Enclosure 27

Memorandum for Record
Gulf Sturgeon Spawning Habitat Survey and Mapping
23-23 October 2002

CESAM-PD-EI 31 October 2002

MEMORANDUM FOR RECORD

SUBJECT: Gulf Sturgeon Spawning Habitat on the Apalachicola River – Initiation of Habitat Survey and Mapping, 22-23 October 2002

1. The Mobile District has agreed to consult with the USFWS on the effects of current water control operations on Gulf sturgeon spawning activities. USFWS has expressed concern that significant Gulf sturgeon spawning habitat located below Jim Woodruff Dam became exposed during extreme low flow stages experienced in the Spring of 2002. Identification of the areal extent and relative depth of sturgeon spawning habitat will assist in preparation of a biological assessment as part of Section 7 consultation under the Endangered Species Act. Collection of cross-sections at spawning habitat areas referenced to controlled elevation will provide information on relative depth of habitat areas. This data can be related to flow/stage rating information to determine extent of habitat inundated at various flow/stage regimes. This information can then be used in an assessment of water management operations during extended drought or low flow conditions to determine the effect on the Gulf sturgeon spawning activities.

2. On 22 October, Terry Jangula, Panama City Site Manager, and members of the U.S. Army Corps of Engineers, Mobile District (CESAM), Panama City Site Office survey crew (led by Danny Freeman) met with Joanne Brandt (CESAM-PD-EI) and Jerry Ziewitz of the U.S. Fish and Wildlife Service (USFWS), Panama City Field Office, to establish an acceptable protocol for surveying and mapping of Gulf Sturgeon spawning habitat on the upper Apalachicola River. Gulf sturgeon utilize hard bottom habitat areas for spawning activities, in particular substrates with irregular surfaces that provide attachment for sturgeon eggs and shelter for non-free swimming larval stages. Preferred habitat areas are comprised of lime rock ledges, hard clay substrates, and gravel bars in areas of sufficient flow to wash the surface clean of sediments and debris, but with currents not so swift that the eggs or larvae would be washed off the site. USFWS had previously identified the following seven locations of suspected suitable habitat between Jim Woodruff Dam and Bristol, Florida:

Site 1: NM 104.5 5o NM 106.5 at base of Jim Woodruff Dam
Site 2: NM 100.2 to NM 100.3, immediately above I-10 bridge
Site 3: NM 98.7 to Nm 99.3, below I-10 bridge
Site 4: Approximate NM 93.5, below Ocheesee Landing
Site 5: NM 92.3 to NM 92.6 at Rock Bluff Landing
Site 6: NM 83.8 to NM 84.4 at Alum Bluff
Site 7: NM 80.4 to NM 81.2 above Bristol Boat Ramp

In addition to these seven general locations, the Mobile District had identified several additional possible rock habitat areas, which were clearly noted as possible navigation hazards on the Apalachicola River Charts based on photography taken in 1985 and 1993, or known from previous rock removal efforts undertaken in the 1980s related to maintenance of the Federal navigation channel. These additional potential habitat areas include the following locations:

NM 103.3 – 103.2 (left bank and right bank), near mouth of Jackson County Port Canal
NM 103.1 – 103.0 (right bank) at Banks Landing
NM 101.0 – 100.9 (left bank) at Disposal Area 147A
NM 95.2 – 95.0 (left bank)
NM 94.0 - -93.2 (right bank)
NM 86.1 (left bank)

3. We began by conducting a "recon" survey effort to locate each of the above potential spawning habitat areas and identifying the upstream and downstream boundaries of the "study area" for each site. We then described the relative location (right bank or left bank) and type of habitat, and recommended the relative number of survey cross-sections and/or spacing of cross-sections to be taken through each habitat area. It was agreed to follow-up at a future date to map the areal extent of the each habitat area (upstream and downstream boundaries, and waterward extent of rock ledge or hard bottom substrate) using a Ponar sampling device or other suitable means. GPS coordinates would at that time be collected by the team for each of the points defining the areal extent of the site. Coordinates for the boundaries of the delimited sites be superimposed on the survey drawings to assist in preparing the surveyed maps.

