

Peer Reviewers:

1. Dr. Boyd Kynard, Emeritus PI, Conte AFRC (USGS), Adj. Professor University of Massachusetts, BK-RIVERFISH, LLC.
2. Dr. Michael Parsley, USGS, Western Fisheries Research Center

General Comments:

I agree with the conclusion in Section 10 that the effects of the proposed license articles would provide little benefit to shortnose sturgeon recovery efforts and would continue to cause harm to the shortnose population within the Santee-Cooper basin and the larger Carolinian Province metapopulation.

Sections 1 through 6 present background information that sets the stage for the analyses in Section 7, the conclusions in Sections 9 & 10, and the development of reasonable and prudent alternatives in Section 11. The draft would benefit from additional detail in the background; I found that new information on dam operations appropriate for the background (primarily Section 3) was introduced in Sections 7 through 11.

Section 6.2.3 should identify an altered prey base as a consequence of dams. Dam effects on sedimentation, water surface elevations, and water velocities have been shown to alter benthic invertebrate communities, which could be tied to shortnose sturgeon feeding.

The reference to Counihan et al. (in press) in section 6.2.3.3 should be removed as this document is not “in press” and has not been published.

Section 6.2.3.4 should identify the potential for mortality of sturgeon during routine and non-routine turbine maintenance and startup.

Section 7.1.1.3 would benefit from a more detailed description of the physical design and operation of the St. Stephen fish lift. Please provide the difference in elevation between the forebay and tailwater.

Responses to Six Questions posed by NMFS:

1. Does the draft Biological Opinion fail to include any pertinent literature? If so, please identify omitted literature.

Several published reports would be useful to the analysis. Brent C. Knights, Jonathan M. Vallazza, Steven J. Zigler, Michael R. Dewey. 2002. Habitat and movement of lake sturgeon in the upper Mississippi River system, USA. Transactions of the American Fisheries Society 131:3, 507-522.

Parsley, M.J., C.D. Wright, B.K. van der Leeuw, E.E. Kofoot, C.A. Peery, and M.L. Moser. 2007. White sturgeon (*Acipenser transmontanus*) passage at The Dalles Dam, Columbia River, USA. Journal of Applied Ichthyology 23:627-635.

Van der Leeuw, B.K., M.J. Parsley, C.D. Wright, and E.E. Kofoot. 2006. Validation of a critical assumption of the riparian habitat hypothesis for white sturgeon. U.S. Geological Survey, Scientific Investigations Report. SIR 2006-5225.

2. Does the draft Biological Opinion correctly interpret results and apply them appropriately in reaching its findings?

The BIOP correctly interprets the information and applies them appropriately. Section 10 concludes that the proposed action is likely to jeopardize the species' continued existence. The presentation of results and interpretation of information available in the draft generally support this finding. The draft makes a good argument that passage for shortnose sturgeon will not be addressed by the proposed actions.

3. If you believe justification is lacking or specific information was applied incorrectly in reaching a conclusion, please specify.

Overall, the information was applied correctly. Section 7.3.4 inadequately assesses and interprets flow effects on habitat. Experts will disagree on the population-metapopulation issue.

4. Does the draft Biological Opinion utilize the best scientific and commercial data available?

The BIOP represents the best data available. However, the draft biological opinion supports its conclusions using information from a number of agency and technical reports that were not accessible during the review period.

5. Has the draft Biological Opinion adequately evaluated the potential effects of the action on shortnose sturgeon?

The BIOP correctly evaluates the effect of the action on shortnose sturgeon but does not address potential mortality of shortnose sturgeon during turbine maintenance or start-up operations. The Biological Opinion should also address the potential for take of shortnose sturgeon during periodic maintenance of existing and proposed fishways.

6. Was appropriate evidence provided to support conclusions regarding the influence of the proposed action on the shortnose sturgeon?

Appropriate evidence was presented to support conclusions regarding the proposed actions on shortnose sturgeon.