



JUL 27 2012

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act (NEPA), an environmental review has been performed on the following action.

TITLE: Environmental Assessment on the Effects of Issuing a Permit for Scientific Research on Protected Shortnose and Atlantic Sturgeon in the Hudson River, New York

LOCATION: The action area includes the Hudson River from River Mile 0 (Battery Park, Manhattan) to River Mile 152 at Troy Dam (Albany, NY).

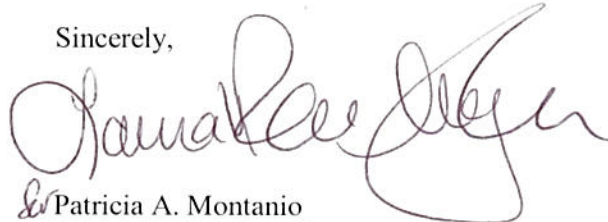
SUMMARY: The National Marine Fisheries Service (NMFS) proposes to issue a scientific research permit for takes of shortnose and Atlantic sturgeon, listed as endangered, under the Endangered Species Act. The objective of the permitted research is to monitor sturgeon abundance and distribution through the Hudson River Biological Monitoring Program. The preferred alternative is not expected to have more than short-term effects on shortnose or Atlantic sturgeon and will not significantly impact the quality of the human environment.

RESPONSIBLE OFFICIAL: Helen M. Golde
Acting Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway, Room 13821
Silver Spring, MD 20910
(301) 713-2332

The environmental review process led us to conclude that this action will not have a significant effect on the human environment. Therefore, an environmental impact statement will not be prepared. A copy of the finding of no significant impact (FONSI) including the supporting environmental assessment (EA) is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the responsible official named above.

Sincerely,


Patricia A. Montanio
NOAA NEPA Coordinator

Enclosure





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910 JUL 25 2012

Environmental Assessment

On the Effects of Issuing a Permit for Scientific Research on Endangered Shortnose and Atlantic Sturgeon in the Hudson River

July 2012

Lead Agency: USDOC National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources

Responsible Official: Helen M. Golde, Acting Director, Office of Protected Resources

For Further Information Contact: Office of Protected Resources
National Marine Fisheries Service
1315 East West Highway
Silver Spring, MD 20910
(301) 427-8400

Location: Hudson River, NY

Abstract: The National Marine Fisheries Service (NMFS) proposes to issue a five-year scientific research permit (Permit No. 17095) to Entergy Nuclear Operations Inc., 450 Broadway, Suite 3, Buchanan, NY 10511, pursuant to the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*). The action would exempt the permit holder from takes of shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) under the ESA, by capture, harassment, wounding and harm during bona fide scientific research. The purpose of the research would be to monitor sturgeon abundance and distribution through the Hudson River Biological Monitoring Program (HRBMP). The action area includes the Hudson River from River Mile 0 (Battery Park, Manhattan) to River Mile 152 at Troy Dam (Albany, NY). The focus of the monitoring program is fish identification, mark and recapture, and enumeration within defined Hudson River region and depth strata. Researchers would be authorized to non-lethally capture, handle, measure, weigh, scan for tags, insert passive integrated transponder (PIT) and dart tags, photograph, tissue sample, and release up to 82 shortnose sturgeon and 82 Atlantic sturgeon annually. Additionally, researchers would be permitted to lethally take up to 40 shortnose sturgeon eggs and/or larvae and 40 Atlantic sturgeon eggs and/or larvae (ELS) annually.



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CHAPTER 1 PURPOSE AND NEED FOR ACTION

1.1 DESCRIPTION OF ACTION

1.1.1 *Proposed Action:*

NMFS proposes to issue Scientific Research Permit No. 17095 pursuant to the Endangered Species Act of 1973 as amended (ESA; 16 U.S.C. 1531 *et seq.*) for “takes”¹ of protected shortnose and Atlantic sturgeon in the Hudson River in response to a request from the following applicant:

File No. 17095: Entergy Nuclear Operations Inc, [John A. Ventosa, Responsible Party], 450 Broadway, Suite 3, Buchanan, NY 10511.

1.1.2. *Purpose and Need for Action:*

The ESA prohibits “takes” of threatened and endangered species with only a few specific exceptions. The applicable exceptions in this case are an exemption for scientific purposes related to species recovery under Section 10(a)(1)(A) of the ESA.

The purpose of the permit is to provide the applicant with an exemption from the take prohibitions under the ESA for harassment of threatened or endangered species, during conduct of research that is consistent with the ESA issuance criteria. The need for issuance of the permit is related to the purposes and policies of the ESA. NMFS has a responsibility to implement the ESA to protect, conserve, and recover threatened and endangered species under its jurisdiction. Facilitating research about species’ basic biology and ecology or that identifies, evaluates, or resolves specific conservation problems informs NMFS management of protected species.

1.1.3 *Background:*

The current permit application succeeds expired Permit No. 1580-01 authorizing an identical study of shortnose sturgeon on the Hudson River. The original permit (Permit 1580-00) was supported by a 2007 environmental assessment (EA) entitled “*Environmental Assessment of Issuance of a Scientific Research Permit (File No. 1580) to Dynegy Northeast Generation, Inc. (Martin Daley, Responsible Party) to Conduct Research on Endangered Shortnose Sturgeon,*” analyzing the effects of issuance of a permit for shortnose sturgeon research on the environment in the Hudson River. A FONSI was produced for this action and signed by the Director in March 2007. Subsequently, in May 2008, the permit was amended by File 1580-01 changing the annual reporting date, but all other aspects of the permit remained the same. With the recent listing of Atlantic sturgeon (FR 77 5880), the applicant is now proposing to include Atlantic sturgeon along with shortnose sturgeon as a target species.

The U.S. Atlantic sturgeon population was listed as separated in five distinct population segments (DPS) based on discreteness criteria such as separation based on physical, physiological, and genetic factors (ASSRT 2007). These were designated as: 1) Gulf of Maine, 2) New York Bight (within the proposed action area), 3) Chesapeake Bay, 4) Carolina, and 5) South Atlantic. Also, based on the most current genetic information available (Wirgin and King 2011; ASSRT 2007) an overlap of animals is indicated within the range of the five documented DPSs through coast-wide migrations of Atlantic sturgeon. Thus, it is likely when sampling in the Hudson River there would be potential for capturing animals originating from outside the New York Bight DPS. Thus, as informed by the

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.”

biological opinion for this EA, an estimate is made on the impact of the proposed action on the non-native Atlantic sturgeon originating from outside the New York Bight DPS.

1.1.4 *Other EAs Influencing the Scope of this EA*

This assessment is an analysis serving as an EA for File No. 17095 focusing primarily on issuing a permit to study shortnose and Atlantic sturgeon on the Hudson River, New York, and how such issuance would add cumulatively to the impacts of research on ESA endangered shortnose sturgeon and Atlantic sturgeon. This section recognizes how the issuance of these permits would impact the decision to issue the proposed permit.

Up until the effective date of listing of Atlantic sturgeon in its U.S. range on April 6, 2012, scientific research on the species was supported by NMFS through the ESA section 6 Conservation Grants program to the states. However, on the effective date of listing, 12 new ESA scientific research permits were issued by NMFS on (FR 77 21754) under one batched EA entitled: *Environmental Assessment for the Issuance of 12 Scientific Research Permits for Research on Atlantic Sturgeon, April 2012*. Additionally, because shortnose sturgeon, a comparable species to Atlantic sturgeon sharing similar life history and habitat types, has been listed since 1967 (32 FR 4001), permits issued for scientific research on shortnose sturgeon also affects the scope of proposed this EA. Consequently, the EAs and SEAs prepared for active shortnose, and Atlantic sturgeon research permits are referenced in Appendix 1.

However, there is no evidence from prior analyses of the effects of permit issuance, or from monitoring reports submitted by permit holders², that issuance of research permits for take of shortnose or Atlantic sturgeon listed under the ESA has resulted in adverse effects on stocks or species. Since 2005, NMFS has prepared over 100 EAs for issuance of permits under the Marine Mammal Protection Act and ESA. In every case, the EA supported a Finding of No Significant Impact (FONSI) regardless of the nature of the permitted take or the status of the species that were the subject of the permit. These EAs were accompanied by Biological Opinions prepared pursuant to interagency consultation under section 7 of the ESA and further document that such permits are not likely to adversely affect listed species. Nevertheless, NMFS has prepared this EA, using a more detailed analysis of the potential for adverse impacts on threatened or endangered species resulting from takes of a specified number of the target species, to assist in making the decision about permit issuance under the ESA.

CHAPTER 2: ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 ALTERNATIVE 1 - NO ACTION: Under the No Action alternative, the requested permit would not be issued and the applicant would not receive an exemption from the ESA prohibition against take.

2.2. ALTERNATIVE 2 - PROPOSED PERMIT: Under the Proposed Permit alternative, a permit would be issued to exempt the applicant from the ESA take prohibition during conduct of research consistent with the purposes and policies of the ESA and applicable permit issuance criteria.

² All NMFS permits for research on protected species require submission of annual reports, which include information on responses of animals to the permitted takes.

2.2.1 *Description of Action of File No. 17095:*

The applicant seeks an ESA scientific research permit for taking endangered shortnose sturgeon and Atlantic sturgeon encountered during the annual Hudson River Biological Monitoring Program (HRBMP). The HRBMP is a continuing, annual biological monitoring program begun in 1966, performed to assess potential impacts of cooling water withdrawals from electric power generating stations on the Hudson River ecology. Individual sampling surveys are conducted each year, each targeting certain life stages of fish in their habitat using appropriate sampling gear and procedures. Shortnose and Atlantic sturgeon would be captured in the following surveys conducted under the HRBMP: (1) the Ichthyoplankton Survey, (2) the Fall Shoals Fish Survey, (3) the Beach Seine Survey, and (4) the Striped Bass Survey. These surveys and related activities are detailed with written protocols in Attachments B-1, B-2, and B-3 of the applicant's current application or prior EAs produced for Permit Numbers 1284 and 1580, using identical sampling methods and equipment over the last ten years and are reviewable by contacting: Chief, Permits Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Suite 13705, Silver Spring, MD 20910; phone (301) 427-8401.

