



November 9, 2010

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**Re: Comments on Proposed Rule to list Three Distinct Population Segments of Atlantic Sturgeon in the Northeast Region**

Dear Ms. Colligan,

The Delaware Riverkeeper Network supports the proposal to list the identified distinct population segments of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) as endangered or threatened pursuant to the Endangered Species Act. In particular, we support the listing of the New York Bight Distinct Population Segment as endangered. But we ask you to consider the following modifications to your proposed actions:

- ✓ **We urge that the Delaware River population be delineated as its own Distinct Population Segment and be listed as endangered.**
- ✓ **We urge that the listing of the Delaware River population**, whether it be as its own Distinct Population Segment or as part of the NY Bight, **be listed on an emergency basis no later than the end of January 2011**, because in a single year's time there are a number of proposed projects that are proposed for forward movement that place this population in tremendous and irreversible jeopardy of harm.
- ✓ **We urge that as part of the listing you designate entire Delaware Estuary as Critical Habitat** to ensure the level of habitat protection necessary to sustain the population. Without the critical habitat designation the Atlantic Sturgeon may not have the level of protection they need to survive.

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**The Delaware River is home to a genetically distinct population of Atlantic Sturgeon and these must be identified and protected as an independent Distinct Population Segment.**

Study has demonstrated that there exists a distinct population of Atlantic Sturgeon that is unique only to the Delaware River. Although, many of the juveniles found in the Delaware River are likely not from this genetic stock – i.e. Atlantic Sturgeon spawned in other river systems are using the Delaware as nursery habitat – there is genetic evidence that there exists a specific Delaware River haplotype, i.e. a Delaware River-specific genetic line. According to scientific study, Haplotype A5 is private to the Atlantic sturgeon of the Delaware River. We submit for the record scientific studies/findings that substantiate this assertion.

New information is also emerging that there are known to be at least 5 different mothers from this unique genetic line that are spawning in the Delaware River. It is significant that there are known to be at least 5 because it shows an ongoing contribution to the genetic line by more than one. But 5 is also not that large a number and so this new information fuels the need for quick and significant protections to ensure that the number of mothers contributing to the genetic diversity of the Haplotype A5 line are not just protected but are allowed to increase so as to strengthen the future viability of this genetically unique population of Atlantic Sturgeon found here in the Delaware River.

The Endangered Species Act encourages listing of distinct population segments (DPS) of species in order to ensure conservation of genetic diversity. DPS is based on population discreteness and their significance to the species. The Delaware River has its own distinct genetic line; it is unique, different and distinct from all other Atlantic Sturgeon. As such, under the law, it should be protected from extinction in its own right, regardless of the listing of other Atlantic sturgeon population segments.

**The Delaware River population of Atlantic Sturgeon is on the brink of extinction and should be listed as federally endangered in its own right. To lump the Delaware River and Hudson River populations together gives a dramatically inaccurate picture of the health of our Delaware River population and may deny them the level of protection needed to avoid extinction.**

Grouping the Delaware River population with the Hudson River population of Atlantic sturgeon, as has been proposed in the listing petition, fails to provide an accurate reflection of the status of the Delaware River population and would fail to provide the appropriate level of protection. While the Hudson River population has remained relatively robust throughout the 20<sup>th</sup> century, the Delaware River population was almost completely extirpated by around 1900 and has demonstrated little recovery since that time. The Hudson and Altamaha “are presumed to have the healthiest Atlantic sturgeon subpopulations within the United States.” By comparison, the Delaware River, genetically unique stock, is among those in the worse shape. And while the Hudson River population of Atlantic sturgeon is characterized by some as growing, the Delaware River population is shrinking.

According to NMFS, the abundance estimate for Atlantic sturgeon belonging to the NY Bight DPS is 870 spawning adults per year for the Hudson River population. NMFS has characterized the Hudson as one of two rivers nationwide that are believed to have the healthiest Atlantic sturgeon populations today. All other rivers are predicted to have fewer than 300 spawning adults; in the case of the Delaware it is believed by some expert that there are fewer than 100 spawning. If the Delaware population is lumped in with the Hudson River population there is an appearance that the population is much healthier than in fact it is; the Hudson River figures would bootstrap up the Delaware River figures.

By lumping the Delaware River stock in with the Hudson River stock we are actually giving the Delaware River population a lesser level of protection than it needs or is entitled to. The level of protection, and the long term need for protection, may be deemed lesser for the Delaware River population when included with the Hudson River population because when looked at on average, as a whole, the Delaware River population looks to be in a healthier state than it in fact is. Thus including it as part of the NY Bight, rather than as it's own DPS, will reduce the level of protection provided the Delaware River population, to its long-term detriment and possible extirpation.

