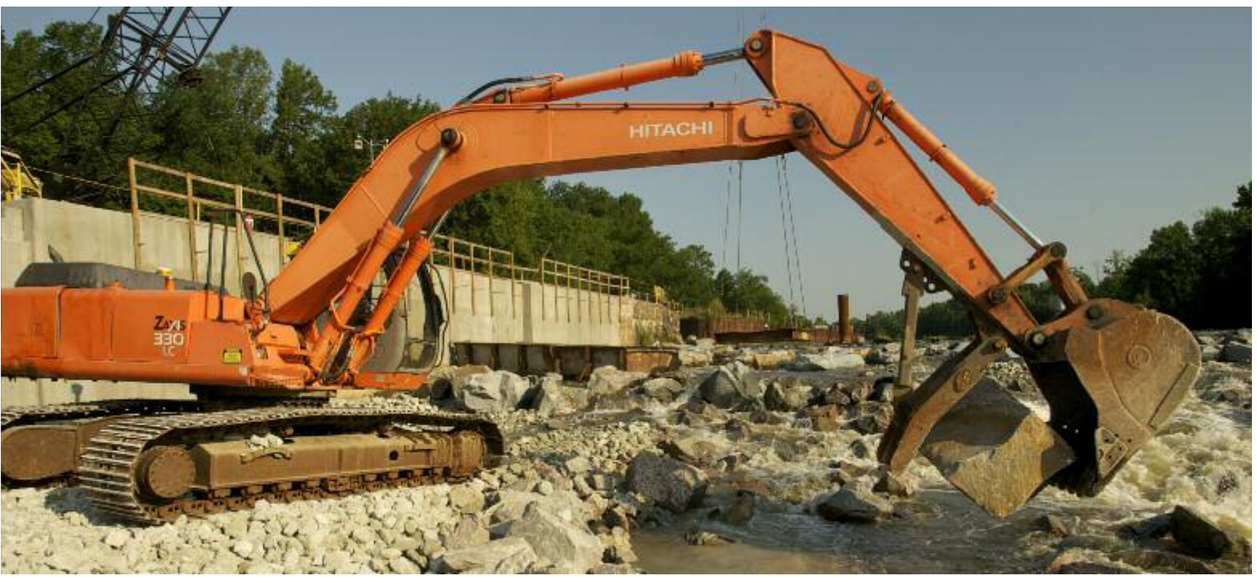
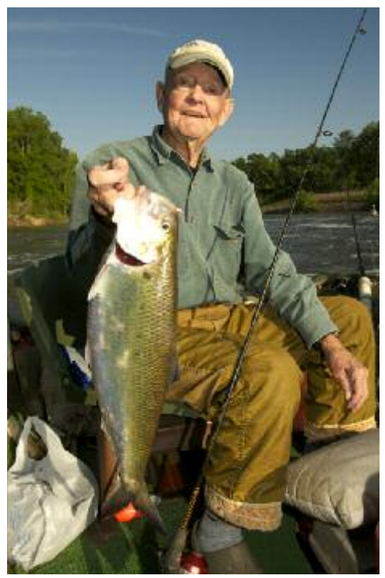
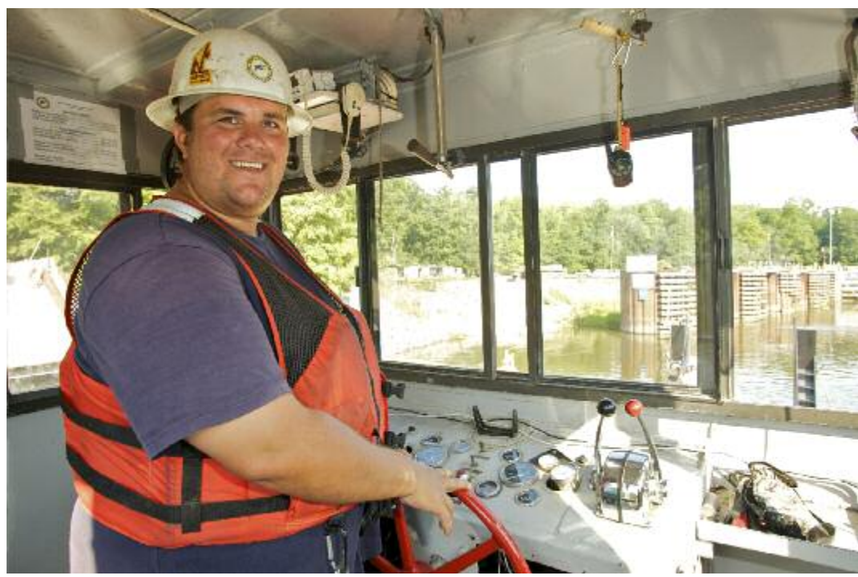
Improved fishing means more anglers. One need not look any farther north than the Roanoke River in the spring. Starting with the hickory and American shad in early March and then the world-famous striped bass run in April and May, the amount of dollars spent in places like Williamston, Jamesville and especially Roanoke Rapids and Weldon is significant. During the harvest season for striped bass the river downstream from Weldon is a mosh pit of boats

