Atlantic States Marine Fisheries Commission

Atlantic Sturgeon Management Board

August 2, 2016
4:45 – 5:30 p.m.
Alexandria, Virginia

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order (*R. Beal*)	4:45 p.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from February 2016	4:45 p.m.
3.	Public Comment	4:50 p.m.
4.	Update on 2017 Benchmark Stock Assessment (*K. Drew*)	5:00 p.m.
5.	Review and Discuss Comment on NOAA Proposed Rules Designating Critical Habitat for Atlantic Sturgeon (*K. Damon-Randall*) **Action**	5:10 p.m.
6.	Elect Chair and Vice-chair (*R. Beal*) **Action**	5:30 p.m.
7.	Other Business/Adjourn	5:30 p.m.

The meeting will be held at the Westin Alexandria; 400 Courthouse Square; Alexandria, VA; 703-253-8600

MEETING OVERVIEW

Atlantic Sturgeon Management Board Meeting
August 2, 2016
4:45 – 5:30 p.m.
Alexandria, Virginia

Chair: Vacant	Technical Committee Chair: Ian Park (DE)	Law Enforcement Committee Rep: Brannock/Meyer
Vice Chair:	Advisory Panel Chair: Vacant	Previous Board Meeting: February 2016
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA, NC, SC, GA, FL, D.C., PRFC, USFWS, NMFS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from February 2016

3. Public Comment – At the beginning of the meeting, public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance, the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Update on 2017 Benchmark Stock Assessment (5:00 – 5:10 p.m.)

Background

- The Board initiated development of a coastwide benchmark stock assessment in 2013.
- Terms of reference for the assessment were approved by the Board in February 2014.
- The assessment is currently on schedule for peer-review in mid-2017.

Presentations

- Update on the 2017 Benchmark Stock Assessment by K. Drew

5. Review and Comment on NOAA Proposed Rules Designating Critical Habitat for Atlantic Sturgeon (5:10 – 5:30 p.m.) Action

Background

- In June, NOAA published two proposed rules, one for each regional office, designating critical habitat for Atlantic sturgeon (**Briefing Materials**).

Presentations

- Overview of proposed rules by K. Damon-Randall

Board Action for Consideration

- Provide comment to NOAA Fisheries on the proposed rules

6. Elect Chair and Vice Chair (R. Beal) Action

7. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

STURGEON MANAGEMENT BOARD

The Westin Alexandria
Alexandria, Virginia
February 3, 2016

These minutes are draft and subject to approval by the Sturgeon Management Board.
The Board will review the minutes during its next meeting.

TABLE OF CONTENTS

INDEX OF MOTIONS

ATTENDANCE

Board Members

Terry Stockwell, ME, proxy for P. Keliher (AA)
Sen. Brian Langley, ME (LA)
Stephen Train, ME (GA)
Douglas Grout, NH (AA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Ritchie White, NH, (GA)
Jocelyn Cary, MA, proxy for Rep. Peake (LA)
Dan McKiernan, MA, proxy for D. Pierce (AA)
Bill Adler, MA (GA)
Mark Gibson, RI, proxy for J. Coit (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Dave Simpson, CT (AA)
Lance Stewart, CT (GA)
Pat Augustine, NY, proxy for Sen. Boyle (LA)
Steve Heins, NY, proxy for J. Gilmore (AA)
Russ Allen, NJ, proxy for D. Chanda (AA)
Emerson Hasbrouck, NY (GA)
Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)
Tom Fote, NJ (GA)
Leroy Young, PA, proxy for J. Arway (AA)
Loren Lustig, PA (GA)
Tom Moore, PA, proxy for Rep. Vereb (LA)
Roy Miller, DE (GA)
John Clark, DE, proxy for D. Saveikis (AA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Bill Goldsborough, MD (GA)
Ed O'Brien, MD, proxy for Del. Stein (LA)
Rob O'Reilly, VA, proxy for J. Bull (AA)
Kyle Schick, VA, proxy for Sen. Stuart (LA)
Louis Daniel, NC (AA)
Douglas Brady, NC (GA)
Ross Self, SC, proxy for R. Boyles (AA)
Patrick Geer, GA, proxy for Rep. Nimmer (LA)
Malcolm Rhodes, SC (GA)
Jim Estes, FL, proxy for J. McCawley (AA)
Martin Gary, PRFC
Sherry White, USFWS
Kim Damon-Randall, NMFS
Dan Ryan, DC, proxy for B. King

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Staff

Robert Beal
Mike Waine
Toni Kerns
Katie Drew
Max Appelman

Guests

The Atlantic Sturgeon Fisheries Management Board of the Atlantic States Marine Fisheries Commission convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, February 3, 2016, and was called to order at 11:36 o'clock a.m. by Chairman John Clark.

CALL TO ORDER

CHAIRMAN JOHN CLARK: The first item of business is to approve the agenda.

APPROVAL OF AGENDA

CHAIRMAN CLARK: Are there any changes to the agenda? Seeing none; the agenda is approved.

APPROVAL OF PROCEEDINGS

CHAIRMAN CLARK: The second item is approval of the proceedings from February, 2014. It has been a while for this board; any changes to the proceedings? Seeing none; that is approved.

PUBLIC COMMENT

CHAIRMAN CLARK: Item Number 3, public comment; we have not had anybody sign up to comment. Would anybody from the public like to make a comment on an item not on the agenda?

UPDATE ON THE 2017 BENCHMARK ASSESSMENT

CHAIRMAN CLARK: Seeing none; we will now move on to Item Number 4, which is an update on the 2017 benchmark assessment that Katie Drew will be giving us.

DR. KATIE DREW: I'll keep this quick. We are still on track for a review in early 2017. We are in the process of finalizing the data from all the states for a terminal year of 2015 in the assessment. We've been pretty lucky in getting the acoustic tagging data together. We still have some sources to track down. But for the most part people have been very cooperative in providing that data, which we look forward to using. We have had to switch assessment modelers for the tagging model, but the new person who hopefully will be approved today as the next agenda item is very well qualified and experienced with this kind of tagging model; and is coming up to speed quickly on that front.

We're also in the process of having those acoustically tagged fish genetically analyzed; so that we can assign them to a DPS, and hopefully get down to a more fine scale estimate of mortality from that model. Basically everything is under control and we're still on track for a 2017 assessment review, and if you have any questions I am happy to answer them.

CHAIRMAN CLARK: Any questions for Katie? Yes, Ross.

MR. ROSS SELF: I have heard there have been some concerns about accessing the genetics data. How is that going to play against getting the stock assessment completed on time? Do you have any concerns with that impacting the schedule for completion?

DR. DREW: Not excessive concerns on that front. I think really the only impact would potentially be a reduction in the sample size of fish that we could actually assign to a DPS for some analyses. There are limitations in terms of money and actual sample availability, but I think we'll be able to get the vast majority of available samples analyzed, and included in the assessment, and it should not delay the assessment in that regards.

REVIEW AND POPULATE THE STOCK ASSESSMENT SUBCOMMITTEE MEMBERSHIP

CHAIRMAN CLARK: Any other questions for Katie? Seeing none; we move on to Agenda Item 5, which is Review and Populate the Stock Assessment Subcommittee membership; and I'll turn that over to Max.

MR. MAX APPLEMAN: As Katie alluded to; there are two stock assessment subcommittee memberships that need board approval; that is for Jared Flowers and David Kazyak. First Jared, he is a recent hire at North Carolina DMF. He has done some extensive work with sturgeon and other anadromous species in the U.S.

As Katie mentioned, he is a very qualified and experienced candidate to head the tagging model portion of the assessment; which was formerly headed by Will Smith, who recently left North Carolina and is no longer a member on the Stock Assessment Subcommittee. The other nominee is David Kazyak; who is a postdoc with the USGS.

A lot of his recent work has been focused on estimating census population size of the Hudson River Atlantic sturgeon population; which is part of the objective of the stock assessment. The SAS, the Stock Assessment Subcommittee intends to incorporate David's work into the assessment and kind of avoid any duplicate efforts to do that part.

Also, he has some experience with genetics data and analysis and this is a big plus for the Stock Assessment Subcommittee, since the majority of those members are somewhat unfamiliar with those kinds of datasets; again just looking for board approval here for Jared Flowers and David to the Sturgeon SAS, thank you, Mr. Chair.

CHAIRMAN CLARK: We'll need a motion. Can I have a motion; Dr. Daniel.

DR. LOUIS B. DANIEL: **Motion to approve Jared Flowers and David Kazyak as members of the Stock Assessment Subcommittee.**

CHAIRMAN CLARK: Second by Bill Adler. Is there any objection to these? **Seeing none; the motion passes unanimously, and they are both on the Stock Assessment Subcommittee.**

OVERVIEW OF NOAA FISHERIES CRITICAL HABITAT DESIGNATION PROCESS FOR ATLANTIC STURGEON

CHAIRMAN CLARK: Okay the next item on our agenda is an overview of NOAA Fisheries Critical Habitat Designation Process for Atlantic Sturgeon; and I will turn it over to Kim Damon-Randall of NOAA. She is in the back of the room there.

MS. KIM DAMON-RANDALL: I am going to talk a little bit about process; that critical habitat designation process, just because I'm not sure if everybody is familiar with it. Under the ESA, the Secretary of either Commerce or Interior has to designate critical habitat based on the best available information.

But they also have to consider whether or not the benefits of including critical habitat outweigh the economic impacts, the impacts of national security and other relevant impacts; when they're specifying areas as particular habitat. This is a little bit different than listing, where economics doesn't factor into the listing decision. Areas can be excluded from critical habitat designation if the benefits of excluding outweigh the benefits of including them, as long as it doesn't result in the extinction of the species. Section 4B, 6C requires the final regulation designating critical habitat of a listed species be published concurrently with the final listing determination if prudent and determinable. If it is not

determinable at the time of listing it can be extended one year, but not more than one year. Just as a reminder, the final listing for the five Atlantic sturgeon DPSs was in February, 2012. It is over that one year timeframe that are allotted under the ESA.

Critical habitat is defined as the specific areas within the geographical area occupied by the species at the time that it is listed, in which are found those physical or biological features that are essential to the conservation of the species and that may require special management consideration or protection. Also it can include specific areas that are outside the geographic area occupied by the species at the time it is listed, if it is determined that those areas are essential for the conservation of the species.

The Secretary shall designate all lands owned or controlled by the Department of Defense, sorry shall not designate; that is an important word, not, all lands that are owned or controlled by the Department of Defense if they have an integrated natural resources management plan that has been determined to provide benefits for the species for which the critical habitat may have been proposed.

We can exclude DOD lands if the in-ramp is protective enough of the listed species and the habitat. In the process we have to first identify the areas that meet the definition of critical habitat, and then we have to do the Section 4B2 analysis, which allows us to consider those impacts and balance the benefits versus the adverse impacts of either including or excluding critical habitat in the designation.

The first thing that we have to do is determine the geographical area that is occupied by the species. For Atlantic sturgeon that is a very wide geographical area that extends from Canada to Florida. Then we have to look at what the physical and biological features are that are essential to the conservation of the species.

Then we have to determine whether any features may require special management considerations or protections. Then we delineate the specific areas that contain those essential features, and we determine whether or not there are any unoccupied areas that are essential for the conservation of the species. The next step is to do the Section 4B2 analysis. We consider the economic or other impacts of designating any particular areas as critical habitat. We need to weigh the benefits of excluding a particular area against the benefits of including it.

We have to look at whether or not there are conservation plans or partnerships, whether or not there are tribal lands, national security and homeland security impacts, and also military lands; and look at the economic impacts of what would happen if that habitat was designated. Then we determine whether any particular areas should be excluded from critical habitat, and areas can again as I said earlier, be excluded as long as the failure to include them does not result in the extinction of the species.

Who is affected by critical habitat? The key benefit of designating critical habitat is to put other federal agencies on notice that they must consult with NOAA Fisheries if they intend to authorize, fund, or carry out an action that may affect the critical habitat of the species listed under the ESA. In these situations we would provide guidance as to how the action can be carried out in a manner that avoids or minimizes impacts to critical habitat. It is very focused on federal actions. For Atlantic sturgeon, some of you may have known that we were sued to designate critical habitat, because we were past that statutory deadline. We entered into a settlement agreement with the Natural Resources Defense Council and Delaware River Keeper that we would file

our proposed rules in the Federal Register by November 30th of 2015.

We actually went back to the court and asked for an extension to that deadline, so it has been extended to May 27, 2016. We've gathered the biological information into biological source documents that form the basis for the designation. New information for a couple of the rivers in the southeast was provided by the peer reviewers.

We did ask the Sturgeon Technical Committee to serve as peer reviewers, and we got some very good information from them. Some of that was new and that is being incorporated into the Southeast Rule as they work forward as they work forward on development of that rule. Both economic analyses were peer reviewed by economic experts.

We used the Biological Source Document and the economic analyses to serve as the basis for the one rule that is being developed for the three distinct population segments in the GARFO region, and one for the two DPSs in the southeast region. Both rules will go through the internal clearance process. They will file with the Federal Register by May 27th, 2016, which means that they'll be actually published in the Federal Register a couple days after that.

We've agreed to doing a 90 day public comment period, normally it is a 60 day public comment period; but we looked at the schedule of the ASMFC meetings and knew that fell right before the August ASMFC meeting, so we decided just to go ahead and extend it for 90 days. We will host public meetings throughout the range to obtain public comment. If it is helpful, we can come to the August ASMFC board meeting if you have one, and present on what the designations include.

