

Scope of Work

Preparation of a Summary of Ecological Information to Support Environmental Flow Recommendations by the Sabine/Neches BBEST

The contractor will review literature, most of which has already been compiled for the Sabine/Neches BBEST, and summarize the following information for focal aquatic and riparian species within the Sabine and Neches river basins: (a) basic life history and ecological information including, environmental requirements for reproduction and recruitment into the adult population; (b) habitats used by various life stages; and (c) behavioral, physiological, or demographic responses to short-term or long-term variation in flow velocity or flow regime. Some of this basic information is available from studies performed within the Sabine and/or Neches river basins, but other information is available in literature summarizing findings from other river basins. For example, several of the fish species examined during a recent instream flow study of hydraulic habitat in the Lower Colorado River, Texas, (Bio-West. 2007. Draft Instream Flow Guidelines Development, BIO-WEST, Inc., Round Rock, Texas) also inhabit the Sabine and Neches rivers. It is anticipated that approximately 10-20 focal species will be identified by the Sabine/Neches BBEST in consultation with the contractor and staff of state agencies involved in the Texas Instream Flow Program (program information is available at

<http://www.twdb.state.tx.us/InstreamFlows/index.html>

Members of the Sabine-Neches BBEST will provide guidance with regard to focal species that are sensitive to flow variation or serve as valuable indicators of the overall status of the ecosystems. These focal species will include fishes, mussels or other aquatic macroinvertebrates, and endemic wetland or floodplain plants, such as hardwood forest species. Focal species also include endemic threatened or endangered taxa. Our focus is not only instream habitats, but also floodplain habitats associated with mainstem and tributary channels that have permanent or periodic surface connections with these channels (e.g., connected backwaters, oxbow lakes, perched wetlands, bottomland forests). The contractor may suggest to the Sabine/Neches BBEST additional focal species during the review.

Information sources already have been compiled and are available at

<http://www.sratx.org/BBEST/Library.html>

The contractor will consult with Sabine/Neches BBEST member, Dr. Matthew McBroom, Stephen F. Austin State University (mcbroommatth@sfasu.edu), who is conducting a literature review under a project with the Texas Water Development Board entitled "State of the Current Knowledge of the Angelina-Neches River Basin Area, Texas Instream Flow Program".

The deliverable will be a summary report that includes: (a) verbal summaries of dependencies of focal species with regard to habitat conditions, especially as affected by flow

variation and seasonality; (b) graphical or tabular summaries of population abundance or biodiversity trends (when suitable data are available) within the basins; and (c) graphical representations and/or charts revealing key relationships between flow variation and the ecology of focal species at the individual or population level. The contractor and the Sabine/Neches BBEST will work together to determine the format requirements of this document, but an example of a similar document can be obtained at

<http://wfsc.tamu.edu/winemiller/lab/PDFs/TAMU%20Caddo%20summary%20rpt.pdf>

The draft version of the summary report, in electronic format, must be provided to the Sabine/Neches BBEST no later than August 15, 2009.

Questions may be addressed to: Dr. Kirk Winemiller, Texas A&M University
979-845-4096
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Scope of Work

Preparation of a Summary of Ecological Information to Support Environmental Flow Recommendations by the Sabine/Neches BBEST

The contractor will review literature, most of which has already been compiled for the Sabine/Neches BBEST, and summarize the following information for focal plant and animal species within the Sabine/Neches estuary (Sabine Lake): (a) basic life history and ecological information including, environmental requirements for reproduction and recruitment into the adult population; (b) habitats used by various life stages; and (c) behavioral, physiological, or demographic responses to short-term or long-term variation in salinity or other environmental aspects related to freshwater inflow dynamics (e.g. primary productivity). Some of this basic information is available from studies performed within Sabine Lake, but other information is available in literature summarizing findings from other estuaries. It is anticipated that approximately 10-20 focal species will be identified by the Sabine/Neches BBEST in consultation with the contractor and staff of state agencies involved in the Texas Bay and Estuary Study Program; program information is available at

http://www.twdb.state.tx.us/data/bays_estuaries/bays_estuary_toc.asp

Members of the Sabine-Neches BBEST will provide guidance with regard to focal species that are sensitive to salinity and freshwater inflow or serve as valuable indicators of the overall status of the ecosystem. These focal species will include fishes, mussels or other aquatic macroinvertebrates, and endemic wetland plants, such saltmarsh grasses. Focal species also include endemic threatened or endangered taxa. The contractor may suggest to the Sabine/Neches BBEST additional focal species during the review.

Information sources already have been compiled and are available at

<http://www.sratx.org/BBEST/Library.html>

Two sources of summary information for Sabine Lake are the following:

TPWD. 2005. Freshwater Inflow Recommendation for the Sabine Lake Estuary of Texas and Louisiana. Texas Parks and Wildlife Department, Coastal Studies Program, Austin.

Turner Collie & Braden, Inc. 2005. Sabine Lake Ecological Condition of the Sabine-Neches Estuary. Sabine River Authority of Texas and Lower Neches River Authority.

TDWR. 1981. Sabine-Neches Estuary: A study of the influence of freshwater inflows. LP-116, Texas Department of Water Resources, Austin, TX.

The deliverable will be a summary report that includes: (a) summaries of dependencies of focal species with regard to habitat conditions, especially as affected by freshwater inflow

variation, salinity patterns and seasonality; (b) graphical or tabular summaries of population abundance or biodiversity trends (when suitable data are available) within the estuary; and (c) graphical representations and/or charts revealing key relationships between inflow and salinity variation and the ecology of focal species at the individual or population level. The contractor and the Sabine/Neches BBEST will work together to determine the format requirements of this document, but an example of a similar document can be obtained at

<http://wfsc.tamu.edu/winemiller/lab/PDFs/TAMU%20Caddo%20summary%20rpt.pdf>

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