

Discussion of Dissolved Oxygen Needs Evaluation



Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Photo credit: Edith Carson (NOAA)



Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Water Quality Advisory Committee

March 29, 2018

Presented to an advisory committee of the DRBC on March 29, 2018.
Contents should not be published or re-posted in whole or in part without
permission of DRBC.

DO Needs Evaluation

- * Described in nutrient criteria development plan (2013)
- * Actions required before rulemaking in Resolution 2017-4
- * Professional Services Contract with Academy of Natural Sciences of Drexel University (ANSDU)

Components of DO Needs Evaluation

- * Identification of key sensitive species
- * Times of year during which life-stages of key sensitive species are expected to be present in the Delaware Estuary
- * Spatial extent within the Delaware Estuary of life-stages of key sensitive species
- * Information sources pertaining to dissolved oxygen needs
- * Development of a table (or tables) of dissolved oxygen needs
- * Description and recommendations regarding appropriate exposure and averaging periods

Work in 2 Steps

Step 1: Develop the Methodology

- * Propose a methodology for evaluating dissolved oxygen requirements of multiple sensitive Delaware Estuary species at several life stages
- * Status: completed
- * http://www.nj.gov/drbc/library/documents/Methodology_Eval-Species-DO-Needs_ANStoDRBC_Mar2018.pdf

Step 2: Carry out the Methodology

- * Carry out the methodology developed in Step 1
- * To be initiated shortly
- * Anticipated *draft* ~ June 2018
- * Anticipated 60 day review time with WQAC, Fisheries Co-op, others

Table 1. List of fish species deemed sensitive to low dissolved oxygen based upon a primary literature search, their sensitivity by life stage, location within the estuary, and list of references.

Species	Common Name	General	Egg	Larvae	Juvenile	Adult	References
<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	-	-	-	P, F	-	16, 58, 102
<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	-	-	-	S, C	-	80, 81, 101, 102
<i>Anguilla rostrata</i>	American Eel	P, C	-	-	-	-	82
<i>Anchoa mitchilli</i>	Bay Anchovy	S, C	-	-	-	-	78
<i>Alosa aestivalis</i>	Blueback Herring	P, C	-	-	-	-	38, 86
<i>Alosa mediocris</i>	Hickory Shad	-	S, F	-	-	-	52
<i>Alosa pseudoharengus</i>	Alewife	-	S, F	S, F	S, C	S, M	38, 86
<i>Alosa sapidissima</i>	American Shad	-	S, F	-	S, C	S, M	38, 117
<i>Brevoortia tyrannus</i>	Atlantic Menhaden	P, M	-	-	-	-	15, 38
<i>Semotilus atromaculatus</i>	Creek Chub	-	S, F	-	-	-	71
<i>Ictalurus punctatus</i>	Channel Catfish	S, F	-	-	-	-	72

• • •

<i>Lepomis cyanellus</i>	Green Sunfish	P, F	-	-	-	-	119
<i>Lepomis macrochirus</i>	Bluegill	-	-	-	-	S, F	120
<i>Micropterus dolomieu</i>	Smallmouth Bass	S, F	S, F	-	-	-	39
<i>Micropterus salmoides</i>	Largemouth Bass	S, F	-	-	-	-	121
<i>Pomoxis annularis</i>	White Crappie	S, F	-	-	-	-	42
<i>Pomoxis nigromaculatus</i>	Black Crappie	S, F	-	-	-	-	41
<i>Pseudopleuronectes americanus</i>	Winter Flounder	-	-	-	S, M	-	118
<i>Paralichthys dentatus</i>	Summer Flounder	-	-	-	S, M	-	7, 34, 38, 118

Where: S = sensitive, P = likely to be sensitive, M = Marine, C = combination (oligohaline, polyhaline, mesohaline, or multiple), and F = freshwater.

Coordination

- * Shared draft Methodology (Step 1) with WQAC voting members, Fisheries Co-op, and PDE in early January 2018 for review
- * Coordinated comments with ANSDU
- * ANSDU responded to comments and incorporated as needed in Methodology

- * Anticipate longer review period and wider pool of reviewers for Step 2 draft product

DO Needs Evaluation

* Discussion & Questions?