2.2.2 *Study Purpose and Objectives:*

Scientific objectives of the HRBMP include describing the physical and chemical parameter patterns in the Hudson River estuary and the spatiotemporal distribution of shortnose and Atlantic sturgeon sampled under a series of surveys using various randomized sampling techniques to develop trends in annual abundance indices, density and standing crop estimates, and length frequency distribution information.

2.2.3. *Action Area:*

The proposed research would take place in the Hudson River Estuary, New York – specifically from Battery Park (Manhattan) to River Mile 152 (See Appendix 2: Map of Action Area for File 17095).

2.2.4 *Specific Activities:*

Both species of sturgeon captured would be measured, inspected for marks and tags, physical condition assessed, and tissue samples taken for genetic analyses. All untagged animals of suitable sizes would be tagged with external tags and PIT tagged prior to being returned to the river where they would become subjects of ongoing mark-recapture efforts.

2.2.5. *Methods and Proposed Take:*

As illustrated in Table 1, researchers would be authorized to non-lethally capture, handle, measure, weigh, scan for tags, insert passive integrated transponder (PIT) and dart tags, photograph, tissue sample, and release up to 82 shortnose sturgeon and 82 Atlantic sturgeon. Additionally, researchers would be permitted to lethally take up to 40 shortnose sturgeon and 40 Atlantic sturgeon eggs and larvae (ELS) annually. Further, with respect to Atlantic sturgeon, the measurable potential to capture animals originating from out the New York Bight DPS is accounted for in Section 4.2.1.7 of this EA. The proposed take is described in detail in the application on file and are briefly summarized here as follows:

2.2.6. *Monitoring Equipment:*

Monitoring equipment would include: (1) epibenthic sleds and Tucker trawls for sampling eggs and larvae (ELS); (2) 3.0 meter Tucker trawls (1 m²) equipped with a 3 mm mesh net for sampling young of the year (YOY), yearling and older age categories of fish in the 152 mile portion of the Hudson River estuary between Battery Park and the Troy Dam; (3) Beach seining of YOY fishes in the shore

zone (<10 ft. deep) along the 142 mile portion of the Hudson River estuary between Yonkers (George Washington Bridge) and the Troy Dam; and (4) 9- meter otter trawls equipped with a 2.0 mm net trawling in the lower Hudson River and New York Harbor (See Attachment A to review specification of sampling gear and an outline of sampling period).

2.2.7 Experimental Procedures:

The following section describes how sturgeon would be captured and handled, and the experimental procedures that would be carried out under the proposed actions.

2.2.7.1 Capturing:

Shortnose and Atlantic sturgeon would be captured during one of the several river surveys using trawl nets, epibenthic sleds, and beach seines described in Attachment A. Sampling would not occur in the same location more than once in a 24-hour period.

Table 1. Activities Authorized Under Permit No. 17095, Annually.

Number Animals	Species	Life Stage	Sex	Take Activity	Location	Date(s)
82	shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Juveniles, sub-adults and adults	male & female	Non-lethal capture, handle, measure, weigh, scan for tags, PIT tag, Dart tag, photograph, tissue sample, and release	Hudson River, NY (Battery Park – RM 152)	January - December
40	shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Eggs or larvae	unknown	lethal take	Hudson River, NY (Battery Park – RM 152)	March - December
82	Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	Juveniles (<500 mm) & Juvenile, sub-adults, adults (≥500mm)	male & female	Non-lethal capture, handle, measure, weigh, scan for tags, PIT tag, Dart tag, photograph, tissue sample, and release	Hudson River, NY (Battery Park – RM 152)	January - December
40	Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	Eggs or larvae	unknown	lethal take	Hudson River, NY (Battery Park – RM 152)	March - December

Description of Capture Gear:

Longitudinal River Ichthyoplankton Survey: This survey is designed to monitor the distribution and abundance of fish eggs and larvae in the Hudson River during and immediately following the spring and early summer spawning seasons. Two gear types would be used to sample the shoal, channel, and bottom strata during this survey: a 1.0 m² Tucker trawl, to sample the channel strata, and a 1.0 m² net mounted on an epibenthic sled (similar in design to the Tucker trawl), to sample the bottom strata; both gear types would be used to sample the shoal strata. Both nets would be 8.0 m long and fitted with a 505 micron mesh. Both gears would be towed against the prevailing current for 5 minute durations. This survey would be repeated weekly or biweekly, depending upon the season.

Fall Shoals Survey: This survey is designed to monitor the distribution and abundance of young fish in areas of the Hudson River deeper than 10 feet, during the summer and fall. A 1.0 m² Tucker trawl and a 3.0 m beam trawl would be used to collect fish during this survey. The Tucker trawl with 3.0 mm mesh would be used to collect samples in the channel stratum, while the beam trawl with 3.8 cm mesh would be used to sample the shoal and bottom strata. Both gear types are towed against the prevailing current for approximately 5 minutes. This survey would be completed on a weekly basis.

Beach Seine Survey: This survey is designed to monitor the distribution and abundance of young fish in the shallow waters (<10 feet) of the Hudson River. A beach seine, measuring 30.5 m (total length) with a bag mesh size of 0.5 cm, would be used. This survey would be conducted in the shore zone of each Hudson River region (with the exception of the Battery Region). The seine would typically be deployed from an outboard powered open boat. The boat would approach the end of the beach that would be sampled, while the other end of the seine would be transferred to a shore position and held there as the net is panned out perpendicular to the shoreline. The seine would then be hauled in a semicircular path toward shore. The complete beach seine deployment would sweep a semicircular area encompassing approximately 450 m². The bag portion of the seine, containing the fish sample, would be retrieved onto the beach. Young-of-the-year (YOY) larval fishes would be sacrificed and processed in the laboratory. Later in the season, all specimens would be field processed. This survey would be repeated weekly or biweekly, depending upon the season.

Striped Bass Mark/Recapture Survey: The Striped Bass Mark/Recapture Survey would use a 9-meter otter trawl deployed in the Upper New York Harbor (Battery Region of the Hudson River at River Mile (RM) 0-9). The cod end would be comprised of 3.8 cm (stretched) polypro mesh, made of 3 mm twine. The tow duration would typically be 10 minutes. Upon retrieval of the gear, fish would be transferred directly into a flow-through holding device and await sampling, and released alive. This survey would be conducted weekly for approximately 24 weeks between November and April.

2.2.7.2 Handling, Measuring, and Weighing:

All shortnose and Atlantic sturgeon, except ELS, captured during these surveys would be handled with care and returned to the river alive after processing. The total handling time of any one sturgeon would not exceed 15 minutes, whereas the holding time would not exceed 2 hours. All sturgeon would be held in a large holding container with a flow-through water supply during measuring and tagging procedures. For each sturgeon, the total length (mm), weight (grams), and sex (if readily apparent) would be determined according to proper fisheries protocols. After the completion of all processes, the fish would be treated with an electrolyte bath, to help reduce stress and restore slime coat, before their release.

2.2.7.3 Passive Integrated Transponder (PIT) Tagging:

PIT tags would be small (2.1 mm x 11 mm) glass coated tags that, when activated by a handheld sensor, emit a signal corresponding to a unique number. PIT tags have shown been reliable and retained well, and, because they have little impact to animals tagged, they have become the standard tag for marking sturgeon (Smith et al., 1990). The entire dorsal surface of the fish would be scanned with a hand-held PIT tag reader to determine the presence of a PIT tag. All untagged sturgeon, measuring at least 250 mm (TL), would be marked with PIT tags, following NMFS approved protocol (Kahn and Mohead, 2010). These PIT tags would be injected 1 cm beneath the dorsal musculature on the left side of the fish using a syringe equipped with a 12 gauge needle. Animals may also be tagged inter-muscularly at the widest part of the dorsal musculature; or additionally tagged under the 4th dorsal scute by angling the PIT tag injection syringe under the scute.

2.2.7.4. Floy/Dart Tagging:

Each sturgeon would be examined for the presence of external tags. If there are no external tags present on fish of 250mm or greater, the applicant would tag animals with Floy/dart tags (an external identifier tag) to document incidental recaptures by commercial or recreational fishermen and other researchers, allowing collection of additional information useful for the assessment of the sturgeon population. The Floy/Dart tags would be anchored in the dorsal fin musculature base and inserted forwardly and slightly downward from the left side to the right through the dorsal pterygiophores. During the study, the rate of Floy/dart tag retention would be documented and reported to NMFS in annual reports.

2.2.7.5. Photographing:

Each sturgeon 250mm or smaller, in addition to recaptured animals with one or more tags present, would have three photographs taken to document variability. Recaptured fish would be photographed because of their importance to the management program and to document tag retention or injuries from tagging. The three photographs (digital images) that would be taken for each sturgeon include: (1) a full view close up of sturgeon <250 mm and recaptured sturgeon with tag visible; (2) a close up of the mouth with a mm ruler for scale; and (3) a close up side view of the base of the anal fin to reveal the presence or absence of anal scutes.

2.2.7.6 Genetic Tissue Sampling:

The researchers would take a small (1-cm) genetic tissue sample from the pectoral fin using sanitized knife/razor blade to determine if Hudson River fish are genetically different from populations found elsewhere along the Atlantic coast. This procedure is a common and accepted practice in all sturgeon permits. Tissue sampling would not impair the sturgeon's ability to swim and is not thought to have any long-term adverse impact. Because researchers would be required to report on the genetic origins of their takes of Atlantic sturgeon within annual reports, in order to process the workload for genetic analyses in a timely manner, researchers would be required to submit samples within six months of capture to the NOS Tissue Archive.

2.2.7.7 Lethal Take of ELS:

The lethal take of shortnose or Atlantic sturgeon eggs or larvae would occur during the Longitudinal River Ichthyoplankton Survey. Up to 40 larvae of each species would be authorized to be sampled annually using the ichthyoplankton net. Eggs and larval samples would be lethally taken, preserved in ethyl alcohol, and identified in the laboratory.

2.2.8 Mitigation Measures:

In addition to the applicant's stated methods, the permit would include conditions for minimizing impacts to the target animals.

CHAPTER 3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This EA evaluates the potential impacts to the human environment from issuance of the proposed permit.