**The Delaware River population of Atlantic Sturgeon faces an array of threats and harms from federally permitted/approved projects that are on a trajectory for fast implementation. An “endangered,” listing and critical habitat designation, provided on an emergency basis, put in place before the end of January 2011, is critical for preventing and/or minimizing impending harm to the Delaware River population of Atlantic Sturgeon.**

An endangered listing decision for the Delaware River population, whether as its own DPS or as part of the NY Bight DPS, must be done on an emergency basis and at a minimum be made before the end of January, 2011. It is believed that the State of Delaware will be making its final permitting decision for the Delaware Deepening, specifically identified by NMFS as a major threat to the Atlantic sturgeon population of the Delaware River and therefore the NY Bight, sometime in the month of February. In order to ensure that the “endangered species” designation be granted at a time when it will inform this permitting decision-making, it needs to be completed before that final decision is made and issued.

Furthermore, there are a number of projects on the fast track for implementation that have the potential to significantly affect the Atlantic Sturgeon of the Delaware River. Emergency listing is necessary in order to ensure these projects do not move forward without full consideration of their effects on the Atlantic sturgeon of the Delaware River. Projects include:

- ✓ Delaware Deepening
- ✓ Southport River fill project
- ✓ Airport expansion project
- ✓ Natural gas drilling using hydraulic fracturing in the Upper Delaware and Schuylkill River watersheds and the Delaware River Basin Commission’s Flexible Flow Management Plan
- ✓ LNG Crown Point project

### **Harms Posed by the Delaware Deepening**

Dredging of river systems significantly affects aquatic ecosystems in a way that is harmful to Atlantic sturgeon. These are among the effects that the Army Corps of Engineers' proposed Deepening Project will have for the Delaware River population of Atlantic sturgeon:

- ✓ Dredging activities remove, disturb, dispose of and re-suspend river sediments, modifying the river bottom substrate and impacting the community of benthic microfauna,
- ✓ Dredging operations can remove or bury organisms and destroy benthic feeding areas,
- ✓ Dredging operations can create noise and disturbance, and can disrupt spawning migrations,
- ✓ Dredging activities can re-suspend contaminants, affect turbidity and siltation, and deposit fine sediments in spawning habitats.
- ✓ Dredging activities alter the hydrodynamic regime, alter physical habitats, and create the loss of riparian habitat.

In addition,

- ✓ Reach B of the Deepening Project is likely to have particularly significant impacts on the Atlantic sturgeon through both direct take and indirect take. Reach B is located near Marcus Hook, PA, and will construct a two-space anchorage to a depth of 45 feet. (*Army Corps 2009 Environmental Assessment<sup>1</sup> (EA) at 16.*) The Deepening Project's activities proposed for Reach B, namely rock blasting approximately 77,000 cubic yards and hydraulic and hopper dredging, pose significant threats of killing Atlantic sturgeon directly as well as destroying essential habitat, including spawning habitat, and degrading water quality.
- ✓ The Army Corps has not provided needed/recommended assurances regarding the protection of Atlantic sturgeon during construction of the Deepening Project. Specifically, the Army Corps noted in its 2009 EA:

To protect Atlantic sturgeon, the Delaware Basin Fish and Wildlife Cooperative has recommended various windows for hopper dredging, cutterhead pipeline dredging, bucket dredging and blasting. All of these windows will be met during construction of the deepening project except for hopper dredging in Delaware Bay. In Delaware Bay (mouth to River mile 32) ["Reach E"] the Cooperative recommends restricting hopper dredging between 1 June and 30 November. Because of a competing restriction with over wintering blue crab it is not possible to observe this restriction.

EA at 140.

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<sup>1</sup> The Delaware Riverkeeper Network, representing a coalition of environmental groups, as well as the New Jersey Department of Environmental Protection have brought suit against the Army Corps in federal district court in New Jersey challenging, *inter alia*, the sufficiency of this Environmental Assessment both procedurally and substantively under the National Environmental Policy Act.

- ✓ Furthermore, the Deepening project will move the salt line further up River. The increased saltwater intrusion resulting from deepening the River would continue to reduce the amount of spawning habitat available to the Atlantic Sturgeon with unknown affects.

#### Direct Take and Habitat Destruction by Blasting:

Despite Army Corps claims to the contrary, studies and data suggest the rock blasting required for the proposed Delaware River Deepening project could significantly jeopardize the population of federally endangered Shortnose sturgeon as well as the Atlantic sturgeon in the Delaware Estuary. After years of asserting that sturgeon would not be present at Marcus Hook during blasting the Army Corps has finally been forced to admit that is not in fact the case (see *May 21, 2010 letter from Army Corps to DNREC – “The Philadelphia District recognizes that sturgeon, including juvenile Atlantic sturgeon, utilize this area year round and it is not possible to time dredging or rock blasting activities to avoid their presence.”*)

According to the NJ Division of Fish & Wildlife, “The spawning area for Atlantic sturgeon ... may well be the rock outcropping at Marcus Hook that will have to be blasted”.

