January 26, 2024

**VIA ELECTRONIC MAIL**
Jolie Harrison, Division Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce
1315 East West Highway
Silver Spring, MD 20910
NMFS.Pr1Comments@noaa.gov

**Re: Public Comment on Draft PEA for Permitting Sturgeon Translocation**

To Whom it May Concern:

The Delaware Riverkeeper Network and Maya K. van Rossum, the Delaware Riverkeeper, (collectively, "DRN") submits the below comments in response to the National Marine Fisheries Service's ("NMFS's") Notice of Availability of Draft Environmental Assessment on the Effects of Permitting Translocation of Sturgeon for Scientific Research and Enhancement Under the of the Endangered Species Act [sic], published in the Federal Register on December 27, 2023.[1]

The Draft Programmatic Environmental Assessment ("Draft PEA") is meant to address a proposal to issue permits under Section 10(a)(1)(A) of the Endangered Species Act[2] that would authorize the permittee to collect shortnose or Atlantic Sturgeon from one river system and release them into an area other than the one which they were caught from, even into another river system ("translocate" them). Translocation means the "intentional capture, holding, handling, transport, and release of individuals within a river system (e.g., translocation of fish across a dam for fish passage) or between river systems within the U.S. historical range of Atlantic and shortnose sturgeon."[3]

[1] 88 Fed. Reg. 89,385 (Dec. 27, 2023).
[2] 16 U.S.C. § 1539(a)(1)(A).
[3] Draft PEA at 21.

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DRN submits these comments urging NMFS to rescind the Draft PEA, as there is insufficient information in the administrative record to identify a concerted program or plan associated with the translocation of sturgeon. DRN also urges NMFS, in any subsequent National Environmental Policy Act ("NEPA")[4] analysis of any request or plan to translocate sturgeon, to consider the potentially devastating impacts that translocation could have on the Delaware River's genetically unique population of Atlantic sturgeon.

DRN firmly opposes the concept of permitting translocation of sturgeon for scientific research and enhancement; it is our position that the Draft PEA:

- is fundamentally flawed in failing to fully or fairly consider the ramifications of translocation for unique and distinct sturgeon populations;
- undermines the statutory obligation for agencies to fully and fairly consider the ramifications of a proposed translocation proposal for all potentially impacted sturgeon populations; and
- puts the genetically unique Delaware River population of Atlantic Sturgeon in grave peril of extinction by undermining essential protective decisionmaking and/or exposing the population to interbreeding that would decimate their genetic uniqueness (genetically unique line).

## I. The purpose and need detailed by NMFS in its Draft PEA is too vague and hypothetical to justify a programmatic approach to the required NEPA analysis for translocation of sturgeon

### A. Programmatic NEPA analyses are not appropriate where a proposed action is merely hypothetical.

The Council on Environmental Quality's ("CEQ's") NEPA regulations allow federal agencies to adopt a "programmatic" approach to their environmental analyses where an agency is contemplating adoption of a new program, an approach that may be useful in avoiding duplication of efforts as the program is carried out in an iterative manner.[5] CEQ guidance explains that "[p]rogrammatic NEPA reviews should result in *clearer and more transparent* decisionmaking . . . ."[6] Instead, NMFS's decision to evaluate the environmental impacts of translocating sturgeon muddies the waters.

A general and amorphous desire to be able to translocate sturgeon under unknown circumstances cannot support a programmatic approach to NEPA review. As stated in the Draft PEA, the proposed action that allegedly triggers NEPA is the "authori[zation of] directed take for the translocation of ESA-listed Atlantic and shortnose sturgeon as a research or enhancement activity to support sturgeon conservation management and

[4] 42 U.S.C. §§ 4321–4370m-12.
[5] *See* 40 C.F.R. §§ 1501.11, 1502.4.
[6] Coun. on Envtl. Quality, Exec. Office of the President, Effective Use of Programmatic NEPA Reviews at 7 (2014) (hereinafter, "2014 CEQ Guidance") (emphasis added).

recovery objectives."[7] However, NMFS does not go on to describe a specific conservation or recovery program or plan that will require translocation of sturgeon. Instead, it merely identifies one specific project that "triggered" the proposed action—relicensing of a dam in South Carolina.[8] In this circumstance, NEPA requires a specific analysis of the environmental impacts of the Section 10 permit proposed to be issued to the South Carolina Public Service Authority, not a broad analysis of all hypothetical future Section 10 permits.

The irrationality of NMFS's proposed programmatic approach is highlighted in its so-called alternatives analysis, where the "action alternative" is presented in contrast with a single "no action alternative."[9] Rather than identifying a specific project or plan and evaluating alternatives to achieving the goals of that project or plan, NMFS presents an illogical binary—either it is allowed to authorize Section 10(a)(1)(A) permits that involve translocation of <u>any</u> Atlantic or shortnose sturgeon population on any river for <u>any</u> conservation management and recovery objectives, or it must deny all permit applications that request translocation.[10] This perfunctory alternatives analysis highlights the absurdity of considering all yet-to-be-made requests to translocate sturgeon as a single programmatic agency action. As CEQ explains in its 2014 guidance, the "NEPA review and the decisionmaking is compromised when a programmatic NEPA review narrows or limits alternatives based only on a superficial or general review of potential impacts."[11]

The desire to conduct and provide programmatic review and approval was triggered by a single request involving a relicensing of a hydroelectric project in a South Carolina waterway. The goal of the South Carolina project is "to provide previously unattained spawning habitat to sturgeon on the Santee River by moving the sturgeon blocked from spawning below the Pinopolis Dam on the Cooper River (an unsuccessful spawning location) to traditional spawning and recruitment areas below the St. Stephens Dam on the Santee River. The action would also include possible future translocation of sturgeon from the area below the St. Stephens Dam, to Lakes Marion and Moultrie, South Carolina, based on ongoing habitat suitability investigations."[12]

In other words, the project that triggered this proposed development of a program to allow such translocation and easier permitting by negating the need for site specific NEPA review, was to address a specific project in a specific river and specific state system. Rather than limit the proposed NEPA review to this single project, NMFS sought to expand it to include all sturgeon, all rivers, and all hypothetical projects – diluting their review in ways that ignores the specific qualities of individual populations and river systems, in order to offer the opportunity for swifter approval of Section 10(a)(1)(A) permits without the kind of detailed scientific and impacts analysis that federal law (NEPA) would otherwise require in order to avoid unnecessary, irreparable, and/or undesirable harm.

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[7] Draft PEA at 7.
[8] *Id*. at 9.
[9] *Id*. at 34–35.
[10] *See id*.
[11] 2014 CEQ Guidance at 13 n.16.
[12] Draft PEA at 4.

NMFS also exaggerates the South Carolina translocation work to justify an overly-broad Draft PEA. Nowhere in the Biological Opinion does the South Carolina work address translocation of Atlantic sturgeon, instead only examining translocation of shortnose sturgeon for this Federal Energy Regulatory Commission relicensing project, with separate research for Atlantic sturgeon.[13] By misstating the origins of this Draft PEA, NMFS fails to address the species specific needs for recovery in each of these two sturgeon species. Translocation of Atlantic sturgeon is thus poorly motivated and inadequately justified in this Draft PEA. The environmental impacts are thus also misrepresented for Atlantic sturgeon, and NMFS fails to accurately and fully evaluate the risks from translocation work, particularly when such work could be rapidly approved without adequate public scrutiny or input under this Draft PEA.

### B. The limitations proposed by NMFS are not sufficient to further define the circumstances under which translocation will be covered by the Draft PEA.

The Draft PEA purports to further define the universe of actions the PEA will apply to by stating that translocation must be "concurrent with additional research or enhancement activities," and that the objectives of those activities must be "1) stated as a term and condition to implement reasonable and prudent measures of an active BO, 2) an identified objective in a NMFS recovery outline or recovery plan for the species, or 3) determined necessary by NMFS Regional Offices and the NMFS OPR to recover the species."[14] These limitations do not transform a nebulous and hypothetical category of actions into a program or plan, it merely further defines the category.