3.1 *SOCIAL AND ECONOMIC RESOURCES*

The proposed action of issuing a scientific research permit for shortnose and Atlantic sturgeon does not affect distribution of environmental burdens, access to natural or depletable resources, or other social or economic concerns. It does not affect traffic and transportation patterns, risk of exposure to hazardous materials or wastes, risk of contracting disease, risk of damages for natural disasters, food safety, or other aspects of public health and safety. Thus, effects on such aspects of the environment are not considered further.

3.2. *PHYSICAL ENVIRONMENT*

The following section provides a brief description of the unique or ecologically critical resources within the action area.

3.2.1 *Biodiversity and Ecosystem Function*

The proposed action is issuance of ESA take exemptions for a scientific research permit directed at the target shortnose and Atlantic sturgeon. It does not interfere with benthic productivity, predator-prey interactions or other biodiversity or ecosystem functions. With the exception of a limited number of ELS directed mortality annually, shortnose sturgeon will not be removed from the ecosystem or displaced from habitat, nor will the permitted research affect their diet or foraging patterns. (See Chapter 4 for a more detailed discussion on the effects of ELS removal from the system). Further, the proposed action does not involve activities known or likely to result in the introduction or spread of aquatic nuisance species, such as ballast water exchange. Thus, effects of issuing the permit on biodiversity and ecosystem function will not be considered further in this EA.

3.2.2. *Ocean and Coastal Habitats*

The proposed action of issuing ESA take exemptions for a scientific research permit targeting shortnose and Atlantic sturgeon would not adversely affect habitat resources. As noted in the EA for the applicant's previous action, the trawling equipment and beach seines used to take sturgeon would have little to no impact to the sediment, critical habitat, or other bottom habitat (Permit No. 1580). Further, research vessels would avoid sensitive habitat areas and the researcher would take precautions to avoid trawling over the same area in a 24 hour period. Based on the proposed research methods and mitigating conditions of the permit, the proposed action does not involve substantive alteration of substrate, movement of water or air masses, or other interactions with physical features of ocean and coastal habitat. Thus, effects on habitat will not be considered further in this EA.

3.2.3 *Unique Areas*

If the permit is issued, the research would not take place at any sanctuaries, reserves or conservation areas. No park lands, prime farmlands, wetlands, or wild and scenic rivers are found within the action area. The exempted takes in the proposed action are directed at shortnose and Atlantic sturgeon with methods of capture that would not alter or adversely affect habitat, unique areas, including any components of essential fish habitat (EFH). As noted in the EA for the applicant's previous action with identical methods of capture used, protected areas, critical habitat, and EFH in the Hudson River were not likely to be significantly impacted by the proposed action (Permit No. 1580). Informal consultations with the Northeast Office of Habitat Conservation confirmed that the proposed gear

were identified as those that could potentially result in adverse impacts to benthic habitats, including those identified and described as EFH, that could be considered more than minimal and not temporary in nature. However, when considering a variety of factors, including the duration and frequency of the impact of the trawls, the intensity and spatial extent of the impact, and the sensitivity of the habitat and habitat functions to impacts from the gear, when considering the experimental design and nature of the survey, and the limited scope of subject activity, the Office of Habitat Conservation had no EFH conservation recommendations to provide pursuant to Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act.” Therefore, no further analysis of effects to EFH was warranted in this environmental assessment.

3.2.4 *Historic Places, Scientific, Cultural, and Historical Resources*

There are no districts, sites, highways or structures listed in or eligible for listing in the National Register of Historic Places in the action area. The proposed action represents the non-consumptive use of shortnose and Atlantic sturgeon for scientific research purposes and does not preclude their availability for other scientific, cultural, or historic uses. Thus, effects on such resources will not be considered further in this EA.

3.3 **BIOLOGICAL ENVIRONMENT**

The following is a brief summary of the status and occurrence of targeted shortnose and Atlantic sturgeon range-wide, including the proposed study area

3.3.1. *ESA Target Species Under NMFS Jurisdiction:*

ESA Endangered:	Shortnose sturgeon (<i>Acipenser brevirostrum</i>)
ESA Endangered	Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)

3.3.1.1 *Shortnose sturgeon:*

The shortnose sturgeon is anadromous, living mainly in rivers or nearshore marine waters, and migrating periodically into fresh water areas to spawn. The species was listed as endangered throughout its range in 1974 under the ESA (38 FR 41370). Critical habitat has not been established for shortnose sturgeon.

Woodland and Secor (2007) noted that the Hudson River shortnose sturgeon is the largest of the eight Atlantic coastal spawning populations for which abundance estimates are available. Bain et al (2007) estimated the abundance of this population during the 1990s to be approximately 60,000 fish. Woodland and Secor (2007) also confirmed the recovery of the shortnose sturgeon population in the Hudson River during the late 1990s, and suggested that this recovery was driven by strong recruitment of juveniles between 1986 and 1992. In sum, the Hudson River supports the largest population of shortnose sturgeon throughout its range, and the current population has expanded from the 1970's through the 1990's (Bain et al. 2007) to represent peak abundance at this time. Further descriptions of the status of the species can be found in the Biological Opinion accompanying this document as well as NMFS Recovery Plans and other documents incorporated by reference at: <http://www.nmfs.noaa.gov/pr/species/fish/shortnosesturgeon.htm>.

3.3.1.2 *Atlantic sturgeon:*

Atlantic sturgeon were listed as endangered in the New York Bight in February 2012 (77 FR 5880) (effective date April 6, 2012). The Atlantic sturgeon's historic range included major estuarine and riverine systems that spanned from Hamilton Inlet on the coast of Labrador to the Saint Johns River

in Florida (Smith and Clugston 1997, ASSRT 2007). Atlantic sturgeon have been documented as far south as Bermuda and Venezuela (Lee et al. 1980). Historically, Atlantic sturgeon were present in approximately 38 rivers in the United States from St. Croix, ME to the Saint Johns River, FL, of which 35 rivers have been confirmed to have had historic spawning populations. Atlantic sturgeon are currently present in 36 rivers, and spawning occurs in at least 20 of these. Other estuaries along the coast formed by rivers not supporting Atlantic sturgeon spawning populations may still be important rearing habitats.

NMFS recently listed as endangered under the ESA the New York Bight Distinct Population Segment (DPS) of Atlantic sturgeon, which includes the Hudson River stock (NMFS 2010). This action was taken because it was concluded that the New York Bight DPS was at risk due to: (1) low levels of abundance with a limited number of spawning populations; (2) threats to habitat from continued degraded water quality and dredging; (3) threats from bycatch and vessel strikes; and (4) lack of existing regulatory mechanisms to address these threats. NMFS concluded that overutilization for commercial purposes was likely the primary factor in the historical decline of sturgeon populations in the New York Bight, and that inability to control continued bycatch of Atlantic sturgeon in fisheries directed at other species continues to be a serious threat to these populations.

Data from a variety of sources indicates that the abundance of Atlantic sturgeon in the Hudson River has been impacted by persistent, inappropriate fishing pressure, although information is limited. Dovel and Berggren (1983) estimated that 14,500-36,000 age-1 Atlantic sturgeon were present in the Hudson in 1977. Peterson et al. (2000) estimated that 4,600 age-0 Atlantic sturgeon were present in the Hudson in 1994. The only available estimate of spawner abundance is from Kahnle et al. (2007), who estimated that an average of 870 Atlantic sturgeon (270 females and 600 males) spawned each year from 1985-1995. Since Atlantic sturgeon females are believed to spawn every 2-5 years, this implies a total population of adult females of 540-1350 fish. The Hudson stock of Atlantic sturgeon is thought to be the largest extant reproducing Atlantic sturgeon population (Kahnle et al. 2007). Further descriptions of the status of the species can be found in the Biological Opinion accompanying this document as well as NMFS Recovery Plans and other documents incorporated by reference at <http://www.nmfs.noaa.gov/pr/species/fish/atlanticsturgeon.htm>.

3.3.2. *Non-Target Marine Animals*

3.3.2.1 *Sea Turtles:*

Kemp's ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*) sea turtles have been observed in Long Island Sound located to the north of the Hudson River mouth. However, all five species of ocean-going turtles may be found in New York coastal waters from time to time (Morreale et al. 1992). However, because there have been only limited occurrences of any sea turtles venturing into the lower Hudson estuary (NYSDEC 2010, Hudson River Almanac. <http://www.dec.ny.gov/lands/68003.html>), the NMFS Northeast Regional Office of Protected Resources recommended general protective conditions be added to the permit. Thus, effects on sea turtles will not be considered further in this EA.

3.3.2.2 *Marine Mammals:*

Various sightings of marine mammals have been documented rarely in the Hudson River estuary and other upriver locations. The most abundant cetacean species would be the bottlenose dolphin (*Tursiops truncatus*), although they are also rarely encountered on the Hudson River. The Riverhead

Foundation (2008), the stranding network for marine mammals in the Hudson River area, documented two different sightings of dolphin in recent history, once in 1997 and another event in 2008. Because marine mammals occur only occasionally in the proposed action area, NMFS Northeast Regional Office of Protected Resources recommended general protective conditions be added to the permit. Thus, effects on marine mammals are not considered further in this EA.

CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

4.1 EFFECTS OF THE NO ACTION ALTERNATIVE

Under the No Action alternative, the take of shortnose or Atlantic sturgeon resulting from the applicant's research under this alternative would not be exempted. There are no direct or indirect effects on the environment of not issuing the permits. The No Action alternative would result in the loss of valuable information about the biology and ecology of the two species.

4.2 EFFECTS OF THE PROPOSED PERMIT ALTERNATIVE

Effects would occur at the time when the applicant's research results in takes of the target shortnose or Atlantic sturgeon.

4.2.1. Environmental Consequences to the Biological Environment—Shortnose and Atlantic Sturgeon

The applicant has requested authorization to take shortnose and Atlantic sturgeon as described in the application and as summarized in Chapter 2. No mortalities or serious injuries from activities authorized by the permit would be expected other than the directed take ELS life stages. The analyses conducted for issuance of prior permits (Permit No. 1284 and Permit No. 1580) to the applicants for similar shortnose sturgeon research activities in the same action area, demonstrated that although individual animals may experience short-lived stress or minimal injury during procedures, they would recover overall within the course of a day (NMFS 2011). These analyses are hereby incorporated by reference, and are reviewable by contacting: Chief, Permits Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Suite 13705, Silver Spring, MD 20910; phone (301) 427-8401. The following discussion summarizes the effects on individual sturgeon taken in the proposed permit.