The September 2005 Army Corps commissioned study titled “*Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005*” acknowledges that:

“little is known regarding the occurrence and distribution of juvenile Shortnose sturgeon in the Delaware River.” “While blasting in the winter months should protect most fish species that use the Delaware River in the spring and warmer months, Atlantic sturgeon (*Acipenser oxyrinchus*) and Shortnose sturgeon (*Acipenser brevirostrum*) may be susceptible to blasting mortality if they use the Marcus Hook area during winter.” (*Versar Inc. prepared for the Army Corps of Engineers, Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005, September 2005*)

In fact, during this study, Sturgeon were observed near the Marcus Hook area during the winter time frame when they would be at risk from planned deepening activities including blasting. The DRBC agrees with this assessment of the report:

“Specifically, the 2005 study suggests that sturgeon are present at Marcus Hook and Trenton during winter months, as opposed to being present only during migration, and that sturgeon may be less likely to avoid a working dredge or blasting than previously believed.”

Additionally, while the study did find more sturgeon located upriver than down, sturgeon were observed near the Marcus Hook area during the winter time frame at issue – the study determined that the relative sturgeon density in the Marcus Hook area was .005 fish per 100 meters thereby suggesting “that sturgeons are more dispersed in the Marcus Hook region of the Delaware River” than upstream. The study included amongst its conclusions:

“Although the video survey data suggests that large aggregations of sturgeon do not exist in the blasting area, impacts to even a small number of Shortnose or Atlantic Sturgeon may not be acceptable to fisheries agencies.” (*Versar Inc.*)

*prepared for the Army Corps of Engineers, Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005, September 2005)*

It is important to note that this study was based on one winter's data and so the language attempting to minimize use of this reach of the River by Atlantic sturgeon, in light of all other research and expert opinion out there, does not hold great weight – what is most important is that it was proven Atlantic sturgeon will be found in the blast zone when blasting happens

While the study discusses concepts for deterring sturgeon from entering the blasting zone during the critical period, the report concluded:

“At present, there is no ‘out-of-the box’ behavioral deterrent system for excluding sturgeon from an underwater blasting area.” (*Versar Inc. prepared for the Army Corps of Engineers, Delaware River Adult and Juvenile Sturgeon Survey, Winter 2005, September 2005*)

### Biological Windows Ignored

NMFS expressed concerns about impacts to Atlantic Sturgeon in its April 16, 2009 letter to the Army Corps on the Kelly Island and Broadkill Beach elements of the Deepening project:

“we are concerned that the deepening of the channel below river mile (RM) 32, and the construction of the Kelly Island and Broadkill Beach projects are scheduled during months that Atlantic sturgeon may be present in the project area and when the Delaware River Fish and Wildlife Management Cooperative has recommended that hopper dredges not be used. ... given the critically low population of Atlantic sturgeon in the Delaware River and the potential for the species to be listed as threatened or endangered in the near future, the ACOE should adhere to the recommended seasonable dredging restriction for hopper dredging below RM 32, and not dredge from June 1 to November 30.”

The Army Corps' response to this concern is that it will have observers who will monitor when harms are inflicted upon Atlantic Sturgeon during the work of the deepening project. Such monitoring will do nothing to protect the Atlantic sturgeon from harm and is not an appropriate response to the concerns of NMFS, NJDEP, the Delaware Riverkeeper Network and others for a species so unique and at such critically low levels in our River.

### Dumping at Buoy 10

The disturbance of benthic fauna, elimination of deep holes and alteration of rock substrates have been identified as of particular concern for Atlantic sturgeon. Atlantic sturgeon are substrate-dependent and as such have been shown to avoid soil-dumping grounds. The spoil disposal planned for Buoy 10 that is part of the deepening project would therefore be a concern for Atlantic sturgeon that we have not been considered or analyzed by the Army Corps for the deepening project.

### Take by Dredging Operations

Study has also shown that Atlantic sturgeon avoid areas where dredging operations are taking place. In addition, hydraulic dredging can entrain Atlantic sturgeon, taking them up into the dredge drag-arms and impeller pumps resulting in death.

### Diminishing Spawning Habitat

The Deepening project threatens spawning habitat for the Delaware River Atlantic sturgeon in a number of ways, including by blasting the rock ledge where spawning is believed to take place, and by decreasing the reaches of the River available for spawning as the result of salt water intrusion.