By defining the proposed actions in this way, NMFS avoids the opportunity to meaningfully discuss alternatives to its actions. It is impossible to determine whether translocation is an environmentally acceptable method of mitigating incidental take, or recovering the species, without knowing what activity will cause the incidental take and where, when, or what recovery outline or recovery plan is being executed, or what circumstances arose to make translocation necessary.

The suggested guardrails on the initiative fail to remedy the fact that all future translocation is purely hypothetical. Given that NMFS has never found a project, activity, action or permit it deemed would significantly jeopardize the genetically unique population of Atlantic sturgeon in the Delaware River, despite there being only 250 spawning adults returning annually, and that NMFS has found no jeopardy for proposals that would result in proportionally significant take/death, removing this last guardrail of individual NEPA analysis and review is alarming to say the least.

[13] Fed. Energy Regulatory Comm'n, SERO-2018-00325, Endangered Species Act – Section 7 Consultation Biological Opinion: Re-licensing of the South Carolina Public Service Authority (SCPSA) Hydroelectric Project (FERC #199-205) (2020).
[14] Draft PEA at 7.

### C. Translocation of sturgeon is subject to many variables, which makes a programmatic NEPA analysis inappropriate.

NMFS describes translocation of sturgeon as "the intentional capture, holding, handling, transport, and release of individuals within a river system (e.g., translocation of fish across a dam or fish passage) or between river systems within the U.S. historical range of Atlantic and shortnose sturgeon (i.e. Maine to Florida)."[15] Accordingly, the translocation proposed by NMFS covers a vast swath of the nation and involves an unknown number of individual sturgeon. Important factors to consider in evaluating the environmental impacts of sturgeon translocation include the river system from which the sturgeon will be captured, the river system into which the sturgeon will be released, the number of sturgeon, the age of sturgeon, the frequency of the translocation, the cumulative effects associated with other translocations and other environmental stressors on the relevant populations, the time of year of the translocation, and the problem that the translocation is attempting to solve. All of these factors are left as large question marks in the Draft PEA, where NMFS contends:

> The use of translocation is expected to be limited to uncommon situations where the effects to the population as a result of remaining in place would be less favorable than translocating them. It is unknown how often this would occur or which life stages or sexes may be affected, but when NMFS determines it to be necessary, the response is expected to result in indirect long-term beneficial effects to the population (e.g., improved survival and recruitment), despite minor, direct short-term adverse effects due to an initial stress response to individual sturgeon.[16]

In other words—"we don't know how, when, where, or why we will be doing this, but trust us, when we do it, we'll do it right." This approach totally undermines the purpose of NEPA, which is to facilitate informed *decisionmaking*, not simply to gather information. Even more concerning, there is no indication that NMFS will use the NEPA process of tiering in the future to address these project-specific issues.

The Draft PEA seems to rule out tiering as a strategy to address the environmental impacts of individual permits, and instead promises that future Section 10(a)(1)(A) permits will be subject to a 30-day commenting period already required by NMFS's own regulations.[17] Tiering under NEPA, according to the CEQ regulations, allows an agency to rely on a programmatic NEPA analysis while also preparing a project- or site-specific NEPA document.[18] However, again, these site-specific and project-level analyses are based upon a larger program, plan, or policy,[19] which is absent here.

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[15] *Id*. at 7–8.
[16] *Id*. at 43.
[17] *See id*. at 10 (citing 50 C.F.R. § 222.303(b)).
[18] 40 C.F.R. § 1501.11(a), (b).
[19] *Id*. at § 1501.11(c).

The determination that a programmatic environmental assessment is the appropriate level of NEPA review does not take into consideration the unique circumstances of a population and river system like the Delaware River. The assertion that "significant environmental impacts" are not anticipated, therefore negating the need for a full EIS, is not well-founded when considered in light of the unique circumstances found in the Delaware River system and the existence of a genetically unique population that lives in our River and is in need of more detailed attention, care and scientific consideration, rather than being overlooked because of a 68-page assessment devoid of the specific considerations needed to address the circumstances in our Delaware River.

Programmatic NEPA reviews are considered of value when the issues to be considered are repetitive or part of a larger plan, but there is nothing generalized or repetitive about the distinct and unique circumstances surrounding each Atlantic sturgeon population living on the east coast, and certainly the unique circumstances of the Delaware River population are not mirrored in other river systems and require individual assessment. It is the perspective of DRN, based upon our own participation and experience with the endangered listing process for the Atlantic sturgeon of the Delaware River and the New York Bight distinct population segment ("DPS"), that ***it was a desire for efficiency and reduced paperwork, driven by demands from industry, that caused NMFS to overlook the Delaware River Atlantic sturgeon population as being in need of its own DPS recognition and protection pursuant to the Endangered Species Act; this same desire for efficiency, driven by industry backing, is now poised to be responsible for very efficiently driving our genetically unique Atlantic Sturgeon of the Delaware River into extinction!***

Because the Delaware River population is not recognized as its own DPS, it does not receive the proper level of protection from NMFS and other government entities. The low numbers of the Delaware River population are masked by the higher numbers of the Hudson River population—the two populations that are combined to form the New York Bight. The result is that it is easier for NMFS to approve damaging dredging, development, pollution discharge, shipping, and other harmful activities, including a failure to take needed action to protect the Delaware River population such as supporting higher dissolved oxygen standards in the River.

The Draft PEA fails to consider the serious ramifications for undermining essential efforts to restore populations currently at low levels, and instead will encourage translocation efforts (1) in lieu of other essential and meaningful government action to restore genetically unique populations currently at low levels and/or (2) to permit translocation efforts that will result in the "contamination" of a genetically unique strain by supporting interbreeding with a similar but genetically distinct line and in so doing will, over time, cause the extirpation/extinction of genetically unique populations like we have in the Delaware River.

## II. Translocation poses an unacceptable risk to the genetically unique and vulnerable Delaware River population of Atlantic sturgeon.

Without explaining why, NMFS asserts that it "does not expect translocation of sturgeon to affect the genetic structure of one or more populations of sturgeon."[20] Rather than recognizing the unique properties of the Delaware River population of sturgeon, NMFS lumps the Delaware River population in with the other New York Bight populations, and apparently intends to freely allow translocation among different river systems and DPSs.[21] It is little consolation that NMFS considers the genetic risk of translocation to be mitigated by the sturgeons' ability to "leave the [river] system of their own accord after release."[22]

Given that the sturgeon of the Delaware River are not impeded by dams or other such structures, if the translocation activities covered by the Draft PEA are carried out within the Delaware River system, translocation of Atlantic sturgeon would mean either removing Delaware River Atlantic sturgeon from our river for translocation to another river; or importing genetically differentiated Atlantic sturgeon from another river system and translocating them to the Delaware. Either outcome is unacceptable.

### A. The Delaware River Atlantic sturgeon is genetically unique and not interchangeable with other east coast populations.

The spawning population of Atlantic sturgeon in the Delaware River is genetically unique, reproductively isolated and clearly discrete from all other populations. The Delaware River once supported the largest population of Atlantic sturgeon worldwide, and thus is among the most important populations in the evolutionary legacy of the species. The threats to the Delaware River population of Atlantic sturgeon are individually and cumulatively severe, among them: lethal levels of dissolved oxygen for young-of-year sturgeon at their spawning and rearing grounds; annual vessel strike mortality at approximately the same magnitude as the annual spawning run of adult sturgeon; ongoing and increasing dredging, development projects, and pollution inputs. With this NMFS proposal to translocate sturgeon, we would be adding genetically-imposed interbreeding to the list of threats to the ongoing genetic diversity affecting the Delaware River Atlantic sturgeon population.

Rather than render determinations regarding projects, permitting, programs, funding, legislation, regulations or other government actions that would prioritize protection of the Delaware River genetically unique population, NMFS would now feel even more free—than it already does—to agree to government and industry actions that would harm the Delaware River population.

The loss of the Delaware River population would constitute the loss of vital genetic biodiversity from the once-largest population. Loss of the genetic biodiversity the Delaware River population provides for the Atlantic sturgeon species as a whole is particularly

[20] Draft PEA at 43.
[21] *Id*.
[22] *Id*.

concerning given the increasing impacts from climate change and sea level rise on this species which is so uniquely sensitive to temperature, salinity, and dissolved oxygen impacts.