4. On 23 October, Jerry and I were joined by Marilyn Phipps, Mobile District Public Affairs Officer, in efforts to characterize the bottom substrate for a number of the sites using the Ponar sampler and to develop recommended procedures for mapping the sites at a future date. Attached are sketched maps showing the location of each site and the minimum number of cross-sections agreed to for each site; as well as a summary of the bottom characteristics for those sites sampled. The Ponar sampler was successful in identifying the bottom substrate (hard bottom, gravel bottom or sand/silt bottom) in most cases. However, at least one or two locations within Site 1 appeared to provide diverse habitat (i.e., sand bottom interspersed with rock outcroppings) and may require the use of divers or other means to more clearly characterize the site(s) and determine suitability for spawning habitat.

5. The Panama City Site Office survey crew will collect cross-sections and prepare survey maps for the above sites as described in this MFR. Cross-sections will extend across the entire river channel and up the bank within rock ledge areas; using hydro and terrestrial survey techniques as necessary. A follow-on site mapping effort will be scheduled with Jerry Ziewitz, Joanne Brandt and the Panama City Site Office survey crew to map the upstream and downstream boundaries and areall extent for each of the sites, hopefully during the weeks of 4 November and/or 11 November. In the meantime, Jerry agreed to consult fishery experts familiar with Gulf sturgeon spawning habitat requirements for additional guidance on whether a particular substrate type would provide suitable spawning habitat.

Attachments

JOANNE BRANDT
Biologist/Compliance Manager
Inland Environment Team

CESAM-PD-EI 31 October 2002
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CF:

Jangula/Freeman/CESAM-OP-GE
Peck/Findley/CESAM-PD-EI
McClellan/CESAM-PD-E
Ziewitz/USFWS, Panama City Field Office

Field Notes
Potential Sturgeon Spawning Habitat Areas
22-23 October 2002

Site 1:
Upstream boundary: NM 106.5
Downstream boundary: NM 104.5
Prelim Site Description: Upper reach is cobble gravel bar located on left bank below Jim Woodruff Powerhouse, overlain with Corbicula shells (Asiatic clam), both live and dead shells. Jerry says he previously sampled deeper areas at this site with a Ponar and found only Corbicula shells on the surface. In the mid-1990s when the outer 1/3 portion of this site was removed to correct an adverse cross current at the Jim Woodruff lock approach, the site was comprised of coarse cobble on the surface and supported a diverse community of mussels, although Corbicula populations were increasing. Lower reach is rock ledge on left bank.
Survey Cross-sections: For upper reach of Site 1 (gravel bar), collect a cross-section at the buoy line below the Powerhouse and approximately 3 additional cross-sections through gravel bar, and a cross-section immediately above the U.S. Highway 90 bridge. For lower reach of Site 1 (rock ledge), collect a cross-section at the navigation buoy, and approximately 4 additional cross-sections through the rock ledge between the buoy and the railroad bridge, and an additional cross-section immediately downstream of railroad bridge. Downstream boundary for Site 1 study reach is the upper tip of the island located below the railroad bridge. Map boundary of exposed upstream tip of island only up to treeline to determine elevation and areal extent. No need to extend cross section through island. (Jerry will check with Frank Parauka to determine if he specifically intended to include the upstream tip of the island as suitable sturgeon spawning habitat.)
Ponar Sampling:

NM 106.0 (23 Oct, 9:00 a.m.): Upper reach of Site 1, gravel bar on left bank. A Ponar sample was taken in 1 to 2-foot water depth at a location just east of the gravel bar, and within the tailrace channel cut through the gravel bar. A layer of sand/silt and Corbicula appear to be overlaying the gravel bar. Lots of willow growth (2 to 3 years of age) was observed growing on the surface of gravel bar. This site, as is, does not provide suitable sturgeon spawning habitat due to accumulated silt/sand and dense layer of Corbicula shells on the surface; however, it is possible that a future flood could wash the surface clean of the accumulated sand/silt and re-establish the cobble/gravel substrate.