CHAIRMAN CLARK: Are there any questions for Kim on this?

MR. DAVID V. BORDEN: Just to the last point. I think it would be very helpful to have a presentation on this at the August board meeting.

MR. WILLIAM A. ADLER: May I ask, it seems to me that the whole coast and all the rivers could be critical habitat. I get very worried about what that means, because I've dealt with that with the whale issue on critical habitats. I guess maybe the Norfolk Navy Base will be okay, because it is military, I guess. I just get worried about how much of this coast and rivers are actually going to be designated, and then what happens to the – for instance the fishing industry that may be impacted there? I am just cautious and I get worried about too much critical habitat.

CHAIRMAN CLARK: Do you have any response to that, Kim?

MS. DAMON-RANDALL: I think one thing to keep in mind is any federal action that is going to go through a Section 7 consultation that would look at affects to critical habitat, has to impact those physical and biological features that we've identified. We just designated a broader area of critical habitat for right whales. It is pretty much the entire Gulf of Maine in the northeast, so very wide geographic area. But the fishing industry does not have impacts on what those physical and biological features are for right whale critical habitat; so it is not having any impact on the fishing industry. Just keep that in mind that whatever the action is that we're consulting on has to affect those physical and biological features.

CHAIRMAN CLARK: Next question is from Bill Goldsborough.

MR. WILLIAM J. GOLDSBOROUGH: I was just wondering how and to what extend our Habitat Committee is in the loop on this. I suspect they will be meeting at the spring

meeting, but I'm not certain about that. In any case, we certainly want them in the loop.

MS. TONI KERNS: The Habitat Committee has their own spring meeting, so it wouldn't be at the main meeting week. But they do have a meeting, and we can work with Lisa and Kim to have a discussion. But they have not been discussing this listing yet.

CHAIRMAN CLARK: Next we have Tom Fote.

MR. THOMAS P. FOTE: I always love this listing of critical habitat, because it affects maybe fishermen and a few other people; but when it comes to the Army Corps of Engineers and their projects like widening of the channels in every river so they can bring in the huge tankers that are now destroying all the sloping along the riverbank and everything else. They seem to get exempted.

You know the ports also get exempted, because they can even outvote a Governor's Consistency Ruling. Always I look at this with a cynical eye, especially when you get, I guess part of the Department of Defense as a former Army Corps of Engineer officer, I realize that we get exempted from things we shouldn't get exempted; like destroying the lumps off the New Jersey coast to basically put sand on beaches. That is also sturgeon habitat. They're out there swimming.

DR. DANIEL: I stay anxious about all this. I guess my question would be, you know based on history if it would be possible for us to have an opportunity to look at and review this before it's published; as a partner in sturgeon management with the National Marine Fisheries Service. That might have helped the actual listing discussion decision, so perhaps we could be involved in that before it is published in the Federal Register.

MS. DAMON-RANDALL: We did ask the Sturgeon Technical Committee to review the biological information that forms the basis for the critical habitat designation. I would have to talk to our attorneys, but I think because of the way that the federal decision process is, I am not sure we can share anything before it is published, because it would be considered pre-decisional. But I can talk to our attorneys and get back to you on that.

ELECT VICE-CHAIR

CHAIRMAN CLARK: Are there any other questions for Kim? Okay not seeing any; we'll move on to our next item, which is an action item. We need to elect a Vice-Chair. Is there a motion from the floor?

MR. MARTY GARY: **I move to nominate Dr. Louis Daniel from the state of North Carolina to be the next Vice-Chairman of the Atlantic States Marine Fisheries Commission Atlantic Sturgeon Management Board.**

CHAIRMAN CLARK: Pat Augustine, second.

MR. PATRICK AUGUSTINE: **I move to close nomination and cast one vote in favor of Mr. Daniel to become the new Vice-Chair**; welcome sir, congratulations!

CHAIRMAN CLARK: Do we have any objections? Seeing none; congratulations, Louis. You are the new Vice-Chair.

OTHER BUSINESS

CHAIRMAN CLARK: We are already on to other business. Since we are moving right along here, we're going to go ahead and do the FMP Review, which was on the original agenda and Max will take that.

MR. APPELMAN: I'll get through this pretty quickly. As we know there is a complete moratorium for Atlantic sturgeon since 1997, and harvest in the EEZ has been prohibited since '98. These moratoria are expected to remain in place until a

minimum of 20 protected year class of spawning females can be exhibited and that the FMP is modified at that point to permit harvest or possession.

Bycatch, in 2013 a total of 288 Atlantic sturgeons were reported as bycatch in various fisheries on the Atlantic Coast, 208 were reported in 2014. A majority of these were reported from the Federal Observer Program, the NEFOP data, and the South Carolina Winyah Bay American shad gillnet fishery; approximately 70 percent of the 2013 and 2014 reported bycatch.

It is also important to note though that there continues to be an underreporting concern regarding bycatch. This is in part due to the ESA listing that everyone is aware of. This has led to some states to terminate some of their voluntary logbook programs for bycatch reporting. Ship strikes continue to be a source of mortality for Atlantic sturgeon.

In 2013 there were 26 sturgeon carcasses reported in the Delaware Estuary and an additional 23 reported in 2014, and this does include fish reporter from Pennsylvania's portion of the Delaware River. As we've alluded to, the current moratorium is partially in response to the 1998 assessment and again in 2012 after several status reviews, NMFS did publish a final rule declaring the Gulf of Maine DPS as threatened and the other four as endangered.

In response to this listing, the board initiated that coastwide assessment, which is currently underway and scheduled for review in early 2017. As Katie explained, the TC, the Stock Assessment Subcommittee and its working groups are working very hard to see that that assessment is completed on schedule.

A quick habitat highlight that I wanted to provide for the board is that in Maine on the Penobscot River, the last of three dams have been removed, which blocked historical habitat since 1830. According to some telemetry results, Maine DMR has demonstrated that Atlantic sturgeons have been using this newly available habitat for spawning, so that is good news for Maine.

As part of compliance, states are required to submit information on the results of bycatch in other fisheries, any independent monitoring results, the status of habitat, and information on aquaculture operations. Also we ask that states provide an overview of any ongoing research; and there was an extensive list of those studies included in the FMP review document that went out in supplemental materials. There are a couple copies in the back of the room if anyone wants to look at that. After review the Plan Review Team found that all states and jurisdictions did meet the requirements for the Atlantic sturgeon FMP. There were a few recommendations though from the PRT. One is for states to continue to coordinate with the commission regarding the progress of incidental take permits under Section 10 of the ESA. North Carolina and Georgia have received Section 10 ITPs for commercial gillnet operations.

I am aware that Rhode Island is also pursuing an ITP for their fisheries. These are the only states that I'm aware of at this point, so if a state was left out here, please get in touch with me and let me know. That concludes the FMP Review. Thank you, Mr. Chair I'll take any questions.

CHAIRMAN CLARK: Questions; Dr. Daniel.

DR. DANIEL: Maybe a comment and a question. First, North Carolina we do have our ITP in place. We have been doing observed trips in all the areas where we've seen sturgeon, and we've seen a lot of sturgeon; mostly juveniles. Most of the big sturgeon basically are represented by big holes in gillnets, we think.

That is going to increase that number significantly, the 288. It just dawned on me, I'm wondering, and Katie may be able to answer this question, if there is enough information in the Observer Program thus far to be of any use in the stock assessment, because that should be providing us with some, at least over time it is going to provide us with some good CPUE and abundance information. I don't know if you've even considered that yet or it is probably too short a time series to use at this point.

DR. DREW: That's a good question. We are intending to use the federal observer program, try to look at that as a CPUE of bycatch over time as an index of abundance; because it is a longer time series. But we'll definitely be including North Carolina, and actually South Carolina's bycatch information.

Partly as just trying to get estimates of bycatch that we can compare to the observer program; to kind of give us some bounds on what is being taken. We will look at it for a potential CPUE, but as you point out, the time series is really too short to have a lot of contrast to be useful in that effect. But it is definitely information that we are looking at and will incorporate into the stock assessment.

CHAIRMAN CLARK: Any more questions about the FMP review? Not seeing any; can we get a motion to approve the FMP review?

MR. ADLER: Yes, I make a motion to approve the FMP report.

CHAIRMAN CLARK: Do we have a second? Pat Augustine seconds the motion. **The motion is up, are there any objections to this motion? Seeing none; the motion is approved.**

Is there any other business to come before the Sturgeon Board? Seeing none; we are adjourned, thank you. I'm sorry, Roy, did you have something?

MR. ROY W. MILLER: I did Mr. Chairman. This was not on the agenda so I am just proposing that this question be considered in the future. We might want to consider how to provide our fishermen in our respective jurisdictions a greater level of comfort with reporting bycatch of Atlantic sturgeon. My perception is that there is considerable reluctance to provide that kind of information for fear of running afoul of the legal system. I would like to explore in the future perhaps, better ways to communicate that information to increase that level of comfort, so that we get more accurate landings statistics – or not landings but more accurate – bycatch statistics.

ADJOURNMENT

CHAIRMAN CLARK: Thanks, Roy. Let me slow down then. Is there anything else to come before the Sturgeon Board? Now seeing now; we are adjourned, thank you.

(Whereupon the meeting was adjourned at 12:04 o'clock p.m. on February 3, 2016.)

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the Act, including the factors identified in this finding and explanation (see Request for Information, above).

Conclusion

On the basis of our evaluation of the information presented under section 4(b)(3)(A) of the Act, we have determined that the petition to remove the golden-cheeked warbler from the List of Endangered and Threatened Wildlife does not present substantial scientific or commercial information indicating that the requested action may be warranted. Therefore, we are not initiating a status review for this species.

We have further determined that the petition to list the U.S. population of northwestern moose (*Alces alces andersoni*) as an endangered or threatened DPS presents substantial scientific or commercial information indicating that the requested action may be warranted. Because we have found that the petition presents substantial information indicating that the petitioned action may be warranted, we are initiating a status review to determine whether this action under the Act is warranted. At the conclusion of the status review, we will issue a 12-month finding in accordance with section 4(b)(3)(B) of the Act, as to whether or not the Service believes the petitioned action is warranted.

It is important to note that the ''substantial information'' standard for a 90-day finding differs from the Act's ''best scientific and commercial data'' standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act's standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a finding that the petitioned action is warranted.

References Cited

A complete list of references cited is available for each species addressed in this document on the Internet at *http://www.regulations.gov* and upon request from the appropriate person listed under **FOR FURTHER INFORMATION CONTACT**, above.

Authors

The primary authors of this document are the staff members of the Branch of Recovery and State Grants, Ecological Services Program, U.S. Fish and Wildlife Service.

Authority

The authority for these actions is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: May 25, 2016.

Stephen Guertin,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. 2016–13120 Filed 6–2–16; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 226

[Docket No. 150818735–6236–01]

RIN 0648–BF28

Endangered and Threatened Species; Designation of Critical Habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments of Atlantic Sturgeon

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: We, the National Marine Fisheries Service (NMFS), propose to designate critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments (DPSs) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). The specific areas proposed for designation include approximately 244 kilometers (152 miles) of aquatic habitat in rivers in Maine, New Hampshire, and Massachusetts for the Gulf of Maine DPS, approximately 547 kilometers (340 miles) of aquatic habitat in rivers in Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, and Delaware for the New York Bight DPS, and approximately 729 kilometers (453 miles) of aquatic habitat in rivers in Maryland, Virginia, and the District of Columbia for the Chesapeake Bay DPS of Atlantic sturgeon. We are soliciting comments from the public on all aspects of the proposal, including information on the economic, national security, and other relevant impacts of the proposed designations, as well as the benefits to the DPSs.

DATES: Comments on this proposed rule must be received by September 1, 2016.

Public hearings and public information meetings: We will hold two public hearings and two public informational meetings on this proposed rule. We will hold a public informational meeting from 2 to 4 p.m., in Annapolis, Maryland on Wednesday, July 13 (see **ADDRESSES**). A second public informational meeting will be held from 3 to 5 p.m., in Portland, Maine on Monday, July 18 (see **ADDRESSES**). We will hold two public hearings, from 3 to 5 p.m. and 6 to 8 p.m., in Gloucester, Massachusetts on Thursday, July 21 (see **ADDRESSES**).

ADDRESSES: You may submit comments, identified by the NOAA–NMFS–2015–0107, by either of the following methods:

- *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal. Go to *www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2015-0107*, Click the ''Comment Now!'' icon, complete the required fields, and enter or attach your comments.
- *Mail:* Kimberly B. Damon-Randall, Assistant Regional Administrator, Protected Resources Division, NMFS, Greater Atlantic Regional Office, 55 Great Republic Drive, Gloucester, MA 01930.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by us. All comments received are a part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personal identifying information (*e.g.,* name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. We will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous).

