

Profile of a Biologist  
Mike Wicker, U.S. Fish and Wildlife Service, Raleigh NC Field Office

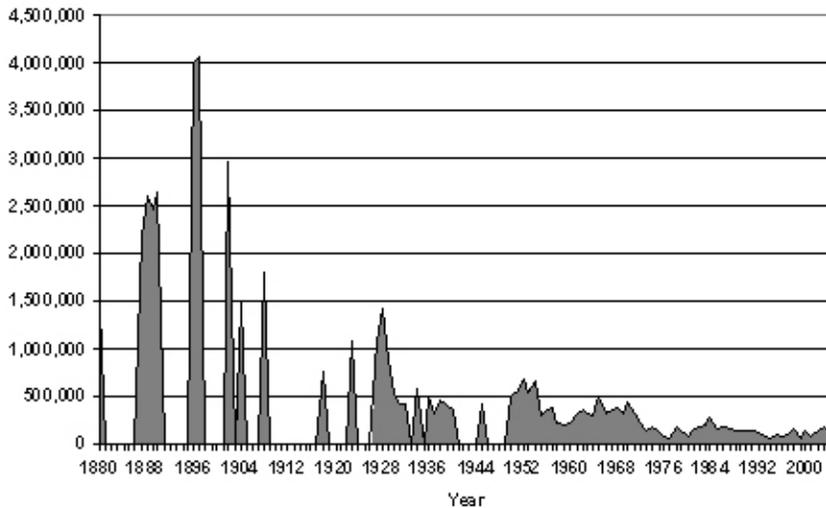
"Working to Restore the Environment"

Mike Wicker is a biologist with the USFWS who does environmental restoration in North Carolina. His focus is on anadromous (migratory) fish restoration, wetland restoration and restoration of rare and threatened plant and animal communities. To do this he works with other federal and state agencies, universities, environmental organizations and dam owners. These partners work together on various restoration efforts throughout the state.

Fish were and still are an important commercial commodity in North Carolina. Native Americans and early settlers to America survived on shad. Many people in the late 1800s and early 1900s made their living through shad fishing. (Patty will create a link on the Raleigh Website to the Civil War Information.)

Mr. Wicker and many other fisheries biologists are working to restore American shad to its historical abundance in North Carolina. One way they do this is by providing migratory fish passage through dams that block fish migration up rivers to the fish's traditional spawning grounds. Another way is to remove dams. Historically, shad have traveled more than 400 miles upstream to spawn. There are questions that must be answered and steps taken before fish passage, or removal of a dam takes place.

Figure 1: North Carolina Commercial Landings (kg) of American Shad, 1880-2005



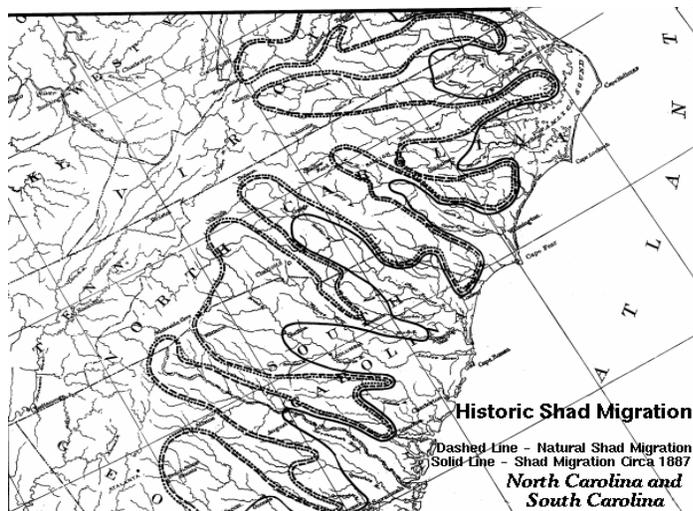


Figure 2: Historic Shad Migration

Documents such as Figure 1 and Figure 2 provide Mr. Wicker with historical data of shad migration before dams were constructed in the North Carolina. First, Mr. Wicker looks at these reports to determine how far upriver the fish would swim to spawn. Next, he reads historical reports to see how many fish used to be caught in various locations along rivers to determine which rivers produced the highest populations of shad. Mr. Wicker evaluates the importance of different rivers to produce fish and tries to determine how valuable, in terms of dollars, those fisheries would be today if restored.