4.2.1.1 Effects of Capture

The applicant proposes to use epibenthic sleds, trawls and beach seines to capture shortnose and Atlantic sturgeon. Entanglement in nets can result in injury and mortality, reduced fecundity, and delayed or aborted spawning migrations of sturgeon (Moser and Ross 1995; Collins et al. 2000; Moser et al. 2000). Historically, the majority of sturgeon mortality during scientific research has been directly related to capture, as a function of numerous factors including water temperature, low dissolved oxygen concentration, soak time, mesh size, net composition, and netting experience.

However, most negative effects resulting from trawling capture of sturgeon typically are related to the speed and duration of the trawl (Moser et al. 2000). The applicant has proposed identical methods over the last 30 years, and prior permits where trawling was employed in the Hudson River BMP (Permit No. 1284; NMFS 2000; and Permit No. 1580; NMFS 2007) reported no mortalities of shortnose and Atlantic sturgeon life stages (excluding directed mortality of early life stages).

Therefore, NMFS concludes that any adverse effects from issuing a permit to take shortnose and Atlantic sturgeon by trawling would be localized and minor. To limit adverse effects of trawling, researchers would be required in the permit to trawl at slow speeds of 2 to 3 knots, limit tows to 10 minutes, and avoid multiple trawls over the same area during a 24-hour period. If the trawl does become entangled in debris, efforts would begin immediately to free the gear, avoiding injuring any captured fish.

Typical use of beach seines for sampling larval and young of year fish has been a practice of the Hudson River BMP sampling shorelines to indicate recruitment health. Efforts to minimize adverse impacts would include conditions in the permit such as: (1) when drawing the seine's lead line close to shore, animals would not be crowded, and would be pooled in clear waters with minimal turbidity or mud bottoms; (2) all animals would be handled and released within 15 minutes after pooled along the shore (3) animals would be released unharmed and minimally handled; (4) areas sampled would not be seined more than once in a 24 hour period; and (5) habitats seined would be characterized by sandy bottoms free of bottom snags.

NMFS does not expect the proposed methods for Permit No. 17095 to result in serious injury or mortality of target shortnose or Atlantic sturgeon or their associated habitat, with exception of 40 ELS of either species authorized to be lethally collected.

4.2.1.2 Record of Applicant's Capture of Shortnose and Atlantic sturgeon:

The following discussion documents how many shortnose and Atlantic sturgeon can reasonably be expected to be affected by the proposed action. Captures using all gear types are documented for the number, average size, and locations where animals were captured in the Hudson river.

Shortnose sturgeon:

Table 2 documents the applicant's record of shortnose sturgeon captured from 1999 through 2010, highlighting the numbers captured in each type of gear, average total length, and locations where they were captured. During the 11 years of sampling with all gear types, a total of 846 shortnose sturgeon (77 annually) were captured having an average total length of 595mm (range = 75 to 1600 mm). No incidental mortalities occurred during sampling. During this same period, 23 early life stages (larval specimens) were captured with epibenthic sled gear and were then preserved to be later identified. No eggs were identified in these samples.

Table 2. Record of shortnose sturgeon captured by gear type, average total length and location in the HRBMP from 1999-2010.

Gear Type	No. Captured	Avg. TL (mm)	Location of Samples Collected
Epibenthic Sled	50	659	RM 16-139
3-m Beam Trawl	645	556	RM 0-152
9-m Otter Trawl	144	747	RM 1-89
Beach Seine	3	633	RM 26-78
All Gear Types	846	595 (range=75-1600)	RM 0-152

Atlantic sturgeon:

Table 3 documents the applicant's record of capturing Atlantic sturgeon from 1999 through 2011 using all gear types. For the 12 years of sampling with all gear types, a total of 367 Atlantic sturgeon (31 annually) were captured averaging 476 mm total length (range = 86 to 984 mm). No incidental mortalities occurred during sampling. During this same period of sampling, 16 larval specimens were captured with epibenthic sled gear targeting early life stages and were preserved for later identification. No eggs were identified in these samples.

Table 3. Record of Atlantic sturgeon captured by gear type, average total length, and location in the HRBMP from 1999-2011

Gear Type	Number Captured	Avg. TL (mm)	Number < 500 mm & Avg. TL (mm)	Number>500mm & Avg. TL (mm)	Location of Samples Collected
Epibenthic Sled	23	551	5 (417)	17 (624)	RM 34-57
3-m Beam Trawl	298	449	164 (310)	134 (620)	RM 0-152
9-m Otter Trawl	45	615	5 (383)	41 (644)	RM 0-9
Beach Seine	1	650	n. a.	1 (650)	RM 33
All Gear Types	367	476 (TL range =86-984)	174 (314) (TL range= 86-499)	193 (628) (TL range=500-984)	RM 0-152

Table 3 also categorizes Atlantic sturgeon measuring less than 500 mm TL (47%) and more than 500 mm TL (53%). This break in the data corresponds to assumptions made by Wirgin and King (2011) noting that Atlantic sturgeon, after having reached 500 mm TL, are capable of migrating outside of their natal ranges into the mixed stock of other DPSs, and, thus, potentially becoming impacted by research outside of their natal range. A determination of the prior extent to which these larger juvenile animals would be straying into the New York Bight DPS from other areas and potentially affected by the proposed action, is estimated by the biological opinion prepared for this EA appearing in Section 4.1.1.7 of this EA.

4.2.1.3 Effects of Handling and Holding

Routine handling and holding can result in raised levels of stressor hormones in sturgeon. Sturgeon are a hardy species, but sensitive to handling stress when water temperatures are high or dissolved oxygen is low. Additionally, sturgeon tend to inflate their swim bladder when stressed or handled in air (Moser et al. 2000). If they are not returned to neutral buoyancy prior to release, they tend to float and would be susceptible to sunburn and bird attacks. In some cases, if pre-spawning adults are captured and handled, it is possible that they would interrupt or abandon their spawning migrations (Moser and Ross 1995).

To minimize capture and handling stress, researchers would hold sturgeon in net pens or in holding tanks (as available), provide fish with a continuous flows of water, and minimize the amount of time the fish are handled and held. For most procedures planned, the total time required to complete routine handling and tagging would be no more than 15 minutes. Moreover, following processing, sturgeon would be returned to the net pen or holding tank for observation, ensuring full recovery prior to release. Sturgeon would be checked for buoyancy problems and treated with a slimecoat restorant prior to release, as well as monitored for proper swimming behavior after release. Total holding time would be no longer than 2 hours from capture until release.

The handling, holding, weighing, measuring, and photographing procedures requested are simple and not invasive. NMFS expects that individual fish would normally experience no more than short-term stresses as a result of these activities. Researchers have taken measurements and weights of thousands of sampled animals in the proposed manner with no apparent ill effect. No injury would be expected from these activities, and individuals would be worked up as quickly as possible to minimize stress. The applicant would also be required to follow procedures designed to minimize the risk of either introducing a new pathogen into a population or amplifying the rate of transmission from fish to fish of an endemic pathogen during handling. The proposed methods of handling fish described in the application and conditioned in the permit are consistent with the best management practices endorsed by NMFS and, as such, should minimize effects resulting from routine handling and holding.

4.2.1.4. Effects of PIT Tagging

PIT tags insure unique identification upon capture or recapture for population and growth estimates. To avoid duplicate tagging, all sturgeon would be scanned with a PIT tag reader prior to the insertion of a PIT tag. Tagging procedures could result in stress during restraint and minor wounds from insertion. PIT tag use is not known to have any other direct or indirect effects on sturgeon when tags are appropriately sized and inserted correctly. There has been reported shortnose sturgeon mortality as a result of PIT tags being too large for the fish or inserted too deeply. Henne et al. (2003) found that 14mm tags inserted into smaller shortnose sturgeon (150 to 220 mm total length TL) caused 40% mortality after 48 hours; however, no mortality occurred in a larger group of juvenile sturgeon measuring 250 to 330 mm TL using smaller 11.5mm PIT tags. Therefore, to address these concerns, the applicant would not PIT tag sturgeon <250mm TL, the same size animals that have been authorized to be tagged for over 10 years in prior permits resulting in no mortality. As such, the tagging of shortnose or Atlantic sturgeon with PIT tags is unlikely to have significant adverse impacts on sturgeon.

4.1.2.5 Effects of Floy/Dart Tags

The use of these external identifier tags would assist researchers in easily identifying animals previously captured. It would also assist in measuring the retention rates of PIT tags upon recapture. NMFS has authorized a variety of external-identifier tags and placement sites on shortnose and Atlantic sturgeon over the past 10 years, including the proposed external Floy/Dart tags. Placing such external tags in the dorsal musculature has shown promise for tag retention with minor impacts to sturgeon (Moser et al. 2000). Smith et al. (1990) compared the effectiveness of dart tags with nylon T-bars, and anchor tags in shortnose and Atlantic sturgeon; however, it was noted that the dart tags caused some minor tissue damage, but had high retention rate. Collins et al. (1994) found no significant difference in healing between fish tagged in fresh and brackish water. Clugston (1996) also looked at T-bar anchor tags placed at the base of the pectoral fins, finding beyond two years, retention rates were about 60%. Collins et al. (1994) compared T-bar tags inserted near the dorsal fin, T-anchor tags abdominally, dart tags near the dorsal fin, and disk anchor tags abdominally. He found, in the long-term, T-bar anchor tags and Dart tags attached dorsally were most effective, but also noted that all of the insertion points healed slowly.

Although there is evidence of small lesions appearing externally using these external tags, NMFS recommends their use to assist the external identification of migratory sturgeon. Researchers would monitor the healing and retention rates of these tags in recaptured sturgeon and reporting the results annually to NMFS. Photographs would be taken to document the healing rate and tag retention of all

recaptured animals. Should the monitoring reveal more than minor damage at the tag insertion points, the practice would be reevaluated by NMFS and permits potentially modified removing the tags' further use.