Over the last twenty years, significant research has expanded our understanding of the life history, behavior, migrations, and genetic structure of Atlantic sturgeon, with much of this research following both the 2007 Status Review Team report[23] and the 2012 Endangered/Threatened species listing decisions for the Atlantic Sturgeon.[24] This expanded body of information supports and motivates the need for listing the Delaware River population as its own DPS and also supports our assertion that any initiative that would impact our genetically distinct population requires careful scientific assessment and review.

Atlantic sturgeon populations are highly structured, with unique genetic compositions for each spawning river population that allow identification of individuals to their natal river. Researchers have found significant correlations between genetic composition and geographical distance. Individuals from the Delaware River population are correctly assigned to the Delaware River genetic group at very high rates, among the higher rates for any river population. Indeed, all contemporary research focuses first and foremost on the Delaware River as its own unique population, using the combined New York Bight DPS only as a secondary grouping for the Delaware River's genetically unique individuals. Fidelity to natal spawning rivers is so high for the Delaware River that current management summaries acknowledge that, effectively, zero cross-river migration occurs for the Delaware River and that extinction of the Delaware River's population would mean the permanent loss of the distinct genetic line the Delaware River currently provides.

The Delaware River is among just three rivers with confirmed extant populations of Atlantic sturgeon remaining in the northeastern United States. Notably, the Delaware River population is not just another small river population that can be discounted. To the contrary, the Delaware River historically held the single largest population of Atlantic sturgeon in North America.

The scientific research is clear: the Delaware River's population of Atlantic sturgeon is (a) reproductively isolated from other sturgeon populations; (b) genetically unique and identifiable based on genetics alone; (c) historically the largest population of Atlantic sturgeon in North America; and (d) discrete from any other sturgeon population. In total, the Delaware River's population of Atlantic sturgeon is arguably among the most significant and important populations in the world based on its historical and existing population structure. The Delaware River's population of Atlantic Sturgeon clearly requires its own unique protection; protection that would be denied by the proposed Draft PEA regarding translocation.

Contrary to all recent genetic research, NMFS also leaves open the door to trivializing the genetic differences within the currently-recognized DPS administrative determinations.

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[23] *See* Atlantic Sturgeon Status Review Team, Status Review of Atlantic Sturgeon (2007), available at https://repository.library.noaa.gov/view/noaa/16197.

[24] *See* Endangered and Threatened Wildlife and Plants; Threatened and Endangered Status for Distinct Population Segments of Atlantic Sturgeon in the Northeast Region, 77 Fed. Reg. 5880 (Feb. 6, 2012).

In every published research study, the Delaware River Atlantic sturgeon are clearly and consistently differentiated from Hudson River Atlantic sturgeon (and all other sturgeon populations) despite both being included in the New York Bight DPS. This Draft PEA would clearly condone translocation among rivers within a DPS, ignoring the scientific findings of genetic uniqueness, particularly for the Delaware River population.

NMFS also seeks an overly-broad PEA where important differences exist across the geographic range of the Atlantic sturgeon. Southern populations of Atlantic sturgeon appear to show much greater rates of genetic mixing among river systems, leading to a different set of management options and implications for these southern populations. However, northern populations demonstrate much higher fidelity to their natal river, and mixing among rivers within a DPS is highly problematic in these northern river systems. Again, NMFS seeks an overly-broad PEA that does not appropriately handle the risks and settings under which permits could be issued.

The Delaware River is a prime example of the serious risks being introduced by this translocation program, risks that were not well considered by the Draft PEA.

**B. Translocation of Atlantic sturgeon from the Delaware River to other river systems poses a serious threat to the critically endangered Delaware River population.**

Taking individuals from the genetically unique and critically endangered Atlantic sturgeon out of our Delaware River system to place them in another river, thereby further lowering our already critically low numbers is scientifically, legally and morally indefensible. Given our already perilously low numbers, the translocation from the Delaware for release in another River is, on its face, simply unsupportable.

Historically, at least thirty-eight rivers and estuaries were home to Atlantic Sturgeon spawning populations, but currently only twenty-three river systems have documented contemporary spawning runs (various researchers have cited numbers from eighteen rivers up to twenty-five rivers). The extirpation of entire river populations has been particularly problematic in the northeastern United States, where only three rivers have documented extant populations between the State of Delaware and the border with Canada: the Delaware River, Hudson River, and Kennebec River. In this long coastal reach, at least eight of the eleven rivers have lost their historic Atlantic Sturgeon populations: Housatonic, Connecticut, Taunton, Merrimack, Sheepscot, Androscoggin, Penobscot and St. Croix.

As of 2023, all United States river populations are at or near historic lows, with the largest populations or spawning runs only estimated between 100 and 500 adults in each year's spawning run. These numbers are many orders of magnitude below historic numbers. For the Delaware River population, the situation is particularly dire. The total estimated number of females in the Delaware River population circa 1890 during heavy exploitation was 180,000, while the most recent estimates of total *adults* in a given spawning run number only between 125 and 250 mature individuals (male and female). While the estimates represent different fractions of the total population, these estimates put the decline on the

order of 1000-fold for the Delaware River population alone. Despite the historically low population numbers, careful studies of genetic variability have generally documented suitably diverse populations for prospective recovery.

For the Delaware River population of Atlantic sturgeon, the unique combination of acute, pernicious threats, with precariously low population numbers, and troubling signs for genetic diversity present a worrisome prognosis that should not be intentionally compounded by removing individuals (at any life stage) for translocation to other rivers.

There is still a clear opportunity to address these pressing threats before the Delaware River population disappears. Currently, the United States Environmental Protection Agency has proposed new water quality standards in order to address the dissolved oxygen problems plaguing our Atlantic and shortnose sturgeon. In addition, DRN has petitioned for greater protections via the Endangered Species Act that would provide better protections when it comes to a range of threats from ship strikes, to dredging, to toxic pollution discharges that all are harmful to our sturgeon.[25] DRN continues to seek new and innovative ways to reduce mortality, particularly from vessel strikes.

This set of complementary protections could result in significant turn-around for our Atlantic sturgeon. But with the option of translocation already pre-approved via this defiant Draft PEA that failed to consider the unique considerations, threats, protections and opportunities when it comes to the Delaware River Atlantic sturgeon, all of these actions could be undermined with NMFS simply determining that bringing fish in from elsewhere—or even more puzzling, removing sturgeon from the Delaware River—will solve the problem and restore Atlantic sturgeon to our River at higher numbers —as opposed to restoring OUR GENETICALLY UNIQUE DELAWARE RIVER ATLANTIC STURGEON through heightened protections and better decisions.

### C. Translocation of Atlantic sturgeon from outside of the Delaware River watershed could result in the extinction of an important and distinct population.

Bringing in Atlantic sturgeon from a different population—which will be genetically different than our Delaware River Atlantic sturgeon—and releasing them into our River is scientifically, legally and morally indefensible. The result would be a merging of the two populations. This proposal of translocating Atlantic sturgeon INTO the Delaware River from another river system, would have severe, significant and irreparable adverse consequences for the Delaware River population and the species as a whole. This translocation of non-Delaware River sturgeon could irreparably harm the genetically unique line of Atlantic sturgeon that live in the Delaware River, and are found only in our River.

The risks include the permanent loss of the genetically unique Delaware River population. The loss of genetic uniqueness through translocation could result in the

[25] *See* Delaware Riverkeeper Network, Petition to List the Delaware River Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) Population as an Endangered Distinct Population Segment Under the Endangered Species Act (July 19, 2023) (attached).

total extinction of our genetically unique Delaware River Atlantic sturgeon that live nowhere else but in our River, an outcome that would be a travesty unto itself; but would also remove the genetic contribution our Delaware River sturgeon adds to the larger *A. oxyrinchus oxyrinchus* family of Atlantic sturgeon.

While the Draft PEA also indirectly appears to prohibit the culture of Atlantic sturgeon in hatcheries for release into the Delaware River and elsewhere, such a hatchery prohibition should be clearly articulated. The Draft PEA states that the release of captive sturgeon is not covered by this Draft PEA, which is important, but this statement fails to take the further clarifying step of explicitly prohibiting the culture and release of hatchery sturgeon as part of the captive sturgeon exclusion in this Draft PEA. Hatchery-reared Atlantic sturgeon would be genetically inferior and potentially could carry diseased individuals into the struggling Delaware River population of Atlantic sturgeon, and beyond into the broader coast-wide population.