Public informational meetings and public hearings: The July 13, 2016, public informational meeting will be held at the Environmental Protection Agency, Information and Conference Center, 410 Severn Avenue, Annapolis, MD 21403. The July 18, 2016, public informational meeting will be held at the Gulf of Maine Research Institute, Cohen Center, 350 Commercial Street, Portland, Maine 04101. The July 21, 2016, public hearings will be held at the NMFS, Greater Atlantic Region Fisheries Office, 55 Great Republic Drive, Gloucester, MA 01930. People needing reasonable accommodations in order to attend and participate or who have questions about the public

hearings should contact Lynn Lankshear, NMFS, Greater Atlantic Region Fisheries Office (GARFO), as soon as possible (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Lynn Lankshear, NMFS, GARFO at 978–282–8473; Julie Crocker, NMFS, GARFO at 978–282–8480; or Lisa Manning, NMFS, Office of Protected Resources at 301–427–8466.

SUPPLEMENTARY INFORMATION: In accordance with section 4(b)(2) of the ESA (16 U.S.C. 1533(b)(2)) and our implementing regulations (50 CFR 424.12), this proposed rule is based on the best scientific information available concerning the range, biology, habitat, and threats to the habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon. We have reviewed the information (*e.g.,* provided in reports, peer-reviewed literature, and technical documents) and have used it to identify the physical and biological features essential to the conservation of each DPS, the specific areas within the occupied areas that contain the essential physical and biological features that may require special management protection, the federal activities that may impact those features, and the potential impacts of designating critical habitat for each DPS. We have gathered this information for all three DPSs into a single document, the Draft Biological Information and ESA section 4(b)(2) Source Document. The economic impacts of the proposed critical habitat designations for each DPS are described in the document titled, Draft Economic Impact Analysis of Critical Habitat Designation for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*), which was prepared by King and Associates, Incorporated. These supporting documents are available on the Federal eRulemaking Portal at *http://www.regulations.gov.* Electronic copies can also be obtained at *http://www.greateratlantic.fisheries.noaa.gov/protected/atlsturgeon/index.html* or upon request (see **ADDRESSES**).

We invite the submission of information that may help to identify other physical or biological features. For example, while we know that there are specific estuarine areas that sturgeon often use for foraging (*e.g.,* the mouth of the Merrimack and Saco rivers), and we can identify aggregation areas (*e.g.,* off of western Long Island, New York) and general movement patterns in the marine environment (*e.g.,* typically within the 50 meter depth contour) to and from estuarine areas, we could not identify what the specific features are of these habitats that make them important to sturgeon and that may require special management.

Background

Under section 4 of the ESA, critical habitat shall be specified to the maximum extent prudent and determinable at the time a species is listed as threatened or endangered (16 U.S.C. 1533(b)(6)(C)). We concluded that critical habitat was not determinable for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs when we published the final listing rule (77 FR 5880, February 6, 2012). However, we anticipated that critical habitat would be determinable in the future, given on-going research. We, therefore, announced in the final rule that we would propose critical habitat for each DPS in a separate rulemaking.

Section 3(5)(A) of the ESA defines critical habitat as the specific areas within the geographical area occupied by the species at the time it is listed on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protections, and specific areas outside the geographical area occupied by the species at the time it is listed that are essential for the conservation of the species (16 U.S.C. 1532(5)(A)). Conservation is defined in section 3(3) of the ESA as ''. . . to use, and the use of, all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary . . .'' (16 U.S.C. 1532(3)). Therefore, critical habitat is the habitat essential for the species' recovery. However, section 3(5)(C) of the ESA clarifies that except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.

As described in section 4(b)(2) of the ESA, we are required to designate critical habitat based on the best available scientific data and after taking into consideration the economic impact, impact on national security, and any other relevant impact, of specifying any particular area as critical habitat. Section 4(b)(2) provides us with discretion to exclude particular areas from a designation if the benefits of excluding that area outweigh the benefits of including it in the designation, unless failure to designate such areas as critical habitat will result in the extinction of the species. Finally, section 4(a)(3)(B) prohibits designating as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense or designated for its use, that are subject to an Integrated Natural Resources Management Plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a conservation benefit to the species, and its habitat, for which critical habitat is proposed for designation. Although not expressly stated in section 4(b)(2), our regulations clarify that critical habitat shall not be designated within foreign countries or in other areas outside of United States jurisdiction (50 CFR 424.12(g)).

Once critical habitat is designated, section 7(a)(2) of the ESA requires Federal agencies to ensure that any action they fund, authorize or carry out is not likely to destroy or adversely modify that habitat (16 U.S.C. 1536(a)(2)). This requirement is in addition to the section 7(a)(2) requirement that Federal agencies ensure that their actions are not likely to jeopardize the continued existence of ESA-listed species. Specifying the geographic location of critical habitat also facilitates implementation of section 7(a)(1) of the ESA by identifying areas where Federal agencies can focus their conservation programs and use their authorities to further the purposes of the ESA. Critical habitat requirements do not apply to citizens engaged in activities on private land that do not involve a Federal agency. However, designating critical habitat can help focus the efforts of other conservation partners (*e.g.,* State and local governments, individuals and nongovernmental organizations).

Accordingly, our step-wise approach for identifying potential critical habitat areas for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs included the following: (1) Identify the physical and biological features essential to the conservation of the DPS and which may require special management considerations or protection; (2) identify specific areas where those features occur within the occupied geographic range of a particular DPS; (3) identify any unoccupied habitat essential to the conservation of a particular DPS; (4) consider economic, national security, or any other impacts of designating critical habitat and determine whether to exercise our discretion to exclude any particular areas; and (5) determine whether any area that contains essential

features is covered under an INRMP that provides a conservation benefit to the DPS.

Biology and Habitat of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic Sturgeon

Although there is considerable variability among species, all sturgeon species (order *Acipenseriformes*) have some common life history traits. They all: (1) Occur within the Northern Hemisphere; (2) spawn in freshwater over hard bottom substrates; (3) generally do not spawn annually; (4) are benthic foragers; (5) mature relatively late and are relatively long lived; and, (6) are relatively sensitive to low dissolved oxygen levels (Dees, 1961; Vladykov and Greeley, 1963; Klyashtorin, 1976; Bemis and Kynard, 1997; Sulak and Randall, 1999; Billard and Lecointre, 2001; Secor and Niklitschek, 2002; Pikitch *et al.,* 2005).

Atlantic sturgeon have all of these traits. They occur along the eastern coast of North America from Hamilton Inlet, Labrador, Canada, to Cape Canaveral, Florida, USA (Bigelow and Welsh, 1924; Dees, 1961; Vladykov and Greeley, 1963; Scott and Scott, 1988; NMFS and USFWS, 2007; T. Savoy, CT DEEP, pers. comm.). They have a lifespan of up to 60 years, although the typical lifespan is probably much shorter (Sulak and Randall, 2001; Balazik *et al.,* 2010). As described in the Status Review, Atlantic sturgeon reach maturity at about 5 to 34 years of age, after years of moving between marine waters and coastal estuaries, and spawn in freshwater of tidal-affected rivers every 1 to 5 years (males) or 2 to 5 years (females) (NMFS and USFWS, 2007). Analysis of stomach contents for adults, subadults (*i.e.,* sexually immature Atlantic sturgeon that have emigrated from the natal estuary), and juveniles (*i.e.,* sexually immature Atlantic sturgeon that have not yet emigrated from the natal estuary) confirms that Atlantic sturgeon are benthic foragers (Ryder, 1888; Bigelow and Schroeder, 1953; Johnson *et al.,* 1997; Secor *et al.,* 2000; NMFS and USFWS, 2007; Guilbard *et al.,* 2007; Hatin *et al.,* 2007; Savoy, 2007; Dzaugis, 2013; McLean *et al.,* 2013).

An anadromous species, Atlantic sturgeon are spawned in freshwater of rivers that flow into a coastal estuary. Tagging records and the relatively low rate of gene flow reported in population genetic studies provide evidence that Atlantic sturgeon return to their natal river to spawn (NMFS and USFWS, 2007). Spawning sites are well-oxygenated areas with flowing water ranging in temperature from 13 °C to 26 °C, and hard bottom substrate such as cobble, coarse sand, hard clay, and bedrock (Ryder, 1888; Dees, 1961; Vladykov and Greeley, 1963; Scott and Crossman, 1973; Gilbert, 1989; Smith and Clugston, 1997; Bain *et al.* 2000; Collins *et al.,* 2000; Caron *et al.,* 2002; Hatin *et al.,* 2002; Mohler, 2003; Greene *et al.,* 2009; Balazik *et al.* 2012; Hager *et al.* 2014). Water depth leading to spawning sites may be highly variable. Since the exact location of spawning is unknown, spawning depth is also uncertain. Atlantic sturgeon in spawning condition have been tracked and captured near presumed spawning habitat at depths up to 27 m (Borodin 1925; Dees 1961; Scott and Crossman 1973; Shirey *et al.* 1999; Bain *et al.* 2000; Hatin *et al.,* 2002; Balazik *et al.,* 2012; Hager *et al.,* 2014).

Within minutes of being fertilized, the eggs become sticky and adhere to the substrate for the relatively short and temperature-dependent period of larval development (Ryder, 1888; Vladykov and Greeley, 1963; Murawski and Pacheco, 1977; Smith *et al.,* 1980; Van den Avyle, 1984; Mohler, 2003). In hatchery studies, hatching occurred approximately 60 hours after egg deposition at water temperatures of 20 °C to 21 °C and 96 hours after egg deposition with a water temperature of approximately 18 °C (Smith *et al.,* 1980; J. Fletcher, USFWS pers. comm. in Mohler, 2003).

Larval Atlantic sturgeon (*i.e.,* less than 4 weeks old, with total lengths less than 30 mm; Van Eenennaam *et al.,* 1996) are assumed to inhabit the same areas where they were spawned and live at or near the bottom (Ryder, 1888; Smith *et al.,* 1980; Bain *et al.,* 2000; Kynard and Horgan, 2002; Greene *et al.,* 2009). The best available information for behavior of larval Atlantic sturgeon is described from hatchery studies. Upon hatching, larvae are nourished by the yolk sac, are mostly pelagic (*e.g.,* exhibit a ''swim-up and drift-down'' behavior in hatchery tanks; Mohler, 2003), and move away from light (*i.e.* negative photo-taxis; Kynard and Horgan, 2002; Mohler, 2003). Within days, larvae exhibit more benthic behavior until the yolk sac is absorbed at about 8 to 10 days post-hatching (Kynard and Horgan, 2002; Mohler, 2003). Post-yolk sac larvae occur in the water column but feed at the bottom of the water column (Mohler, 2003; Richardson *et al.,* 2007).

The next phase of development, referred to as the juvenile stage, lasts months to years in brackish waters of the natal estuary (Hatin *et al.,* 2007; NMFS and USFWS, 2007; Greene *et al.,* 2009; Calvo *et al.,* 2010; Schueller and Peterson, 2010). Juveniles occur in oligohaline waters (salinity of 0.5 to 5 parts per thousand) and mesohaline waters (salinity of 5 to 18 parts per thousand) of the natal estuary during growth and development. They will eventually move into polyhaline waters (salinity of 18–30 parts per thousand) before emigrating to the marine environment. Larger, presumably older, juveniles occur across a broader salinity range than smaller, presumably younger, juveniles (Hatin *et al.,* 2007; McCord *et al.,* 2007; Munro *et al.,* 2007; NMFS and USFWS, 2007; Sweka *et al.,* 2007; Greene *et al.,* 2009; Calvo *et al.,* 2010).

The distribution of Atlantic sturgeon juveniles in the natal estuary is a function of physiological development and habitat selection based on water quality factors of temperature, salinity, and dissolved oxygen, which are inter-related environmental variables. In laboratory studies, juveniles less than a year old (also known as young-of-year) had reduced growth at 40 percent dissolved oxygen saturation with salinity of 8 and 15 parts per thousand and temperature at 12 °C, 20 °C, and 28 °C. They grew best at 70 percent dissolved oxygen saturation with salinity of 8 and 15 parts per thousand and temperature of 12 °C and 20 °C (*i.e.,* dissolved oxygen concentrations greater than 6.5 mg/L), and selected for conditions that supported growth (Niklitschek and Secor, 2009; Niklitschek and Secor, 2010). Similar results were obtained for age-1 juveniles (*i.e.,* greater than 1 year old and less than 2 years old), which have been shown to tolerate salinities of 33 parts per thousand (*e.g.,* a salinity level associated with seawater), but grow faster in lower salinity waters (Niklitschek and Secor, 2009; Allen *et al.,* 2014).

Once suitably developed, Atlantic sturgeon leave the natal estuary and enter marine waters (*i.e.,* waters with salinity greater than 30 parts per thousand) which marks the beginning of the subadult life stage. In the marine environment, subadults mix with adults and subadults from other river systems (NMFS and USFWS, 2007; Grunwald *et al.,* 2008; Dunton *et al.,* 2010; Erickson *et al.,* 2011; Dunton *et al.,* 2012; Wirgin *et al.,* 2012; Waldman *et al.,* 2013; O'Leary *et al.,* 2014, Wirgin *et al.,* 2015a; Wirgin *et al.,* 2015b). Atlantic sturgeon travel long distances in marine waters, aggregate in both ocean and estuarine areas at certain times of the year, and exhibit seasonal coastal movements in the spring and fall (NMFS and USFWS, 2007; Dunton *et al.,* 2010; Dunton *et al.,* 2012; Erickson

et al., 2011; Oliver *et al.,* 2013; Wippelhauser and Squiers, 2015). Existing and new technologies are providing additional information for the life history and distribution of the Atlantic sturgeon in marine waters (Nelson *et al.,* 2013; Breece *et al.,* 2016). However, there is still a paucity of data to inform distribution of subadult and adult Atlantic sturgeon within the marine environment and their habitat use.

