

JAMES RIVER
Sturgeon



Looking for evidence of new life from a fish that has seen it all.

by Clarke C. Jones
photos by Dwight Dyke

As fish go, the Atlantic sturgeon will win few beauty pageants. With its rows of bony plates, called scutes, a long snout with dangling, sensory barbels used to find prey, and a tail like a shark, it looks like an animal that has been around since the Cretaceous period *should* look. But what the Atlantic sturgeon lacks in beauty, it makes up for with the will of self-preservation. Over 200 million years ago, it was seeking refuge from predators like the *Mosasaur* or perhaps the *Plesiosaur*. Now it fights for survival against river pollutants,

chemicals, overfishing, and ocean-going vessels that travel up the river James on their way to Richmond. The sturgeon is an anadromous fish like the salmon, meaning that it spawns in freshwater rivers and then moves to the ocean to live; then returns to spawn in fresh water. Early records indicate that as many as 20,000 sturgeon used the James River prior to commercial harvesting in the mid-19th century. It was thought by many that the Atlantic sturgeon no longer exists today in the James, although rumors persisted that they had been seen.

Pretty or not, the Atlantic sturgeon has certainly captured the heart of a number of scientists, environmentalists, and a few corporate leaders here in Virginia. They have undertaken a study to confirm that the Atlantic sturgeon does indeed still spawn in the James River and, with that knowledge, hope to bring it back from what some fear is the brink of extinction.

Monitoring James River Sturgeon Today

On an early summer day in 2010, Lower James Riverkeeper Chuck Frederickson mo-

tors his 23-foot Maritime skiff out of its slip at Jordon Point near Hopewell and points it upriver. Mark Williams, the environmental manager for Luck Stone Corporation, is accompanying us on a search for sturgeon eggs along a manmade reef in the James. The reef was assembled from two full barge-loads of stone, of specific sizes, donated by Luck Stone and placed with the assistance of Norfolk Tug and Coastal Design in hopes that sturgeon would find it a suitable habitat for spawning.

Mark noted that the project really started with the James River Association and Dr. Greg Garman at VCU. Riverkeeper Frederickson applied for a grant from the National Fish and Wildlife Foundation to implement his ideas about creating a spawning reef. It wasn't long before Garman, at the Center for Environmental Studies at VCU, got involved.

"VCU wants to be a recognized educational leader in river studies and our company had worked with VCU on a previous project. Environmental stewardship has been a great tenet of the Luck Stone Corporation since the company started in 1923," notes Williams. Indeed, Luck Stone has a long history of championing environmental projects.

Frederickson brings his boat alongside an area of the reef where we can grab onto a small buoy. Attached to that buoy, at a depth of approximately 14 feet, is a circular floor-polishing mat—like the ones you see used on floors in commercial buildings and public schools. He carefully pulls on the rope to bring the mat to the surface and looks at its underside—which has been lying on the reef. Attached to the bottom of the mat are a number of different types of tiny animal life, including some fish eggs, proving that fish and other creatures have accepted these mats as a viable habitat for safe reproduction. We discover that there are shad, white perch, and other fish eggs present. But we are looking for sturgeon eggs, which are black, and there are no black eggs on this mat. The riverkeeper gently lowers the mat back on the reef. He will return throughout the year, selecting one of the numerous buoys above the reef to repeat this exercise and determine if any sturgeon eggs have collected.

Later in the summer, Frederickson ferries us again up the James. On this trip are Doug Palmore, the vice-president of environmental design and development at Luck Stone, and



On page 9, researcher Matt Balazik places a tagged sturgeon back into the James River. Left, Chuck Frederickson, along with Mark Williams of Luck Stone (R), examines one of the tracking devices that monitor sturgeon in the river.

Luck's stewardship coordinator, Amy Romero, as well as more sophisticated computer and tracking equipment than was on board the *Pueblo!* We have two missions: first, to locate previously tagged sturgeon using Frederickson's high-tech equipment and record our findings; and second, to head about a mile or so west upriver from Hopewell to see if Matt Balazik, a doctoral candidate at VCU, is having any luck catching sturgeon in one of the four 900-foot nets he and his crew have placed in the river.

We get a "ping" from a tagged sturgeon almost immediately after Frederickson lowers his sonar device into the water. With his equipment, he is able to tell us when the fish was tagged, whether it is a male or a female, its general current location, and where it has been. While some sturgeon spawn once a year, it is thought that there may be both a spring and a fall spawning season in the James.