The current spawning areas for the Atlantic Sturgeon in the Delaware Estuary remain little known, although data demonstrates that spawning is occurring. Atlantic Sturgeon in general are believed to spawn in the flow water that is between the salt front and the fall line of the major river systems they spawn in. Spawning requires freshwater and a hardbottom substrate. Research is indicating that suitable spawning habitat may exist between Marcus Hook (RM 125) and Tinicum Island. Because of the availability of freshwater and hard-bottom substrates, potential spawning habitat is also believed to exist between Marcus Hook and Trenton.

Deepening of the Delaware River main channel and its maintenance dredging has increased the tidal range of the Delaware Estuary (See attached DiLorenzo et al., *Dredging Impacts on Delaware Estuary Tides*, Estuarine and Coastal Modeling III, Proceedings of the 3rd International Conference, Sept 1993 & *Anthropogenic Influences on the Morphology of the Tidal Delaware River and Estuary: 1877-1987*, by David R. Walsh, thesis for Master of Science in Marine Studies, Summer 2004). Consumptive use and water diversions up river have reduced freshwater flows. The combination of increased tidal fluctuation and reduced freshwater flows has caused saltwater to intrude into the freshwater-tidal reach of the estuary, depriving the Atlantic Sturgeon of freshwater habitat important for spawning. Ongoing dredging continues to change salinity and bottom habitats in a way that adversely affects the Atlantic Sturgeon and its habits. It is already believed that there may be a move up river as the result of increased saltwater intrusion. The proposal to deepen the Delaware River's main channel from 40 to 45 feet will exacerbate these conditions – moving the salt line even further up river and so further shrinking the available spawning grounds for the Atlantic Sturgeon.

According to the NJ Division of Fish & Wildlife “The spawning area for Atlantic sturgeon ... may well be the rock outcropping at Marcus Hook that will have to be blasted” as part of the deepening project. (NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007) The effects from the blasting, therefore, can be two-fold (1) the direct impact of harm from the blasting on sturgeon in the vicinity and (2) the unknown ramifications of physically altering this spawning habitat area, i.e. how will changing the rock outcrop affect the sturgeon in terms of their ability or willingness to use this area for future spawning?

### Harms Posed by Southport

The Southport Development project involves the filling in of 12.28 acres of open water (.2 of which is emergent wetlands, 1.08 acres of which is shallow water habitat, and 3.62 of which is deep water habitat); 3.75 acres of nontidal wetlands; .73 acres of a tidal drainage area; filling in an unspecified amount of floodplain lands with 3 to 4 feet of fill in order to raise the area to above the 100-year floodplain (in fact to raise it to the 200 year floodplain); dredging a 35-acre area within the River to a 40+2 foot depth; impacts to approximately 4600 linear ft of existing shoreline; the permanent loss of 1.08 acres of submerged aquatic vegetation; and having a 116

acre development footprint which will necessarily be on riverside lands and result in the loss of potential terrestrial habitat.

According to the listing proposal issued by NMFS the Atlantic sturgeon range is threatened/affected among other factors by:

- ✓ dredging and
- ✓ effects to water quality including dissolved oxygen levels, water temperature, and contaminants.

Southport includes 35 acres of deepening/dredging. It also will have important water quality effects, including impacts to Dissolved Oxygen levels through removal of water celery important for contributing oxygen to the water and introducing contaminants with resuspension of sediments and through disposal in the Fort Mifflin CDF known to be a source of contaminants from the sediments disposed there.

#### Dissolved Oxygen Effects

In one study, all Atlantic sturgeon exposed to oxygen levels of 3 mg/l at a temperature of 26C, when unable to otherwise access air, died. The DO criteria currently held by the DRBC for the Delaware Estuary is 3.5 mg/l. In the Philadelphia reach of the River even this low oxygen level is not always achieved. Research has shown that a combination of low dissolved oxygen, water temperature, and salinity can restrict available Atlantic sturgeon habitat and that by increasing oxygen levels the amount of habitat available can be significantly increased (13% in the Chesapeake Bay).

Southport is proposing damage/destruction to large swaths of habitat, including more than an acre of SAV dominated by wild celery. Because wild celery is a source of oxygen in this reach of the River where higher oxygen levels are needed, its effect on Atlantic sturgeon is of great concern.

#### Other Water Quality Harms:

According to the US Fish and Wildlife Service, samples for sediments to be used in the Southport project demonstrate “that contaminants are leachable from the sediments at concentrations that would pose unacceptable ecological risk to aquatic organisms.” This means that these sediments should only be used in areas where they will not be inundated during high water events and in a way that reduces their potential for leaching from precipitation. Considering that spoils from this project are planned to be disposed of in the Fort Mifflin CDF, there is a high potential for violating these concerns.