NM 105.4 (23 Oct, 9:30 a.m.): Lower reach of Site 1, upper end of rock ledge on left bank.
Sample 1 taken approx 50 feet from treeline on shore in 9-foot water depth. Ponar collected cobble and Corbicula indicating hard bottom surface.
Sample 2 taken 70-100 feet from treeline on left bank and approximately 40 feet east of red can navigation buoy in 10.5-foot water depth. Ponar collected more Corbicula shells and 2" diameter rock.
Sample 3 taken even with red can navigation buoy in 10.5-foot water depth. Ponar collected Corbicula shells but no sand. Bottom feels hard; signs of white clay observed on boat anchor.
Sample 4 taken midway between red and green can navigation buoys (mid navigation channel) in 11-foot water depth. Ponar collected Corbicula shells and one 2" diameter rock (no sand). Anchor was clean.
Sample 5 taken even with green can to approximately 20 feet west of green can on west edge of navigation channel in 9.5-foot water depth (boat was slowly drifting). Ponar collected Corbicula shells and sand.

Conclusion is that this is a hard bottom site extending from the left bank, with edge of exposed rock/hard bottom located somewhere between mid channel and the west edge of the navigation channel at the green can.

NM 105.3 (23 Oct 10:30 a.m.): Continuation of rock ledge on left bank, with boat lined up with iron pipe in the rock. This is the site where Jerry measured water depths in May 2002, demonstrating habitat that was exposed during low flows.

Sample 1 taken approximately 30 feet from exposed edge of rock and approx 20 feet east of red can navigation buoy in 6-foot water depth. Ponar collected Corbicula shells and three 1" to 2" diameter rocks, and a small amount of sand. Anchor was clean.

Sample 2 taken at 10:45 a.m. approximately 30 feet west of red can navigation buoy in 12-foot water depth. First two Ponar samples came up empty; 3rd sample at this location collected 5" to 6" piece of limerock. (Note: Jerry says in May 2002 he observed sand off edge of exposed rock ledge; we are finding rock. Therefore, it is likely there are discontinuous outcroppings of rock extending into the channel.)

Sample 3 taken at 11:15 a.m., lined up with the iron pipe in the rock ledge and the upstream, green can navigation buoy, approximately 100 feet off the west bank of the river, in approximate14-foot water depth. Current is swift in this reach. Ponar collected Corbicula, small amount of gravel and detrital debris. (Note: Due to discontinuous outcroppings and gravel deposits contributing to the complexity of this site, it may be useful to employ divers to characterize this site. Jerry will also consult sturgeon experts to determine whether this type of site would be used by sturgeon for spawning.)

Jackson County Port Canal Site:

Upstream boundary: 103.7

Downstream boundary: 103.0

Prelim Site Description: Right bank rock disposal area on the extending upstream from Jackson County Port canal was used as a rock disposal site for removal of limerock outcroppings occurring within the navigation channel fronting the canal Rock was removed from location fronting the canal in the 1980s. Broken rock pieces placed in this upstream disposal site on the right bank vary from 6" to 8 " in size. Additional outcropping rock was removed from the navigation channel reach located under the power lines near Banks Landing, and placed within a rock disposal area located on the right bank under the overhead power lines. Rock in this disposal site also comprised of broken pieces of limerock.

Survey Cross-sections: Collect two cross-sections through rock disposal site located upstream of canal. Collect a cross-section across river at approximate centerline of canal. Collect two cross sections through rock disposal area located on right bank downstream of canal and under overhead powerlines.

Ponar Sampling (23 Oct 02):

Sample 1 taken at 11:50 a.m. at approx. NM 103.6 near upper section of rock disposal area approximately 50 feet east of green can navigation buoy in 7.5-foot water depth. Ponar collected Coricula shells and dark mucky clay.

Sample 2 taken at 12:00 noon at approx. NM 103.6 closer to edge of rock disposal area in 5.8-foot water depth. Ponar collected Corbicula shells, mucky clay and a 3" diameter chunk of limerock. Concluded that rock disposal area does not extend beyond observable limits (rock was placed on top of soft bottom).