The exact spawning locations for Gulf of Maine, New York Bight and Chesapeake Bay DPS Atlantic sturgeon are unknown but inferred based on the location of freshwater, hard substrate, water depth, tracking of adults to upriver locations and the behavior of adults at those locations, capture of young-of-year and, in limited cases, larvae, and historical accounts of where the caviar fishery occurred. Based on one or more of these lines of evidence, multiple sites have been identified within many of the rivers used for spawning (NMFS and USFWS, 2007; Simpson, 2008; Hager, 2011; Austin, 2012; Balazik *et al.,* 2012; Breece *et al.,* 2013). Spawning sites at different locations within the tidal-affected river would help to ensure successful spawning given annual changes in the location of the salt wedge.

Male Atlantic sturgeon in spawning condition have been observed to stage in more saline waters of the coastal estuary before moving upriver once the water temperature reaches approximately 6 °C (43 °F). They may spend weeks moving upstream and downstream of the presumed spawning area(s) before moving back downriver to the lower estuary and residing there until outmigration in the fall. In contrast, spawning females move upriver when temperatures are closer to 12 °C to 13 °C (54 ° to 55 ° F), return downriver relatively quickly, and may leave the estuary and travel to other coastal estuaries until outmigration to marine waters in the fall (Smith *et al.,* 1982; Dovel and Berggren, 1983; Smith, 1985; Bain, 1997; Bain *et al.,* 2000; Collins *et al.,* 2000; NMFS and USFWS, 2007; Greene *et al.,* 2009; Balazik *et al.,* 2012; Breece *et al.,* 2013).

There is a growing body of evidence that some Atlantic sturgeon river populations have two spawning seasons comprised of different spawning adults (Balazik and Musick, 2015). Evidence of fall spawning for the Carolina and South Atlantic DPSs was available when the five Atlantic sturgeon DPSs were listed under the ESA (77 FR 5914; Smith *et al.,* 1984; NMFS and USFWS 1998; Collins *et al.,* 2000). Since the listings, additional evidence of fall as well as spring spawning has been obtained for the Chesapeake Bay DPS (Balazik *et al.,* 2012; Hager *et al.* 2014; Kahn *et al.,* 2014). Spring is the only currently known spawning period for the Gulf of Maine and New York Bight DPSs. However, an 1870's report of Atlantic sturgeon spawning during August in the Hudson River (Dovel and Berggren, 1983) and other historical information (Borodin, 1925; Balazik and Musick, 2015) suggests spring and fall spawning runs were typical, and may still occur in many areas of the Atlantic sturgeon's range. Given seasonal changes in the location of the salt-wedge for estuarine systems, it is likely that fall spawning would occur or would have occurred further upstream than the locations for spring spawning in rivers.

In addition to providing access to spawning habitat, estuaries provide foraging opportunities for subadult and adult Atlantic sturgeon. Stomach content analysis of Atlantic sturgeon captured in coastal estuaries confirm that sturgeon are foraging in coastal estuaries (Hatin *et al.,* 2007; Savoy, 2007; Calvo *et al.,* 2010; Wippelhauser, 2012; Dzaugis, 2013; McLean *et al.,* 2013; McLean *et al.,* 2014). The occurrence of subadult and adults in association with the salt front (Brundage and Meadows, 1982; Savoy and Shake, 1993; Collins *et al.* 2000; Savoy and Pacileo, 2003; Hatin *et al.,* 2007; Calvo *et al.,* 2010; Hager, 2011; Balazik, 2012; Breece *et al.,* 2013), a biologically-rich area of estuaries, also suggests use of estuarine waters for seasonal foraging. At least some Atlantic sturgeon subadults and adults move between estuarine environments in the spring through fall (Savoy and Pacileo, 2003; Simpson, 2008; Collins *et al.,* 2000; Balazik *et al.,* 2012).

The directed movement of subadult and adult Atlantic sturgeon to coastal estuaries in the spring is reversed in the fall (NMFS and USFWS, 2007; Greene *et al.,* 2009; Hager, 2011; Erickson *et al.,* 2011; Balazik *et al.,* 2012; Wippelhauser, 2012; Oliver *et al.,* 2013). The whereabouts of these fish once they leave coastal estuaries is uncertain. Atlantic sturgeon aggregate off of Long Island, New York and off of the Virginia/North Carolina coastline (Laney *et al.,* 2007; Dunton *et al.,* 2015). Others have been tracked to the southern extent of the range (T. Savoy, CT DEEP, pers. comm.) while at least one was tracked to the more northern area of the subspecies range, the Back River, Maine, in winter (G. Zydlewski, Univ. of Maine, pers. comm.). Two adults originally tagged in the Delaware River were detected in the Appomattox River, Virginia (C. Hager, Chesapeake Scientific, pers. comm.) during the winter. A recent study of Atlantic sturgeon tracked in the Delaware Bay found that some of the fish migrating from the estuary in the fall remained in nearby coastal marine waters within a plume of water flowing out from the estuary, suggesting a continued affinity with the estuary even after emigrating from the estuary proper (Oliver *et al.,* 2013). Further work suggests Atlantic sturgeon distribution in the marine environment is affected more by the characteristics of the water (*e.g.,* eddies, coastal upwelling, temperature) than characteristics of the landscape (*e.g.,* depth, substrate) (Breece *et al.,* 2016).

To identify specific habitats used by an Atlantic sturgeon DPS, we considered available information that described: (1) Capture location and/or tracking locations of a subadult or adult Atlantic sturgeon identified to its DPS by genetic analysis; (2) capture location and/or tracking locations of a subadult or adult Atlantic sturgeon identified to its DPS based on the presence of a tag that was applied when the sturgeon was captured as a juvenile in its natal estuary; (3) capture or detection location of adults in spawning condition (*i.e.,* extruding eggs or milt) or post-spawning condition (*e.g.,* concave abdomen for females); (4) capture or detection of young-of year and other juvenile age classes; and, (5) collection of eggs or larvae. In the case of estuaries of known spawning rivers, we assumed based on the available information that a portion of the subadults and adults present originated from that river and, thus, the habitats used by subadults and adults in a spawning river were indicative of habitats used by the DPS which spawned in the river. Previous studies have demonstrated that a combination of microsatellite and mitochondrial DNA analyses provide the most accurate information to identify an Atlantic sturgeon to its DPS, and using mitochondrial analysis, alone, provides much lower assignment accuracy given the prevalence of a common Atlantic sturgeon haplotype (NMFS and USFWS, 2007; Wirgin *et al.,* 2012; Waldman *et al.,* 2013). Therefore, when reviewing the available information on habitats used by Atlantic sturgeon, we also considered what genetic analyses were used to assign the sampled sturgeon to its DPS of origin.

The Kennebec River was the only known spawning river for the Gulf of Maine DPS when the DPS was listed as threatened (NMFS and USFWS, 2007; 77 FR 5880, February 6, 2012). Spawning has since been confirmed in the Androscoggin River (Wippelhauser, 2012). The Brunswick Dam at Pejepscot

Falls, the head-of-tide, is the upstream limit of Atlantic sturgeon distribution in the Androscoggin River. The dam is located approximately 10 kilometers upstream of the confluence of the Kennebec and Androscoggin rivers (ASMFC, 1998; NMFS and USFWS, 2007; NMFS, 2013; Wippelhauser and Squiers, 2015). The Lockwood Dam at river kilometer 103 is the current upstream limit for Atlantic sturgeon in the Kennebec River; it is located at the site of a natural falls (NMFS and USFWS, 2007). From 1837 to 1999, the Edwards Dam was the upstream limit of Atlantic sturgeon in the Kennebec River. Located near the head-of-tide, approximately 29 kilometers downstream of the Lockwood Dam at Augusta, the Edwards Dam (rkm 74) prevented Atlantic sturgeon from accessing historical habitat. Sturgeon were sighted above the former Edwards Dam site after removal of the dam and in June 2005, an Atlantic sturgeon was incidentally captured at river kilometer 102 (NMFS and USFWS, 2007; Wippelhauser, 2012).

Substrate type in the Kennebec estuary is largely sand and bedrock (Fenster and Fitzgerald, 1996; Moore and Reblin, 2008). Mesohaline waters occur upstream of Doubling Point during summer low flows, transitioning to oligohaline waters and then essentially tidal freshwater from Chops Point (the outlet of Merrymeeting Bay) upriver to the head-of tide on the Kennebec and Androscoggin rivers (ASMFC, 1998; Kistner and Pettigrew, 2001). A thorough description of the Kennebec Estuary is provided in Moore and Reblin 2008.

During the period 1977–2001, Atlantic sturgeon in spawning condition (*i.e.,* ripe males releasing sperm) or of size presumed to be sexually mature adults (*i.e.,* greater than 150 cm total length) were caught between river kilometers 52.8 and 74 of the Kennebec River during the months of June and July, the likely spawning season. From 2009 to 2011, 31 sturgeon, including 6 ripe males, were caught in the Kennebec River between river kilometers 70 and 75 (Wippelhauser, 2012; Wippelhauser and Squiers, 2015). Sturgeon in the Upper Kennebec Estuary (defined as river kilometer 45 to river kilometer 74 at head-of tide in the cited document) repeatedly moved between river kilometers 48 and 75 (Wippelhauser, 2012). An additional eight sturgeon, including one ripe male, were caught in the Androscoggin in June and July of 2009–2011 (Wippelhauser, 2012). Three larvae were also captured in the Upper Kennebec Estuary, 1 to 1.6 river kilometers upstream of river kilometer 74, the former Edwards Dam site (Wippelhauser, 2012).

The Merrymeeting Bay and Lower Kennebec Estuary are used by post-spawn adults, juveniles, and other life stages at least as late as November, and some Atlantic sturgeon may overwinter in Merrymeeting Bay (Wippelhauser, 2012). Sturgeon captured and tagged in the Saco and Penobscot rivers are also detected in the Kennebec Estuary, typically Merrymeeting Bay and downstream locations, although at least one male, captured in the Saco in 2010, was the single ripe male also captured in the Androscoggin suggesting that the Saco and Penobscot are important habitat areas for the Androscoggin spawning population (Wippelhauser, 2012). However, genetic information identifying the river of origin of the Atlantic sturgeon is not yet available.

While there is no current evidence that Atlantic sturgeon are spawning in Gulf of Maine rivers other than the Kennebec and Androscoggin, captures of sturgeon in the Merrimack and Penobscot Rivers as well as the presence of the features necessary to support reproduction and recruitment in these rivers indicate that there is the potential for spawning to occur (Kieffer and Kynard, 1993; Fernandes *et al.,* 2010; Wippelhauser, 2012). The 1998 and 2007 status reviews for Atlantic sturgeon described information for presence of Atlantic sturgeon in the Piscataqua River, including capture of a large female Atlantic sturgeon in spawning condition in 1990. The presence of this female (NMFS and USFWS, 1998; ASSRT, 2007) as well as the presence of the features necessary to support reproduction and recruitment in this river indicates that there is the potential for spawning to occur in the Piscataqua.

Genetic information is available for Atlantic sturgeon captured in six specific areas of the marine range: Minas Basin, Bay of Fundy, Canada; the Connecticut River estuary; Long Island Sound; the Atlantic Ocean off of Rockaway, New York; the Atlantic Ocean off of Delaware Bay; and, the Atlantic Ocean off of Virginia/North Carolina (Laney *et al.,* 2007; Wirgin *et al.,* 2012; Waldman *et al.,* 2013; O'Leary *et al.,* 2014; Wirgin *et al.,* 2015a). Atlantic sturgeon belonging to the Gulf of Maine DPS comprised 35 percent of the Minas Basin, Bay of Fundy samples collected in the summer, suggesting this is an important foraging area for the Gulf of Maine DPS. The DPS comprised less than 2 percent to 14.5 percent of Atlantic sturgeon sampled in the Connecticut River, Long Island Sound, the Atlantic Ocean off of Rockaway, New York, and the Atlantic Ocean off of Delaware Bay. The DPS was not detected in the sampled Atlantic sturgeon incidentally captured during winter from waters off of Virginia/North Carolina.

At the time of listing, the Delaware and Hudson rivers were the only known spawning rivers for the New York Bight DPS of Atlantic sturgeon (Dovel and Berggren, 1983; Bain, 1998; Kahnle *et al.,* 1998; NMFS and USFWS, 2007; Calvo *et al.,* 2010). In spring 2014, several small Atlantic sturgeon were captured in the Connecticut River (T. Savoy, CT DEEP, pers. comm.). We presume these to be juveniles less than a year old based on their apparent size seen in a photo provided in the Connecticut Weekly Diadromous Fish Report, report date May 20, 2014. Though it was previously thought that the Atlantic sturgeon population in the Connecticut had been extirpated (Savoy and Pacileo, 2003; NMFS and USFWS, 2007), capture of these juvenile Atlantic sturgeon strongly suggests that spawning is occurring in this river. For the Housatonic River, the 1998 and 2007 status reviews for Atlantic sturgeon described information for historical presence of Atlantic sturgeon in that river, including Whitworth's (1996) reference to a large fishing industry for Atlantic sturgeon (NMFs and USFWS, 1998; NMFS and USFWS, 2007). Since the commercial fisheries targeted spawning sturgeon, historical captures of sturgeon in the Housatonic River as well as the presence of the features necessary to support reproduction and recruitment in this river indicates that there is the potential for spawning to occur in the Housatonic.

