

systems that support the seven currently reproducing subpopulations (FWS *et al.*, 1995) and associated marine habitats. These river systems include (from west to east)—the Pearl, Pascagoula, Escambia, Yellow/Blackwater, Choctawhatchee, Apalachicola, and Suwannee Rivers. We believe that with proper protection and management, these units collectively represent habitat necessary to provide for the conservation of the species. The number, distribution, and range of Gulf sturgeon subpopulations included in these units is necessary to protect and support the extent and diversity of the species' genetic integrity and can provide a rescue effect, if needed. The Services believe that these seven river systems, with their associated estuarine and marine environments, represent habitat that is essential for the conservation of the Gulf sturgeon.

#### *Assessing Specific Habitat Areas Essential to the Conservation of Gulf Sturgeon*

Once we determined that the proper scale of the critical habitat designation should cover the area occupied by the seven reproducing subpopulations, we evaluated which habitats used by those seven subpopulations are essential to their conservation. To conduct this evaluation, we assessed the critical life history components of Gulf sturgeon as they relate to habitat. Gulf sturgeon use the rivers for spawning, larval and juvenile feeding, adult resting, and staging, and to move between the areas that support these components. Gulf sturgeon use the lower riverine, estuarine, and marine environment during winter months primarily for feeding, and more rarely, for inter-river migrations.

We then investigated what habitat types support these life history components and where these habitat areas are located. We evaluated empirical data, published and unpublished literature, and solicited the views of experts. These habitat components are described in the "Primary Constituent Elements" section of this final rule. We identified known or presumed spawning sites in each of the seven river systems. Some spawning sites have been conclusively identified; others are presumed due to the presence of suitable habitat. We identified known or presumed sites used for resting or staging. We identified areas where subadult and adult Gulf sturgeon occur during winter and are presumed to be feeding. These areas are primarily in the marine or estuarine environment; young-of-the-year and juveniles feed mostly in the riverine environment. As

a component of the above identifications, we gathered all available data on locations and habitat use of marked (tagged) fish.

To determine which areas should be designated as critical habitat, we then evaluated where the necessary constituent elements of Gulf sturgeon habitat intersected with areas known to be used by both marked and unmarked fish. Detailed location data, where available, is included with each unit description in the "Critical Habitat Unit Descriptions" section of this final rule. Because most of the sturgeon species' farthest upstream movement is for spawning (Bain, 1997; and J. Hightower, USGS-Biological Resources Division, pers. comm. 2002), we have determined that the designation should include areas as far upstream as the furthest known or presumed spawning site. Therefore, in rivers where spawning sites have been confirmed, critical habitat extends upstream to a geographically identifiable point, such as a river confluence upstream of those sites. In areas where spawning sites are presumed but not confirmed, we have included river reaches that contain the appropriate substrate necessary for spawning, if those areas occur within close proximity of Gulf sturgeon historic and/or current sightings or captures, and if they are still accessible to sturgeon (*e.g.*, not entirely blocked by dams). The riverine critical habitat units include areas that continue to offer at least periodic passage of Gulf sturgeon to known and presumed spawning sites. Successful reproduction and recent recruitment have been documented in each riverine unit by eggs, larvae, and/or juveniles, or by a mixed age structure. We are proposing to protect subpopulation extirpation from a catastrophic occurrence by including up to both the main stem spawning sites and at least one tributary site.

We have included riverine habitat from the river mouth upstream to and including spawning grounds in order to provide sufficient habitat necessary for the other riverine life stages of Gulf sturgeon while they reside in the riverine habitats. Habitat necessary for these life stages includes habitat for summer resting or staging areas, juvenile feeding, entire young-of-the-year life cycle, passage throughout the river, and passage into and out of estuarine habitat. All of the selected areas are known to be used by Gulf sturgeon for some portion of their life cycle.

Subadult and adult sturgeon use estuarine and marine areas for feeding and passage between river systems. Designation of critical habitat units

encompassing estuaries and bays adjacent to the riverine units discussed above will protect unobstructed passage of sturgeon from feeding areas to spawning grounds. In evaluating the estuarine and marine areas, we first reviewed where Gulf sturgeon from the seven adjacent riverine units have been documented by telemetry relocations and tag returns from incidental captures. We also considered areas for which we have Gulf sturgeon sightings and targeted and incidental capture records. When available, we reviewed habitat data (*e.g.*, bathymetry, substrate type, and community structure) associated with these estuarine and marine systems and compared these data with studies pertaining to the habitat requirements and preferences of Gulf sturgeon. We also evaluated data for evidence of critical migratory pathways between the river systems and the adjacent bays and Gulf of Mexico that allow Gulf sturgeon to travel to important feeding areas, as well as allow for the occasional travel to non-natal rivers for possible spawning and genetic interchange. Where documented inter-riverine movements have occurred, but no telemetry data exist to identify the migratory path (*e.g.*, between the Pascagoula River and Yellow River, the Pascagoula and Choctawhatchee Rivers, and between Suwannee River and Apalachicola River), we have not designated a migration route. We then assessed the Gulf sturgeon's overall use of estuarine and marine waters and delineated specific critical habitat boundaries.

Migration and feeding may take place within the GIWW in some of the units. Portions of the GIWW that consist primarily of excavated land cuts and canals have been excluded from this designation because they were not available historically, and, therefore, are not considered to be evolutionarily significant.

This final designation includes a significant portion, but not all, of the species' historic range. The fourteen critical habitat units include riverine main stems and in some cases tributaries, distributaries (a river branch flowing away from the main stem in the floodplain) and adjacent estuarine and marine areas that contain one or more of the primary constituent elements essential for the conservation of the Gulf sturgeon (see "Primary Constituent Elements" section). The omission of some historically occupied river drainages and estuarine and marine areas from this critical habitat designation does not diminish their individual or cumulative importance to the species. Rather, it is our