Sample 3 taken at 12:29 p.m. aligned with downstream edge of Jackson County Port Canal at approx. NM 103.2, approximately 25 feet off the left bank in 6.3-foot water depth (downstream edge of rock removal site). First Ponar sample came up empty. Second Ponar sample included

only a 4" diameter chunk of rock. Velocity measured at 1.8 ft/sec. Hard plastic clay observed on the anchor. Concluded this hardbottom habitat.
Sample 4 taken at 12:45 p.m. at NM 103.2 at approximate mid navigation channel in 13-foot water depth. Ponar collected Corbicula shells and clean pea gravel. Jerry took a photo of the Ponar sample. Velocity was measured as 3 ft/sec.
Sample 5 taken at approximately 12:55 p.m. at NM 103.2 near downstream edge of mouth of canal, approximately 50 feet off the right bank in 5.6-foot water depth. Ponar collected Corbicula shells, detrital debris and a dragonfly nymph. Velocity measured at approx. 2 ft/sec. Approximate GPS coordinates: 30°40'15.87" N; 84°52'40.30" W (± 23 feet).
Conclusion is that the rock ledge and hard bottom habitat extends from left bank to somewhere beyond the middle of the river channel.

Disposal Areas 147A on left bank and 147C on right bank:
Upstream boundary: NM 101.1
Downstream boundary: NM 100.9
Prelim Site Description: Apalachicola River Chart shows rock Disposal Area 147A at this location on the left bank and rock Disposal Area 147B on left bank immediately upstream (approx NM 101.3 to 101.5). Disposal Area 147C is designated in the FDEP permit to accept only sand material. Observations on site showed 147C suggested that this site was used as a previous rock disposal area. (Need to confirm nature of this site with bottom samples, etc.)
Survey Cross-sections: Three cross-sections to be taken through rock disposal area delimited within boundaries of Disposal Area 147C
Ponar Sampling: No Ponar sample taken yet at this site.

Site 2:
Upstream boundary: 100.4
Downstream boundary: 100.1
Prelim Site Description: Rock ledge area comprised of hard white clay rock located on right bank immediately upstream of Interstate 10 bridge. Ledge is terraced, indicating that the clay rock was probably removed from navigation channel, and apparently placed along the right bank in a rock disposal area located immediately upstream (see photos in Apalachicola River charts).
Survey Cross-sections: Two cross-sections to be taken through rock ledge area on right bank.
Ponar Sampling (23 Oct):
Sample 1 taken at 1:15 p.m. at approx. NM 100.1 at the edge of the first terrace in 8-foot water depth. Ponar sample collected hard-packed white clay. Velocity measured at approx. 2 ft/sec.
Sample 2 taken at 1:30 p.m. at NM 100.1 approximately 30 feet east of green can navigation buoy (within navigation channel) in 9-foot water depth. Ponar sample was basically empty with small pieces of hard white clay and floating algae.
Sample 3 taken at 1:40 p.m. just downstream of clay ledge outcropping in mid channel in 9-foot water depth. Ponar collected Corbicula shells and coarse gravel.
Sample 4 taken at 1:50 p.m. in mid channel off shore of clay ledge outcropping in 8-foot water depth. Ponar collected Corbicula shells, coarse gravel and sand. Velocity measured at approx. 3 ft/sec.

Site 3 near Aspalaga Landing:

Upstream boundary: NM 99.5 at downstream dike on right bank
Downstream boundary: NM 98.0 at downstream end of Disposal Area 141A
Prelim Site Description: Visible rock ledges along both right and left banks throughout this reach. Fine-ground (pulverized) lime rock also observed in some rock disposal areas along the banks (probably the result of previous blasting for rock removal – Danny Freeman says in early rock removals they blasted and then dug out the blasted/pulverized rock from the channel; in later rock removal effort they just dug out rock in chunks.)
Survey Cross-sections: Collect cross-sections every 500 feet where rock is visible along the shoreline (Minimum of 1 to 2 cross-sections in each observed rock ledge or rock disposal area). For other portions of this reach collect sections at 1000-foot intervals.
Ponar Sampling: No Ponar samples collected yet at this reach.