According to documents on the record the spoils from the Southport project are planned for the Fort Mifflin CDF. Fort Mifflin has been shown to effectively dump pollution back into the River from sediments disposed there rather than filter it out prior to discharge.

Dr. Thomas Fikslin with the Delaware River Basin Commission (DRBC) conducted a review of the overflow from confined dredge disposal areas associated with dredging projects in the Delaware estuary. Dr. Fikslin analyzed data from two existing dredge spoils disposal facilities - Money Island and Fort Mifflin. These areas receive sediments and water from Delaware River dredge operations. Sediments settle out in the area and the water is returned to the estuary. According to Dr. Fikslin's findings, these two CDFs, independently and collectively,

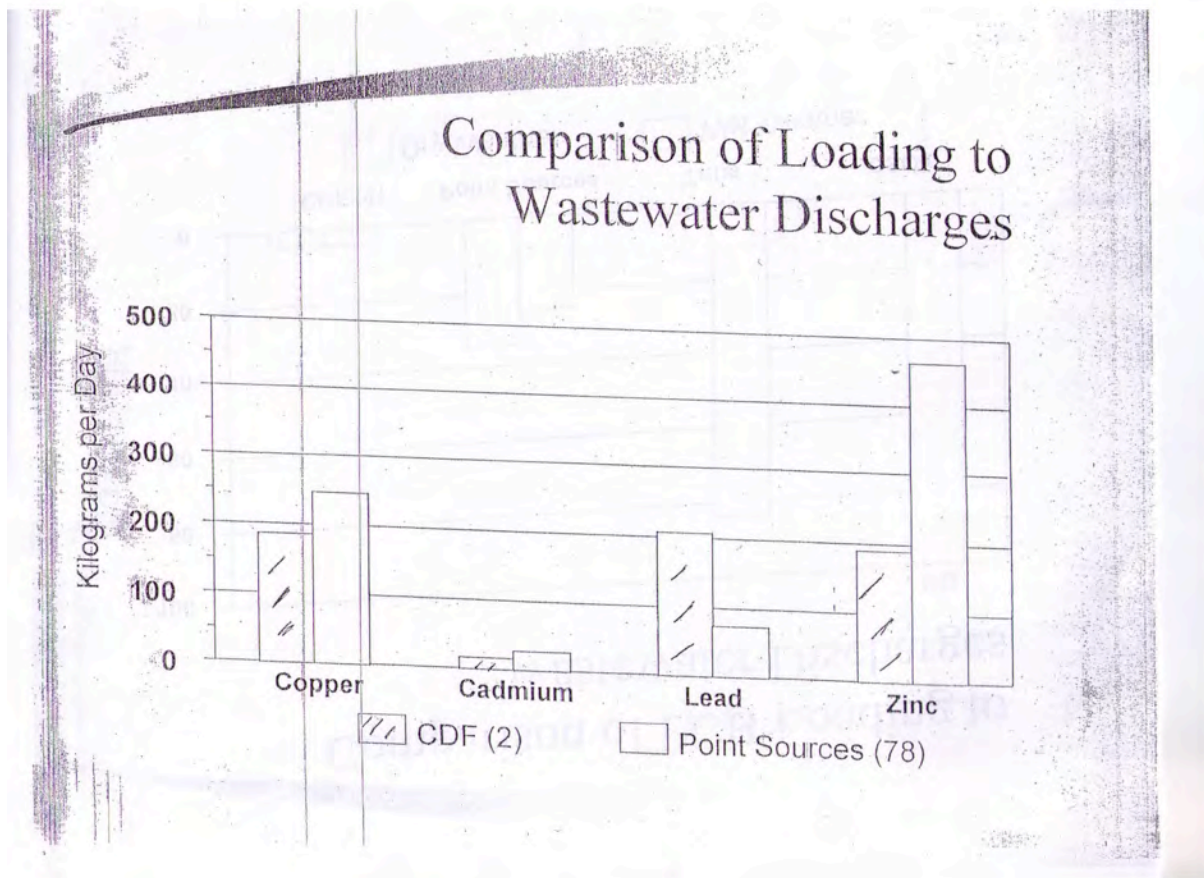


are a significant source of toxic pollution to the Delaware River. The findings demonstrate that these particular facilities do not effectively remove contaminants from the discharge water that goes back into the River. Among the toxics discharged to the River during the de-watering process at these facilities are Cadmium, Lead, Copper, Zinc and total suspended solids. In some instances, the discharge concentration exceeds the DRBC's acute and/or chronic criteria, although the DRBC criteria are for dissolved metals.

