UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

Supplemental Environmental Assessment (SEA)

On the Issuance of a Modification to Scientific Research Permit No. 16507 to Dewayne Fox to Conduct Research on Shortnose sturgeon

[2013]

A supplement to the 2012 EA entitled "*Environmental Assessment for the Issuance of 12 Scientific Research Permits for Research on Atlantic Sturgeon*"

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Abstract: The National Marine Fisheries Service (NMFS) proposes to issue a modification to a research permit to Dewayne Fox, PhD., for takes of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) in the wild, pursuant to the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*). The modification would be valid through April 5, 2017.

The objectives of the research for Atlantic sturgeon would remain unchanged: to collect data on the biology, distribution and abundance of endangered Atlantic sturgeon to facilitate recovery of the species. Three projects fall under the permitted research. The first project authorizes directed mortality of Atlantic sturgeon eggs. As part of the second project, a hydroacoustic assessment survey, 100 Atlantic sturgeon are authorized for capture by gill net, and for measuring, weighing, tissue sampling, and PIT tagging. The third involves the capture of 300 Atlantic sturgeon annually by gill net throughout Delaware's coastal waters, and in the Delaware Bay and River. All captured Atlantic sturgeon are measured, passive integrated transponder tagged, tissue sampled, and released. Subsets of captured Atlantic sturgeon are fitted with internal satellite tags or external pop-off satellite tags; sampling also includes gonad tissue biopsy.

The applicant now requests authorization for 100 annual shortnose sturgeon (*Acipenser brevirostrum*) takes for the remainder of the permit; all capture methods, action areas and activities would remain the same as for the currently authorized Atlantic sturgeon takes. The authorization to sample an additional sturgeon species would allow the permit holder to test use of a hydroacoustic assessment method for shortnose sturgeon which is currently authorized for Atlantic sturgeon.

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CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

1.1 DESCRIPTION OF ACTION

The National Marine Fisheries Service (NMFS), Office of Protected Resources (NMFS PR) proposes to issue a modification of Permit No. 16507 to Dewayne Fox, PhD., Delaware State University, under Section 10(a)(1)(A) of the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 *et seq*.), and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR 222-226). This modification would be valid through April 5, 2017.

1.1.1 BACKGROUND:

In response to the receipt of an application for a modification from Dewayne Fox [File No. 16507], NMFS PR proposes to issue a modification to scientific research Permit No. 16507 to include "takes"[1] of shortnose sturgeon (*Acipenser brevirostrum*) pursuant to the statute and regulations listed above. This document supplements the 2012 EA entitled "*Environmental Assessment for the Issuance of 12 Scientific Research Permits for Research on Atlantic Sturgeon*" (NMFS 2012).

The applicant's permit currently authorizes: capture of up to 300 Atlantic sturgeon annually by gillnet; weigh; measure; genetic sample; and passive integrated transponder (PIT) tag. A subset of up to 60 adults annually are gonad sampled; fin ray sampled; implanted with acoustic transmitter tags, released and tracked; a second subset of 60 adults annually may be externally acoustic tagged, fin ray sampled, and gonad sampled. The permit also authorizes directed lethal take of 50 Atlantic sturgeon early life stage/eggs. The applicant is also currently authorized to use side scan sonar to image and capture by gill net up to 100 Atlantic sturgeon, and weigh, measure, PIT tag, and tissue sample them before release.

1.1.2 PURPOSE AND NEED:

The primary purpose of the permit is to provide an exemption from the ESA prohibitions to allow "takes" of endangered species for bona fide scientific research. The need for issuance of the permit is related to NMFS's mandates under the ESA, specifically, the responsibility to protect, conserve, and recover threatened and endangered species under its jurisdiction. The ESA prohibits takes of threatened and endangered species with only a few very specific exceptions, including for scientific research and enhancement purposes. Permit issuance criteria require research activities are consistent with the purposes and policies of this federal law and will not have a significant adverse impact on the species. NMFS reviewed the proposed action to ensure all the proposed activities fulfill these permit issuance criteria.

1.1.3 OBJECTIVES OF THE RESEARCH:

The objectives of the proposed modification are identical to that of the original permit: collecting data on the biology, distribution and abundance of the endangered Atlantic sturgeon

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1 The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" is further defined by regulations (50 CFR §222.102) as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including breeding, spawning, rearing, migrating, feeding, or sheltering."

to facilitate recovery of the species. The applicant is now requesting the addition of endangered shortnose sturgeon to the permit. All other aspects of the currently permitted activity—the action area, capture methods, activities, and research objectives—would remain the same.