4.2.1.6 Effects of Genetic Tissue Sampling

The applicant's proposal to take a small (1 cm²), genetic tissue sample, clipped with surgical scissors from a section of soft fin rays of captured sturgeon, does not appear to impair the sturgeon's ability to swim and is not thought to have any long-term adverse impact (Kahn and Mohead 2010). Many researchers, including the applicant, have removed tissue samples according to this same protocol reporting no adverse effects (Wydoski and Emery 1983); therefore, NMFS does not anticipate any long-term adverse effects to the sturgeon from this activity.

4.2.1.7 Effects of Lethal Collection of Sturgeon ELS

Due to their relatively small size, epibenthic sleds would not disrupt water flow or bottom habitat. Typically, larvae and no eggs are captured by the sled, because the net is suspended over skids of the sled interfacing with the bottom surface as it proceeds during tow. Drifting or dislodged embryos and larvae would be captured in the sleds, identified, and preserved. Numbers of eggs and/or larvae taken in excess of the authorized take would immediately be returned to the river; however, for purposes of evaluating the impact of research activity, all ELS taken would be characterized as non-viable, accounted as intentional lethal takes of the directed research.

The survival from egg to juvenile is a critical aspect in determining the strength of the year class (COSEWIC 2005); therefore, it is important to be conservative when authorizing ELS sampling. For example, each adult female shortnose sturgeon produces between 94,000 and 200,000 eggs every 3 years (COSEWIC 2005). The fecundity of Atlantic sturgeon has been correlated with age and body size (ranging from 400,000 to 8 million eggs (Smith et al. 1982, Van Eenennaam and Doroshov 1998, Dadswell 2006) with mature females spawning every 2 to 5 years. So therefore, if the proposed directed mortality of shortnose sturgeon and Atlantic sturgeon ELS were 40 annually for each species, and only 1 female shortnose sturgeon or Atlantic sturgeon reproduces each year, producing a minimal number of eggs—94,000 or 400,000, respectively—this project would collect 0.04 and 0.01% of the ELS produced in that year for shortnose and Atlantic sturgeon.

As such, the proposed take of ELS is not expected to impact the population viability of shortnose or Atlantic sturgeon in the Hudson River. In fact, authorizing ELS take in the Hudson River would likely result in more timely and conclusive data about sturgeon spawning success to aid management decisions.

4.2.1.8 Effects on the Mixed Stock of Atlantic Sturgeon:

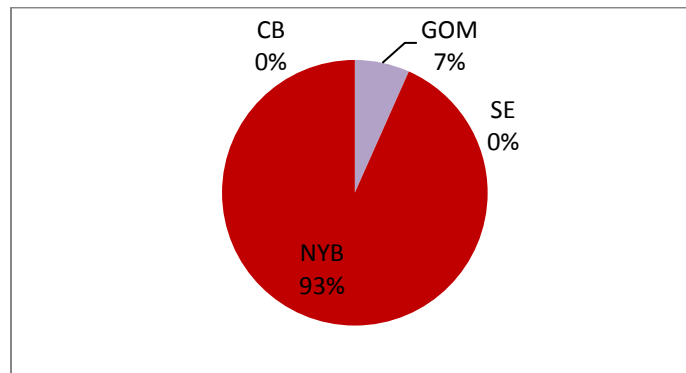
Because Atlantic sturgeon are known to occupy marine areas outside of their natal rivers (Wirgin et al. *in press*), there is potential for Atlantic sturgeon captured in the Hudson River to have originated from outside of the New York Bight DPS.

Although we anticipate a mixed stock of animals throughout the range of Atlantic sturgeon, even within riverine areas of spawning rivers such as the Hudson River, we expect eggs/larvae and young of the year to be 100% from the spawning river of origin. Wirgin and King (2011) indicates that juvenile animals found in spawning rivers measuring less than 500 mm (TL) and mature animals measuring over 1,300 mm TL should be considered native to that DPS. Because no animals over the prior 12 years of sampling by the applicant was captured over 1,300 mm TL, only juveniles measuring between 500 mm and 1,300 mm TL were considered to have potential to stray from other

DPSs. Wirgin and King (2011) state that Atlantic sturgeon taken from their spawning rivers, tend to aggregate within the geographic region of their spawning river, resulting in a significant percentage of fish being native to that DPS, while a much smaller percentage are from the other DPSs (Wirgin and King 2011).

As evidenced by the genetic assignment data (n=28), Wirgin and King 2011 found that 93% of the sample animals were assignable to the New York Bight DPS, while only 7% were non-native, assigned to the Gulf of Maine DPS. No other assignments to other DPSs were discovered (Figure 1).

Figure 1. Proportional mixing of Atlantic sturgeon in the Hudson River from all DPSs.



While a sample size of 28 individuals is small, the analysis does indicate limited straying of Atlantic sturgeon occurs between DPSs. Therefore, NMFS, under the ESA, is required to make a determination whether the proposed research on the Hudson River is likely to jeopardize the continued existence of any Atlantic sturgeon derived from other DPSs. In this regard, the Biological Opinion prepared for this permit first estimates the numbers of Atlantic sturgeon potentially occurring in the authorized catch from other DPSs. This was done by applying the proportional mixing ratio illustrated above to the appropriate number of animals authorized in the proposed action.

Table 4, using the 11 years of capture data summarized in Table 3, anticipates that of the 82 Atlantic sturgeon captured annually in the proposed action, only 52.6% (or 43) would exceed an appropriate size threshold of animals measuring ≥ 500 mm TL (assumed in Wirgin and King 2011), that is, those animals of the size potentially migrating from another DPS. (The remaining 39 animals measuring < 500 mm are assumed native to the New York Bight DPS). In turn, using the 93:7 assignment ratio of native to non-native Atlantic sturgeon, Table 4 illustrates the numbers of animals estimated to be captured by the proposed action native and non-native to the New York Bight DPS.

Table 4. Allocation by DPS of the 82 juvenile Atlantic sturgeon authorized captured annually in Permit No. 17095 within the Hudson River.

Size & No. of Juvenile Atlantic sturgeon Anticipated in Permit		NY Bight	GOM	Chesapeake Bay	Carolina	South Atlantic
$< 500\text{mm}^1$	39	100% or 39	0%	0%	0%	0%
$\geq 500\text{mm}^2$	43	93% or 40	7% or 3	0%	0%	0%

1. Juvenile life stages targeted are assumed to be natal to the New York Bight.

2. ≥ 500 mm —the assumed size threshold to potentially occur in the mixed stock estimate.

4.2.2. *Environmental Consequences to the Biological Environment—Non-Target Species*

4.2.2.1 *Listed Species Under USFWS Jurisdiction*

There are no non-target ESA-listed species affected by the proposed action under USFWS jurisdiction. Therefore, the USFWS was not consulted.

4.2.3 *Cumulative Impacts*

4.2.3.1 *Summary of Effects from Total Number of Permits:*

In general, takes of shortnose or Atlantic sturgeon by harassment during permitted research using the proposed methodologies have not been shown to result in long-term or permanent adverse effects on individuals regardless of the number of times the harassment occurs. The frequency and duration of the disturbance under the proposed permit would allow adequate time for animals to recover from adverse effects such that additive or cumulative effects of the action on its own are not expected. No measurable effects on population demographics are anticipated because any sub-lethal (disturbance) effects are expected to be short-term, with the animals recovering within a day, and the proposed action is not expected to result in unintentional mortality of any animals. There exists the possibility that adverse effects on a species could accrue from the cumulative effects of other permitted takes on the Hudson River by harassment. However, relative to the size of the population—the Hudson River has the healthiest populations within the range of both shortnose and Atlantic sturgeon—there is no evidence that current or past levels of permitted takes have resulted in such population or species level effects. The impacts of directed mortality of ELS shortnose or Atlantic sturgeon would also be negligible at the population and species level.

Appendix 1 documents all other permits and actions for taking shortnose and Atlantic sturgeon within the range of each species. Although the applicant's most recent permit (Permit 1580-01) expired on March 31, 2012, there are two other active sturgeon permits in the proposed action area on the Hudson River authorizing takes of the target shortnose (Permit 16439) and Atlantic sturgeon (Permit 16436). In addition, four other research permits in the New York Bight DPS authorizing sturgeon research are Permit No. 15614 (Shortnose sturgeon in Connecticut waters); Permit No. 16323 (Atlantic sturgeon in Connecticut waters); and Permit No. 16422 (Atlantic sturgeon Atlantic Coastal waters of New York, New Jersey and Delaware). Elsewhere within the New York Bight DPS in the Delaware River, there are five other sturgeon permits in authorized to take shortnose sturgeon (Permit Nos. 14396 and 14604) and Atlantic sturgeon (Permit Nos. 16431, 16438 and 16507).³

Even if the proposed permit is able to target the same animals as other permit holders in the region, NMFS would not expect cumulative impacts from research since effects of research activities would dissipate within a day. Moreover, researchers working under NMFS permits are required to notify the appropriate NMFS Regional Office in advance of field work. The Northeast Regional Office is tasked with coordinating activities under multiple permits for the action area to ensure there is not unnecessary duplication of research.

³ Documents are reviewable by contacting: Chief, Permits Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Suite 13705, Silver Spring, MD 20910; phone (301) 427-8401.

4.2.3.2 Interaction from Atlantic sturgeon from other DPSs:

Most animals captured since 1999 by the applicant are juvenile age class animals (i.e., 0, 1 and 2-yr), thought to be native to the Hudson River, and thus the New York Bight DPS. However, although, the best available information is preliminary about the extent animals migrating from other DPSs, there is evidence of mixing within the Hudson River. Approximately 7% of the Atlantic sturgeon captured would be expected to be derived from the GOM DPS.

Consequently, the researcher's permit would be conditioned to take genetic tissue samples from all Atlantic sturgeon captured, forwarding them to the NOAA NOS genetics archive within six months of capture. After genetic assignments have been conducted, the results of take from individual permitted actions would be totaled from all DPSs and compared to those authorized in all actions. These would provide a basis for determining the impacts of animals from other DPSs and if authorized take exceeds authorized takes for each DPS. Beyond this effort, NMFS would immediately begin gathering more complete information on the potential cumulative impacts of the research activities on individual DPSs for use in future analyses and when issuing future permits.