As DRN has seen with freshwater mussel conservation and restoration, the allure of hatcheries in place of protecting and restoring water quality and habitat conditions is a shortcut that continues to find adherents and funding. Hatcheries are no substitute for wild breeding, and must be used only as an option of last resort. The Draft PEA leaves open the possibility of hatchery sturgeon being permitted under this PEA, and this possibility must be firmly, repeatedly, and clearly prohibited in the PEA should this Draft PEA move to becoming finalized.

## III. Conclusion

DRN urges NMFS to rescind the Draft PEA, and to evaluate the environmental impacts of proposals to translocate sturgeon on a case-by-case basis in accordance with NEPA.

Respectfully submitted,

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the Delaware Riverkeeper

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Restoration Director

Kacy C. Manahan
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Anneke van Rossum
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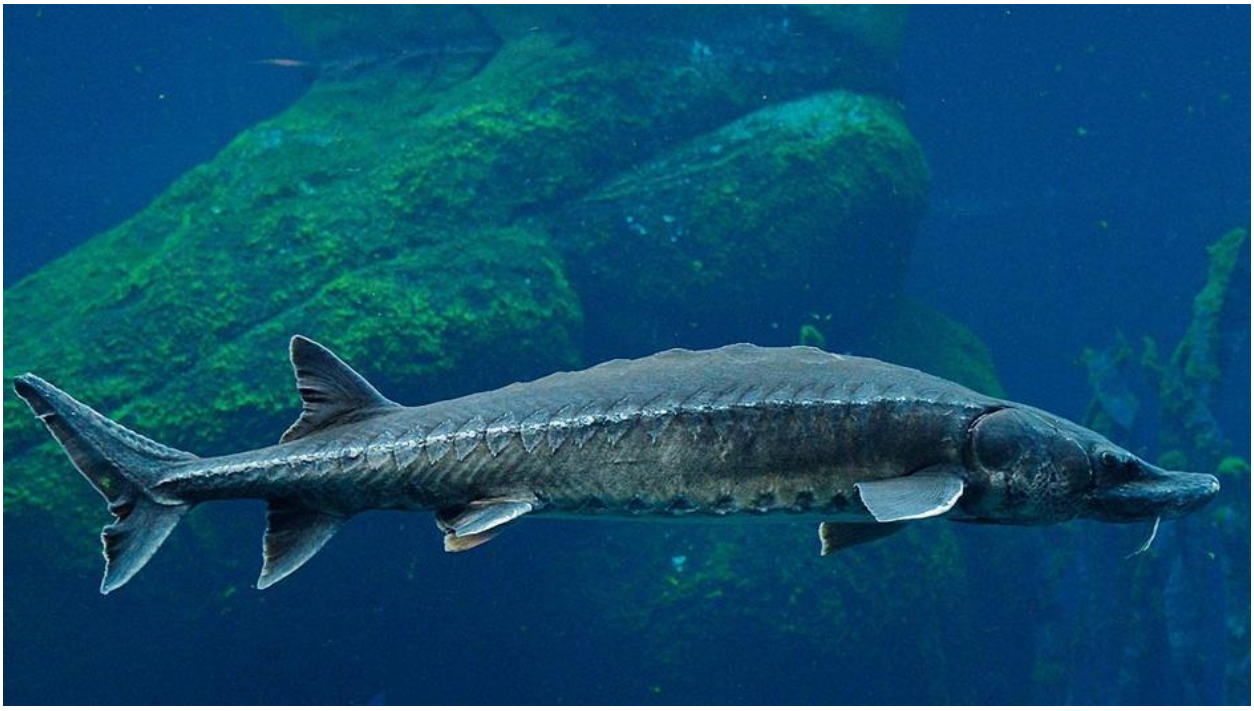
Enclosure

**Submitted to the Secretary of Commerce**

# Petition to List the Delaware River Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) Population as an Endangered Distinct Population Segment Under the Endangered Species Act



**Atlantic Sturgeon**

Photo credit: (Mauro Orlando from Flickr; CC BY-NC-ND 2.0) https://www.njspotlightnews.org/2022/07/atlantic-sturgeon-delaware-river-new-numbers-less-than-one-tenth-1-continue-spawning/

**Submitted to U.S. Secretary of Commerce Acting through the National Oceanic and Atmospheric Administration and the National Marine Fisheries Service**

**July 19, 2023**

Submitted by:

Delaware Riverkeeper Network
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Bristol, PA 19007

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## I. NOTICE OF PETITION

Gina Raimondo, Secretary of Commerce
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1315 East West Highway
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*via email*

Dear Secretary Gina Raimondo, NOAA Administrator Richard W. Spinrad, National Marine Fisheries Service Administrator Janet Coit,

Pursuant to the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544, Delaware Riverkeeper Network ("DRN") formally petitions the Secretary of Commerce to list the Delaware River Atlantic Sturgeon as a distinct population segment ("DPS") separate from the NY Bight and to designate critical habitat concurrent with the listing.

The National Marine Fisheries Service ("NMFS"), on behalf of the Secretary of Commerce, has jurisdiction over this Petition. This Petition sets in motion a specific process, requiring NMFS to make an initial finding as to whether the Petition "presents substantial scientific or commercial information indicating that the petitioned action may be warranted." 16 U.S.C. § 1533(b)(3)(A). NMFS must make this initial finding "[t]o the maximum extent practicable, within 90 days after receiving the petition." *Id*.

NMFS must acknowledge the receipt of this Petition within a reasonable timeframe. 50 C.F.R. §424.14(f)(2). Thereafter, NMFS promptly ought to make a positive finding on the Petition and commence a status review. 16 U.S.C. § 1533(b)(3)(B).

In order to ensure consideration of the material cited in this Petition and in compliance with 50 C.F.R. § 424.14(h)(1)(ii), electronic copies of the material supporting the petition and cited by the petitioner are contained in the following Google Drive: https://drive.google.com/drive/folders/1PlM18atNPYHSNQRFi_8_aBSx2LOaHJ9Q?usp=sharing. Should the conveyance of the electronic materials be preferred in another form, please let me know and Delaware Riverkeeper Network will be happy to provide them in the preferred format.

If you have any questions, please feel free to contact me via phone at 215 369 1188 ext 102, email KeeperMaya@DelawareRiverkeeper.org, address 925 Canal Street, Suite 3701, Bristol, PA 19007. Please cc all written communications to Delaware Riverkeeper Network's legal counsel, Daryl Grable at Daryl@DelawareRiverkeeper.org or the U.S. Postal address above.

Respectfully,

Maya K. van Rossum
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## II. EXECUTIVE SUMMARY

The spawning population of Atlantic Sturgeon in the Delaware River is genetically unique, reproductively isolated and clearly discrete from all other populations. The Delaware River once supported the largest population of Atlantic Sturgeon worldwide, and thus is among the single most important populations in the evolutionary legacy of the species. The threats to the Delaware River population of Atlantic Sturgeon are individually and cumulatively severe, among them: lethal levels of dissolved oxygen for young-of-year sturgeon at their spawning and rearing grounds; annual vessel-strike mortality at approximately the same magnitude as the annual spawning run of adult sturgeon; ongoing and increasing dredging, development projects, and pollution inputs.

The Delaware River population of Atlantic Sturgeon merits its own unique designation as a DPS based solely on the accepted criteria for DPS designation. As important, if not more so, the current conflation of the Delaware River and Hudson River populations into a single DPS undermines the potential continued existence of the Delaware River's population, precludes its recovery, and likely accelerates its downward spiral into extinction. If the Delaware River's DPS of Atlantic Sturgeon were lost, NMFS itself has acknowledged that the Delaware River would not likely be recolonized in the foreseeable future given the species' strong philopatry. Yet, even considering recolonization represents a grave failure for Atlantic Sturgeon.