The applicant is currently authorized for Atlantic sturgeon takes for three projects under Permit No. 16507. The objective of the second project is to characterize the sturgeon population in areas of suitable habitat in the Delaware River, as well as to determine if side scan sonar imaging can be used to differentiate Atlantic sturgeon and shortnose sturgeon. Transect surveys take place using side scan sonar to image fish in areas of known sturgeon habitat based on benthic maps. Sturgeon are captured by gill net for identification, and then minimally sampled and released. Without authorization for takes of both sturgeon species, the applicant will be unable to sample, since the species co-occur.

The applicant's initial request for Atlantic sturgeon takes under File No. 16507 included shortnose sturgeon takes as part of the second project, and it remained part of the request, released for public comment in September 2011 (see below). During Section 7 consultation, the request for shortnose sturgeon takes was removed, and the request is now being processed separately as a modification.

1.2 OTHER EAs/EISs INFLUENCING THE SCOPE OF THIS SEA

An EA (NMFS 2012) was prepared for issuance of the original Permit (No. 16507) which determined that issuance of the permit and the associated research would not result in significant impacts to any portion of the human environment.

Because the proposed action would not change the nature or location of the research activities, the effects on the physical, social, and economic environment are not re-examined in this SEA. The modification would authorize annual takes of shortnose sturgeon; therefore, the scope of this SEA is limited to the potential impacts to shortnose sturgeon.

1.3 SCOPING SUMMARY

The purpose of scoping is to identify the issues to be addressed and the significant issues related to the proposed permit modification, as well as identify and eliminate from detailed study the issues not significant or those having been covered by prior environmental review. An additional purpose of the scoping process is to identify the concerns of the affected public and Federal agencies, states, and Indian tribes. CEQ regulations implementing the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) do not require that a draft SEA be made available for public comment as part of the scoping process.

A Notice of Receipt of the application was published in the *Federal Register*, announcing the availability of the permit application and related documents for public comment (File No. 16507; September 21, 2011; 76 FR 58469). No comments were received from the public regarding this application. Comments from NMFS Northeast Regional Office and Northeast Fisheries Science Center were also solicited and addressed in the decision memos.

1.4 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

This section has not changed from that described in the 2012 EA. Applicable laws include the NEPA and ESA.

CHAPTER 2: ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 ALTERNATIVE 1 – NO ACTION

Under the No Action alternative, a modification to scientific research Permit No. 16507 to add shortnose sturgeon take would not be issued at this time. The existing permit would remain in effect through expiration, allowing research to continue as originally authorized. The applicant is currently authorized to capture by gillnet up to 300 Atlantic sturgeon annually; weigh; measure; genetic sample; passive integrated transponder (PIT) tag. A subset of up to 60 adult Atlantic sturgeon annually may be gonad sampled; fin ray sampled; implanted with acoustic transmitter tags, and released; another subset of 60 adults may be externally acoustic tagged, fin ray and gonad tissue sampled. The permit also authorizes directed lethal take of 50 Atlantic sturgeon early life stage/eggs.

To conduct the hydroacoustic assessment project, the applicant is also currently authorized to capture by gill net up to 100 Atlantic sturgeon, and weigh, measure, PIT tag, and tissue sample them before release. The hydroacoustic assessment uses digital high frequency side scan sonar to obtain underwater images to characterize the species in an area of interest, and for potential identification and enumeration of the sturgeon species. Locations for sampling are chosen based on the bottom characteristics and suitability as sturgeon habitat, using fine-scale habitat maps created by the Delaware Department of Natural Resources and Environmental Control's Delaware Bay Benthic Mapping Program. Side scan sonar is then used along transects, and then gill nets are set on the slack tide.

2.2 ALTERNATIVE 2 – PROPOSED ACTION

Under the Proposed Action alternative, a permit modification would be issued for research activities having terms and conditions standard to such permits as issued by NMFS.

The portion of the permitted research relevant to this modification is the hydroacoustic assessment project. The applicant is now requesting the addition of shortnose sturgeon to the permit, so that the hydroacoustic assessment portion of the permitted research may go forward. The applicant is requesting to capture by gill net up to 100 shortnose sturgeon, and weigh, measure, PIT tag, and tissue sample them before release. All other aspects of the currently permitted activity would remain the same.

2.3 DESCRIPTION OF THE PROPOSED ACTION

2.3.1 BOUNDARIES OF ACTION AREA:

The action area is defined in 50 CFR 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The description

of the action area therefore includes the areas affected by sampling activities as well as the area transited by project vessels.