4.2.3.3 Summary of Other Activities:

The target shortnose and Atlantic sturgeon populations in the Hudson River may be exposed to other human activities including by-catch in fishing gear, ship strikes, and habitat alteration such as dams. Effects of past and ongoing human and natural factors (fisheries, existing NMFS research permits and other activities) occurring in or near the action area that have contributed to the current status of the species are described in the baseline section of the attached biological opinion done for the ESA Section 7 consultation for this permit. General threats facing shortnose sturgeon range-wide are also discussed in the opinion. These activities and threats are expected to continue into the future.

4.2.3.4 Conclusions:

The conclusion of the biological opinion was that the proposed action would not likely jeopardize the continued existence of any of any listed species, including other DPSs of Atlantic sturgeon. The action also would not likely destroy or adversely modify designated critical habitat because no critical habitat has been designated in the action area for Atlantic or shortnose sturgeon. NMFS also expects the proposed research activities not to appreciably reduce the species likelihood of survival and recovery in the wild by adversely affecting their birth, death, or recruitment rates. In particular, NMFS expects the proposed research activities not to affect adult female sturgeon in a way appreciably reducing the reproductive success of adults, the survival of young, or the number of young annually recruiting into the breeding populations of either of the target species.

Overall, the proposed action would not be expected to have more than short-term effects on endangered shortnose or Atlantic sturgeon. Further, the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed here would be minimal and not significant. The data generated by the research activities associated with the proposed action would help determine certain movement patterns, habitat use, population parameters and life history characteristics of shortnose and Atlantic sturgeon found in the waters of the action area. The research would provide information helpful to managers in managing and recovering the endangered species and would outweigh any adverse impacts occurring.

CHAPTER 5.0 LIST OF PREPARERS

This EA was prepared by the Permits and Conservation Division of the National Marine Fisheries Service, Office of Protected Resources, Silver Spring, MD. Formal section 7 consultations covering

the effects of research on shortnose and Atlantic sturgeon were received in the biological opinion produced by the ESA Interagency Cooperation Division, Office of Protected Resources; and informal comments on proposed scientific research were received from the Northeast Regional Office of NMFS Offices of Protected Resources.

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APPENDIX 1: Actions Similar to the Proposed Action

Table 1: Listing of similar shortnose sturgeon ESA permits affecting the scope of the Proposed Action

<i>Permit No.</i>	<i>Location</i>	<i>Authorized Take</i>	<i>Research Activity</i>
<u>10115</u> Expires: 8/3/2013	Saltillo & Saint Marys Rivers, GA & FL	85 adult/juv 20 ELS	Capture, handle, measure, weigh, PIT tag, tissue sample, collect ELS
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT TO CONDUCT RESEARCH ON SHORTRNOSE STURGEON IN THE SAINT MARYS RIVER AND SATILLA RIVERS, GEORGIA AND FLORIDA			
<u>14394</u> Expires: 9/30/14	Altamaha River and Estuary, GA	500 adult/juv. (1 lethal), 100 ELS	Capture, handle, weigh, measure, PIT tag, transmitter tag, tissue sample, anesthetize, laparoscopy, blood collection, fin ray section, collect ELS
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (FILE NO. 14394) TO CONDUCT RESEARCH ON SHORTRNOSE STURGEON IN THE ALTAMAHA RIVER, GEORGIA			
<u>10037</u> Expires: 4/30/2013	Ogeechee River and Estuary, GA	150 adult/juv. (2 lethal), 40 ELS	Capture, handle, measure, weigh, PIT tag, tissue sample, fin-ray section, anesthetize, laparoscopy, blood collection, radio tag, collect ELS
ENVIRONMENTAL ASSESSMENT OF ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT TO DR. DOUGLAS PETERSON, UNIVERSITY OF GEORGIA, (FILE NO.10037) TO CONDUCT RESEARCH ON ENDANGERED SHORTRNOSE STURGEON			
<u>15677</u> Expires: 5/31/2016	S. Carolina Rivers and Estuaries	154 adult/juv 100 ELS	Capture with gill & trammel net or trawl, measure, weigh, photograph/video, dart tag, PIT tag, genetic tissue sample, anesthetize, laparoscopy, gonadal biopsy, blood sample; collect ELS
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (FILE NO. 15677) TO CONDUCT SCIENTIFIC RESEARCH ON SHORTRNOSE STURGEON IN SOUTH CAROLINA RIVERS			
<u>14759</u> Expires: 8/19/2015	North Carolina Rivers	70 adult/juv.	Capture, handle, weigh measure, Floy tag, PIT tag, genetic tissue sample; anesthetize acoustic tag
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (FILE NO. 14759) TO CONDUCT SCIENTIFIC RESEARCH ON SHORTRNOSE STURGEON IN NORTH CAROLINA RIVERS			
<u>14176</u> Expires: 9/30/2015	Potomac River	30 adult/juv. 20 ELS	Capture, handle, weigh, measure, Floy PIT tag, genetic tissue sample; anesthetize w/ electronarcosis; & internal acoustic tag
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT FILE NO. 14176 TO CONDUCT RESEARCH ON SHORTRNOSE STURGEON IN THE POTOMAC RIVER, MARYLAND AND VIRGINIA			
<u>14604</u> Expires: 4/19/2015	Delaware River and Estuary NJ & DE	1,000 adult/juv. (1 lethal), 300 ELS	Capture, handle, measure, weigh, Floy tag, PIT tag, tissue sample, anesthetize, ultrasonic tag, laparoscopy, blood collection, collect ELS
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (FILE NO. 14604) TO CONDUCT SCIENTIFIC RESEARCH ON SHORTRNOSE STURGEON IN THE DELAWARE RIVER			
<u>14396</u> Expires: 12/31/2014	Delaware River and Estuary NJ & DE	100 adult/juv	Capture, handle, measure, weigh, Floy tag, PIT tag, genetic tissue sample, anesthetize, and sonic tag
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (FILE NO. 14396) TO CONDUCT SCIENTIFIC RESEARCH ON SHORTRNOSE STURGEON IN THE DELAWARE RIVER			
<u>16439</u> Expires: 10/31/2016	Hudson River,	240 and 2,340 shortnose sturgeon in year 1-3 and year 4-5,	Capture, handle, weigh, measure, PIT & Carlin tag, genetic tissue sample, and gastric lavage
ENVIRONMENTAL ASSESSMENT (SEA) OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT MODIFICATION (FILE NO. 16439) TO NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) FOR CONDUCTING RESEARCH ON ENDANGERED SHORTRNOSE STURGEON			
Subject Permit <u>17095*</u> Would Expire: 5 years after issuance	Hudson River and Estuary, NY	82 Shortnose adult/juv; & 40 ELS 82 Atlantic adult/juv; & 40 ELS	Capture, handle, measure, weigh, PIT tag, Carlin tag, photograph, tissue sample, collect ELS
ENVIRONMENTAL ASSESSMENT OF ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (FILE NO. 17095) TO ENTERGY NUCLEAR GENERATION, INC. TO CONDUCT RESEARCH ON ENDANGERED SHORTRNOSE AND ATLANTIC STURGEON			

<u>16549</u> PROPOSED FOR 7/31/2012	UPPER CONN. RIVER, MERRIMACK RIVER, MA	673 ADULT/JUV. (5 LETHAL), 1,430 ELS FROM EAST COAST RIVERS	CAPTURE, HANDLE, MEASURE, WEIGH, ANESTHETIZE, PIT TAG, TIRIS TAG, RADIO TAG, TEMPERATURE/DEPTH TAG, TISSUE SAMPLE, BORESCOPE, LABORATORY TESTS, PHOTOGRAPHS, COLLECT ELS
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT ON THE ISSUANCE OF A MODIFICATION TO SCIENTIFIC RESEARCH PERMIT NO. 1549 [BOYD KYNARD, S.O. CONTE ANADROMOUS FISH RESEARCH CENTER] TO CONDUCT RESEARCH ACTIVITIES ON ENDANGERED SHORTNOSE STURGEON			
<u>15614</u> EXPIRES: 5/23/2016	LOWER CONN. RIVER & ESTUARY., CT	500 ADULT/JUV (2 LETHAL); 300 ELS	CAPTURE, HANDLE, MEASURE, WEIGH, PIT & FLOY TAG ACOUSTIC TAG, GASTRIC LAVAGE, FIN RAY SECTION, COLLECT ELS
ENVIRONMENTAL ASSESSMENT ON THE EFFECTS OF THE ISSUANCE OF SCIENTIFIC RESEARCH PERMIT FILE NO. 15614 TO CONDUCT RESEARCH ON SHORTNOSE STURGEON IN CONNECTICUT WATERS			
<u>16306</u> EXPIRES 5/21/2017	KENNEBEC COMPLEX AND ESTUARY, ME	500 ADULT/JUV.; 30 ELS	CAPTURE, HANDLE, MEASURE, WEIGH, TISSUE SAMPLE, PIT TAG, ACOUSTIC TAG, LAVAGE, ANESTHETIZE, COLLECT ELS
ENVIRONMENTAL ASSESSMENT FOR ISSUANCE OF SCIENTIFIC RESEARCH PERMITS NOS. 16306 TO CONDUCT SCIENTIFIC RESEARCH ON PROTECTED SHORTNOSE STURGEON IN THE GULF OF MAINE			