Balazik and his crew of two have finished placing the nets in position. These nets have 12-inch spacing, to allow smaller fish to pass through. Balazik is interested in catching and tagging mature male and female sturgeon. In particular, what he and everyone else involved in this research are looking for is a

Chuck Frederickson carefully studies a reef mat for sign of sturgeon eggs.





gravid sturgeon (gravid, meaning a female fish that is carrying eggs she will release in the water). Finding a gravid fish will be another step in providing proof that sturgeon do in fact spawn in the James. There are strong indications that they do—as young sturgeon had been captured in the river by the Chesapeake Bay Foundation a few years back.

Assisted by his brother Martin and Master's student Bree Langford, Matt Balazik begins to pull on the first 900-foot net but it comes up empty. Martin then motors over to another net. Martin and Bree begin the arduous task of bringing in yet another 900-foot net. It too is empty. At the third net, we see something white entangled within—about 30 yards from Balazik's boat—but it slips away just as he tries to lift it into his vessel. At the fourth net we have luck, but hauling up a 75-pound fighting fish that has no interest in leaving the river is, to put it mildly, quite a delicate and difficult task. The longer the sturgeon is entangled in the net, the more stress it undergoes. Balazik has to bring the fish into his boat and place it in the water-filled holding tank while gathering in the rest of the net, in case more sturgeon are trapped inside. He discovers two more sturgeon, and they also have to be brought into the boat. Balazik then must step into the holding tank—which the 4- to 5-ft. sturgeon really do not appreciate—then lift each fish out so that it can be weighed, measured, sexed, and tagged with a sonar tag. That tag can track the fish's movements for up to three years. Once a sturgeon is tagged, its travels will be monitored by one of the 36 tracking receivers positioned from the mouth of the James to just east of Richmond. Frederickson explains, "We can tell what fish came by, when it came by, and how long it stayed in the area."

Research teams in other states, who track fish in different waterways with the same type of equipment, may also track the tagged sturgeon—which have migrated from the fresh water of the James, through

Bree Langford, in back, records sturgeon data collected by Martin Balazik (L) and Matt Balazik.



Dr. Greg Garman (L) of VCU holds a young sturgeon in the Environmental Studies lab. Above, Doug Palmore and Amy Romero of Luck Stone review sturgeon data.



its life cycle in the ocean, and back again into other rivers. The researchers will then report that information back to VCU and the James River Association. Again, Frederickson explains, "This lets us share our information with other entities conducting fish studies by sending it to a central database."

Balazik works hurriedly and shouts out the measurements and tag number to Langford, who records everything. A holding tank is not a natural environment for such large fish, and they splash and thrash to escape. Balazik is cognizant of the stress they are under and quickly places the first fish back into the river and retrieves the next. This team will check the nets three to four times a day during spawning season.

Study Objectives

Both VCU and the James River Association hope to confirm, through this research, that James River sturgeon spawn in the James and how often. Dr. Greg Garman, director of VCU's Center for Environmental Studies, is quick to point out the contribution that Luck Stone has made to sturgeon research here.

"Ever since the Civil War, sedimentation into the James has increased, and most of the hard bottom of the James that has been there historically is now gone. We think the restricted access to that type of hard bottom habitat has been a limiting factor in sturgeon reproduction in the James. If it wasn't for Luck Stone coming to us and asking, 'How can we help?' and then responding positively to our request of providing 2,200 tons of crushed aggregate—it is doubtful this project would have been able to proceed." Dr. Garman further emphasizes: "Luck Stone also provided certain specified sizes of stone which we felt were necessary to make this a successful project. My point being that the company just didn't go to any pile of rock they had or just any type of stone in their inventory that they may have wanted to get rid of."

How long does Dr. Garman think it will take to get definitive results from this study? "We have given ourselves a 5-year time span to see if this project worked by pulling up one of those egg mats at the reef site and finding a little black sturgeon egg underneath," he answers.



We watch as Balazik places the last tagged sturgeon in the river. Our photographer packs away his camera and Riverkeeper Frederickson points the bow of his boat eastward as we head back to the landing. It is easy to see why everyone who is involved in this project wants to see it succeed. The fact that this fish has survived for millions of years with everything that has been thrown at it makes it hard to accept that its existence might end on our watch. ❧

Clarke C. Jones is a freelance writer who spends his spare time with his black lab, Luke, hunting up good stories. You can read more by Clarke at his website www.clarkecjones.com.

Resources:

James River Association & Riverkeeper Chuck Frederickson:
www.jamesriverassociation.org

VCU, videos and lesson plans:
www.vcu.edu/lifesci/sosq