Under the proposed modification, the action area would remain the same. Sampling would continue to occur throughout Delaware's coastal waters (up to three miles offshore), and in the Delaware Bay and River. The hydroacoustic assessment portion of the Atlantic sturgeon research takes place in the Delaware River, from the Chesapeake and Delaware Canal (river kilometer 94) to Trenton (river kilometer 210). The proposed shortnose sturgeon takes associated with this research would occur in the same area.

2.3.2 Request for Shortnose Sturgeon Take:

The applicant requests 100 annual shortnose sturgeon takes for Project 2 as shown in Table 1 below. The number of Atlantic sturgeon takes currently authorized would remain the same.

Sampling would occur year round on a quarterly basis. Areas for sampling would be selected based on logistics (e.g., vessel traffic), and suitability as sturgeon habitat (e.g., bottom characteristics) based on available fine-scale benthic maps. Once an area was chosen, the side scan sonar would be used along transects ($n \geq 50$; 500m length). After the sonar was used, nets would be set; standard netting condition requirements would apply (e.g., water temperature, dissolved oxygen levels). Soak times would be less than 2 hours; gillnetting would only occur on the slack tide. Nets would be monitored continuously. Upon capture, sturgeon would be identified to species, weighed, measured, tissue sampled, PIT tagged, and released. Estimated time from removal from nets to release would be less than 10 minutes.

Table 1: Take Table for File No. 16507—Sturgeons in the mid-Atlantic; identification of critical habitats, population assessment and migratory patterns. Proposed modification to authorized takes are in bold.

Species	Life Stage	Annual Take	Collect Method	Take Activities	Details	Location
Atlantic Sturgeon	Early Life Stage (Eggs/ Larvae)	50	Egg Mat	Directed Mortality, (Preserved as laboratory samples)	Project 1: Spawning Site Identification	Delaware River and Estuary New York Bight
Atlantic Sturgeon	Early Life Stage (Eggs/ Larvae)	300	Egg Mat	Enumerated and returned to river	Project 1: Spawning Site Identification	Delaware River and Estuary New York Bight
Atlantic Sturgeon	Juvenile	100	Gill Net	Measure; Weigh; Photograph; PIT tag; Genetic tissue sample	Project 2: Hydroacoustic Assessment	Delaware River and Estuary New York Bight
Shortnose Sturgeon	**Juvenile**	**100**	**Gill Net**	**Measure; Weigh; Photograph; PIT tag; Genetic tissue sample**	**Project 2: Hydroacoustic Assessment**	**Delaware River and Estuary** **New York Bight**
Atlantic Sturgeon	Adult/ Sub-adult	300	Gill Net	Measure; Weigh; Photograph; PIT tag;	Project 3: Fishery	Delaware Bay and Offshore

				Floy/T-bar tag; Genetic tissue sample	Independent Monitoring/Coastal Sampling Program	New York Bight
Atlantic Sturgeon	Adult/ Sub-adult	60	Gill Net	Measure; Weigh; Photograph; PIT tag; Floy/T-bar tag; Genetic tissue sample; Fin ray sample; Anesthetize; Internal sonic tag[1] Gonad tissue sample	Project 3: Fishery Independent Monitoring/Coastal Sampling Program	Delaware Bay and Offshore New York Bight
Atlantic Sturgeon	Adult/ Sub-adult	50	Gill Net	Measure; Weigh; Photograph; PIT tag; Floy/T-bar tag; Genetic tissue sample; Fin ray sample; Anesthetize; Pop-off satellite archival tag[2] Gonad tissue sample	Project 3: Fishery Independent Monitoring/Coastal Sampling Program	Delaware Bay and Offshore New York Bight

1. Only Atlantic sturgeon >60.0cm fork length would be implanted with a sonic tag.
2. PSAT tags are slated for Year 2 – 5 of the permit.

CHAPTER 3: AFFECTED ENVIRONMENT

The affected physical environment would not change as a result of the proposed action and would remain as previously described in the 2012 EA. The affected biological environment has not changed since the writing of the 2012 EA; the 2012 EA is incorporated by reference.

3.1 PHYSICAL ENVIRONMENT

The action area for the research under the proposed permit modification is identical to that evaluated in the 2012 EA. NMFS PR has determined that the original 2012 EA developed for the issuance of the original permit considers all of the measurable impacts on the physical environment, and this document is incorporated by reference. The modifications proposed in this SEA are not expected to impact the physical environment in ways that have not previously been analyzed.

3.2 BIOLOGICAL ENVIRONMENT

The biological environment for the proposed research modification has not changed from that evaluated in the 2012 EA. The modification would authorize annual takes of shortnose sturgeon (*Acipenser brevirostrum*); therefore, this discussion is limited to the potential impacts to shortnose sturgeon.