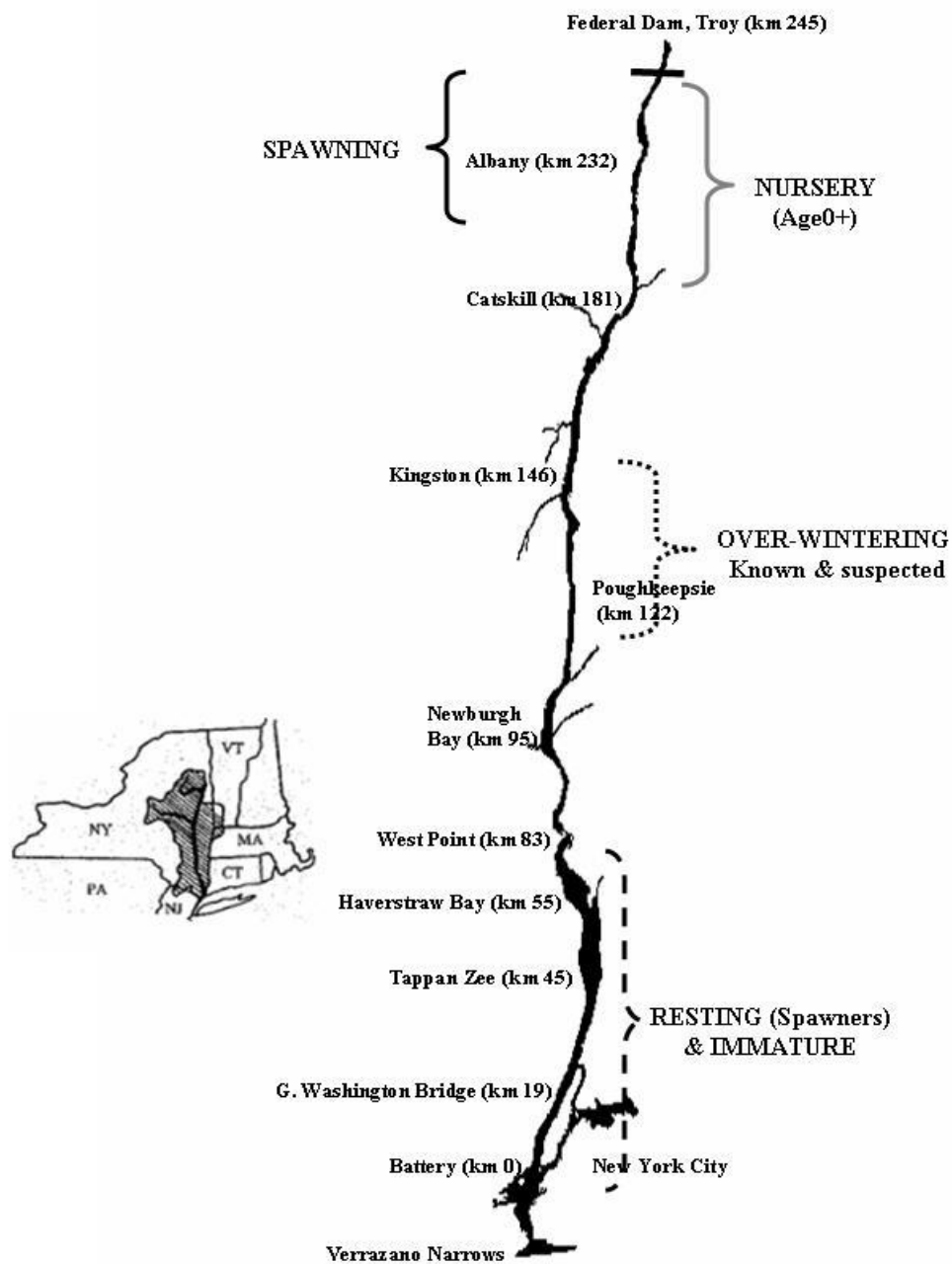
Table 2: Listing of Section 6 Grants awarded to researchers in Atlantic sturgeon actions affecting the scope of Proposed Action

<i>Section 6 Grant No.</i>	<i>Location</i>	<i>Authorized Take</i>	<i>Research Activity</i>
Award No 4720023	Gulf of Maine	Non-listed at the time of grant	CAPTURE, HANDLE, MEASURE, WEIGH, PIT TAG, ANESTHETIZE, ACOUSTIC TAG, GASTRIC LAVAGE, COLLECT ELS, DIDSON SONAR
ENVIRONMENTAL ASSESSMENT ISSUANCE OF A PROTECTED SPECIES CONSERVATION AND RECOVERY GRANT TO THE MAINE DEPARTMENT OF MARINE RESOURCES (AWARD FILE 4720023) TO CONDUCT RESEARCH ON STURGEON IN MAINE			
AWARD NO. NA10NMF4720036	South Carolina Rivers Georgia Rivers North Carolina Rivers	Non-listed at the time of grant	ESTABLISHING ACOUSTIC RECEIVER ARRAY, TRACKING ACOUSTIC TAGGED ATLANTIC STURGEON, TELOMERE GENETIC SAMPLING
ENVIRONMENTAL ASSESSMENT ISSUANCE OF A PROTECTED SPECIES CONSERVATION GRANT TO THE SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES (AWARD NO. NA10NMF4720036) TO CONDUCT RESEARCH ON ATLANTIC STURGEON AND SHORTNOSE STURGEON			
AWARD NO. NA10NMF4720030	Delaware River Connecticut River and Long Island Sound	Non-listed at the time of grant	ESTABLISH ARRAY, CAPTURE, HANDLE, MEASURE, WEIGH, PIT TAG, ANESTHETIZE, ACOUSTIC TAG, COLLECT ELS, SIDE-SCAN SONAR SURVEY
ENVIRONMENTAL ASSESSMENT ISSUANCE OF A PROTECTED SPECIES CONSERVATION GRANT TO THE DELAWARE DIVISION OF FISHERIES AND WILDLIFE (AWARD NO. NA10NMF4720030) TO CONDUCT RESEARCH ON ATLANTIC STURGEON			

Table 3: Listing of Atlantic sturgeon ESA permits affecting scope of Proposed Action (ENVIRONMENTAL ASSESSMENT for the issuance of 12 scientific research permits for research on Atlantic sturgeon.)

Permit No.	Location	Authorized Take	Research Activity
<u>16526</u> Expires: 4/5/2017	Gulf of Maine Rivers and Coastal Areas GOM DPS	975 adult/sub-adult & juveniles (2 lethal juv & 1 Adult)	Determine the degree of demographic connectivity (immigration and emigration) and correspondence (similarity or uniqueness of demographic parameters) among Atlantic sturgeon in the Gulf of Maine.
<u>16323</u> Expires: 4/5/2017	Connecticut Waters & Long Island Sound (New York Bight DPS)	200 adult/sub-adult	Determine abundance and specific habitat utilization of Atlantic sturgeon in Connecticut waters and correlate movement within and in/out of key areas in Connecticut with environmental variables (temperature, river flow, and dissolved oxygen [DO]).
<u>16422</u> Expires: 4/5/2017	Coastal Waters off Long Island Sound and New Jersey to Delaware River (New York Bight DPS)	285 adult/sub-adult	Develop a multi-State program identifying movements of Atlantic sturgeon among and within marine aggregation areas in the New York Bight DPS.
<u>16436</u> Expires: 4/5/2017	Hudson River Estuary: NY Harbor to Troy, NY (New York Bight DPS)	925 adult/sub-adult/juv	Development of annual juvenile abundance survey; comparison of diet preference of co-occurring Atlantic and shortnose sturgeon; and annual adult spawning stock survey for Hudson River Atlantic sturgeon.
<u>16507</u> Expires: 4/5/2017	Delaware River and Delaware Coastal Waters (New York Bight DPS)	500 adult/sub-adult/juv 350 ELS	Provide information on the location and periodicity of Atlantic sturgeon spawning in the Delaware River; provide a hydroacoustic assessment of habitat requirements of Atlantic sturgeon using side scan sonar; document habitat use, behaviour and diet of Atlantic sturgeon in a marine environment; and estimate a Delaware River Estuary vessel-strike carcass reporting rate for Atlantic sturgeon
<u>16431</u> Expires: 4/5/2017	Delaware River Estuary (New York Bight DPS)	230 juveniles (1 lethal juvenile)	Define juvenile Atlantic sturgeon abundance and habitat selectivity through telemetry and mark-recapture methods in the Delaware River and Estuary.
<u>16438</u> Expires: 4/5/2017	Delaware River Estuary (New York Bight DPS)	284 juveniles 50 ELS (1 lethal juvenile)	Characterize habitat use, abundance, reproduction, juvenile recruitment, temporal and spatial distribution, and reproductive health of Atlantic sturgeon in the Delaware River and Estuary.
<u>16547</u> Expires: 4/5/2017	Chesapeake Bay and Rivers (MD & VA) (Chesapeake DPS)	600 adult/sub-adult/juv 25 ELS	Study life history requirements of Atlantic sturgeon in the Chesapeake Bay and tributaries, conducting stock and threat assessments, genetic identification, movement patterns, habitat preference, dredge and shipping/boating interactions
<u>16375</u> Expires: 4/5/2017	North Carolina Albemarle Sound and Rivers and Cape Fear River (Carolina DPS)	200 adult/sub-adult/juv	Investigation of population dynamics and migration of Atlantic sturgeon captured in North Carolina rivers and coastal waters through mark-recapture and telemetry techniques.
<u>16442</u> Expires: 4/5/2017	South Carolina Rivers (Carolina & South Atlantic DPS)	350 adult/sub-adult/juv 100 ELS	Investigation of population dynamics and migration of Atlantic sturgeon captured in South Carolina rivers and coastal waters through mark-recapture and telemetry techniques.
<u>16482</u> Expires: 4/5/2017	Georgia Rivers and Coastal Waters (South Atlantic DPS)	3474 adult/sub-adult/juv (5 lethal juv/1 adult) 250 ELS	Study of abundance, population dynamics, seasonal movement, diet, general ecology and environmental tolerance of Atlantic sturgeon captured in Georgia rivers and coastal waters.
<u>16508</u> Expires: 4/5/2017	Florida/Georgia Rivers (South Atlantic DPS)	60 adult/sub-adult/juv	Determine presence and population status of Atlantic sturgeon in Florida and Georgia coastal rivers, and through telemetry techniques, determine movement patterns and habitat use.

Figure 1. Map of the Action Area for File No. 17095





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

JUL 25 2012

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
ON THE EFFECTS OF THE ISSUANCE OF A SCIENTIFIC RESEARCH PERMIT (File No.
17095) TO CONDUCT SCIENTIFIC RESEARCH ON SHORTNOSE AND ATLANTIC
STURGEON IN THE HUDSON RIVER ESTUARY

National Marine Fisheries Service

Background:

On March 23, 2012, the National Marine Fisheries Service, Office of Protected Resources (NMFS PR) received a new scientific research permit application from Entergy Nuclear Operations Inc., 450 Broadway, Suite 3, Buchanan, NY 10511 to take shortnose and Atlantic sturgeon in the Hudson River Estuary.