From opposite page, left: An excavator from Cape Romain Contractors is used to move the heavy boulders that comprise the rock arch rapids; Rudolph Inman of Elizabethtown is a veteran shad angler and looks forward to seeing the sturgeon thrive in the Cape Fear; Matt Bierstedt comes from a fishing family and hauled barges of rock during the construction of the project. He is excited about participating in the project.







ranging from canoes to cabin cruisers. One-hundred fish days are not uncommon. Last spring commission biologists sampled a little over 2,600 striped bass on the Roanoke by electrofishing. The majority were under 10 pounds, but 66 were over 30 pounds, including four over 50 pounds. According to Chad Thomas, coastal region fisheries supervisor, staff averaged 16–17 hour days on the Roanoke sampling stripers between March and June.

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CASH COWS. That kind of fishery draws crowds, and crowds mean money. The commission did creel surveys of anglers on the Cape Fear (2003–2004) and the Roanoke (2005–2006), essentially visiting various boating access areas and doing quick interviews with departing anglers about their trip experience. Cape Fear trip expenditures (fuel, bait and food) averaged $20.84 a trip or $392,777 annually. Catfish and shad were the primary species sought. Roanoke River expenditures (fuel, bait, food and lodging) were $93.44 per trip or $2,545,460 annually, and the primary species then were striped bass and largemouth bass. The largemouth fishery is mostly locals, but people come from all over the nation to fish for the stripers. It should be noted that these figures do not include any economic multipliers and are probably on the conservative side. Last spring I fished the Roanoke with a buddy, and we spent $66 on live shad and shiners. Throw in fuel, drinks, tackle, Nabs and pork skins and our tab was over $100 and we day-tripped it.

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CAPE FEAR POTENTIAL. Joe Hightower, fisheries biologist with the U.S. Geological Survey, and Chip Collier, a biologist with NCDMF, have done population estimates and forecasted population potential based in part on historical landings. The river should support 100,000 striped bass; currently about 10,000 are present. Atlantic sturgeon (fewer than 1,000) and shortnose sturgeon (fewer than 100 presently) could number about 8,000 and 31,000, respectively. Based on historical landings, the Cape Fear could support 2.3 million river herring. There are no current population estimates, but Hightower said the current population is "far below target levels." American shad target levels are 450,000 for the Cape Fear and Northeast Cape Fear rivers.

What happens to fish in the Cape Fear matters to the local environment and economies, but also has far-reaching effects. Shad, for example, are prey for larger species like striped bass. In the case of the American shad, they range as far north as the Bay of Fundy between Nova Scotia and New Brunswick and as far south as Florida. They remain in the ocean two to six years before becoming sexually mature.