For example, the following discharges were identified at the two sites:

	<b>Money Island (total)</b>	<b>Fort Mifflin (total)</b>	<b>Acute Criteria</b>	<b>Chronic Criteria</b>
<b>Metals (ug/liter)</b>				
Lead	268.1	242.0	48	16
Copper	229.7	76.7	13.3	9.1

According to Dr. Fikslin, the two disposal facilities are the eighth largest discharger to the estuary and in the case of lead discharge more lead than all 78 point source dischargers to the estuary combined. (See chart below)



*Overhead slide from  
Dr. Tom Fikslin Presentation  
Nov. 4, 1998 at DRBC offices in  
West Trenton, NJ*

Dr. Fikslin also found that these CDFs are a source of DDE to the River, and a potential source of PCBs that have been documented in the sediments of the estuary. According to Dr. Fikslin, his preliminary evaluation "indicates that CDFs have the potential to impact aquatic life through acute and chronic toxicity, and human health through the bioaccumulation of organic compounds such as PCBs and DDX."

This research regarding Fort Mifflin CDF operations, coupled with the findings of the USF&WS demonstrate another threat to water quality posed by Southport.

According to NMFS, additional water quality concerns from Southport include "turbidity through the resuspension of sediments into the water column from dredging and port operations" degrading water quality, lowering dissolved oxygen levels, and potentially releasing "chemical contaminants bound to the fine-grained estuarine/marine sediments." Alterations to sedimentation and wave patterns caused by vessels entering and exiting the mooring area could also increase turbidity. "Suspended sediments mask pheromones used by migratory fishes, and can smother immobile benthic organisms and demersal newly-settled juvenile fish." (NMFS 10/22/2010)

These additional water quality issues identified by NMFS and the USF&WS on the record regarding the Southport project are directly relevant to the kind of water quality concerns facing and affecting Atlantic sturgeon.

#### Dredging and Construction Harms:

The proposed listing specifically identifies dredging as a factor in the destruction, modification, or curtailment of the Atlantic sturgeon's habitat and range. "Environmental impacts of dredging include direct removal or burial of organisms, elevated turbidity or siltation, contaminant resuspension, noise or disturbance, alterations to hydrodynamic regime and physical habitat, and loss of riparian habitat." 75 Fed. Reg. 61,872 (Oct. 6, 2010) at 61,882. NMFS further found:

Dredging and filling operations can impact important features of Atlantic sturgeon habitat because they disturb benthic fauna, eliminate deep holes, and alter rock substrates necessary for spawning. Deposition of dredge sediment has been shown to affect the distribution of Atlantic sturgeon. Dredging can also result in direct takes (killing and injuring) of Atlantic sturgeon. Such takes have the potential to affect the range of Atlantic sturgeon. *Id.* at 61,883 (citations omitted).

According to PA Fish and Boat representatives "the entire area from the interpier areas at the north end of the site all the way around to the south end of the site is valuable for young-of-year sturgeon, shad and striped bass."

NMFS, in its October 22, 2010 letter about the Southport project said “In-water construction activities can affect Shortnose and Atlantic sturgeon through direct injury or mortality, displacing species from the area, or by altering the habitat and destroying forage items.”

The Southport project involves significant amounts of dredging (35 acres), filling (over 12 acres in the River), and other in water construction such as the installation of pilings, thus raising significant potential for harm to Atlantic sturgeon known to use this reach of the Delaware River Estuary.

#### Harm From Vessel Strikes:

NMFS has determined vessel strikes to be a “significant threat” to the New York Bight DPS of which the Delaware population is a part. According to project supporters, Southport will result in increased vessel traffic to the Delaware River as far up as Philadelphia.<sup>2</sup> Increased vessel traffic means increased vessel strikes. The change in traffic patterns and vessel traffic on the Delaware River for Southport with both a 40 foot and a 45 foot channel were not part of any analysis for the Southport project with regard to its effects on Atlantic sturgeon.

#### ***Harms Posed by Airport Expansion***

The airport expansion being posed by the FAA is another River fill project, in this case the filling of 25 acres, that, according to NMFS’ comments, will contribute to changes in the hydrodynamic and sedimentation patterns of the Delaware Estuary. To the extent these changes further contribute to the changes that will be inflicted by the Deepening and Southport, it becomes another addition to the cumulative affects that could impact Atlantic sturgeon.

#### ***Harms Posed by Crown Landing LNG***

The Crown Landing site near Logan, New Jersey is believed to have been a historic spawning ground for Atlantic Sturgeon. This reach of the River was approved by the Federal Energy Regulatory Commission for construction and operation of a Liquefied Natural Gas import terminal. Construction of an LNG facility is likely to threaten the viability of the Delaware River population of Atlantic sturgeon. Dredging for construction and maintenance will be required for this facility. In addition, it is believed the facility will receive up to 150 shipments per year. LNG carriers take on ballast water as they offload in order to maintain stability – an estimated 8 million gallons will be pumped from the River over a 10 hour period while at the berth with an additional 5 to 11 million gallons being taken on after undocking downstream of the berth area. If still used by Atlantic sturgeon, entrainment and impingement of Atlantic sturgeon larvae is foreseeable.