In accordance with the National Environmental Policy Act (NEPA), NMFS prepared an Environmental Assessment (EA) analyzing the impacts on the human environment associated with issuing the permit (*Environmental Assessment On the Effects of Issuing a Permit for Scientific Research on Endangered Shortnose and Atlantic Sturgeon in the Hudson River*). In addition, a Biological Opinion was issued under Section 7 of the Endangered Species Act (ESA) (*Biological Opinion on the Permits and Conservation Division's proposal to issue a Scientific Research Permit Number 17095 to the Entergy Nuclear Operations Inc, [John A. Ventosa, Responsible Party], 450 Broadway, Suite 3, Buchanan, NY 10511 for research on shortnose and Atlantic Sturgeon in the Hudson River pursuant to section 10(a)(1)(A) of the Endangered Species Act of 1973.*) The analyses in the EA, as informed by the Biological Opinion, support the following findings and determination.

Analysis:

The National Oceanic and Atmospheric Administration's Administrative Order 216-6 (May 20, 1999) for implementing NEPA, contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) NEPA implementing regulations at 40 C.F.R. 1508.27 state the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

- (1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson - Stevens Act and identified in Fishery Management Plans?



Response: Issuing a permit to take shortnose and Atlantic sturgeon in the manner described in the EA would not cause substantial damage to the ocean and coastal habitats and/or EFH. Designated EFH does exist for federally managed species in the lower Hudson River action area. Additionally, proposed fishing gear in this action area are identified by NMFS as those that could potentially result in adverse impacts to benthic habitats, including those identified and described as EFH.

Nevertheless, NMFS concluded that, based on mitigation measures placed in the permit, these gears would result in minimal disturbance to the physical environment, including the bottom substrate and any portion having EFH. Factors in our determination included the duration and frequency of the trawls, the intensity and spatial extent of the impact, and the sensitivity of the habitat and habitat functions to impacts from the gear. Informal consultations with the Northeast Office of Habitat Conservation confirmed that no EFH conservation recommendations were necessary for the proposed action.

- (2) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: No substantial impacts on biodiversity or ecosystem function within the affected action areas are expected by authorizing take to exempt capture and other procedures in a permit to study shortnose and Atlantic sturgeon. The impacts to bottom substrate would typically be during capture; however, due to the minimal contact by trawling in localized areas—in addition to the proposed mitigation measures set forth in the permit for trawling (see Question No. 1 above)—NMFS expects minimal disturbance of the benthic organisms and substrate. The bottom substrate of the proposed areas for sampling consists of sandy loam sediment, mud flats and some deep and shallow rocky substrate in the channels and off drop-offs of elevated shoreline.

Due to the nature of netting necessary to take sturgeon, NMFS would however expect some other non-targeted species would become enmeshed. However, non-target fish would be removed from the nets and released at the site of capture at short intervals, and it is believed that virtually all by-catch would be released alive without long-term effects on predator-prey relationships that could potentially impact target species. Thus, ecosystem function would not be substantially impacted.

- (3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

Response: Issuance of the permit is not expected to have substantial adverse impacts on public health or safety. The activity of researchers' preservation of genetic materials, as required by NMFS in research protocols, would involve the use of pre-measured 5 to 20 ml samples of alcohol and/or formalin contained in individual vials for preservation, storage, and transportation of tissue samples. NMFS considers the risk to be negligible because of the minimal volume contained in individual vials if broken.

- (4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

Response: Issuing a permit to researchers exempting take in order to conduct scientific research on shortnose and Atlantic sturgeon could potentially have adverse effects on individuals, but the effects are not expected to be significant at the population or species level. Furthermore, we do not anticipate any individual sturgeon mortality or serious injuries from the take authorized by the permit, other than the directed take authorized for early life stages. The permit activities require standard NMFS mitigation protocols to minimize stress and harmful effects on the species. In the Biological Opinion produced for this action, NMFS concluded issuance of the permit would not likely jeopardize the continued existence of the endangered shortnose or Atlantic sturgeon. Critical habitats for Atlantic sturgeon or shortnose sturgeon have not been designated; thus, these would not be affected.

Likewise, NMFS believes any by-catch of non-target species encountered would be returned immediately to the water with minimal exposure to handling stress. Also, in the highly unlikely event a protected sea turtle or marine mammal were encountered while netting, researchers would be directed by permit conditions to avoid the animal if sighted, releasing it as soon as possible unharmed (see mitigation measures contained in the permit to minimize risks to protected sea turtles and/or marine mammals).

- (5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: There are no known social or economic impacts associated with the proposed actions. Therefore, there would be no significant social or economic impacts interrelated with natural or physical environmental effects.

- (6) Are the effects on the quality of the human environment likely to be highly controversial?

Response: A *Federal Register* notice (77 FR 21750) was published on April 11, 2012, allowing other agencies and the public to comment on the action. All agency comments were appropriately addressed and none of the comments indicated the proposed action was controversial, and none addressed the proposal's potential effects on the quality of the human environment. No comments from the public were received on the application.

- (7) Can the proposed action be reasonably expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?

Response: The proposed activities would not be expected to result in significant impacts to any unique areas mentioned above. Additionally, with respect to anticipated effects on EFH by gear and boating activities, NMFS concluded these activities while targeting sturgeon would result in minimal disturbance to the physical environment, including the bottom substrate and any portion having EFH. No national marine sanctuaries or coral reef ecosystems occur in the action area of the Hudson River, and thus none would be affected.

- (8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: Potential risks by issuing a permit to take shortnose and Atlantic sturgeon are not unique or unknown, nor is there significant uncertainty about impacts from taking sturgeon in the manner proposed. Monitoring reports from other permits or actions of similar nature, and published scientific information on impacts of research on shortnose or Atlantic sturgeon indicate that taking sturgeon in the manner described in the EA would not result in significant adverse impacts to the human environment or the species. There is also considerable scientific information available on the minimal likelihood of such impacts.

- (9) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: Overall, the proposed action of issuing a permit to exempt take of shortnose and Atlantic sturgeon in the manner conditioned in the permit would be expected to have no more than short-term effects on individual endangered shortnose or Atlantic sturgeon and no effects on other aspects of the environment. The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed in the environmental assessment would be minimal and not significant.

- (10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: The action would not take place in any district, site, highway, structure, or object listed in or eligible for listing in the National Register of Historic Places; thus, none would be impacted. The proposed action would also not occur in an area of significant scientific, cultural or historical resources and would not cause their loss or destruction.

- (11) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: Issuing the proposed permit would not be expected to result in introduction or spread of non-indigenous species to other watersheds. The U.S. Geological Survey has documented several aquatic nuisance species occurring in the proposed research area having potential to be spread by research into adjacent watersheds. However, the applicant has agreed to follow certain permit conditions proposed by NMFS minimizing the potential spread of these aquatic nuisance species. The research activities would also not involve discharging bilge water or other issues of concern relative to non-indigenous species.

- (12) Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: The decision to issue this research permit would not be precedent-setting nor would it affect any future decisions. NMFS has issued numerous scientific research permits to study shortnose and Atlantic sturgeon pursuant to section 10 of the Endangered Species Act; thus, this is not the first permit NMFS has issued for this type of research activity.

Further, issuance of a permit to a specific individual or organization for a given research activity, does not in any way guarantee or imply NMFS would authorize other individuals or organizations to conduct the same research activity. Any future request received, including those by the applicants, would be evaluated upon its own merits relative to the criteria established in the ESA and NMFS' implementing regulations.

- (13) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

Response: Issuance of the proposed permit is not expected to violate any Federal, State, or local laws for environmental protection. NMFS has sole jurisdiction for issuance of such permits for both shortnose and Atlantic sturgeon and has determined the proposed research activities are consistent with applicable provisions of the ESA. The permit contains language stating the permit does not relieve the Permit Holder of the responsibility for obtaining other permits, or comply with other Federal, State, local, or international laws or regulations.

- (14) Can the proposed action reasonably be expected to result in cumulative adverse effects having a substantial effect on the target species or non-target species?

Response: NMFS concluded that issuing the proposed permit would have potential for adverse effects on individual shortnose and Atlantic sturgeon. However, because these species are robust, responding well to the measures in the proposed permit, the cumulative effects due to research on the individuals captured, the populations, or the species, are neither long-term or significant.

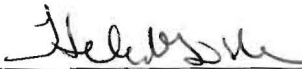
The biological opinion concluded that the proposed action would not likely jeopardize the continued existence of any of any listed species, including other DPSs of Atlantic sturgeon. The action also would not destroy or adversely modify designated critical habitat because no critical habitat has been designated in the action area. NMFS also expects the proposed research activities not to appreciably reduce the species' likelihood of survival and recovery in the wild by adversely affecting their birth, death, or recruitment rates. In particular, NMFS expects the proposed research activities not to affect adult female sturgeon in a way appreciably reducing the reproductive success of adults, the survival of young, or the number of young annually recruiting into the breeding populations of either of the target species.

Overall, the proposed action would not be expected to have more than short-term effects on endangered shortnose or Atlantic sturgeon. Further, the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions would be minimal and not significant. The data generated by the research activities associated with the proposed action would help determine certain movement patterns, habitat use, population parameters and life history characteristics of shortnose and Atlantic sturgeon found in the waters of the action area.

DETERMINATION

In view of the information presented in this document and the analyses contained in the EA prepared for issuance of the permit, pursuant to the ESA, and the ESA section 7 Biological Opinion, it is hereby determined that the issuance of Permit No. 17095 would not significantly impact the quality of the human environment as described above. In addition, all beneficial and adverse impacts of the proposed action have been addressed, reaching the conclusion of no significant impacts. Accordingly, preparation of an Environment Impact Statement (EIS) for this action is not necessary.

JUL 25 2012



Helen M. Golde
Acting Director, Office of Protected Resources
National Marine Fisheries Service

Date