Another tool Mr. Wicker uses is GIS or Geographic Information System. GIS mapping data allows him to take an in-depth look at the river systems in North Carolina by viewing layers of

### Attachment 3

information that reveal relationships, patterns, and trends. He uses this information to calculate the amount of water flowing at various points within the river and creeks, and the points between dams. This information, along with mathematical calculations, allows him to decide the best river to focus his fish restoration efforts on.

The dams with the highest flow rate are the most important to provide fish passage for American shad. Flow rate is an indication of the amount of upstream spawning habitat for shad. The number of stream miles opened once fish passage is created in a dam is an indicator of the progress being made to restore historical stream habitat for fish spawning. Mainstem rivers usually have the most flow of water and are the pathways to the tributaries for the fish, so they are generally the most important sections of the river to provide fish passage on.

The best way to provide fish passage is to simply remove the existing dams. (Visit fish passage information for North Carolina: [www.fws.gov/raleigh/cp\\_reports.html](http://www.fws.gov/raleigh/cp_reports.html).) However, many dams are used to create lakes to supply drinking water to cities (link to Falls Lake). Other dams, like the hydroelectric dam located in Roanoke Rapids, were built to produce electricity (link to Dominion Power). The high level of importance of these two types of dams prohibits their removal. Biologists like Mr. Wicker help create solutions so that there is a way to keep the dams functional for human use and create a way for fish to bypass them.

There are other options for fish passage. On a short dam, a gradual incline can be provided so that fish can swim up and over the dam. Another choice is a small stream built around a dam so fish can just swim around the dam. On a tall dam, fish elevators can be built so that fish can ride up and over the dam or adult fish can be caught below the dam and taken around the dam and released. Fish hatcheries provide another option to fish passage. Adult fish can be caught beneath the dam and taken to a fish hatchery where they spawn and their young are returned to the river upstream of the dam.

Another effort to restore American shad is by restocking the fish in rivers. Mr. Wicker works with biologists at two of the seven fish hatcheries located in North Carolina: Edenton National Fish Hatchery and Watha State Hatchery. (For hatcheries in North Carolina: [www.carolinaoutdoorsguide.com/Hatchery.htm](http://www.carolinaoutdoorsguide.com/Hatchery.htm).) These two hatcheries raise American shad for release. Since 1998 more than 18 million American shad have been stocked in the Roanoke River.

All of these fish restoration techniques work but they can be expensive. Mr. Wicker works with other agencies to determine where to spend the limited amount of money available to accomplish the most good.

Water quality is also an important factor in the survivability of the fish once their populations are restored. Mr. Wicker works with partners to educate the public on the importance of healthy streams and river systems.

Some of Mr. Wicker's greatest rewards are to see fish numbers start to grow, and to see fish species return to locations not previously seen in several years. In North Carolina it has been so long on some streams that no one alive today remembers the fish being there. He also enjoys working with the students in the local universities as they provide much of the research on anadromous fish, as well as assessing how well the recovery effort is working in North Carolina.

If your school is participating in the Shad in the Schools program you too are now part of the restoration effort in North Carolina.

#### Links to Learn More:

Hydroelectric dams ([link to Dominion Power](#)).

[Link to fish passage](#)

See link to “Bringing Back a Historically Important Fish”

[Link to hatcheries in North Carolina: www.carolinaoutdoorsguide.com/Hatchery.htm](http://www.carolinaoutdoorsguide.com/Hatchery.htm)

See link to “Albert Spells, Fisheries Biologist profile” to learn more about another fisheries biologist who helped create the student shad program and helped design the shad tanks.