#### ***Harms Posed by Natural Gas Drilling and DRBC FFMP***

The movement of the salt line has significant ramifications for the Atlantic sturgeon in that it reduces the freshwater/habitat available for spawning. Freshwater flows added upstream in the Delaware River are important for preventing the upward migration of the salt line. Because the Deepening project will result in a movement upriver of the salt line, what effect deepening will ultimately have on the salt line and Atlantic sturgeon spawning habitat is linked with the outcome of this upriver FFMP process and the new release program for freshwater flows.

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<sup>2</sup> Note -- according to the NEPA documents on the Deepening Project, the Army Corps has explicitly stated that the deepened channel will not result in increased vessel traffic and so the Army Corps discounted the possibility that the Deepening Project would create increased risk to sturgeon from vessel strikes.

In addition, at this time, there is a tremendous press from companies for new withdrawals from the River, withdrawals that are both consumptive and depletive to the River and therefore will further affect salt water intrusion and freshwater flow issues. New practices are being employed in drilling for natural gas: hydraulic fracturing and horizontal drilling. Each natural gas well, when hydraulically fractured (“fracked”), will require the use of 1 to 9 million gallons of water, an average of 4.5 million gallons, from the Delaware River system – the main stem, its tributaries, or groundwater supplies.

The DRBC estimates 10,000 as the minimum number of wells it expects to be drilled in the Delaware River basin while federal representatives recently projected 30,000 wells<sup>3</sup>. Professor Terry Engelder of Penn State University forecasts that the Marcellus will be a “super giant” of gas production<sup>4</sup> and some industry websites project huge productivity that could mean many more wells. If the Upper and Middle Delaware Watersheds contain a “sweet spot”, a gas-rich area, as some analysts believe due to the thickness and rich organic composition of the shale here, then it is reasonable to expect more gas wells than other places (more intense development), perhaps more closely spaced, and gas development will likely go on for a longer period of time if the wells are prolific.

This means that, in the foreseeable future, hundreds of millions of gallons of freshwater will be robbed from the Upper Delaware River system, affecting the volume of freshwater that enters upstream and thereby affecting the downstream movement of the salt line in yet to be determined ways. The effects of all this lost freshwater flow and what it means for the salt line and associated habitats for Atlantic sturgeon is a real and foreseeable concern and harm.

#### Cumulative impacts

These projects individually, and cumulatively, pose a present and threatened destruction, modification and curtailment of the habitat of the Atlantic sturgeon in the Delaware River as well as the present and foreseeable risk of direct take of individual Atlantic sturgeon.

The lack of protection and consideration being given to the harms posed to the Atlantic sturgeon directly and through habitat destruction demonstrate the inadequacy of existing regulatory mechanisms for their protection.

The forward movement of these projects is a demonstration of the significant manmade factors that continue to come into existence which threaten the continued existence of the genetically unique Delaware River population of Atlantic sturgeon as well as the NY Bight population segment.

#### **Designation of Critical Habitat – Needs to Happen Immediately and Include the Full Delaware Estuary**

According to the October 6, 2010 public notice, NMFS is not now proposing critical habitat for the NY Bight, asserting further analysis is necessary for determining critical habitat.

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<sup>3</sup> [http://www.house.gov/list/press/ny22\\_hinchey/morenews/07232010delriverbasinstudy.html](http://www.house.gov/list/press/ny22_hinchey/morenews/07232010delriverbasinstudy.html)

<sup>4</sup> “Natural gas reservoir may hike U.S. output”, <http://www.geosc.psu.edu/~engelder/>

To delay identification of critical habitat, on even a preliminary basis, is likely to result in irreversible harm. The projects discussed in this comment will do irreparable harm to habitat important for the survival and eventual recovery of Atlantic Sturgeon.

The Delaware Riverkeeper Network suggests that there is enough information, currently available on the record, to make at least a preliminary designation of critical habitat.

During the summer months juveniles concentrate in three main areas, it is believed, Artificial Island (RM 89), Cherry Island Flats (RM 110) and the Marcus Hook Anchorage (RM 125).

Spawning requires freshwater and a hardbottom substrate. Research is indicating that suitable spawning habitat may exist between Marcus Hook and Tinicum Island and also between Marcus Hook and Trenton. Increased saltwater intrusion resulting from deepening the river would continue to reduce the amount of habitat available to the Atlantic Sturgeon.