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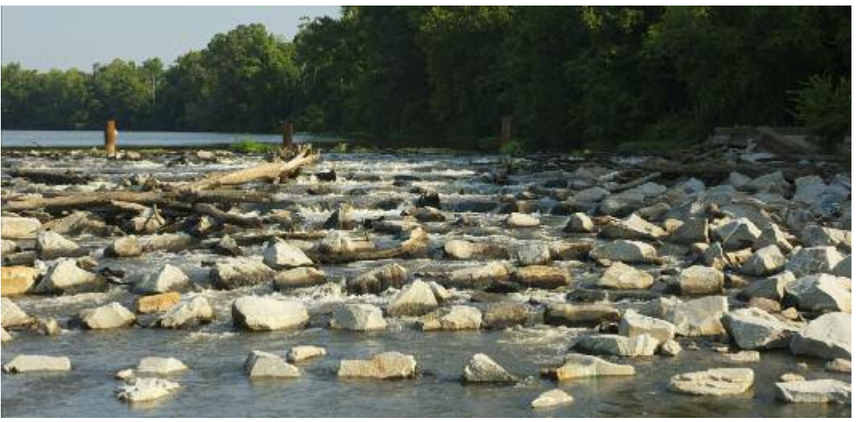
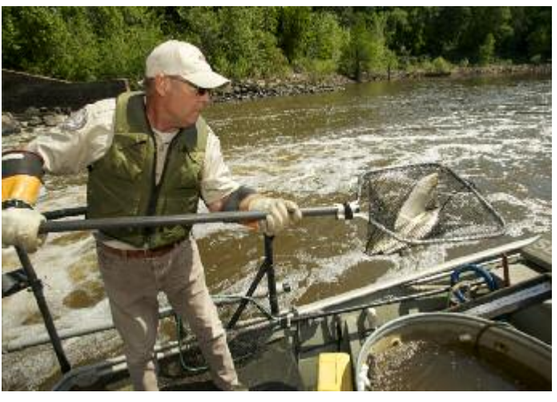
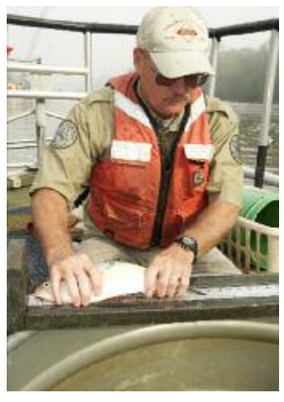
WHAT'S NEXT? The rock arch rapids at Lock & Dam No. 1 should be completed by January, but last spring spawning fish made it over the partially completed structure.

"From the sonic tagging study that DMF [Division of Marine Fisheries] conducted this spring on the partially completed structure we already know that three American shad and two striped bass used the rapids to pass upstream," said Ashley. "I'm very excited about the potential this structure has for getting anadromous fish upstream to their historical spawning grounds. I think once the structure is completed, and provided we have normal spring flows next year, a lot more shad and striped bass are going to be making their way upstream over this structure. Now, if we can only get something in place at lock and dams 2 and 3, we will be well on our way to restoring these populations to historical levels."

Unfortunately, funding is not in place at this time for the other two barriers on the Cape Fear, and the best spawning habitat for the striped bass is above Lock and Dam No. 3 near Fayetteville. Building rock arch rapids at No. 2 and No. 3 would be much less costly—around $7 million each—because fewer repairs would be needed. One bonus Wicker brought up with the rock arch fish rapids is that drownings at the base of dams will be negated. No one knows what the future holds, but the current structure at Lock & Dam No. 1 is a huge first step for the anadromous species of the Cape Fear, and also for the communities that stand to benefit from a better river. ⬙







