

sturgeon from the Pearl River subpopulation have been documented (by tags) to use the eastern half of Lake Pontchartrain. Researchers believe that the eastern portion of the lake provides important winter habitat for juveniles and subadults, and they have located tagged individuals in Lake Pontchartrain and have repeatedly caught untagged sturgeon between Goose Point and Point Platte, an area believed to be used for winter feeding. While Gulf sturgeon have been documented in the western portion of the Lake (generally near the mouth of small rivers), it is not known whether those sturgeon are part of the Pearl and Bogue Chitto Rivers spawning subpopulation, or if they are part of a smaller spawning subpopulation that might exist within the Tickfaw, Tangipahoa, or Tchefuncte Rivers. We, therefore, conclude that the eastern portion, but not the western portion, of Lake Pontchartrain provides essential winter habitat for the Pearl River subpopulation, as data supports inclusion of the eastern portion of Lake Pontchartrain as critical habitat. Although the Lake Pontchartrain Causeway does not restrict fish movement, it does provide an appropriate and easily identifiable boundary.

Public Comments

Issue A: General Biological Comments

Comment 6: One commenter believes that forestry practices (e.g., the use of silvicultural Best Management Practices and application of streamside management zones, to protect surface water quality during forestry operations) actively contribute to the conservation of the Gulf sturgeon by providing an important incentive for private landowners to retain forested riverine corridors adjacent to sturgeon habitat.

Our Response: We agree that Best Management Practices when applied correctly to silvicultural activities do protect and improve the quality of surface waters and, therefore, do contribute to the conservation of the Gulf sturgeon.

Comment 7: Some commenters questioned the basis of our statement that adult Gulf sturgeon do not feed while in freshwater.

Our Response: As stated in the proposed and final rules (see "Feeding Habits" section), many reports indicate that subadult and adult Gulf sturgeon fast and lose between 4 and 15 percent of their total body weight while in freshwater, and then compensate the loss during winter feeding in estuarine and marine environments (Carr, 1983;

Wooley and Crateau, 1985; Clugston *et al.*, 1995; Morrow *et al.*, 1998a; Heise *et al.*, 1999a; Sulak and Clugston, 1999; and Ross *et al.*, 2000). Gu *et al.* (2001) tested the hypothesis that subadult and adult Gulf sturgeon do not feed significantly during their annual residence in freshwater by comparing stable carbon isotope ratios of tissue samples from subadult and adult Gulf sturgeon and their potential freshwater and marine food sources. A large difference in isotope ratios between freshwater food sources and fish muscle tissue suggests that subadult and adult Gulf sturgeon do not feed significantly in freshwater. The isotope similarity between subadult and adult Gulf sturgeon and marine food resources strongly indicates that this species relies almost entirely on the marine food web for its growth (Gu *et al.*, 2001).

Comment 8: One commenter questioned whether fish tagging studies were limited to adults or whether they included other life stages as well.

Our Response: Juveniles (age 1 to 6 years), subadults (age 6 years to sexual maturity), and adults (sexually mature) have been marked with different types of equipment, but primarily with T-bar tags (external) and passive integrated transponder (PIT) tags (internal). Young-of-the-year less than 20 cm (7.8 inches) tail length are too small to tag with the standard markers and therefore are exclusively PIT tagged (Mike Randall, USGS, pers. comm. 2002).

Comment 9: Four commenters had questions regarding Gulf sturgeon prey items and foraging areas.

Our Response: As stated in the proposed rule (67 FR 39107), the diet of the Gulf sturgeon depends on its life history stage. While adults are not known to forage in freshwater, juveniles and young-of-the-year do. We have used data from stomach content analysis and telemetry studies to identify probable Gulf sturgeon foraging areas, i.e., those areas with substrate that supports the known prey items, coupled with tracking data indicating sturgeon presence. We relied on two observations to conclude that subadult and adult Gulf sturgeon do not forage in freshwater: (1) Gulf sturgeon lose a substantial percentage of their body weight while in freshwater in summer and then compensate for the loss during winter, and (2) stable isotopes from sturgeon muscle tissue and their potential marine food sources are similar, while there is a large difference between muscle tissue and potential freshwater food sources. Gulf sturgeon researchers and the Services are certain that the existing data support these conclusions

regarding Gulf sturgeon food items and foraging locations.

Comment 10: Commenters wondered what we know of Gulf sturgeon's overall use of estuarine and marine waters.

Our Response: While research indicates that Gulf sturgeon utilize estuarine and marine areas for staging, resting and foraging, researchers continue to investigate Gulf sturgeon over-wintering behavior and locale. We are not able, at this time, to readily discern the Gulf sturgeon's overall utilization of marine and estuarine areas and we look forward to evaluating additional information when it becomes available.

Comment 11: Some commenters questioned whether we were knowledgeable of Gulf sturgeon migration routes.

Our Response: We have identified and described Gulf sturgeon spawning migrations from coastal/marine areas to the rivers; however, inter-riverine migratory patterns are not well understood. When we could identify inter-riverine movements (mostly from telemetry data), we included appropriate inshore coastal waters in the critical habitat designation to provide protection for migrating sturgeon (e.g., Unit 11). Research is ongoing to investigate Gulf sturgeon inter-riverine migrations (e.g., recording broad movement patterns via satellite tags), and researchers are presently collating data to analyze Gulf-wide movements.

Issue B: Site-specific Biological Comments

Comment 12: One commenter questioned whether any areas south of the Suwannee River in Florida were historic critical habitat for Gulf sturgeon.

Our Response: Since this is the first critical habitat designation for the Gulf sturgeon, we presume that the commenter is asking whether areas south of the Suwannee River were of importance to the Gulf sturgeon historically. There are few reported sightings of Gulf sturgeon using rivers south of the Suwannee River, but there are historic and recent records of Gulf sturgeon in Tampa Bay and Charlotte Harbor. At one time, the Tampa Bay area produced large commercial landings of Gulf sturgeon. There have been reported Gulf sturgeon sightings in the Florida Keys during winter months. Some biologists theorize that the Suwannee River population of Gulf sturgeon may winter in the Tampa Bay and Charlotte Harbor areas; however, further research is needed in this area.