In 2008, Marcus Hook was found to be a favored spot of summering juveniles. According to the NJ Division of Fish & Wildlife “The spawning area for Atlantic sturgeon ... may well be the rock outcropping at Marcus Hook that will have to be blasted” as part of the deepening project. (*NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007.*) In addition, science continues to emerge about the use of this reach of the River for spawning, young of year and other life stages.

Dredging in the upper portions of the River near Philadelphia is considered detrimental to the successful spawning of the Atlantic sturgeon in the Delaware – this is not just because of the act of dredging but also because of the degradation of spawning habitat.

Scientific study (including as demonstrated by the research and other documents submitted as part of this comment) on the Delaware River population of Atlantic sturgeon show that the entire Delaware Estuary provides important habitat, with the upper reaches of the estuary providing important spawning grounds and lower reaches important habitat for a mix of life stages. Thus, in order to ensure protection of the Atlantic sturgeon the Delaware River, the entire Estuary should be designated as critical habitat, only opening the door to a reduction in this designation if new information becomes available justifying it.

**In sum: the Delaware Riverkeeper Network believes that the best available scientific and other data available on the Atlantic sturgeon in the Delaware River as well as the projects with a federal nexus necessitates:**

- ✓ The Delaware River population, which has its own genetic haplotype (A5) and is estimated to have fewer than 300 spawning adults and maybe even fewer than 100 spawning adults, should be identified as its own Distinct Population Segment and be granted endangered species status.
- ✓ If the Delaware River population is not listed as its own distinct DPS then it should be listed as endangered as part of the NY Bight DPS.
- ✓ Listing of the Delaware River population, whether as its own DPS or as part of the NY Bight, should be done on an emergency basis and immediately, at a minimum

before the end of January, 2011 when permitting decisions for the Delaware deepening are planned for completion.

- ✓ That the listing decision include designation of the Delaware Estuary as critical habitat with the potential for future refinement based on new information that is received.

Thank you for your careful consideration and fast action on this matter,

Maya K. van Rossum  
the Delaware Riverkeeper

Attachments:

- ✓ Grunwald, Maceda, Waldman, Stabile, Wirgin. Conservation of Atlantic Sturgeon *Acipenser oxyrinchus oxyrinchus*: delineation of stock structure and distinct population segments, Printed Springer Science+Business Media, B.V. 2007.
- ✓ Wirgin, Grunwald, Stabile, Waldman. Genetic Evidence for Relict Atlantic Sturgeon Stocks along the Mid-Atlantic Coast of the USA. North American Journal of Fisheries Management, 27:1214-1229, 2007.
- ✓ Matthew Fisher, DNREC, Atlantic Sturgeon Progress Report, State Wildlife Grant, Project T-4-1, December 2009.
- ✓ DRBC, Delaware River State of the Basin Report, 2008
- ✓ NJDEP Briefing, Delaware River Main Channel Deepening Project, Supplemental Environmental Impact Statement (SEIS) Information, January 2007
- ✓ Correspondence Delaware River Basin Commission to US Army Corps, December 31, 2008
- ✓ *Effects of hypoxia and temperature on survival, growth, and respiration of juvenile Atlantic sturgeon, Acipenser oxyrinchus, by David Secor and Troy Gunderson, Center of Environmental and Estuarine studies, the University of Maryland system. October 1997.*)
- ✓ Simpson & Fox, Delaware State University Department of Agriculture and Natural Resources, Atlantic Sturgeon in the Delaware River: Contemporary Population Status and Identification of Spawning Areas, no yr given
- ✓ Review of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) Prepared by the Atlantic Sturgeon Status Review Team for the National Marine Fisheries Service National Oceanic and Atmospheric Administration
- ✓ DiLorenzo et al, Dredging Impacts on Delaware Estuary Tides, Estuarine and Coastal Modeling III, Proceedings of the 3rd International Conference, Sept 1993

- ✓ Anthropogenic Influences on the Morphology of the Tidal Delaware River and Estuary: 1877-1987, by David R. Walsh, thesis for mater of Science in Marine Studies, Summer 2004
- ✓ *Investigations of Juvenile Shortnose and Atlantic Sturgeons in the Lower Tidal Delaware River*, by Harold M. Brundage, III, and John C. O'Herron, II, Printed by the New Jersey Academy of Science, 2009.
- ✓ Wirgin, Grunwald, Stabile, Waldman, Delineation of Discrete Population Segments of Shortnose Sturgeon *Acipenser Brevirostrum* Based on Mitochondrial DNA Control Region Sequence Analysis, Printed by Springer Science+Business Media, B.V., 2009.