The Hudson River is one of the most studied areas for Atlantic sturgeon. The upstream limit for Atlantic sturgeon on the Hudson River is the Federal Dam at the fall line, approximately river kilometer 246 (Dovel and Berggren, 1983; Bain, 1998; Kahnle *et al.,* 1998; Everly and Boreman, 1999). Recent tracking data indicate Atlantic sturgeon presence at this upstream limit (D. Fox, DESU, pers. comm.). Sturgeon occurring in the upstream limits of the river are suspected, but not yet confirmed, to belong to the New York Bight DPS.

Spawning may occur in multiple sites within the river (Dovel and Berggren, 1983; Van Eenennaam *et al.,* 1996; Kahnle *et al.,* 1998; Bain *et al.,* 2000). The area around Hyde Park (approximately river kilometer 134) is considered a likely spawning area based on scientific studies and historical records of the Hudson River sturgeon fishery (Dovel and Berggren, 1983; Van Eenennaam *et al.,* 1996; Kahnle *et al.,*

1998; Bain *et al.,* 2000). Habitat conditions at the Hyde Park site are described as freshwater year round with substrate, including bedrock, and waters depths of 12 to 24 meters (Bain *et al.,* 2000). Similar conditions occur at river kilometer 112, an area of freshwater and water depths of 21 to 27 meters (Bain *et al.,* 2000).

Catches of Atlantic sturgeon less than 63 cm fork length suggest that these sexually immature fish utilize the Hudson River estuary from the Tappan Zee (river kilometer 40) through Kingston (river kilometer 148) (Dovel and Berggren, 1983; Haley, 1999; Bain *et al.,* 2000). Seasonal movements of the immature fish are apparent as they primarily occupy waters from river kilometers 60 to 107 during summer months and then move downstream as water temperatures decline in the fall, primarily occupying waters between river kilometers 19 to 74 (Dovel and Berggren, 1983; Haley, 1999; Bain *et al.,* 2000). In a separate study, Atlantic sturgeon ranging in size from 32 to 101 cm fork length were captured at highest concentrations during spring in soft-deep areas of Haverstraw Bay, even though this habitat type comprised only 25 percent of the available habitat in the Bay (Sweka *et al.,* 2007).

In the Delaware River, there is evidence of Atlantic sturgeon presence from the mouth of the Delaware Bay to the head-of-tide at the fall line near Trenton on the New Jersey side and Morrisville on the Pennsylvania side of the River, a distance of 220 river kilometers (Shirey *et al.,* 1997; Brundage and O'Herron, 2007; Simpson, 2008; Calvo *et al.,* 2010; Fisher, 2011; Breece *et al.,* 2013). There are no dams on the Delaware River and an Atlantic sturgeon carcass was found as far upstream as Easton, PA in 2014 (M. Fisher, DE DNREC, pers. comm.), suggesting that sturgeon can move beyond the fall line.

The presence of hard bottom habitat, the location of the salt-wedge in April through July, and tracking of adult Atlantic sturgeon in spawning condition suggests that spawning habitat for Atlantic sturgeon occurs within the Delaware River between river kilometer 125 (near Claymont, Delaware) and the fall line at river kilometer 211 (landmarks of Trenton, New Jersey, and Morrisville, Pennsylvania) (Sommerfield and Madsen, 2003; Simpson 2008; Breece *et al.,* 2013).

Twenty Atlantic sturgeon less than 30 cm fork length (26.2 to 34.9 cm total length) and presumed to be less than one year old were captured in the Delaware River from September through November 2009 and tracked for up to one year using a passive acoustic array (Calvo *et al.,* 2010; Fisher, 2011). The data collected indicate this life stage makes use of Delaware River habitats from river kilometers 105 to 199 with seasonal changes in distribution (Fisher, 2009; Calvo *et al.,* 2010; Fisher, 2011). For example, during the winter months, some remained around river kilometer 134 (*i.e.,* the Marcus Hook area) while others moved upstream or downstream, exhibiting migrations in and out of the area (Calvo *et al.,* 2010; Fisher, 2011). Overall, the studies demonstrated the complexity of habitat needs for juvenile Atlantic sturgeons in the natal estuary during the first 1 to 2 years. In contrast to juveniles, subadult Atlantic sturgeon occur further downriver in polyhaline waters of the Bay and River (Brundage and Meadows, 1982; Lazzari *et al.,* 1986; Shirey *et al.,* 1997; Shirey *et al.,* 1999; Simpson, 2008; Brundage and O'Herron, 2009; Calvo *et al.,* 2010; Fisher, 2011).

The Connecticut River has long been known as a seasonal aggregation area for subadult Atlantic sturgeon, and both historical and contemporary records document presence of Atlantic sturgeon in the river as far upstream as Hadley, MA (Savoy and Shake, 1993; Savoy and Pacileo, 2003; NMFS and USFWS, 2007). The Enfield Dam located along the fall line at Enfield, CT prevented upstream passage of Atlantic sturgeon from 1827 until 1977 when it was breached (NMFS and USFWS, 2007). Although Atlantic sturgeon may generally remain below the fall line, an Atlantic sturgeon was captured at the Holyoke Dam fish lift in 2006, upstream of Enfield (NMFS and USFWS, 2007). As noted previously, the capture of juvenile Atlantic sturgeon in the Connecticut River in May 2014 (T. Savoy, CT DEEP, pers. comm.; Connecticut Weekly Diadromous Fish Report, report date May 20, 2014) suggests spawning may be occurring in the river.

The genetics information for Atlantic sturgeon captured in six specific areas of the marine range demonstrated that Atlantic sturgeon belonging to the New York Bight DPS were present in each area. In addition, the New York Bight DPS was the most represented DPS in each collection, comprising 55 percent to 87 percent of the sturgeon sampled in each area, with the exception of the Minas Basin collection where the New York Bight DPS comprised only 1 to 2 percent of the sampled sturgeon (Laney *et al.,* 2007; Wirgin *et al.,* 2012; Waldman *et al.,* 2013; O'Leary *et al.,* 2014; Wirgin *et al.,* 2015a). The results suggest that New York Bight DPS Atlantic sturgeon travel great distances, including into Canadian waters, but occur most predominantly in marine waters in areas off New York and the Mid-Atlantic Bight.

At the time of listing, the James River was the only known spawning river for the Chesapeake Bay DPS (NMFS and USFWS, 2007; Hager, 2011; Balazik *et al.,* 2012). Since the listing, spawning has been confirmed to occur in the Pamunkey River, a tributary of the York River (Hager *et al.,* 2014; Kahn *et al.,* 2014). Spawning is also suspected to be occurring in Marshyhope Creek, a tributary of the Nanticoke River, based on the presence of adult sturgeon in spawning condition in areas and at times when spawning would be expected to occur (Maryland DNR, web article, September 17, 2014).

Adult Atlantic sturgeon enter the James River in the spring, with at least some eventually moving as far upstream as Richmond (river kilometer 155), which is also the head-of-tide and close to the likely upstream extent of Atlantic sturgeon in the river, given the presence of Boshers Dam at the fall line (approximately river kilometer 160) (Bushnoe *et al.,* 2005; Hager, 2011; Balazik *et al.,* 2012). Adults disperse through downriver sites and begin to move out of the river in late September to early October, occupy only lower river sites by November, and are undetected on tracking arrays in the lower river by December, suggesting that the sturgeon leave the river for the winter (Hager, 2011; Balazik *et al.,* 2012).

The availability of hard-bottom habitat remains relatively limited in the James River and appears to be significantly reduced compared to the amount of available hard-bottom habitat described in historic records (Bushnoe *et al.,* 2005; Austin, 2012). In general, tracked adults occurred further upstream during the late summer and early fall residency (*e.g.,* river kilometer 108 to river kilometer 132; Balazik *et al.,* 2012) than during the spring and early summer residency (*e.g.,* river kilometer 29 to river kilometer 108; Hager, 2011), suggesting two different spawning areas depending on season.

The capture of adult Atlantic sturgeon in spawning condition in the low salinity waters of the Pamunkey River, a major tributary of the York River, in August 2013, and subsequent genetic testing demonstrate that there is a spawning population of Atlantic sturgeon in the Pamunkey River (Hager *et al.,* 2014; Kahn *et al.,* 2014). The York River is 55 kilometers long from its mouth, after which it divides into two major tributaries, the Mattaponi and the Pamunkey Rivers (Bushnoe *et al.,* 2005; Friedrichs, 2009; Reay, 2009). The

transition to freshwater typically occurs within these tributaries (Friedrichs, 2009; Reay, 2009). Bushnoe *et al.* (2005) previously reviewed available information on substrate, salinity, and dissolved oxygen for the Pamunkey and Mattaponi rivers and concluded that Atlantic sturgeon spawning habitat was likely present in each river.

For the Susquehanna and Potomac Rivers, the 1998 and 2007 Atlantic sturgeon status reviews provided the information for presence of Atlantic sturgeon in the rivers, including: (1) Historical newspaper accounts of large sturgeon in the lower reaches of the Susquehanna River during the period 1765 to 1895; (2) personal communication of a limited but more recent sturgeon fishery on the Susquehanna near Perryville, Maryland (R. St. Pierre, USFWS, personal comm.); (3) several sightings of sturgeon near the Susquehanna River mouth during the period 1978 to 1987; (4) a historical fishery for Atlantic sturgeon in the Potomac; and (5) observations of a large mature female Atlantic sturgeon in the Potomac River in 1970 ((NMFS and USFWS, 1998; NMFS and USFWS, 2007). Since the commercial fisheries targeted spawning sturgeon, historical captures of sturgeon in the Susquehanna and Potomac Rivers, as well as the presence of the features necessary to support reproduction and recruitment in each river, indicate that there is the potential for spawning to occur in both the Susquehanna and Potomac.

The 1998 and 2007 status reviews for Atlantic sturgeon described information for presence of Atlantic sturgeon in the Rappahannock River, including commercial landings data from the 1880s and incidental captures reported to the U.S. Fish and Wildlife Service Reward Program in the 1990's (NMFS and USFWS 1998; NMFS and USFWS, 2007). Most recently, in September 2015, researchers captured a male Atlantic sturgeon in spawning condition in the Rappahannock River (M. Balazik, Virginia Commonwealth University, pers. comm.). The historical and contemporary accounts of Atlantic sturgeon in the Rappahannock River (NMFS and USFWS, 1998; ASSRT, 2007), as well as the presence of the features necessary to support reproduction and recruitment in this river indicate that there is the potential for spawning to occur in the Rappahannock.

The condition of Atlantic sturgeon captured in the late summer-fall in the James River (*e.g.,* adults expressing milt or eggs), the rapid upstream movement of adults in the fall, and the aggregation of adults relative to the salt wedge provide evidence of fall spawning in the James River (NMFS and USFWS; 2007; Hager, 2011; Balazik *et al.,* 2012). Similar evidence was found for adult sturgeon captured in the Pamunkey River in mid to late August 2013, and adult sturgeon captured in Marshyhope Creek in late August 2014 (Maryland DNR, web article, September 17, 2014). All of these instances provide evidence that Chesapeake DPS Atlantic sturgeon spawn in the fall.

The genetics information for Atlantic sturgeon captured in six specific areas of the marine range demonstrates that Atlantic sturgeon belonging to the Chesapeake Bay DPS were present in at least four of the sampled areas: The Connecticut River, Long Island Sound, the Atlantic Ocean off of Rockaway, New York, and the Atlantic Ocean off of Delaware Bay. The DPS comprised approximately 5 percent to 21 percent of the Atlantic sturgeon sampled in these areas (Waldman *et al.,* 2013; O'Leary *et al.,* 2014; Wirgin *et al.,* 2015a). The Chesapeake Bay DPS was not detected in the relatively small number of samples collected from Atlantic sturgeon captured in the winter off of North Carolina (Laney *et al.,* 2007), and comprised no more that 1 percent of Atlantic sturgeon sampled in the Minas Basin in the summer (Wirgin *et al.,* 2012). The results suggest that Chesapeake Bay DPS Atlantic sturgeon travel great distances, including into Canadian waters, but occur most predominantly in marine waters of the New York and Mid-Atlantic Bight.

Geographical Area Occupied by Each DPS

Consistent with our past practice, we interpret ''geographical area occupied'' for critical habitat designations to mean the range of the listed entity (*e.g.,* species, subspecies or DPS) at the time of listing (45 FR 13011; February 27, 1980). In February 2016, NMFS and the USFWS published a joint final rulemaking that included a regulatory definition for ''geographical area occupied'' (81 FR 7417, February 11, 2016). The new definition provides clarity to the critical habitat designation process, but does not change how we approached critical habitat designations.

The marine range of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs, including coastal bays and estuaries, is Hamilton Inlet, Labrador, Canada, to Cape Canaveral, Florida (77 FR 5880, February 6, 2012). The listing rule also identified the known spawning rivers for each of these DPSs, but it did not describe the specific in-river range for any of the DPSs. Therefore, areas were considered to be within the range of a DPS if there were: (1) Presence of Atlantic sturgeon belonging to that DPS in that area; (2) presence of Atlantic sturgeon in a similar area within the boundaries of the otherwise established DPSs range; and, for rivers, (3) all areas downstream of the farthest known upstream location of Atlantic sturgeon belonging to that DPS in that river. Areas were identified as unoccupied by a DPS if the area was completely inaccessible to Atlantic sturgeon.

