A Dinosaur Fish Back from the Brink of Extinction: Saving the Gulf Sturgeon with Interjustridctional Restoration

Abigail J. Lynch

As written for *Eddies*, the U.S. Fish & Wildlife Service's Fisheries Program Outreach Magazine

Out on the Yellow River along the Florida panhandle, you might not expect to see a dinosaur. But, that's exactly what Frank Parauka, a fishery biology with the U.S. Fish & Wildlife Service's Panama City Fish and Wildlife Conservation Office (FWCO), is on the hunt for. He is out on a multi-month annual survey for Gulf sturgeon (*Acipenser oxyrinchus desotoi*). These fish are, in fact, a "living dinosaur." Gulf sturgeon first appeared in the fossil record *before* the reign of the dinosaurs, approximately 225 million years ago, and have, remarkably, changed little since that time. While they have persisted all these millions of years, they are now on the brink of extinction because of overfishing and habitat degradation. Parauka's job, along with numerous partners and volunteers, is to ensure that restoration, not extinction, is the future for this majestic fish.

Gulf sturgeon grow to over 8 feet, weigh over 200 pounds, and live to at least 30 years. They have a large snout, with a vacuum-like mouth, and their bodies are covered in five rows of bony scutes, modified scales that act as a body armor. And, if that is not an intimidating enough picture, imagine one jumping up next to your 15 foot fishing boat! In Florida's Suwannee River, there have been 10 collisions between Gulf sturgeon and boaters in this year alone. These sturgeon are famous for jumping, but scientists have yet to discover why. Some researchers hypothesize that jumping is a form of sturgeon-to-sturgeon communication because the jumping has a characteristic sound pattern. "There are too many questions to answer about these fun fish," says Parauka. "They sure keep you guessing."

The most southern of the sturgeons, Gulf sturgeon are a subspecies of Atlantic sturgeon that were separated by the Florida peninsula (approximately 350,000 years ago). They've since adapted to the warmer waters of the Gulf of Mexico. Historically, Gulf sturgeon ranged from the Mississippi River to Tampa Bay. The present range extends from Lake Pontchartrain, Louisiana and the Pearl River system, Mississippi east to the Suwannee River, Florida. As an anadromous species, they migrate between fresh and marine waters. They feed nearshore in the Gulf of Mexico and its estuaries during the winter, rarely straying more than a few miles from the coast. Gulf sturgeon have a very strong homing instinct and generally return to their own natal rivers in the spring to spawn. They spend the rest of the summer and fall months in freshwater where they fast, not eating for eight or nine months.

Initially, Gulf sturgeon supported a profitable fishery with the harvest of their eggs for caviar, their flesh for smoked fillets, and their swim bladders for isinglass, a semi-transparent gelatin used in jellies, wine and beer clarification, special cements, and glues. Because of their long life, slow growth, and late maturity (females at 12-15 years and males at 7-10 years), and infrequent reproduction (females spawn every 3-5 years), Gulf sturgeon were easily overfished by the mid twentieth century. Concurrent with overfishing, habitat degradation also precipitated this decline. Dams limited migration to historical spawning grounds; groundwater extraction decreased flow into streams and restricted cool-water summer refuges; point and non-point

pollution caused bioaccumulation of heavy metals and other toxicants; and dredging destroyed benthic feeding areas.

Management of Gulf sturgeon poses many challenges; first and foremost is that they migrate across state boundaries without a second thought or glance. Because these fish travel long distances, place-based management measures do not provide adequate protection and interjurisdictional management is necessary. The subspecies was officially listed as threatened in 1991 and a recovery plan was implemented in 1995. The U.S. Fish & Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Gulf States Marine Fisheries Commission were signatories to the plan with the following joint objectives to: "prevent further reduction of existing wild populations of Gulf sturgeon within the range of the subspecies," "establish population levels that would allow delisting of the Gulf sturgeon by management units," and "establish a self-sustaining population that could withstand directed fishing pressure within management units."

Under the recovery plan, Gulf sturgeon are comanaged by the USFWS and NMFS but there are many other partners involved from state agencies, to the Army Corps of Engineers, the Air Force, and universities. Karen Herrington of the Panama City Ecological Services Office is the recovery lead for the Service. She and her NMFS counterpart are currently guiding the update of the recovery plan. "Since we've listed the subspecies," says Herrington, "we've funded a lot of research and come a long way in what we know about species. We can greatly improve upon the current plan because we have a better idea of how to achieve recovery."

Currently, seven rivers are known to support four genetically distinct reproducing populations of Gulf Sturgeon. The largest population in the Suwannee River may contain as many as 14,000 individuals. Parauka and the FWS Panama City FWCO have led annual monitoring efforts on one or more of the four Florida Panhandle rivers (Escambia, Yellow, Choctawhatchee, and Apalachicola) since the mid 1980s. The gill net surveys measure standard life history characteristics, such as length and weight, and also tag individuals to track their movement patterns and habitat use. By the end of the year, close to 300 Gulf sturgeon will have acoustic transmitters. There are 140 receivers, from the mouth of the Suwannee River to the Louisiana coast, positioned 25km apart to record when the fish leave the rivers and where they go afterwards. Gulf sturgeon movement is still quite a mystery. "We don't know what they're going to do half the time," says Paruka. The success of these surveys, according to Parauka, wouldn't be possible without the "excellent working relationship" that USFWS has with partners (the states, NMFS, universities, and NGOs) and volunteers.

Interjurisdictional management at its best, Gulf Sturgeon restoration will never be simple. Though everyone has common restoration goals, wrangling geographically dispersed partners can be difficult. "Little things can be big challenges," according to Herrington. "Permitting and getting all the partners to use the same conservation measures while sampling, for example, can be tough." But, the returns from working together are even greater. "To see these charismatic fish recover," says Herrington, "what a reward!"

-high resolution photos available with permission and proper credit