The loss of the Delaware River population would constitute the loss of vital genetic biodiversity from the once-largest population. Loss of the genetic biodiversity the Delaware River population provides for the Atlantic Sturgeon species as a whole is particularly concerning given the increasing impacts from climate change and sea level rise on this species which is so uniquely sensitive to temperature, salinity, and dissolved oxygen impacts.

The Endangered Species Act and the relevant regulations and guidance clearly require the designation of the Delaware River population of Atlantic Sturgeon as its own DPS. From a legal, ethical, and conservation standpoint, the necessity for the greater protections this distinct DPS designation would provide is imperative. In order to protect, and then recover, the genetically unique population of Atlantic Sturgeon in the Delaware River, it is essential that NMFS designate the population as its own DPS in as quick a time frame as is possible.

## III. LEGAL AND REGULATORY FRAMEWORK

### (a) ESA Summary

The Endangered Species Act ("ESA" or "Act") was enacted in 1973 to protect "fish, wildlife, and plants" which were deemed to be at risk of extinction and/or scientifically significant. See 16 U.S.C. § 1531(a). Specifically, the Act's stated goals are to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate" pursuant to treatises and conventions to which the U.S. is party. See 16 U.S.C. § 1531(b).

The ESA is administered by the Secretary of Commerce, but it is also "the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened" species while working cooperatively with state and local agencies. 16 U.S.C. § 1531(c). Primarily, the Fish and Wildlife Service ("FWS") in the Department of the Interior and the National Marine Fisheries Service ("NMFS" or "NOAA Fisheries") in the Department of Commerce, regulate ESA compliance.

Under the ESA, the term "species" is defined as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." 16 U.S.C. § 1532(16).

The Secretary of Commerce is tasked with determining whether a species is endangered or threatened, as well as designating the critical habitat of such species and preparing a recovery plan for each listed species. 16 U.S.C. § 1533(a)(1)-(3). Determinations made under the ESA are to be made with "the best scientific and commercial data available." 16 U.S.C. § 1533(b). To further clarify what a "distinct population segment" entails, in 1996 the FWS and NMFS adopted the Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act. 61 Fed. Reg. 4722-01, 4275 (February 7, 1996) ("1996 Policy").

In addition to consulting the best scientific data available, NMFS must consider five statutorily prescribed factors when determining whether a species is endangered or threatened: 1) "the present or threatened destruction ... of its habitat"; 2) the "overutilization" of the species by humans; 3) disease or predation pressures; 4) "the inadequacy of existing regulatory mechanisms"; and 5) "other natural or manmade factors affecting" the continued existence of the species. 16 U.S.C. § 1533(a).

(b) DPS Designation Standard

Congress did not define the term “distinct population segment” (“DPS”) and the ESA does not set forth any restrictive criteria for defining a DPS.” *See Alsea Valley All. v. Evans*, 161 F. Supp. 2d 1154, 1157 (D. Or. 2001) Therefore, Federal agencies are allotted some discretion in determining what qualifies as a DPS. Typically, courts will defer to an agency’s construction of a statute absent a showing that a policy decision was either arbitrary and capricious or an abuse of discretion. *Chevron, U.S.A., Inc. v. Nat. Resources Def. Council, Inc.*, 467 U.S. 837 (1984); *S.W. Ctr. for Biological Diversity v. Babbitt*, 980 F. Supp. 1080 (D. Ariz. 1997) (finding FWS’s policy requirement allowing only one subspecies per DPS was “not contemplated by Congress in enacting the ESA" and, therefore, arbitrary and capricious).

In 1991, NMFS issued a policy regarding Pacific Salmon which provided guidance regarding species determinations. Policy on Applying the Definition of Species Under the Endangered Species Act to Pacific Salmon, 56 Fed. Reg. 58612-01 (November, 20, 1991) (“1991 Policy”). This policy states that “[a] salmon stock will be considered a distinct population, and hence a ‘species’ under the ESA, if it represents an evolutionary significant unit (“ESU”) of the biological species.” Id. The 1991 Policy also specifies two criteria which must be met for a stock to be considered an ESU:

> (i) It must be substantially reproductively isolated from other nonspecific population units; and
>
> (ii) it must represent an important component in the evolutionary legacy of the species. Id.

According to the 1996 Policy, three elements are considered when making a decision regarding the status of a possible DPS as endangered or threatened under the ESA:

> (i) *discreteness* of the population segment in relation to the remainder of the species to which it belongs;
>
> (ii) the *significance* of the population segment to the species to which it belongs; and
>
> (iii) the population segment’s conservation status in relation to the ESA’s standards for listing.

The 1996 Policy provides factors relevant to determining whether a population within a DPS is discrete and ecologically significant. According to the 1996 Policy: A population is considered discrete if it satisfies one of two conditions:

(i) it is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors; or

(ii) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA.

Once a population segment is considered discrete under one or more of the above conditions, its biological and ecological significance will then be considered. *See* Senate Report 151, 96th Congress, 1st Session. In order to achieve this, the Services will consider available scientific evidence of the discrete population segment's importance to the particular taxon to which it belongs. Some of the factors that may be taken into consideration include, but are not limited to:

(i) persistence of the DPS in an ecological setting unusual or unique for the taxon,

(ii) evidence that loss of the DPS would result in a significant gap in the range of a taxon,

(iii) evidence that the DPS represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range, or

(iv) evidence that the DPS segment differs markedly from other populations of the species in its genetic characteristics.

When a population segment is found to be discrete and significant, and thus, a distinct population segment, its evaluation for endangered or threatened status shall be based on the Act's definitions of those terms and a review of the factors enumerated in section 4(a) of the Act. Atlantic sturgeon in the Delaware River have already been found to meet the standards of being considered endangered in 2012, with circumstances only becoming more dire since then as outlined in this petition.

## IV. NATURAL HISTORY[1]

### Overview:

The Atlantic Sturgeon, *Acipenser oxyrinchus oxyrinchus*, one of two sub-species of *Acipenser oxyrinchus* (the other being the Gulf Sturgeon), is a long-lived and late-

[1] The information, scientific studies, and expert analyses supporting the information provided in this section can be found in Section VIII of this document.

maturing anadromous fish native to the eastern seaboard of North America. Adult females can reach lengths exceeding 14 ft (4.3 m) and can live to be 60 years or older. Males are typically smaller than females, with average size ranging from 5 to 7 ft long.

The Atlantic Sturgeon is one of 28 species worldwide in the family Acipenseridae and one of 9 species / sub-species native to North American waters. With a mostly cartilaginous skeleton, sturgeons have an ancestral fossil record dating back more than 200 million years.

Atlantic Sturgeon spawn in freshwater reaches of estuaries and rivers from the St. Lawrence River in Canada down to the St. Marys River in Florida and Georgia. Historically, at least 38 rivers and estuaries were home to native Atlantic Sturgeon spawning populations, but currently only 23 river systems have documented contemporary spawning runs. There are substantial behavioral, ecological, and genetic gradients across the species' range. Spring and early summer anadromous runs were the primary known and targeted runs of adult fish until very recently, but it is now known that rivers in the southern part of the species' range include both spring and fall runs that are distinct. In the tidal Delaware River, only a late spring / early summer (May into June) run of Atlantic sturgeon has been verified, but tagging of sexually mature fish has shown some movement into freshwater spawning grounds during fall months that could suggest a remnant fall run in this river system.

Juvenile Atlantic Sturgeon remain in their natal river from 1 to 10 years, with residency again varying by latitude and extending for longer periods in northern parts of the range. At this stage, before moving to the Atlantic Ocean, young sturgeon are known as River Resident Juveniles ("RRJ"), with unique physiological and ecological requirements. In the Delaware River, RRJs typically spend only 2 years in the Delaware estuary before joining the migratory movements along the mid-Atlantic.

Atlantic Sturgeon sub-adults are migratory and reach sexual maturity between 5 to 30 years of age, with females maturing later than males. Sub-adults migrate both along the coast and into estuaries, and occur as mixed aggregations among multiple river populations. Atlantic Sturgeon exhibit strong philopatry and return to their natal river to spawn once they reach sexual maturity.

**Population Structure:**

Over the last 20 years, significant research has expanded our understanding of the life history, behavior, migrations, and genetic structure of Atlantic Sturgeon, with much of this research following both the 2007 Status Review Team report and the 2012

Endangered/Threatened species listing decisions for the Atlantic Sturgeon.[2] This expanded body of information supports and motivates the need for listing the Delaware River population as its own DPS.

