

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



*"Working to Restore the Environment"*

Mike Wicker is a biologist with the U.S. Fish and Wildlife Service 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. He partners with other federal and state agencies, universities, environmental organizations and land owners to help make this happen. These partners work together on various restoration efforts throughout the state.

Mr. Wicker and many other fisheries biologists are working to restore American shad to its historical abundance in North Carolina. Migratory fish have always been an important commercial commodity in North Carolina. Native Americans and early settlers survived on shad. Shad fishing in North Carolina played a role in the civil war. ([Link to Civil War Information.](#))

American shad can travel hundreds of miles upstream to spawn. One way to help restore shad to its historical routes is by providing migratory fish passage through or around dams that block fish migration. Another way is to remove dams.

Providing fish passage and/or removal of dams can be costly and time consuming. Many environmental changes will take place to the aquatic habitat. Many questions must be answered to decide the best course of action. Do you remove a dam, or do you provide fish passage? Together with his partners, Mr. Wicker begins the necessary steps to answer these questions.

Documents Figure 1 and Figure 2 provide Mr. Wicker with historical data of shad migration in North Carolina. He can look at these reports and other historical documents to determine how far upriver the fish would swim to spawn. Together these reports tell him how many fish used to be caught in various locations along a river. He can then determine which river produced the highest population of shad. Mr. Wicker evaluates the importance of different rivers to produce fish and determines how valuable these fisheries would be when 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 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 combined with mathematical calculations allows him evaluate the amount of river miles open and rate of water flowing through the dam.

The dams with the highest flow rate are the most important to provide fish passage for migratory fish. The number of stream miles opened once fish passage is created is an indicator of the progress being made to restore historical stream habitat for fish spawning.

The best way to provide fish passage is to simply remove the existing dams. ([www.fws.gov/raleigh/cp\\_reports.html](http://www.fws.gov/raleigh/cp_reports.html)). However, dams like Falls Lake on the Neuse River in North Carolina are used to create lakes to supply drinking water to cities ([www.saw.usace.army.mil/falls/index.htm](http://www.saw.usace.army.mil/falls/index.htm)). Other dams, similar to the hydroelectric dam located in Roanoke Rapids, were built to produce electricity ([www.dom.com/about/stations/hydro/gaston-hydro-station.jsp](http://www.dom.com/about/stations/hydro/gaston-hydro-station.jsp)). Dams that provide drinking water or hydroelectric power cannot be removed. However, biologists across the USFWS are working together with partners to help create solutions.

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 have been built where fish can ride up and over the dam. In some instances, adult fish are caught and released on the other side of the dam. Fish hatcheries provide another option to fish passage.

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 ([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. Another important factor is water quality. You do not want to place fish in an environment where they will not survive or thrive. 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 migratory fish numbers increase and see the species return to their historical spawning grounds. In North Carolina it has been so long on some streams that no one alive today remembers the fish ever being there.

Some of the information Mr. Wicker receives on migratory fish is provided by university students and their professors. Mr. Wicker is pleased to see students following in his footsteps and majoring in environmental careers. He finds the work he does fun and very rewarding. To see a dam removed and/or a fish caught in areas where they haven't been in more than 50 years is thrilling.

If your school is participating in the Shad in the Schools program you too are now partnering with the USFWS to help migratory fish in North Carolina.

**Attachment 3**

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

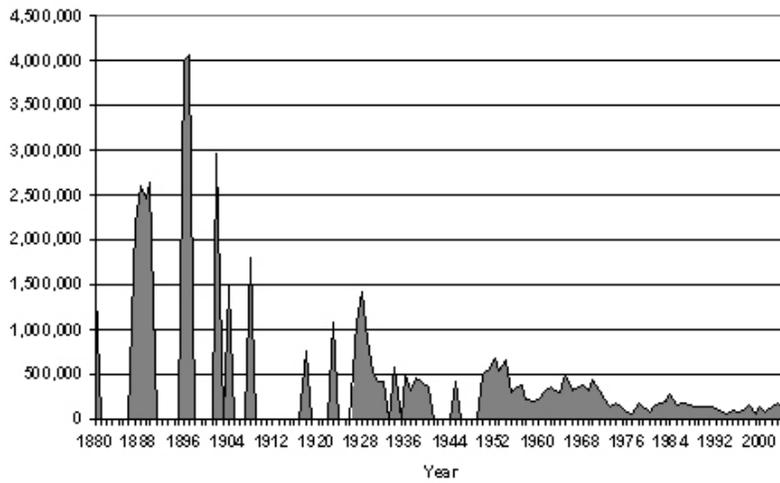
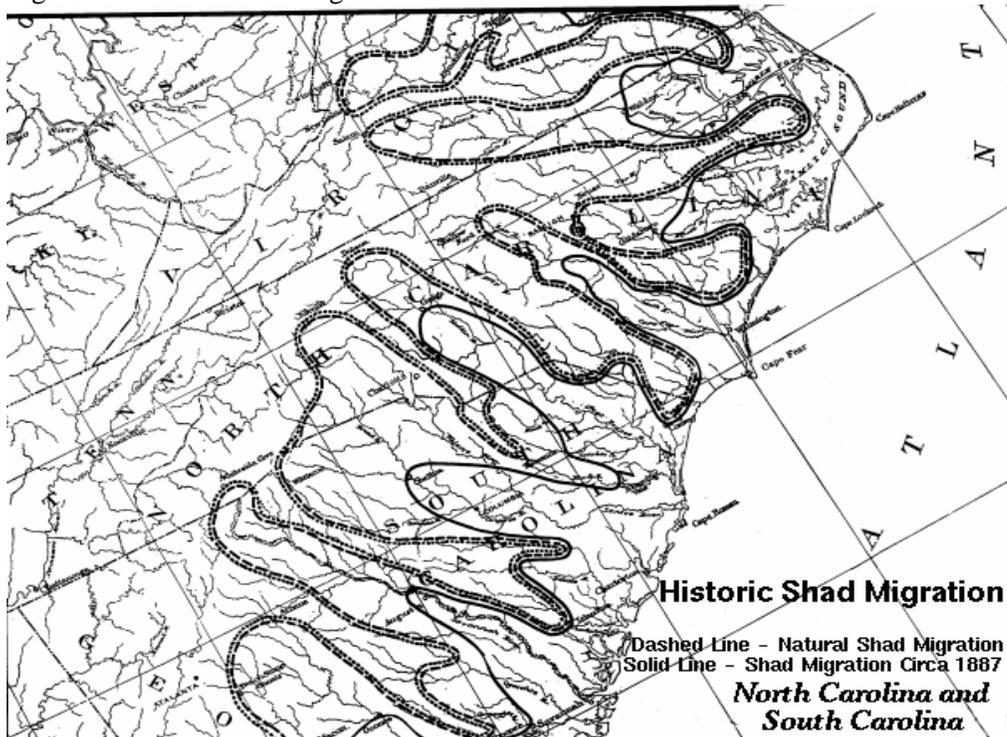


Figure 2: Historic Shad Migration



Links to Learn More:

Hydroelectric dams : [www.dom.com/about/stations/hydro/gaston-hydro-station.jsp](http://www.dom.com/about/stations/hydro/gaston-hydro-station.jsp)

See Resource/Links to “Bringing Back a Historically Important Fish”

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

See Resource/Links 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.