3.2.1 TARGET SPECIES—SHORTNOSE STURGEON

In this request, the shortnose sturgeon, which is not the subject of directed research in the applicant's current permit, would now be a target species. Shortnose sturgeon would be captured by gill net, measured, weighed, PIT tagged and released.

The research techniques and capture methods for shortnose sturgeon would be the same as currently authorized for Atlantic sturgeon. Furthermore, the mitigation measures contained in the applicant's current permit were designed to be protective of both sturgeon species (Kahn and Mohead 2010).

Since shortnose and Atlantic sturgeon co-occur, it was necessary to examine the effects of issuing Atlantic sturgeon research permits on non-target shortnose sturgeon. The 2012 EA prepared for the original action contains a discussion of the effects of the Atlantic sturgeon research on non-target species, particularly shortnose sturgeon, and resulted in a Finding of No Significant Impact; both documents are hereby incorporated by reference (NMFS 2012). Since the gear and sampling location would remain the same, NMFS does not expect different by-catch species under the proposed modification. Due to short soak times (< 2 hours) and the constant monitoring of nets, all by-catch is expected to be released alive. Impacts to by-catch species are not expected to be different than previously analyzed in the 2012 EA.

This ends the summary of the description of the biological environment from issuance of the proposed permit modification. For a more thorough discussion of the biological environment associated with this action, please refer to the original 2012 EA, its accompanying Biological Opinion, and the current Biological Opinion accompanying this SEA.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter represents the scientific and analytical basis for comparison of the direct, indirect, and cumulative effects of the alternatives. Regulations for implementing the provisions of NEPA require consideration of both the context and intensity of a proposed action (40 CFR Parts 1500-1508).

4.1 EFFECTS OF ALTERNATIVE 1 – NO ACTION

Under the No Action alternative, the take activities would continue as currently authorized under the existing permit. Based on the analyses in the 2012 EA, NMFS determined issuance of the permit and conduct of the associated research would not likely jeopardize the continued existence of Atlantic sturgeon or any other non-target species, including shortnose sturgeon. Additionally, the activities conducted under the permit were not expected to significantly affect any other portions of the environment (NMFS 2012).

4.2 EFFECTS OF ALTERNATIVE 2 – PROPOSED ACTION

Any impacts of the Proposed Action alternative would be limited primarily to the to the target species and unlikely to affect the physical or socioeconomic environment or pose a risk to public health and safety in any way not already analyzed in the EA (NMFS 2012) previously prepared for this permit. The following discussion assesses the effects of directed take at shortnose sturgeon.

4.2.1 EFFECTS OF PROPOSED SHORTNOSE STURGEON TAKES:

The issue most relevant to this analysis is the potential for negative impacts on the target species. It is important to recognize that an adverse effect on a single individual or a small group of animals does not translate into an adverse effect on the population or species unless it results in reduced reproduction or survival of the individual(s) that causes an appreciable reduction in the likelihood of survival or recovery for the species. In order for the Proposed Action to have an adverse effect on a species, the exposure of individual animals to the research activities would first have to result in:

- direct mortality,
- serious injury that would lead to mortality, or
- disruption of essential behaviors such as feeding, mating, or nursing, to a degree that the individual's likelihood of successful reproduction or survival was substantially reduced.

That mortality or reduction in the individual's likelihood of successful reproduction or survival would then have to result in a net reduction in the number of individuals of the species. In other words, the loss of the individual or its future offspring would not be offset by the addition, through birth or emigration, of other individuals into the population. That net loss to the species would have to be reasonably expected, directly or indirectly, to appreciably reduce the likelihood of both the survival and recovery of the listed species in the wild.

NMFS believes that the effects of directed research activities on shortnose sturgeon to be minimal, short in duration, and not likely to adversely affect (NMFS 2012). The NMFS biological opinion prepared for the issuance of the Atlantic sturgeon research permits concluded the incidental capture of shortnose sturgeon in the Action Areas would not reduce the likelihood of the survival and recovery of its populations in the wild and would not likely jeopardize the continued existence of shortnose sturgeon (NMFS 2012a).

Hence, although the total number of animals captured and suite of activities performed would increase as a result of the Proposed Action, as described above, none of the activities would result in the serious injury, mortality or reduced reproductive success of the target species, as supported in the Biological Opinion prepared for this action (NMFS 2012b). Therefore the Proposed Action is not expected to significantly impact individual shortnose sturgeon, their populations or species.