Atlantic Sturgeon populations are highly structured, with unique genetic compositions for each spawning river population that allow identification of individuals to their natal river. Researchers have found significant correlations between genetic composition and geographical distance. The research demonstrates increasing isolation with increasing distance.

At the broadest organizational level, northern and southern populations of Atlantic Sturgeon cluster separately based on genetic results, with important relationships and distinctions among river populations within both the northern and southern populations. Populations from rivers in the Chesapeake Bay have mixed relations with populations further north and south. Among the northern populations, identification of individuals to natal rivers is generally very high, while in southern rivers the differentiation is lower, leading to greater uncertainty of assignments for individuals to their natal rivers. In addition, recent results confirm that fall spawning populations exist in a number of the southern rivers, and that there are complex relationships between spring and fall runs within each river and among the southern river populations.

The Delaware River population clusters among the northern populations, showing higher similarity to the Hudson River, Kennebec River, Saint John River, St. Lawrence River, as well as the James River in the Chesapeake region. While clustering among northern populations, the Atlantic sturgeon of the Delaware River are clearly distinct and unique, with genetic characteristics found solely in the Delaware River population and nowhere else. Individuals from the Delaware River population are correctly assigned to the Delaware River genetic group at very high rates, among the higher rates for any river population. Indeed, all contemporary research focuses first and foremost on the Delaware River as its own unique population, using the combined New York Bight DPS only as a secondary grouping for the Delaware River's genetically unique individuals. Fidelity to natal spawning rivers is so high for the Delaware River that current management summaries acknowledge that, effectively, zero cross-river migration occurs for the Delaware River and that extinction of the Delaware River's population would mean the permanent loss of the distinct genetic line the Delaware River currently provides, as well as the complete elimination of Atlantic Sturgeon from the Delaware River system for the foreseeable future, extending out hundreds if not thousands of years.

[2] The information, scientific studies, and expert analyses supporting the information provided in this section can be found in Section VIII of this document.

The Delaware River is among just three rivers with confirmed extant populations of Atlantic sturgeon remaining in the northeastern United States. Historically, at least eleven rivers from Maine to Delaware sustained reproducing populations of Atlantic sturgeon. With just three populations remaining, this genetic cluster of northeastern rivers has already sustained a 73% or greater loss of unique spawning river populations.

Grouping the Delaware River with the Hudson River into a single, conflated Atlantic Sturgeon DPS ignores the uniqueness and the value of the Delaware River population itself, and increases the risk of extinction for one of the last three remaining river populations in the northeastern United States. Notably, the Delaware River population is not just another small river population that can be discounted. To the contrary, the Delaware River historically held the single largest population of Atlantic sturgeon in North America.

The scientific research is clear; the Delaware River's population of Atlantic sturgeon is (a) reproductively isolated from other sturgeon populations; (b) genetically unique and identifiable based on genetics alone; (c) historically the largest population of Atlantic sturgeon in North America; and (d) discrete from any other sturgeon population. In total, the Delaware River's population of Atlantic sturgeon is arguably among the most significant and important populations in the world based on its historical and existing population structure. The Delaware River's population of Atlantic Sturgeon clearly requires its own unique protection as a distinct DPS apart from any other river population.

Across its range, Atlantic sturgeon populations continue to struggle. Overexploitation and anthropogenic disturbance have led to severe reductions in all populations. Stock collapse was observed in the late 1800s and early 1900s during a period of high commercial landings, and numbers in U.S. rivers have generally failed to rebound from this unsustainable harvest. The Delaware River is a particularly bleak example of this decline. Fishery-based estimates placed the population size at 180,000 females for the Delaware River population ca. 1890. Recent estimates place the annual run size at between 125 and 250 adult fish (male and female) for the Delaware River, indicating a staggering 1000-fold decrease in the Delaware River population.

**Reproduction:**

Atlantic Sturgeon return to their natal estuary to spawn in either the spring or the fall, depending on the population and river system. In northern rivers, only a spring/early summer run of Atlantic Sturgeon has been documented. In southern rivers, both spring and fall runs have been documented in recent years, with genetic testing demonstrating complex relationships among the river populations in this southern part of the Atlantic

Sturgeon range. Individuals do not typically spawn annually, with males spawning at return intervals of between 1 and 5 years, and females spawning at return intervals of between 2 and 5 years.

Spawning occurs over clean, coarse substrate in freshwater reaches above the salt front in each estuary and into lower, non-tidal river reaches. Eggs are demersal and adhesive, and attach to the coarse substrate selected by females for spawning. Following hatching, larval fish become pelagic, but quickly return to a benthic behavior for foraging and protection as young juveniles.

River Resident Juveniles ("RRJ") spend between 1 and 10 years within their natal estuary, with increasing tolerance for salinity that increases with age and size. In the Delaware River, RRJ typically spend two years in the estuary. Following residency in their natal river, Atlantic Sturgeon sub-adults enter the Atlantic Ocean and become migratory, spending between 5 and 30 years moving among coastal and estuarine habitats before gaining sexual maturity and returning to spawn.

In the Delaware River, suitable freshwater habitats exist from the head-of-tide at Trenton, NJ (RM 133 / RKm 215) down to at least the Delaware state line (RM 79 / RKm 127). Historically, suitable spawning habitat may have extended further downstream into Delaware state waters, before dredging of a deepwater navigation channel brought the salt front to its current range of variability near the Delaware state line.

Since 2009, monitoring for RRJ has shown aggregations in the lower freshwater section of the estuary, from the Delaware state line upstream to near the Philadelphia airport. This reach of river contains the only outcrops of bedrock substrate in the tidal Delaware River, and monitoring of the movements of sexually mature adults has shown high usage of this lower freshwater section of river. Earlier research by Lazzari and colleagues documented RRJ in the upper tidal reaches between River Mile 125 (RKm 201) and RM 132 (RKm 212) in the time span of 1981 to 1984. This corresponds to a period for the Delaware River of continued severe hypoxia and anoxia in the Philadelphia-to-Wilmington reach of river, when conditions in the current aggregation areas near Marcus Hook were unsuitable for both spawning and rearing.

Atlantic Sturgeon reproduction and juvenile rearing in the Delaware River has been documented to span the entire freshwater extent of the tidal river, from Trenton down to near the Delaware state line. In addition, tracking of RRJ, sub-adults, and adult Atlantic Sturgeon has shown reliance on the entire tidal estuary, from the mouth of Delaware Bay at RM 0 to the head-of-tide at RM 133 (RKm 215), extending beyond the current narrow definition of Critical Habitat designated by NMFS in 2017.

## V. STATUS & THREATS[3]

Atlantic Sturgeon face a host of threats and impacts from human actions and activities throughout their range. Historically, intense harvests in commercial fisheries led to stock collapses in the late 1800s and early 1900s from which the species has never recovered. Legal harvest ceased in 1988 within the United States because of an Atlantic States Marine Fisheries Commission (ASMFC) moratorium on the harvest and possession of Atlantic Sturgeon. Even with the moratorium, however, commercial fishing remains a significant threat to Atlantic Sturgeon via bycatch across many near-shore and estuarine fisheries.

Additional impacts and threats to Atlantic Sturgeon range-wide include impairment of spawning and nursery habitat, water quality impacts, vessel-strike mortality, dredging impacts and mortality, dams / impoundments, and in-water construction activities on important habitat reaches for projects that result in increased vessel traffic that contribute to the significant number of vessel strikes.

All populations of Atlantic sturgeon in the United States were federally listed as threatened or endangered in 2012 by the National Marine Fisheries Service (NMFS, or NOAA Fisheries) following the sobering findings of the 2007 Status Review Team. However, despite genetically unique populations for each river, varying conditions of each population (some stable, some increasing, and some spiraling toward extinction), and unique threats to each river population, NMFS ignored calls by scientists and advocates, including the Delaware Riverkeeper Network, to protect each river population independently and instead combined multiple rivers into amalgamations of Distinct Population Segments (DPS). In total, five DPS units were designated in 2012, with the Gulf of Maine designated as “threatened” under the Endangered Species Act and the four additional DPSs designated as “endangered”: New York Bight DPS, Chesapeake Bay DPS, Carolina DPS, and South Atlantic DPS.