Genetic analyses indicate the presence of Atlantic sturgeon belonging to the Gulf of Maine, New York Bight, and Chesapeake Bay DPS in many parts of the marine range including the Bay of Fundy, the Connecticut River Estuary, Long Island Sound, the New York Bight, and coastal waters from Delaware to North Carolina (Waldman *et al.,* 1996; Laney *et al.,* 2007; Dunton *et al.,* 2010; Dunton *et al.,* 2012; Wirgin *et al.,* 2012; Waldman *et al.,* 2013; O'Leary *et al.,* 2014; Wirgin *et al.,* 2015a). In addition, tracking and tagging studies indicate the presence of Atlantic sturgeon throughout the marine range (Vladykov and Greeley, 1963; Holland and Yelverton 1973; Dovel and Berggren, 1983; Gilbert 1989; Savoy and Pacileo, 2003; Stein *et al.* 2004; Eyler, 2006; Laney *et al.,* 2007; Dunton *et al.,* 2010; Dunton *et al.,* 2012; Oliver *et al.,* 2013). Based on our review of the literature and other available data, we concluded that Atlantic sturgeon: Typically occur in marine waters within the 50 m depth contour, but also occur in deeper marine waters; occur in many coastal sounds and bays from the Maine/Canada border to Cape Canaveral, Florida, regardless of whether or not the sound or bay is part of an estuary of a known spawning river; and, occur in tidally-affected rivers along the coast.

The ''geographical area occupied'' is only aquatic habitat (*e.g.,* below the high tide line). In addition, certain natural features (*e.g.,* large waterfalls) and dams are impassable barriers to sturgeon. Therefore, we consider those parts of the range that are currently inaccessible to Atlantic sturgeon due to dams, other manmade structures, or natural features to be unoccupied, and not part of the geographic area occupied by the DPS at the time of listing.

Physical and Biological Features Essential to Conservation That May Require Special Management Considerations or Protections

As described above, critical habitat is defined as those specific areas in the geographical area occupied that (1) have the physical or biological features essential to the conservation of the

listed entity, and (2) may require special management considerations or protections. Each of these two prongs must be met when designating critical habitat within the occupied geographical area. If we identify physical or biological features that are essential to the conservation of the listed entity, but there are no special management considerations or protections that may be required, then we do not designate critical habitat based on those physical or biological features. Finally, we do not designate critical habitat based solely on the presence of the listed entity. The presence of the listed entity can, however, help us identify the essential physical or biological features. For example, repeated use of an area by the listed entity suggests the presence of essential physical or biological features.

We determined that a key conservation objective for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs is to increase the abundance of each DPS by facilitating increased successful reproduction and recruitment to the marine environment. We know that each DPS is at a low level of abundance and successful reproduction and recruitment, which are essential to the conservation of the species, occur in a limited number of rivers for each DPS. Since the listing, additional rivers have either been confirmed to support spawning, or are suspected of supporting spawning for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs (Wippelhauser, 2012; Hager *et al.,* 2014; Kahn *et al.,* 2014; T. Savoy, CT DEEP, pers. comm.). Nevertheless, the number of known spawning rivers for each DPS is still limited compared to the four to six rivers for each DPS in which spawning occurred in the past (NMFS and USFWS, 2007). Further, we do not know how successful reproduction is for any of the known spawning rivers (*e.g.,* we do not have counts of the number of juveniles of each DPS or spawning river that recruit to the marine environment, compared to the number of fertilized eggs that hatched).

The term ''physical or biological features'' is defined as the features that support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms of relating to principles of conservation biology, such as patch size, distribution distances, and connectivity (50 CFR 424.02). The term ''special management considerations or protection'' is defined as the methods or procedures useful in protecting the physical or biological features essential to the conservation of the listed species (50 CFR 424.02). In addition, the term ''may'' in the phrase ''may require special management considerations or protections'' was the focus of two cases in Federal district courts that ruled that features can meet this provision because of either a present requirement for special management considerations or protection or possible future requirements (see *Center for Biol. Diversity* v. *Norton,* 240 F. Supp. 2d 1090 (D. Ariz. 2003); *Cape Hatteras Access Preservation Alliance* v. *DOI,* 344 F. Supp. 108 (D.D.C. 2004)).

Atlantic sturgeon are estuarine-dependent, anadromous fish that require specific estuarine habitat for successful reproduction and recruitment. Adults require unimpeded access (*e.g.,* suitable water depth to be able to move freely and a lack of obstructions) to and from all spawning sites. In addition, spawning males require unimpeded access to search for spawning females throughout the spawning season. Fertilized eggs require freshwater, hard, clean substrate to adhere to, and flowing water that helps to disperse and aerate the eggs. Larval Atlantic sturgeon (less than 4 weeks old and less than 30 mm total length), assumed to inhabit the same freshwater areas where they were spawned, require hard substrate with interstitial spaces that provide refuge from predators. The relatively lengthy juvenile phase requires developing Atlantic sturgeon have access to aquatic habitat with a gradual downstream salinity gradient of 0.5 to 30 parts per thousand (*e.g.,* inclusive of oligohaline, mesohaline, and polyhaline waters), and areas of soft substrate that provide an environment for benthic prey necessary for juvenile foraging. Last, Atlantic sturgeon juvenile rearing habitat, habitat for spawning adults and subadults, and larval habitat must have sufficient levels of dissolved oxygen both before the fish are present (to enable fish to utilize the habitat when they migrate to it) and when fish arrive since Atlantic sturgeon are particularly sensitive to low oxygen levels and, similar to other fish species, will avoid habitats that are hypoxic (*i.e.,* have insufficient oxygen) (Secor and Niklitschek, 2001; Breitburg, 2002; EPA, 2003). Oxygen concentrations that fish avoid are approximately equal to concentrations that reduce their growth rate, even when at concentration levels higher than necessary for their survival (Breitburg 2002; EPA, 2003). Lab studies have shown that a dissolved oxygen concentration of about 6.5 mg/L supports growth and habitat use of juvenile Atlantic sturgeon less than two years old (Niklitschek and Secor, 2009; Niklitschek and Secor, 2010; Allen *et al.,* 2014). The complex relationship between dissolved oxygen, temperature, and salinity, as well as other factors that can affect dissolved oxygen levels in estuaries (*e.g.,* water depth and mixing), makes it difficult for us to specify water quality parameters necessary to support Atlantic sturgeon use of reproduction and recruitment habitat. The EPA's guidance on ambient water quality criteria for dissolved oxygen for the Chesapeake Bay recommends dissolved oxygen concentrations of greater than 6 mg/L, based on a seven-day mean, in tidal habitats with salinity of 0 to 0.5 parts per thousand for the growth of larval and juvenile tidal-fresh resident fish, including Atlantic sturgeon (EPA, 2003). This concentration has been shown to increase the likelihood of habitat use by Atlantic sturgeon juveniles less than two years old (Niklitschek and Secor 2009; Niklitscheck and Secor, 2010). Since these early age groups are more sensitive to dissolved oxygen levels than older, larger juveniles, subadults, and adults, a dissolved oxygen concentration of 6 mg/L supports habitat use by all age groups. Therefore, the physical features essential for reproduction and recruitment are:

- Hard bottom substrate (*e.g.,* rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (*i.e.,* 0.0 to 0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;
- Aquatic habitat with a gradual downstream salinity gradient of 0.5 to 30 parts per thousand and soft substrate (*e.g.,* sand, mud) downstream of spawning sites for juvenile foraging and physiological development;
- Water of appropriate depth and absent physical barriers to passage (*e.g.,* locks, dams, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) Unimpeded movement of adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (*e.g.,* ≥1.2 m) to ensure

continuous flow in the main channel at all times when any sturgeon life stage would be in the river; and

• Water, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: (1) Spawning; (2) annual and interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment (*e.g.,* 13 °C to 26 °C for spawning habitat and no more than 30° C for juvenile rearing habitat, and 6 mg/L dissolved oxygen for juvenile rearing habitat).

The specific oxygen concentration and temperature values are provided as examples and guidance to inform the combinations of temperature, salinity, and oxygen that support successful reproduction and recruitment. Temperature, salinity, and oxygen are ephemeral by nature, fluctuating daily and seasonally in estuaries. Specific areas designated as critical habitat based on the four features are not expected to have water with oxygen concentration of 6 mg/L and the specific water temperatures at all times and within all parts of the area.

Barriers (*e.g.,* dams) and in-water structures (*e.g.,* tidal turbines) in rivers used by Atlantic sturgeon can damage or destroy bottom habitat needed for spawning and rearing of juveniles, as well as restrict movement of adults to and from spawning grounds, and prevent juveniles from accessing the full range of salinity exposure in the natal estuary. Land development, as well as commercial and recreational activities on the river, contribute to the persistence of nutrient loading and sediment deposition, which negatively affect the water quality necessary for successful spawning and recruitment. For example, nutrient loading can result in unnaturally enhanced growth of aquatic vegetation or phytoplankton and algal blooms, which disrupt normal functioning of the ecosystem, causing a variety of problems, including a lack of sufficient levels of oxygen that fish, such as Atlantic sturgeon, need to survive. Excessive sediment deposition reduces Atlantic sturgeon egg adherence on hard spawning substrate and reduces the interstitial spaces used by larvae for refuge from predators. Dredging to remove sediment build-up or to facilitate vessel traffic may remove or alter hard substrate that is necessary for egg adherence and as refuge for larvae, and may change the water depth, resulting in shifts in the salt wedge within the estuary or change other characteristics of the water quality (*e.g.,* temperature, dissolved oxygen) necessary for the developing eggs, larvae, and juveniles.

The features essential for successful Atlantic sturgeon reproduction may also require special management considerations or protection as a result of global climate change. Many communities and commercial facilities withdraw water from the rivers containing the features essential to Atlantic sturgeon reproduction. Water withdrawals during times of low flow can affect the position of the salt wedge, impact the water depth necessary for successful sturgeon reproduction, and affect water flow. Because dissolved oxygen concentrations increase wherever the water flow becomes turbulent, decreasing flow can result in decreases in dissolved oxygen concentrations. Attempts to control water during very high flows (*e.g.,* spilling water from dams upriver of Atlantic sturgeon spawning and rearing habitat) can create barriers (*e.g.,* from debris) to upstream and downstream passage of adults and juveniles. Therefore, we concluded that the features essential to the conservation of each of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs may require special management considerations or protections.

For the reasons provided above, we have concluded that the habitat features that support successful spawning and recruitment of Atlantic sturgeon juveniles to the marine environment are: Essential to the conservation of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs; within the geographical area occupied by each DPS; and, may require special management considerations or protection. As such, we used these features to identify specific areas as potential critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon.

We determined another conservation objective for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs is to increase the abundance of each DPS by facilitating increased survival of subadults and adults. The ability of subadults to find food is necessary for continued survival, growth, and physiological development to the adult life stage. Likewise, given that Atlantic sturgeon mature late and do not necessarily spawn annually, increased adult survival would improve the chances that adult Atlantic sturgeon spawn more than once.

We considered all studies that have collected Atlantic sturgeon stomach contents. All of the prey species identified are indicative of benthic foraging, and all of the identified prey are found in soft substrates. However, different types of prey were consumed, and different soft substrates were identified for the areas where Atlantic sturgeon were foraging (Bigelow and Schroeder, 1953; Johnson *et al.,* 1997; NMFS and USFWS, 2007; Guilbard *et al.,* 2007; Savoy, 2007; Dzaugis, 2013; McLean *et al.,* 2013). No data are available to differentiate areas of preferred prey items or higher prey abundance within or across estuaries. Adding to our uncertainty of the essential features that support successful foraging for growth and survival of subadults and adults, Atlantic sturgeon move between estuarine environments in the spring through fall, and can occur in estuarine environments during the winter as well (Savoy and Pacileo, 2003; Simpson, 2008; Collins *et al.,* 2000; Balazik *et al.,* 2012). For example, subadult Atlantic sturgeon spawned in one riverine system may utilize multiple estuaries for foraging and growth, including those not directly connected to their natal river. Due to the paucity of data on their estuarine needs and specific habitat or resource utilization, we could not at this time identify the physical or biological features of estuaries for foraging and growth that are essential to the conservation of the Gulf of Maine, New York Bight or Chesapeake Bay DPSs.

Subadult and adult Atlantic sturgeon use marine waters to traverse between estuarine areas, particularly within the 50 meter depth contour. In addition, several congregations of Atlantic sturgeon in the marine environment are known to occur. However, the exact importance of those areas is not known, nor whether Atlantic sturgeon are drawn to particular areas based on physical or biological features of the habitat. Therefore, while we can identify general movement patterns and behavior in the marine environment (*e.g.,* aggregating behavior) that may contribute to subadult and adult survival, due to the paucity of data on each DPSs' needs and specific habitat utilization in the marine environment, we could not at this time identify physical or biological features in the marine environment essential to conservation of the Gulf of Maine, New York Bight or Chesapeake Bay DPSs.