4.3 SUMMARY OF COMPLIANCE WITH APPLICABLE LAWS, NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

As summarized below, NMFS has determined the proposed research is consistent with the purposes, policies, and applicable requirements of the ESA and NMFS regulations. NMFS issuance of the modification would be consistent with the ESA. However, issuance of this modified permit would not relieve the Permit Holder of the responsibility to obtain any other permits, or comply with any other Federal, State, local, or international laws or regulations.

4.3.1 COMPLIANCE WITH THE ENDANGERED SPECIES ACT

The consultation process under section 7 of the ESA was concluded after close of the comment period on the application for File No. 16507 to ensure that no relevant issues or information were overlooked during the initial scoping process summarized in Chapter 1. For the purpose of the consultation, the draft SEA represented NMFS' assessment of the potential biological impacts.

After reviewing the current status of endangered shortnose sturgeon, the environmental baseline for the action area, the effects of the proposed research program, and the cumulative effects, NMFS's biological opinion is that issuance of this permit modification would not likely jeopardize the continued existence of the shortnose sturgeon, nor would it impact any of its designated critical habitat.

4.4 COMPARISON OF ALTERNATIVES

The No Action alternative would not allow any aspects of the requested modification to be authorized. The research would continue as currently authorized. This alternative would not result in any significant impacts to the social, economic, biological, or physical environment; however, the opportunity to gather additional information that would aid in the conservation and management of endangered shortnose sturgeon would be lost.

The Proposed Action alternative would authorize shortnose sturgeon takes. Although this alternative would result in impacts to the target shortnose sturgeon, no other aspects of the environment are expected to be significantly adversely affected. The mitigation measures proposed in the original permit would be used to guard against any significant effects to the species and population. The information gained would outweigh any potential for negative impacts to the target species.

4.5 MITIGATION MEASURES

The mitigation measures contained in Permit No. 16507 are intended to minimize the potential for adverse effects on Atlantic sturgeon. The mitigation measures in the permit were developed to be protective of Atlantic and shortnose sturgeon (Kahn and Mohead 2010). All of the mitigation measures in the current permit would remain in effect. No additional mitigation measures are proposed.

4.6 UNAVOIDABLE ADVERSE EFFECTS

Because the research involves wild animals that are not accustomed to being captured, the research activities will unavoidably result in some harassment. The research activities would cause disturbance and stress to shortnose sturgeon already captured. The research is not expected to have more than a minimal effect on individuals and no effect on populations with animals recovering within the day of the procedures. While individual animals may experience short-term stress and discomfort in response to the activities of researchers, the impact to individual animals is not expected to be significant. The minimization measures imposed by permit conditions are intended to reduce, to the maximum extent practical, the potential for adverse effects of the research on these species (NMFS 2012). Since the proposed action would only occur on shortnose sturgeon already captured, no other portion of the human environment

would be affected in a manner not already considered in the 2012 EA, which is hereby incorporated by reference.

4.7 CUMULATIVE EFFECTS

The baseline for this document, which was discussed in the original 2012 EA, includes the past and present impacts of state, Federal or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone consultations under Section 7 of the ESA, and the impact of contemporaneous state or private actions.

There are two other shortnose sturgeon permits authorized in Delaware waters with an action area overlapping part of the proposed action (Nos. 14604 (ERC, Inc.) and 14396 (DE Department of Natural Resources and Environmental Control)). However, all of the research actions would be expected to have no more than short-term effects on individual endangered shortnose sturgeon and no effects on other aspects of the environment. Please see the 2012 EA for a complete description of previously analyzed cumulative effects.

NMFS believes that the proposed modification as discussed above, and in the original EA, would not have a significant cumulative effect on any part of the human environment. The proposed action is directed at specific shortnose sturgeon and as modified would also not have a significant cumulative impact on non-target species encountered or on the physical environment in the proposed action area. Further, as informed by the Biological Opinion for this action, issuance of this modification is not likely to jeopardize the continued existence of endangered shortnose sturgeon, its critical habitat, or of other listed species.

CHAPTER 5 LIST OF PREPARERS AND AGENCIES CONSULTED

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Agencies and Personnel Consulted:

Office of Protected Resources Section 7 National Marine Fisheries Service Endangered Species Division, Silver Spring, MD 20910	Formal Consultations on the Effects on ESA Target Species (shortnose sturgeon)

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NMFS 2012. Environmental Assessment for the Issuance of 12 Scientific Research Permits for Research on Atlantic Sturgeon. Silver Spring, MD.

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NMFS 2012b. Biological opinion on the Office of Protected Resources' proposal to issue Permit 16507-01 for research on shortnose sturgeon in the Delaware River pursuant to section 10 (a)(1)(a) of the Endangered Species Act of 1973. Silver Spring, MD.