Historically, at least 38 rivers and estuaries were home to Atlantic Sturgeon spawning populations, but currently only 23 river systems have documented contemporary spawning runs (various researchers have cited numbers from 18 rivers up to 25 rivers). The extirpation of entire river populations has been particularly problematic in the northeastern United States, where only 3 rivers have documented extant populations between the State of Delaware and the border with Canada: the Delaware River, Hudson River, and Kennebec River. In this long coastal reach, at least 8 of the 11 rivers

[3] The information, scientific studies, and expert analyses supporting the information provided in this section can be found in Section VIII of this document.

have lost their historic Atlantic Sturgeon populations: Housatonic, Connecticut, Taunton, Merrimack, Sheepscot, Androscoggin, Penobscot and St. Croix.

As of 2023, all United States river populations are at or near historic lows, with the largest populations or spawning runs only estimated between 100 and 500 adults in each year's spawning run. These numbers are many orders of magnitude below historic numbers. For the Delaware River population, the situation is particularly dire. The total estimated number of females in the Delaware River population ca. 1890 during heavy exploitation was 180,000, while the most recent estimates of total *adults* in a given spawning run number only between 125 and 250 mature individuals (male and female). While the estimates represent different fractions of the total population, these estimates put the decline on the order of 1000-fold for the Delaware River population alone. Despite the historically low population numbers, careful studies of genetic variability have generally documented suitably diverse populations for prospective recovery. Inbreeding is present, but only at modest levels.

For the Delaware River population of Atlantic Sturgeon, the unique combination of acute, pernicious threats, with precariously low population numbers, and troubling signs for genetic diversity present a worrisome prognosis that demands immediate intervention.

Two of the most pressing and unique threats for the Delaware River population are exceedingly high vessel strike mortality relative to population size, and young-of-year mortality from hypoxia. Habitat destruction, ongoing and increasing dredging, and in-river development provide compounding harms and impacts. Movement of the River's salt line resulting from a combination of events including sea level rise and river deepening, negatively impact the availability of suitable spawning habitat.

Research and data demonstrate that within the Delaware River population, the number of Atlantic Sturgeon killed by vessel strike (~160 individuals killed per year) is at the same magnitude as the annual spawning run of adult Atlantic Sturgeon in the system (estimated to be between 125 and 250 adults annually). In fact, at these levels, the potential exists that the number of Delaware River Atlantic Sturgeon killed in a year could soon exceed the number of adult individuals entering the estuary to spawn.

These alarming vessel-strike estimates arise from the recent NMFS-funded study by Fox and colleagues, completed in 2020, for vessel strike reporting within the Delaware estuary itself. Despite numerous reports of Atlantic Sturgeon mortalities on the river each year, the Fox et al. study showed how government has underestimated the impacts of vessel strikes on the Delaware River population of Atlantic Sturgeon for decades. These studies confirm: without aggressive protective measures to reduce this mortality source, the unsustainably high vessel strike mortality in the Delaware estuary

could alone doom this river's critically endangered population of Atlantic Sturgeon. Vessel strike mortality needs immediate reduction to preclude extinction; maintaining the status quo or actions that increase vessel strike mortality are indefensible positions and place the Delaware River Atlantic Sturgeon population in grave jeopardy. Recognizing the Delaware River population as a distinct population segment, and identifying associated critical habitat, will provide government guidance and additional protections essential for addressing this and other unsustainable sources of Atlantic Sturgeon mortality.

Hypoxia on the spawning and rearing grounds for Atlantic Sturgeon similarly presents its own grave threat to the survival of the Delaware River population. Beginning in 2009, when the State of Delaware's Division of Fish & Wildlife began focusing on RRJ Atlantic Sturgeon in the Delaware River, extreme variability in YOY (young of year) and age 1 fish have been documented. The Delaware Riverkeeper Network has repeatedly sounded the alarm about the link to estuary hypoxia and year-class failure or partial-failure since as early as 2010. Increasingly, Sturgeon researchers have been drawing attention to this link. In 2023, US Environmental Protection Agency researchers, using Delaware River Basin Commission ("DRBC") water quality modeling results, demonstrated the severe reduction in Atlantic Sturgeon numbers and biomass for YOY individuals as a result of the persistent hypoxia currently experienced on the spawning and nursery grounds for Delaware River Atlantic Sturgeon.

While the impacts of vessel strikes, dredging, pollution, and habitat destruction on the Atlantic Sturgeon of the Delaware River have been known for decades, attainable solutions and opportunities to avoid adverse impacts on the Atlantic Sturgeon have not been acted upon or pursued. For example, point source loads of BOD have been known since the 1960s to create both hypoxia and even fully anoxic conditions from Philadelphia and Camden down through Wilmington. Load reductions for CBOD have been required of point source facilities since 1967, but load reductions for NBOD (primarily ammonia) were postponed in favor of addressing the larger CBOD loads (1,000,000 lbs/day for CBOD vs 600,000 lbs/day for NBOD). Again, in the 1980s and 1990s DRBC and its contractors modeled the impacts from BOD loading and proposed that up to 2 mg/L of improvements to D.O. could be attained through the implementation of the conventional treatment process called nitrification (the oxidation of ammonia and other reduced forms of nitrogen to nitrite and nitrate). Yet through 2023, the discharge requirements for ammonia and NBOD, and the dissolved oxygen criteria for the Delaware estuary, remained unchanged from those original and antiquated standards adopted in 1967.

Despite the existential threat to sturgeon and known, simple and conventional solutions, the risk of government inaction remains extremely high. The DRBC acknowledged the

need for swift action on upgrading D.O. standards in 2009 as an initial step towards addressing the more complex problem of cultural eutrophication for the Delaware Estuary. Yet in 2023, nearly 15 years later, DRBC has taken no regulatory action. Instead, DRBC has: proposed and conducted multiple studies; proposed and then extended multiple deadlines upon itself, and; failed to propose either (i) a new D.O. standard that would protect the highly-sensitive YOY Atlantic Sturgeon or (ii) limits beyond those adopted in 1967 for the reduction of ammonia and NBOD. Industrial interests who stand to benefit from continued pollution of the estuary and continued catastrophic impacts to Atlantic Sturgeon aggressively challenge even simple modeling studies of loads and impacts from point sources. Influenced by industry opposition, no government agency–not state, not interstate, not federal–has moved to propose new D.O. standards that would protect Atlantic Sturgeon. However, the Delaware Riverkeeper Network is hopeful that the US EPA will propose protective standards in the coming months in response to a Clean Water Act petition filed by the Delaware Riverkeeper Network and colleague organizations.

Like in the 1960s, and in the 1990s, the entire estuarine ecosystem stands to benefit from implementation of conventional treatment of wastewaters and, specifically, ammonia. Still, many observers expect failure once again. History has shown that the financial interests of industry normally outweigh both the benefits to our ecosystems as well as the benefits to our river communities from clean water. The pernicious threat of hypoxia to the Delaware River's Atlantic Sturgeon is acute, large in magnitude, and risks being perpetuated into the future. Indeed, even if new standards were adopted in 2023, the upgrades to wastewater facilities could be delayed for 5 to 10 years through permit variances and implementation schedules. Even with swift action, the Atlantic Sturgeon could face a decade or more of continued hypoxia, of continued year-class failure, arising from continued anthropogenic impacts not seen either in the Hudson River or other rivers in the poorly-defined DPS.

Additional significant threats to the Delaware River's population of Atlantic sturgeon include the 'squeeze' of salt front migration up-estuary. Sea level rise, continued dredging of deep-water ports, and deepening of the river's navigation channel, are radically changing the tidal forcing effect of the Delaware estuary and are causing major up-estuary migration in the salt front. This continuing and expanding threat is now at the doorstep to the large aggregation of spawning adults and rearing juveniles just above the current salt front near the Delaware state line, an area unique to the estuary because of exposed bedrock that is ideal for sturgeon spawning. With further migration of the salt front up-estuary, this critical area for Atlantic sturgeon risks becoming a brackish-water zone. The requirement for freshwater habitat by spawning adults would then render this area (an area that the sturgeon themselves prefer) as non-viable spawning habitat, forcing spawning adults upstream into more urban areas of the

estuary where hypoxia is more severe and acute. Adding to this "squeeze" are rapidly increasing concentrations of chloride in the freshwater sources to the estuary, and heightened variability in precipitation patterns due to climate change. Both trends further exacerbate an already problematic situation and risk eliminating key spawning grounds in the Delaware River.

