

MEMORANDUM FOR RECORD

SUBJECT: Savannah Harbor Expansion Project;
Summary of 19 December Interagency Meeting on Evaluation of Fisheries

- Attendees:
ATM/GPA: Bo Ellis
Bridget Callahan
COE: Bill Bailey

By phone:

- USFWS: Ed Eudaly
NMFS: Prescott Brownell
SCDNR: Mark Collins

- The Agenda is attached.
- The following is a summary of the discussion and does not include all the information that was presented or all comments made during the discussion.
- I reviewed our previous meeting and the major conclusions we reached. We completed our work on the Striped Bass application. We decided that no further work was needed to attempt to use the Hydrodynamic Model to the Habitat Suitability Indexes for the following species: Atlantic sturgeon; Red drum; Spotted seatrout; Blue crab; and Shrimp. We will continue work on Shortnose sturgeon; Southern flounder; and American shad.

Review of the Habitat Suitability Index models for red drum, seatrout, crab, and shrimp revealed that these models were generally not designed for use in evaluating changes in salinity or dissolved oxygen. That does not mean that those species are not affected by changes in salinity and D.O., but the models were designed to assess changes in other habitat variables. Rather than spend time developing modified models responsive to D.O. and salinity, it was realized that other species and key life stages could be employed as surrogates for the estuarine fish community. Accordingly, a focus on Shortnose sturgeon, Southern flounder, Striped bass and American shad is appropriate for initial habitat analysis employing the Hydrodynamic Model.

- We started with a **clarification of the use of the Hydro Model to determine minimum levels of dissolved oxygen (D.O.)**. We had discussed this at our previous meeting, but I was uncertain of exactly what information we should ask the model to produce. We decided that the 5 percent occurrence values should be identified as a measure of the minimum D.O. levels in the estuary. This data should be reported every

0.2 mile along each river in the estuary. The information would not be part of the habitat suitability criteria, but would be additional information to assess the general fishery habitat conditions in the estuary under those flow conditions. At this point, we will request this information for every species that we use the Hydro Model to assist in the evaluation of project impacts.

The Hydro Model can display zones (spatial distribution) of dissolved oxygen under test scenarios. We will then be able to identify changes in area of available suitable habitat under the various test scenarios. The reporting of minimum levels of D.O., as discussed in the previous paragraph) will also allow us to identify any areas with D.O. problems that may develop under the test scenarios.

6. We then discussed **Southern Flounder**. Bridget had been somewhat unsure of what actions she needed to take. Because of the seasonal differences in their occurrence in the harbor, we agreed that the analysis should evaluate habitat for both adults and juveniles. By this decision, we substituted juveniles for larvae from the position we reached at our last meeting. This substitution is due to (1) the occurrence of juveniles in the estuary over a longer duration than larvae, and (2) the temporal overlap of adult's occurrence with that of larvae. Juveniles are present in the estuary over the spring, summer and fall months. We will evaluate the summer months, since the habitat will be most limited during that period due to the requirement for relatively higher D.O. levels. Bridget will review the HSI criteria for D.O. to determine the 0.7 suitability threshold. We expect it is around 4.0 mg/L. Unless she uncovers something to indicate that is not a good number to use, we will use 4.0 mg/L as our criteria. The location in the water column where that would be determined is at the bottom. Bridget will revise the application for this species prior to our next meeting.

7. We then discussed **American shad**. Bridget reviewed that the studies for the HSI had been conducted primarily in northern areas. As opposed to behavior in the north, it is believed that for American shad in the south, (1) adults are not repeat spawners, and (2) juveniles overwinter in the estuary. This species uses two types of habitat in the Savannah River: (1) Riverine -- spawning adults, freshwater, January to May, and (2) Estuary -- juveniles and migrating adults, emergent or submerged vegetation is important, November to March. **We will consider that shad juveniles may be in the estuary at any month of the year, particularly summer months, not limited to November to March.** Relatively high D.O. is needed by this species. Juveniles need >3.0 mg/L for equilibrium. In the Temporal and Spatial Distribution Study conducted in this estuary, shad were found at locations with D.O. ≥ 4.1 mg/l. We decided to use 4.0 mg/l as our criterion for acceptable habitat. There is no need to look further at adult habitat because they move through this harbor when the water is cooler, and therefore when the D.O. is higher. We will look at juveniles and use the following criteria: summer months; D.O. ≥ 4.0 mg/l; bottom layer. Bridget will revise her write-up to include our conclusions and any other information she may find from additional research.

8. We discussed **Shortnose sturgeon**. Salinity and D.O. are critical water quality parameters. In the summer, sturgeon move upriver out of the harbor. Pres indicated we may want to consider designating an “Area of Concern” where no impacts are desired. This area is just above the mouth of the Middle River, where SCDNR found sturgeon during the winter in their most recent monitoring. This designation would be separate from any habitat areas identified by the Hydro Model. **He and Mark will try to identify those areas, based on the telemetry study experiences, prior to the next meeting.** We agreed that we should look at both winter and summer conditions, since it is believed that these are the two seasons in which the fish are under the greatest environmental stress. Pres will document his and Mark’s findings and our discussions, and prepare a paper describing the habitat criteria we could use to identify suitable habitat in the Savannah River estuary.

9. Next meeting: Preliminary date: Tuesday, January 28 starting at 9:30 AM.

William Bailey
Environmental Resources Branch