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Help for the Sturgeons

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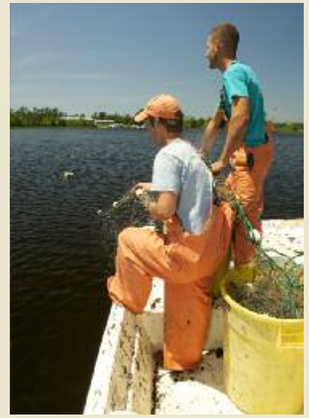

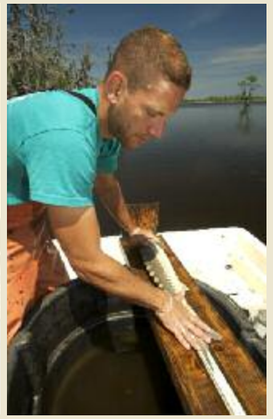

Clockwise from top left: John Perry, an intern with the Division of Marine Fisheries, and Joe Facendola, fisheries technician II with the Division of Marine Fisheries, tend a gill net used in sturgeon sampling; Facendola measures a juvenile sturgeon; An anchor tag with information unique to each fish is affixed before release. Opposite page: commission biologists Keith Ashley and Tom Rachels sample shad on the Cape Fear.

TWO SPECIES SET TO BENEFIT GREATLY from the rock arch fish rapids are the Atlantic sturgeon and the shortnose sturgeon. Sturgeons are primitive fish with origins dating back 120 million years. They have declined drastically in the 20th century.

The Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is a long-lived, estuarine dependent, anadromous fish. Atlantic sturgeon can grow to approximately 14 feet long and can weigh up to 800 pounds. They are bluish-black or olive brown dorsally, with paler sides and a white belly. They have five major rows of dermal scutes. Atlantic sturgeon are similar in appearance to shortnose sturgeon, but can be distinguished by their larger size, smaller mouth, different snout shape and scutes. Atlantic sturgeons have been aged to 60 years.

The shortnose sturgeon (*Acipenser brevirostrum*) is the smallest of the three sturgeon species that occur in eastern North America: they attain a maximum length of about 6 feet, and a weight of about 55 lbs. Adults are often confused with the similar-sized juvenile Atlantic sturgeon that historically co-occurred in the lower mainstem rivers of major basins along the Atlantic coast. The geographic range of the shortnose sturgeon is from the Saint John River, New Brunswick, Canada, to the St. Johns River in Florida.

Bennett Wynne is the commission's anadromous fish coordinator for the Division of Inland Fisheries.

"Shortnose and Atlantic sturgeon populations in the Cape Fear River are still severely depressed compared to historic, pre-lock and dam levels, he said. "However, preliminary results from the sturgeon Section 6 acoustic tagging study that Chip Collier of DMF [N.C. Division of Marine Fisheries] is conducting indicate decent numbers of sub-adult Atlantics occur in key areas of the lower Cape Fear, and a gravid female shortnose sturgeon was collected in January of 2012. This is a good sign that remnant sturgeon populations occur in the river, but it is still not clear whether the Atlantics collected and tagged were spawned in the Cape Fear, or spawned in another river system and just moved to the Cape Fear for forage, water quality or other reasons."

Wynne said that as the Section 6 study continues to move forward, they expect it will shed light on the origins and movements of these fish. "Construction of the rock arch rapids, together with the information gained from the Section 6 work, sets the stage for sturgeon recovery in the Cape Fear Basin," Wynne said. "The rock rapids at Lock & Dam No. 1 will give sturgeon much more access to the mainstem Cape Fear, but lock and dams 2 and 3 will still block access to historic anadromous spawning grounds in Harnett County."

Wynne said that they may soon find that sturgeon spawn on the new rock rapids itself, move upstream to Lock & Dam No. 2, that some sturgeon spawning is occurring in tidal freshwater reaches of the river having hard bottom, or that currently most sturgeon in the Cape Fear are visitors from other river systems—any one of which is a huge improvement in the state of our knowledge of these fish. "One thing is already certain—great strides are being made toward sturgeon recovery in the Cape Fear River," he said.