Unoccupied Areas

As mentioned, the definition of critical habitat includes areas outside of the geographical area occupied by the listed entity (*i.e.,* unoccupied areas) at the time it is listed if these areas are essential to the conservation of the listed entity. We do not need to identify

physical or biological features requiring special management consideration or protection within the unoccupied areas in order to designate unoccupied areas as critical habitat. However, the area must be essential to the conservation of the listed species.

There are riverine areas outside of the geographical area occupied by the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs as a result of dams and natural falls. We considered whether these unoccupied areas were essential to the conservation of the respective DPS and concluded that they were not essential because nearly all known historical habitat is accessible to the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs (NMFS and USFWS, 2007; 77 FR 5880, February 6, 2012).

Critical Habitat Units

Critical habitat must be defined by specific limits using reference points and lines as found on standard topographic maps of the area, and cannot use ephemeral reference points (50 CFR 424.12(c)). When several habitats, each satisfying the requirements for designation as critical habitat, are located in proximity to one another, an inclusive area may be designated as critical habitat (50 CFR 424.12(d)).

The habitat containing the physical features essential to the conservation of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs and that may require special management or protection is aquatic habitat of main stem rivers flowing into a coastal estuary. We are designating only occupied habitat. Atlantic sturgeon typically cannot pass dams or natural features such as waterfalls and rapids found at the fall line of rivers from Maine through Virginia. Therefore, we are defining each critical habitat unit by an upriver landmark on the main stem river (*e.g.,* the most downriver dam or a bridge immediately downriver of the fall line of that river) and all waters of the main stem downriver of that landmark to where the waters empty at its mouth into an identified water body.

Identified Critical Habitat for Each DPS

Based on the physical features that we identified as essential for successful spawning and recruitment and the best available information, we identified five critical habitat units for the Gulf of Maine DPS as follows: (1) Penobscot River main stem from the Milford Dam downstream for 53 river kilometers to where the main stem river drainage discharges at its mouth into Penobscot Bay; (2) Kennebec River main stem from the Ticonic Falls/Lockwood Dam downstream for 103 river kilometers to where the main stem river discharges at its mouth into the Atlantic Ocean; (3) Androscoggin River main stem from the Brunswick Dam downstream for 10 river kilometers to where the main stem river drainage discharges into Merrymeeting Bay; (4) Piscataqua River from its confluence with the Salmon Falls and Cocheco rivers downstream for 19 river kilometers to where the main stem river discharges at its mouth into the Atlantic Ocean as well as the waters of the Cocheco River from its confluence with the Piscataqua River and upstream 5 river kilometers to the Cocheco Falls Dam, and waters of the Salmon Falls River from its confluence with the Piscataqua River and upstream 6 river kilometers to the Route 4 Dam; and (5) Merrimack River from the Essex Dam (also known as the Lawrence Dam) downstream for 48 river kilometers to where the main stem river discharges at its mouth into the Atlantic Ocean. In total, these designations encompass approximately 244 kilometers (152 miles) of aquatic habitat.

The physical features essential for successful reproduction and recruitment may require special management or protection in these specific areas because of potential adverse impacts from activities such as the operation of dams, dredging operations, other construction (*e.g.,* bridge construction or repair), and impacts from development along the river that includes wastewater treatment and water withdrawals (Ceasar *et al.,* 1976; Short, 1992; Kistner and Pettigrew, 2001; Odell *et al.,* 2006; NMFS and USFWS, 2007; Mohlar, 2008; Moore and Reblin, 2008; McFarlane, 2012).

We identified four critical habitat units for the New York Bight DPS: (1) Connecticut River from the Holyoke Dam downstream for 140 river kilometers to where the main stem river discharges at its mouth into Long Island Sound; (2) Housatonic River from the Derby Dam downstream for 24 river kilometers to where the main stem discharges at its mouth into Long Island Sound; (3) Hudson River from the Troy Lock and Dam (also known as the Federal Dam) downstream for 246 river kilometers to where the main stem river discharges at its mouth into New York City Harbor; and (4) Delaware River from the crossing of the Trenton-Morrisville Route 1 Toll Bridge, downstream for 137 river kilometers to where the main stem river discharges at its mouth into Delaware Bay. In total, these designations encompass approximately 547 kilometers (340 miles) of aquatic habitat.

The physical features that are essential to successful reproduction and recruitment may require special management or protection in these specific areas because of potential adverse impacts from, for example, the operation of dams, dredging operations, other construction (*e.g.,* bridge construction or repair), and impacts from development along the river that includes wastewater treatment and water withdrawals (Hammerson, 2004; NMFS and USFWS, 2007; Henshaw, 2011; Breece *et al.,* 2013; 78 FR 1145).

We identified five critical habitat units for the Chesapeake Bay DPS: (1) Susquehanna River from the Conowingo Dam downstream for 16 river kilometers to where the main stem river discharges at its mouth into the Chesapeake Bay; (2) Potomac River from the Little Falls Dam downstream for 189 river kilometers to where the main stem river discharges at its mouth into the Chesapeake Bay; (3) Rappahannock River from the U.S. Highway 1 Bridge, downstream for 172 river kilometers to where the river discharges at its mouth into the Chesapeake Bay; (4) York River from its confluence with the Mattaponi and Pamunkey rivers downstream to where the main stem river discharges at its mouth into the Chesapeake Bay as well as the waters of the Mattaponi River from its confluence with the York River and upstream to the Virginia State Route 360 Bridge crossing of the Mattaponi River, and waters of the Pamunkey River from its confluence with the York River and upstream to the Virginia State Route 360 Bridge crossing of the Pamunkey River for a total of 192 kilometers of aquatic habitat, (5) James River from Boshers Dam downstream for 160 river kilometers to where the main stem river discharges at its mouth into the Chesapeake Bay at Hampton Roads. In total, these designations encompass approximately 729 kilometers (453 miles) of aquatic habitat.

The physical features essential for successful spawning and recruitment may require special management or protection in these specific areas because of potential adverse impacts from activities such as the operation of dams, dredging operations, other construction (*e.g.,* bridge construction or repair), and impacts from development along the river that includes wastewater treatment and water withdrawals (Bushnoe *et al.,* 2005; CBF, 2006; NMFS and USFWS, 2007; Friedrichs, 2009; Reay, 2009; Austin, 2012; SRBC, 2013; Potomac Conservancy, 2014).

Military Lands

Section 4(a)(3)(B) of the ESA prohibits designating as critical habitat any lands

or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an INRMP prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such a plan provides a benefit to the species for which critical habitat is proposed for designation.

In February 2014, we requested information from the Department of Defense to assist in our analysis. Specifically, we asked for a list of facilities that occur within the potential critical habitat areas and available INRMPs for those facilities. There are a limited number of facilities with INRMPs that overlap with the potential critical habitat areas for the New York Bight and Chesapeake Bay DPSs. The Department of the Army identified the U.S. Military Academy—West Point, New York as a facility that overlapped with the Hudson River Critical Habitat Unit of the New York Bight DPS. The Department of the Air Force identified Joint Base Langley—Eustis, Virginia as a facility that overlapped with the James River Critical Habitat Unit of the Chesapeake Bay DPS. The Navy identified Marine Corps Base Quantico, Virginia, and Naval Support Facility Dahlgren as facilities that overlapped with the Potomac River Critical Habitat Unit, and identified Naval Weapons Station Yorktown, a complex of three facilities, as facilities that overlapped with the York River Critical Habitat Unit of the Chesapeake Bay DPS. We reviewed the INRMP for each facility and concluded that each INRMP provides a benefit to Atlantic sturgeon and its habitat belonging to the respective DPS. Therefore, in accordance with section 4(a)(3)(B) of the ESA, the particular areas of each facility with an approved INRMP that overlaps with a proposed critical habitat unit will not be part of the designated critical habitat unit. No Department of Defense facilities were identified as overlapping with potential critical habitat areas of the Gulf of Maine DPS.

Economic, National Security, and Other Relevant Impacts

The administrative cost of conducting ESA section 7 consultations was determined to be the primary source of economic impacts as a result of designating critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs. We used the consultation record over the past 10 years to identify the types of Federal activities that may affect proposed Atlantic sturgeon critical habitat if implemented in the future. We also requested that federal action agencies provide us with information on future consultations if we omitted any future actions likely to affect the proposed critical habitat. Of the types of past consultations that ''may affect'' some or all of the essential features in any unit of proposed critical habitat, we determined that no activities would solely affect the essential features. That is, all categories of the activities identified have potential routes of adverse effects to both Atlantic or shortnose sturgeon and the critical habitat.

There were no section 7 consultations for activities in the Housatonic River over the past ten years. Activities that have occurred did not trigger the need for section 7 consultation for a listed ESA species under NMFS jurisdiction (*e.g.,* shortnose sturgeon), and there is no critical habitat designated in the Housatonic River for any other ESA-listed species under NMFS jurisdiction. Based on this information, the projected administrative cost of section 7 consultations likely to occur over the next ten years as a result of designating the Housatonic River Critical Habitat Unit was zero. However, the potential Housatonic River Critical Habitat Unit contains a federal navigation channel as well as a major highway bridge. Channel dredging, bridge maintenance, and bridge replacement are activities likely to trigger section 7 consultation if critical habitat for Atlantic sturgeon are designated in the Housatonic River. We expect the federal navigation channel will require periodic dredging. Bridge replacement has recently occurred (78 FR 1145; January 8, 2013), but we expect that routine maintenance will be required within the next 10 years. Therefore, the administrative section 7 costs as a result of designating the Housatonic River Critical Habitat Unit are unlikely to be zero. Based on the past history and the likely need for maintenance, we anticipate up to three formal consultations will occur over the next 10 years for federal agency actions that affect the features of the Housatonic River Critical Habitat Unit. However, consultation would also assess whether the proposed actions may affect one or more of the Atlantic sturgeon DPSs. Therefore, no incremental administrative impacts are anticipated as a result of designating critical habitat in the Housatonic River.

Nine nationwide consultations with EPA are also expected to occur within the next 10 years. These consultations will involve all listed species and designated critical habitat under NMFS's jurisdiction, and thus costs attributable solely to this proposed rule are expected to be very small. To be conservative, we added nine consultations to each critical habitat unit, and nine to each DPS's total number of consultations. We spread the costs of these consultations ($5,080 each) evenly across all critical habitat units included in this proposed rule and the companion proposed rule to designate critical habitat for the Carolina and South Atlantic DPSs. This resulted in a total cost of $1,474.84 per critical habitat unit.

We cannot be certain that the numbers of informal and formal consultations involving Atlantic sturgeon critical habitat in the future will be exactly the same as the number that would have occurred during the past ten years if critical habitat was designated at the time. We also have no information about the scope, methods, exact location or timing of future actions, which are key factors for determining whether an action may adversely affect critical habitat, which essential features may be affected, and whether the action may also affect Atlantic sturgeon. Similar to economic analyses for other NMFS critical habitat designations (*e.g.,* for Gulf sturgeon (IEc, 2003), and for the southern DPS of green sturgeon (IEc, 2009)), uncertainty was addressed by presenting three cost estimate scenarios: Consultations of low, medium, or high complexity. These cost estimate scenarios help to demonstrate how changes in the number of informal and formal consultations and differing percentages of coextensive and incremental consultations could influence the cost projections. The scenarios are: (1) Low administrative section 7 cost estimates, which are based on the assumption that the numbers of informal and formal consultations in the future will be the same as they were in the past, and that half of the consultations will be co-extensive (*i.e.,* initiated as a result of listing and critical habitat designation) and half will be incremental (*i.e.,* initiated as a result of the critical habitat designation); (2) medium administrative section 7 cost estimates, which are based on the assumption that the numbers of informal and formal consultations in the future will be the same as they were in the past, and that they will all be incremental; and, (3) high administrative section 7 cost estimates, which are based on the assumption that all consultations in the next ten years will be formal and incremental.

The regulatory baseline conditions, including the listing of the Atlantic sturgeon, will greatly affect the number of incremental consultations. Specifically, the number of incremental

consultations will likely be relatively small, because Atlantic sturgeon of a given life stage are likely to be either directly or indirectly affected by the federal activities projected to occur within the proposed critical habitat. In general, we expect Atlantic sturgeon of a given life stage could occur year round in the particular areas proposed for designation. Therefore, the section 7 consultations we anticipate to occur will need to evaluate potential effects to both the Atlantic sturgeon DPS present in the area and the critical habitat since impacts will be co-extensive. Because the high and medium administrative costs estimates both assumed that all project consultations would be incremental, we consider the low administrative cost estimates to be the most realistic costs estimates.

Based on the Draft Economic Impacts Analysis, the projected low administrative costs of designating all of the Gulf of Maine DPS critical habitat units total $816,574.20. The individual low costs for the five critical habitat units range from $54,274.84 for the Piscataqua River Critical Habitat Unit to $305,874.84 for the Kennebec River Critical Habitat Unit. The medium and high administrative costs for the Gulf of Maine DPS critical habitat units total $1,625,774.20 and $2,707,374.20, respectively. The projected low administrative costs for the New York Bight DPS critical habitat units total $1,418,299.301. The individual low costs for the four critical habitat units range from 31,474.84 for the Housatonic River Critical Habitat Unit to $752,674.84 for the Hudson River Critical Habitat Unit. The medium and high administrative costs for the New York Bight DPS critical habitat units total $2,830,699.30 and $5,565,899.30, respectively. The projected low administrative costs of designating all of the Chesapeake Bay DPS critical habitat units total $524,974.20. The individual low costs for the five critical habitat units range from $45,474.84 for the Rappahannock River Critical habitat Unit to $276,274.84 for the Potomac River Critical Habitat Unit. The medium and high administrative costs for the Chesapeake Bay DPS critical habitat units total $1,042,574.20 and $1,947,374.20, respectively.