There are many common threats to Atlantic sturgeon across its range and among the various river systems. The Delaware River's population, however, faces critical and unique threats that not only are preventing recovery but are driving the population closer and closer to extinction.

The misguided decision to lump the genetically unique and independent populations from the Hudson and the Delaware Rivers into a single DPS stands as a major barrier to recovery for the dwindling Delaware River population. Critical threats to the Delaware River population of Atlantic sturgeon are unique to this river and are not shared with the Hudson River population. Hypoxia does not threaten the Hudson River's spawning and nursery grounds like it does in the Delaware. Vessel strike mortality, while present in the Hudson River, is far lower than in the Delaware River. This is due, in part, to the much greater natural depths of the Hudson River, particularly on the spawning grounds.

Because of the lower anthropogenic impacts, the Hudson River's population of Atlantic sturgeon is estimated to be among the largest remaining U.S. populations and has seen important signs of recovery in the last decade. By contrast, the Delaware River population is among the most imperiled. Combining the two rivers into a single DPS and management unit undermines the ability of all government agencies to protect and recover both populations, and most certainly compromises the ability to properly reflect upon, and protect, the Delaware River population.

When rendering a jeopardy determination pursuant to the Endangered Species Act, including the level at which government permits "take" from a species, the relative health of a population, including the remaining number of individuals, is a key element for decision-making. While the Delaware River population of Atlantic Sturgeon continues to be in decline, the Hudson River population remains significantly higher and even increases along a recovery trajectory. The result is that the New York Bight DPS demonstrates far higher population numbers and a recovery trajectory that is inaccurately and misleadingly ascribed to the Delaware River population.

A key consequence of the decision to lump the Hudson River and Delaware River populations into a single DPS is that permitting decisions and consultation under the Endangered Species Act allow for expansion of the unsustainable "take" and increased mortality of Delaware River sturgeon because it is nearly impossible to trigger a "jeopardy" decision when the Hudson River population is expanding. Even if the

Delaware River population were forecast to go extinct, the DPS can be said to remain viable because of the stronger Hudson River population numbers.

Despite significant anticipated, well-documented, and government-recognized impacts to Delaware River Atlantic Sturgeon from a newly proposed project or ongoing permitting of an existing and harmful condition, we repeatedly see NMFS determinations that a proposed action "may adversely affect, but is not likely to jeopardize the continued existence" of the New York Bight DPS, and as a result essential protections are denied the Delaware River population which is the one actually experiencing the adverse affects and loss that will result (as opposed to those affects being inflicted upon Hudson River sturgeon). Deep-water dredging, hundreds of vessel strike mortalities each year, decisions and actions that will increase vessel strikes, near complete elimination of year classes through juvenile hypoxia mortality, ongoing cooling water intakes, construction and in-river activities damaging critical Atlantic Sturgeon habitat – all of these remain permissible in the Delaware River not because they are inconsequential to the Delaware River's population survival, but because the DPS decision lumps the Hudson River population with the Delaware River population.

The Delaware River's population of Atlantic sturgeon must be recognized as its own DPS to adequately and appropriately address existing and future sources of "take" and mortality, and to stabilize and restore this significant and vital population of Atlantic sturgeon that is 1 of just 3 populations that remains in the northeastern United States.

The unique population of Atlantic sturgeon in the Delaware River face manifold threats, the magnitude and severity of which dwarf those faced in the Hudson River. As a result, the Delaware River's population continues to struggle and fades towards extinction while the Hudson River's population begins its recovery. These Delaware River threats, complemented by the clear science demonstrating the genetic uniqueness of the Delaware River population, constitute pivotal reasons for designating the Atlantic sturgeon in the Delaware River as a stand-alone DPS.

## VI. CRITERIA FOR LISTING AS A DISTINCT POPULATION SEGMENT

(a) Discreteness:

Discreteness implies that an individual DPS is reproductively isolated from other such units, and parameters that support this include identifying significant discontinuities of selectively neutral genetic markers such as mitochondrial DNA haplotype or microsatellite (nuclear DNA) allelic frequencies.

Atlantic sturgeon exhibit strong population discreteness for anadromous fish, and populations experience their own fates. As a result, lumping separate river populations

into a single DPS for purposes of management decisions and actions is not just ineffective but can be severely counterproductive. Population discreteness is essential when considering distinct population status for Atlantic Sturgeon.

Scientific research confirms the Delaware River's population of Atlantic sturgeon is genetically unique, clearly recognizable from both mitochondrial and nuclear DNA markers, and is reproductively isolated from all other river populations, including the Hudson River's population.

The Delaware River population of Atlantic sturgeon is discrete from all other populations, including those in the Hudson River.

(b) Significance:

The Delaware River's population of Atlantic sturgeon historically represented the largest single river population for the species. Estimates from the caviar fishery period place the proportion of total landings from the Delaware River upwards of 70 to 80%. No other population sustained such incredible biomass and fecundity across the Atlantic sturgeon's range.

The Delaware River's population of Atlantic sturgeon similarly represents one of the very last extant populations in the northeastern United States. Eight of the known 11 populations have been eliminated between Maine and Delaware, and the Delaware River stands with the Hudson and Kennebec Rivers as the last surviving historic populations.

The Delaware River's population of Atlantic sturgeon contains unique genetic markers and sources of variability as compared to other populations. These sources of unique genetic variability allow individuals to be correctly assigned to the Delaware River with remarkably high accuracy.

In the face of climate change, particularly increasing temperatures, rising sea levels, and changes to precipitation and runoff, the unique genetic variability of Delaware River Atlantic Sturgeon likely provides unique adaptive characteristics that will help the species adapt to a changing environment. As a result, loss of the unique genetic variability the Delaware River population provides represents an increased risk for the long-term survival of Atlantic sturgeon range-wide.

The Delaware River population of Atlantic sturgeon is clearly "significant" by the established criteria. Indeed, the Delaware River's population is among the most significant populations remaining for the Atlantic sturgeon.

## VII. CONCLUSION

As demonstrated in this petition filed under §553(e) of the Administrative Procedure Act, §1533(b)(3) of the ESA, and 50 C.F.R. §424.14(b), there is sufficient evidence to support the identification of the Delaware River's population of Atlantic sturgeon as a separate Distinct Population Segment (DPS). The geographical separation and genetic differences between the Delaware River's population and other sturgeon populations, as well as the unique ecological setting in which it resides and unique threats to its continued existence, demonstrate that this population segment is both discrete and significant.

The Delaware River's population of Atlantic sturgeon clearly meets the definition of an endangered species: it is in danger of extinction, and that risk of extinction is imminent without strong action.

We urge the National Marine Fisheries Service, on behalf of the Secretary of Commerce, to take immediate action to protect Delaware River's Atlantic sturgeon under the ESA by listing the population as its own DPS, by identifying all critical habitats essential for supporting its life cycle, and then taking all steps necessary to render the decisions and provide the protections that will allow this unique and imperiled population to recover and once again thrive.

Failure to immediately take these steps will allow the dire imminency of extinction for the Delaware River population of Atlantic Sturgeon to continue to be masked by the Hudson River population. The end result being that government actors will continue to fail to take the actions, and render the decisions, necessary to save the Delaware River Atlantic Sturgeon from extinction.

The weight of history is upon us. If you fail to act, you will be the individuals, agencies, and administration that ignored the science, the law, and the facts, and allowed a genetically unique population of Atlantic Sturgeon to disappear from earth forever. But if swift action is taken to grant and act upon this petition, future generations who are able to enjoy the beauty and majesty of the Delaware River Atlantic Sturgeon will look back with appreciation and gratitude, for you will be the ones who used your authority to make a meaningful difference and help save a species.

## VIII. RELEVANT LITERATURE

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