Rock Shelf at NM 95.2:
Upstream boundary: NM 95.3
Downstream boundary: NM 94.9
Prelim Site Description: Apalachicola River Charts show a rock ledge on left bank between NM 95.0 and 95.2.
Survey Cross-sections: Two cross-sections to be collected through the rock ledge.
Ponar Sampling: No Ponar samples collected yet at this reach.

Site 4 Downstream of Ocheesee Landing:
Upstream boundary: NM 94.0 at Ocheesee Landing boat ramp
Downstream boundary: NM 92.7
Prelim Site Description: Original boundaries of Site 4 designated by USFWS included a small segment at approx. NM 93.4 to NM 93.5. Apalachicola River Charts show an extensive rock ledge on the right bank from NM 94.0 to NM 93.2, and a rock disposal site on the left bank from approx NM 92.7 to NM 93.2 (at downstream end of Disposal Area 135A). It was agreed to extend the Site 4 study limits accordingly to encompass the extension of the rock ledge and the rock disposal area. Downstream boundary of extended Site 4 is therefore contiguous with upstream boundary of Site 5. Rock ledge on right bank just downstream of Ocheesee Landing boat ramp is grey rock ledge extending into river and is overlain with white marl clay.
Survey Cross-sections: Same guidance as for Site 3: take cross-sections at 500-foot intervals where rock ledge or rock disposal area is visible along bank (minimum of 1 or 2 sections through each rock ledge or rock disposal area); and sections at 1000-foot intervals in all other portions of this reach.
Ponar Sampling: No Ponar samples collected yet at this reach.

Site 5, Rock Bluff:
Upstream boundary: NM 92.7
Downstream boundary: NM 92.3
Prelim Site Description: USFWS map shows rock ledge at NM 92.6 to 92.3. It was agreed to extend the upstream boundary to make Site 5 contiguous and continuous with the upstream Site 4 boundary.
Survey Cross-sections: Two sections to be taken through this site.
Ponar Sampling: No Ponar samples collected yet at this reach.

Rock Outcropping at NM 86.1:
Upstream boundary: 86.1
Downstream boundary: 86.0
Prelim Site Description: Rusty colored sandstone/rock outcropping on left bank. Appears as several large boulders clustered and scattered along the bottom.
Survey Cross-sections: One cross-section through this site.
Ponar Sampling: No Ponar samples collected yet at this reach.

Site 6 (Alum Bluff):
Upstream boundary: NM 84.5
Downstream boundary: NM 83.8
Prelim Site Description: Alum Bluff on left bank, comprised of clay, gravel, sand and limestone on the bank; steep, very tall vertical bluff.
Survey Cross-sections: Cross-sections to be taken at 1000-foot intervals throughout this reach. Topo survey to extend up ledges at base of bluff.
Ponar Sampling (22 Oct):
Sample 1 taken approx 30 feet off left bank at upstream end of Bluff in approx 17-foot water depth; area of strong current on outside bend of river. Ponar sample indicates hard marl clay on bottom, washed clean due to strong current.
Sample 2 taken immediately downstream of rocks in channel. Ponar collected fine and coarse sand.
Sample 3 taken at upper third of bluff approx. 25 feet off the left bank in 20-foot water depth, still along outside bend and in stiff current. Ponar sample came up empty, indicating a hard bottom (no sediments).
Need to determine suitability of this site due to strong currents.

Site 7, Limerock Bluff at Bristol Boat Ramp:
Upstream boundary: NM 81.4
Downstream boundary: NM 80.2 at Bristol Boat Ramp
Prelim Site Description: Limerock bluff beginning approximately 200 feet upstream of Bristol Landing. Hard clay bottom substrate, with sandstone interspersed in the upstream third of the site. Upstream end of bluff is plastic grey clay and sand.
Survey Cross-sections: Sections to be taken at 1000-foot intervals. Topo surveys to map clay ledge at base of bluff.
Ponar Sampling: No Ponar samples collected yet at this reach.

[See also attached Plates 1 – 7 from FDEP Permit No. 129424001-DF with notes.]