including the sicklefin redhorse sucker. The petition included supporting information regarding the species' taxonomy and ecology, historical and current distribution, present status, and actual and potential causes of decline. In a partial 90-day finding on the petition to list 404 species, published on September 27, 2011 (76 FR 59836), the Service reaffirmed the existing candidate status of the sicklefin redhorse sucker.

## Background

The sicklefin redhorse sucker (*Moxostoma sp.*), a freshwater fish species, can grow to a length of approximately 650 mm (roughly 25.6 in). It has an elongate, somewhat compressed body and a highly falcate (sickle shaped) dorsal fin (back fin). Its body is olive-colored, with a coppery or brassy sheen; its lower fins (pectoral, pelvic, and anal fins) are primarily dusky to dark, often tinted yellow or orange and pale edged; the caudal fin (tail fin) is mostly red; and its dorsal fin is olive in color, sometimes partly red.

Although the sicklefin redhorse sucker is now known to have been collected in 1937 (based upon preserved specimens collected at the thenunimpounded mouth of Forney Creek near its confluence with the Tuckasegee River), it was not recognized as a potentially distinct species until 1992, when Dr. Robert Jenkins obtained and examined two specimens that had been collected in 1981 and 1982 from the Little Tennessee River by Dr. Edward Menhinick (University of North Carolina at Charlotte, Charlotte, North Carolina). Based on the characteristics of the specimens' lower lips, dorsal fins, and pharyngeal teeth, Jenkins recognized the species as possibly a previously unidentified species or a hybrid of the smallmouth redhorse (M. breviceps) and the river redhorse (M. carinatum). Subsequent detailed morphological and behavioral studies and genetic studies have concluded that the sicklefin redhorse sucker is, in fact, a distinct species. The Service has reviewed the available taxonomic literature, and is not aware of any challenges to the validity of this conclusion

The species is currently known to occupy cool to warm, moderate-gradient creeks and rivers and, during at least parts of its early life, large reservoirs. In streams, adults of the species are generally associated with moderate to fast currents, in riffles, runs, and well-flowing pools, while juveniles show a preference for moderate to deep pools with slow currents and large boulder crevice cover. Adults feed and spawn

over gravel, cobble, boulder, and bedrock substrates with no, or very little, silt overlay.

Past and recent collection records of the sicklefin redhorse sucker, together with what is known about the habitat utilization of the species, indicate that the sicklefin redhorse sucker once inhabited the majority, if not all, of the rivers and large creeks in the Blue Ridge portion of the Hiwassee and Little Tennessee River systems in North Carolina, Tennessee, and Georgia. Currently, there are only two metapopulations of the sicklefin redhorse sucker known to remain: One in the Hiwassee River system and one in the Little Tennessee River system. Estimated occupied stream habitat in the Hiwassee river systems totals about 53.0 river miles (rm). However, use of various streams/stream reaches within this total appears to be seasonal. Available information indicates that the sicklefin redhorse sucker uses Brasstown Creek, Hanging Dog Creek, Beaverdam Creek, Nottely River, and the mid and upper reaches of the Valley River, primarily for spawning. No spawning or courting behavior was observed within the mainstem of the Hiwassee River; the mid and lower Hiwassee River or lower reaches of the spawning tributaries primarily from the post-spawning period through the fall and early winter; or the lower unimpounded reaches of the Hiwassee River, and to a lesser extent, the lower Valley River, during the winter months.

The Little Tennessee River system metapopulation of the sicklefin redhorse sucker includes a total of approximately 59.15 rm of creek and river reaches plus near-shore areas of Fontana Reservoir, including: (1) The main stem of the Little Tennessee River in Macon and Swain Counties, North Carolina, between the Franklin Dam and Fontana Reservoir (approximately 23.2 rm), and its tributaries, Burningtown Creek (approximately 5.5 rm) and Iotla Creek (approximately 0.1 rm) in Macon County, North Carolina; (2) the main stem of the Tuckasegee River in Swain and Jackson Counties, North Carolina, from approximately rm 27.5, downstream to Fontana Reservoir (approximately 27.5 rm), and its tributaries, Forney Creek (mouth of the creek), Deep Creek (approximately 2.35 rm), and the Oconaluftee River below the Bryson Dam (also sometimes referred to as the Ela Dam) (approximately 0.5 rm), in Swain County, North Carolina; and (3) subadults in the near shore portions of Fontana Reservoir, Swain County, North Carolina.

Summary of Status Review

In completing our status review, we reviewed the best available scientific and commercial information and compiled this information in the SSA Report for the sicklefin redhorse sucker. For our finding, we evaluated potential stressors related to the sicklefin redhorse sucker and its habitat. The stressors we analyzed were: (1) Hydroelectric operations, inadequate erosion/sedimentation control during agricultural, timbering, and construction activities; (2) runoff and discharge of organic and inorganic pollutants from industrial, municipal, agricultural, and other point and nonpoint sources; (3) habitat alterations associated with channelization and instream dredging/ mining activities; (4) predation and habitat suitability impacts by nonnative species; (5) fragmentation and isolation of surviving populations; and (6) other natural and human-related factors that adversely modify the aquatic environment. Associated with the status review for this 12-month finding, we conducted an analysis of the Candidate Conservation Agreement (CCA) for the Sicklefin Redhorse Sucker under the Service's Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE policy), published in the Federal Register on March 28, 2003 (68 FR 15100), and found that the CCA does meet the PECE policy criteria for certainty of implementation and certainty of effectiveness.

A number of factors likely contributed to a reduction in the species' historical range and may have affected population dynamics within the existing occupied stream reaches. The construction of hydroelectric dams fragmented populations, confining spawning activity only to river reaches accessible from the two reservoirs where this species is thought to reside during the juvenile stage of its life cycle. The sicklefin redhorse sucker also appears to be absent from several reaches of unimpounded river habitat where it was likely extirpated by degradation of the habitat or by cold water from hypolimnetic (deepwater that remains perpetually cold) discharges or hydropeaking (releasing frequent, large discharge pulses of water) for hydropower production. The introduction of blueback herring (Alosa aestivalis) into the habitat occupied by the sicklefin redhorse sucker was also considered a potential threat to future population stability in past candidate assessments.

Upon further review of the information related to the factors