

sensitive to many pollutants (*e.g.*, chlorine, ammonia, heavy metals, high concentrations of nutrients) commonly found in municipal and industrial wastewater effluents (Havlik and Marking 1987, Goudreau *et al.* 1988, Keller and Zam 1991). Stream discharges from these sources may result in decreased dissolved oxygen concentration, increased acidity and conductivity, and other changes in water chemistry, which may impact mussels or their host fish.

The historic activities discussed above, especially dam construction, had a second major impact on mussel species by isolating surviving populations within limited portions of the Basin's major drainages. The Mobile River Basin Aquatic Ecosystem Recovery Plan (U.S. Fish and Wildlife Service 2000) recognized habitat fragmentation as one of the primary threats to the Basin's imperiled aquatic species. Small isolated mussel populations are more vulnerable to natural random events, such as droughts or floods, as well as to changes in human activities and land use practices that impact aquatic habitats (Neves *et al.* 1997). A number of the Basin's imperiled mussel populations that became restricted to small tributaries or river segments eventually disappeared because of individual or cumulative impacts of land uses such as urbanization, industrialization, mining, and certain agricultural activities and practices that resulted in sedimentation, eutrophication (an aquatic condition in which the increase in mineral and organic nutrients reduces dissolved oxygen producing an environment that favors plant life over animal life), or other negative effects to stream and river habitats (58 FR 14330, U.S. Fish and Wildlife Service 2000).

Human populations and associated needs for housing, commerce, recreation, water, electricity, forest and agricultural products, waste disposal, and mineral exploitation continue to increase in the Basin (U.S. Fish and Wildlife Service 2000). Currently surviving populations of endangered and threatened mussels remain vulnerable to habitat loss, population isolation, and the cumulative effects of these land use activities on aquatic environments (U.S. Fish and Wildlife Service 2000). More detailed information on threats to these species can be found in the March 17, 1993, final listing determination (58 FR 14330) and in the Mobile River Basin Aquatic Ecosystem Recovery Plan (U.S. Fish and Wildlife Service 2000).

Previous Federal Actions

Federal actions began when the orange-nacre mucket was included as a category 2 species (May 22, 1984, 49 FR 21675). We applied category 2 designations to those species for which some evidence of vulnerability existed, but for which we needed additional biological information to support a proposed rule to list as endangered or threatened. In the January 6, 1989, Notice of Review (54 FR 578–579), this species was again included as a category 2 species. In the same Notice of Review, the upland combshell, southern acornshell, and fine-lined pocketbook were additionally included as category 2 species. A status review completed in 1991 for these four species, and seven other mussels endemic to the Basin, recommended listing the upland combshell, southern acornshell, Coosa moccasinshell, southern clubshell, dark pigtoe, southern pigtoe, ovate clubshell, and triangular kidneyshell as endangered species, and the fine-lined pocketbook, orange-nacre mucket, and Alabama moccasinshell as threatened species (Hartfield 1991).

We proposed the 11 mussel species for protection under the Act on November 19, 1991 (56 FR 58339). In that proposed rule, we stated that critical habitat was not prudent because of the threat of illegal commercial harvest. Legal notices announcing the proposal and requesting public comments were published in *The Clarion-Ledger* (Jackson, Mississippi) on December 6, 1991; the *Mobile Press Register* (Mobile, Alabama) on December 7, 1991; and *The Atlanta Constitution* (Atlanta, Georgia), the *Commercial Dispatch* (Columbus, Mississippi), and the *Montgomery Advertiser* (Montgomery, Alabama) on December 8, 1991. We published a final rule on March 17, 1993 (58 FR 14330), listing the fine-lined pocketbook, orange-nacre mucket, and Alabama moccasinshell as threatened species, and the Coosa moccasinshell, ovate clubshell, southern clubshell, dark pigtoe, southern pigtoe, triangular kidneyshell, upland combshell, and southern acornshell as endangered species.

New mussel harvest regulations adopted by the State of Alabama, and other information received in public comments during the open comment period, removed our concerns about illegal commercial harvest, and in the final rule, we determined that critical habitat was prudent but not determinable for the 11 mussel species. The not determinable finding was because of insufficient information on

distribution and the biological needs of these species. Section 4(b)(6)(C) of the Act provides that a concurrent critical habitat determination is not required with a final regulation implementing endangered or threatened status and that the final designation may be postponed for 1 additional year beyond the period specified in section 4(b)(6)(A), if a prompt determination of endangered or threatened status is essential to the conservation of the species, or if critical habitat is not then determinable. We found that prompt determination of status was essential to the conservation of these species and stated that we would attempt to evaluate critical habitat needs through research and recovery actions.

In late 1994, a Technical/Agency draft Mobile River Basin Aquatic Ecosystem Recovery Plan that included recovery objectives for the 11 mussels, among other listed species, was released for public review and comment. High levels of interest in details of the plan were expressed by the State of Alabama, certain environmental groups, and a number of water- and timber-related industries. As a result of a series of discussions sponsored by the Alabama Department of Economic and Community Affairs, a Mobile River Basin Coalition composed of various governmental, environmental, and industry representatives was organized for the purpose of reviewing, revising, and eventually implementing the recovery plan. A revised Technical/Agency draft was subsequently released for public review in 1998, and the final Mobile River Basin Aquatic Ecosystem Recovery Plan was published in 2000 (U.S. Fish and Wildlife Service 2000).

On October 12, 2000, the Southern Appalachian Biodiversity Project filed a lawsuit in U.S. District Court for the Eastern District of Tennessee against the Service, the Director of the Service, and the Secretary of the Department of the Interior, challenging our not determinable findings regarding critical habitat for 9 listed mussels. These 9 mussels represent 9 of the 11 Mobile River Basin mussels that were listed in 1993, and are listed as follows: upland combshell, southern acornshell, Coosa moccasinshell, southern clubshell, southern pigtoe, ovate clubshell, triangular kidneyshell, fine-lined pocketbook, and Alabama moccasinshell. On November 8, 2001, the District Court issued an order directing us to make a proposed critical habitat designation for these 11 Mobile River Basin mussels no later than March 17, 2003, and the final designation by March 17, 2004.