Currently, there is no information indicating that any of the section 7 consultations expected to result from the critical habitat designations will result in project modifications. However, there is potential that section 7 consultation stemming from these designations may, sometime in the future, result in project modifications and associated costs. Therefore, for illustrative purposes, the draft economic analysis similarly presents low, medium, and high cost estimate scenarios for project modifications that may need to be made to specific projects as a result of section 7 consultation. The same caveats noted above apply to costs associated with modifications, *i.e.,* while the three broad categories of costs based on broad assumptions provide a potential range of costs, in most instances, modifications will occur as a result of coextensive impacts. It is extremely unlikely that modifications that would be required to avoid destruction or adverse modification of critical habitat would not also be required because of adverse effects to the species. Details of the cost projections and the number of past formal and informal consultations for each critical habitat unit of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs are provided in the draft economic analysis and the Draft Biological Information and 4(b)(2) Source Document.

The Navy expressed concern that designating the Kennebec River and Piscataqua River critical habitat units, including the area of the Kennebec River adjacent to the location of Bath Iron Works, a private shipbuilder for the Navy, and the area of the Piscataqua River surrounding Portsmouth Naval Shipyard on Seavey Island at the mouth of the Piscataqua River, will impact the national security. The Navy described the activities likely to occur in one or both of the particular areas as: Flooding and dewatering dry docks, updating and maintaining pier structures including pile driving, and dredging activities to maintain proper channel and berthing depths.

We considered the impact these activities are likely to have on the physical features. The physical features of critical habitat in the areas requested for exclusion are salinity suitable for older juveniles, open passage for juveniles suitably developed to leave the natal river, open passage for adults traveling through the area to and from spawning areas, open passage for subadults traveling through the area, and soft substrate. Withdrawing water from the river to flood dry docks and returning that water to the river would not change the salinity or substrate in the river and would have no impact on open passage. Maintaining and/or updating the pier structures is not likely to adversely affect salinity, but may affect open passage and substrate (*e.g.,* placing more pier structures in the area, altering the substrate to make it more suitable for the pier structure). Similarly, dredging activities to maintain proper channel and berthing depths may affect (*e.g.,* remove) the substrate that supports foraging, and change the depth affecting salinity (*e.g.,* as a result of changes to mixing in the estuarine river or the extent of saltwater intrusion). However, dredging and maintaining and/or updating the pier structures also may affect the species. For example, construction to maintain and/or update pier structures can produce sounds that disrupt normal behaviors such as sturgeon foraging, staging, and spawning. Dredging may injure or kill sturgeon that come into contact with the gear (*e.g.,* older juveniles passing through as they leave the natal river, adults traveling through the area to and from spawning areas, and subadults traveling through the area). Therefore, we determined that any resulting consultations will likely be coextensive.

The Navy expressed concern that designating the Delaware River critical habitat unit in the area surrounding the Philadelphia Naval Yard Annex (three specific areas), will impact national security. The Navy described the activities likely to occur in the particular areas as: updating and maintaining pier structures including pile driving, dredging activities to maintain proper channel and berthing depths, barge loading and unloading, and fuel unloading.

We considered the impact these activities are likely to have on the physical features. The physical features of critical habitat in the areas requested for exclusion are salinity suitable for younger juveniles, open passage for juveniles to access all parts of the estuary needed for development, open passage for adults traveling through the area to and from spawning areas, and soft substrate. The activities described by the Navy may affect salinity, open passage, and substrate. Maintaining and/or updating the pier structures may affect open passage and substrate (*e.g.,* placing more pier structures in the area, and altering the substrate to make it more suitable for the pier structure). Dredging activities to maintain proper channel and berthing depths may affect (*e.g.,* remove) the substrate that supports foraging and spawning. Changing the depth could affect salinity (*e.g.,* as a result of changes to mixing in the estuarine river or the extent of saltwater intrusion). Barge loading and unloading, and fuel unloading may affect water quality (*e.g.,* as a result of spills). Maintaining and/or updating the pier structures, dredging, and barge traffic also may affect the species. For example, maintaining and/or updating pier structures can produce sounds that

harass sturgeon and disrupt normal behaviors such as foraging, staging, and spawning. Dredging may result in injury or death of sturgeon that come into contact with the gear (*e.g.,* older juveniles passing through as they leave the natal river, adults traveling through the area to and from spawning areas, and subadults traveling through the area). Vessels for fuel deliveries and barge traffic can strike sturgeon resulting in injuries and mortality. Since the activities described by the Navy are also likely to impact the species (*e.g.,* juveniles and spawning adults), we expect consultations will be coextensive.

The Navy also expressed concern that designating the Rappahannock and James River critical habitat units will impact national security. The activities conducted in these areas are in-water training on the Rappahannock, including small boat tactic, amphibious landings, and helicopter rope suspension techniques, and training activities on the lower James River, which include underwater diving and salvage operations, helicopter rope suspension techniques, small boat launch and recovery, high-speed boat tactics training, small boat defense drills, visit, board, search and seizure drills, integrated swimmer defense, submarine maintenance and system upgrades, sonar testing, towing of in-water devices, unmanned vehicle testing, and mine countermeasure testing.

The physical features of critical habitat in the areas requested for exclusion are salinity suitable for older juveniles, open passage for juveniles to access all parts of the estuary needed for development, open passage for adults traveling through the area to and from spawning areas, open passage for subadults traveling through the area, and soft substrate. The described training activities are not likely to adversely affect salinity, but may affect open passage and substrate (*e.g.,* from placement of structures, activities resulting in increased siltation or erosion of substrate). However, the training activities also may affect the species. For example, sonar testing and various in-water testing can produce sounds that harass sturgeon and disrupt normal behaviors such as foraging and staging. Small and large vessel operations can result in vessel strikes to sturgeon. Since the activities described by the Navy are also likely to impact the species (*e.g.,* juveniles, subadults, and adults), we expect consultations will be coextensive.

There are a number of potential beneficial impacts of designating critical habitat that extend beyond the conservation benefits to Atlantic sturgeon. For example, protecting essential features of sturgeon habitat, including preserving water quality and natural flow regimes, will benefit other organisms that are co-located in these areas. Benefits can result from additional protections in the form of project modifications or conservation measures due to section 7 consultations or, conversely, a benefit of excluding an area from designation could be avoiding the costs associated with those protections (78 FR 53058, August 28, 2013). Because it is often difficult to quantify the benefits of designating critical habitat, Executive Order (EO) 12866, Regulatory Planning and Review, provides guidance on assessing costs and benefits. The EO directs Federal agencies to assess all costs and benefits of available regulatory alternatives, and to select those approaches that maximize net benefits.

The designation of critical habitat will provide conservation benefits such as improved education and outreach by informing the public about areas and features important to the conservation of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs. As stated in the Background, specifying the geographic location of critical habitat facilitates implementation of section 7(a)(1) of the ESA by identifying areas where Federal agencies can focus their conservation programs and use their authorities to further the purposes of the ESA. Designating critical habitat can also help focus the efforts of other conservation partners (*e.g.,* State and local governments, individuals and nongovernmental organizations).

Discretionary Exclusion Analysis

Based on our consideration of impacts above, we are not excluding any particular areas from the critical habitat designation based on economic, national security, or other relevant impacts. Section 4(b)(2) of the ESA provides the Secretary with broad discretion to exclude any area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless it is determined, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned. The agency has considerable discretion in evaluating the various impacts and determining how the impacts will be considered and weighed in deciding whether to exclude any particular area.

We have analyzed the economic, national security, and other relevant impacts of designating critical habitat. Although we have used the best available information and an approach designed to avoid underestimating economic impacts, many of the potential impacts are speculative and may not occur in the future. Our conservative identification of potential, incremental, economic impacts indicates that any such impacts, if they were to occur, would be very small. Any incremental economic impacts will consist solely of the administrative costs of consultation; no project modifications are projected to be required to address impacts solely to the proposed critical habitat. The Navy requested exclusion of two areas within the Gulf of Maine DPS proposed critical habitat units, three areas within the New York Bight critical habitat units, and two areas within the Chesapeake Bay critical habitat units. As noted above, no impacts to national security are expected as a consequence of the proposed critical habitat. Other relevant impacts include conservation benefits of the designation, both to the species and to society. The designation of critical habitat will provide conservation benefits such as improved education and outreach by informing the public about areas and features important to the conservation of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs. There are also a number of potential beneficial impacts of designating critical habitat that extend beyond the conservation benefits to Atlantic sturgeon. For example, protecting essential features of sturgeon habitat, including preserving water quality and natural flow regimes, will benefit other organisms that are co-located in these areas. While we cannot quantify nor monetize the benefits, we believe they are not negligible and would be an incremental benefit of this designation. Therefore, we have concluded that there is no basis to exclude any particular area from the proposed critical habitat units.

Activities That May Be Affected

Section 4(b)(8) of the ESA requires that any proposed or final regulation to designate critical habitat describe briefly and evaluate those activities that may adversely modify such habitat or that may be affected by such designation. A wide variety of activities may affect critical habitat and, when carried out, funded, or authorized by a Federal agency, will require an ESA section 7 consultation. Such activities (detailed in the economic analysis) include in-water construction, dredging, bridge, culvert,

and road projects (*e.g.,* for restoration projects), hydropower (unknown capacity), utility lines, sand and gravel mining, and activities requiring National Pollutant Discharge Elimination System permits. Private entities may also be affected by these proposed critical habitat designations if a Federal permit is required, Federal funding is received, or the entity is involved in or receives benefits from a Federal project. These activities will need to be evaluated with respect to their potential to destroy or adversely modify critical habitat. Specifically, as discussed above, activities (dredging, mining, utility lines, in water construction, placement of dams and tidal turbines) may adversely modify the substrate essential feature by removing or altering the substrate. The open passage feature may also be adversely modified by the placement of structures such as dams and tidal turbines. The salinity feature may be adversely affected by activities that impact fresh water input, such as operation of water control structures and water withdrawals, and activities that impact water depth, such as dredging. The water quality feature may be adversely affected by land development, and commercial and recreational activities on rivers may adversely affect the water quality feature by contributing to the persistence of nutrient loading, resulting in decreased dissolved oxygen levels and increased water temperature, and by increasing sediment deposition, which reduces Atlantic sturgeon egg adherence on hard spawning substrate and reduces the interstitial spaces used by larvae for refuge from predators. Dredging to remove sediment build-up or to facilitate vessel traffic may remove or alter the hard substrate that is necessary for egg adherence and as refuge for larvae, and may change the water depth, resulting in shifts in the salt wedge within the estuary or changes to other characteristics of the water quality (*e.g.,* temperature, dissolved oxygen) necessary for the developing eggs, larvae, and juveniles. These activities would require ESA section 7 consultation when they are implemented, funded, or carried out by a federal agency.

Questions regarding whether specific activities will constitute destruction or adverse modification of critical habitat should be directed to NMFS (see **ADDRESSES** and **FOR FURTHER INFORMATION CONTACT**).

Public Comments Solicited

We request that interested persons submit comments, information, and suggestions concerning this proposed rule during the comment period (see **DATES**). We are soliciting comments or suggestions from the public, other concerned governments and agencies, the scientific community, industry, or any other interested party concerning this proposed rule, including any foreseeable economic, national security, or other relevant impact resulting from the proposed designations. You may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES**). Copies of the proposed rule and supporting documentation can be found on the NMFS Greater Atlantic Region Web site at *www.greateratlantic.fisheries.noaa.gov/.* We will consider all comments pertaining to this designation received during the comment period in preparing the final rule. Accordingly, the final designation may differ from this proposal.

Information Quality Act and Peer Review

The data and analyses supporting this proposed action have undergone a pre-dissemination review and have been determined to be in compliance with applicable information quality guidelines implementing the Information Quality Act (IQA) (Section 515 of Pub. L. 106–554). On July 1, 1994, a joint USFWS/NMFS policy for peer review was issued stating that the Services would solicit independent peer review to ensure the best biological and commercial data is used in the development of rulemaking actions and draft recovery plans under the ESA (59 FR 34270). In addition, on December 16, 2004, the Office of Management and Budget (OMB) issued its Final Information Quality Bulletin for Peer Review (Bulletin). The Bulletin was published in the **Federal Register** on January 14, 2005 (70 FR 2664), and went into effect on June 16, 2005. The primary purpose of the Bulletin is to improve the quality and credibility of scientific information disseminated by the Federal government by requiring peer review of 'influential scientific information'' and ''highly influential scientific information'' prior to public dissemination. ''Influential scientific information'' is defined as ''information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions.'' The Bulletin provides agencies broad discretion in determining the appropriate process and level of peer review. Stricter standards were established for the peer review of ''highly influential scientific assessments,'' defined as information whose ''dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest.''

The Draft Biological Information and 4(b)(2) Source Document (NMFS, 2015) and the Draft Economic Impact Analysis (King and Associates Inc., 2014) supporting this proposed critical habitat rule are considered influential scientific information and subject to peer review. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of these draft documents, and incorporated the peer review comments prior to dissemination of this proposed rulemaking. For this action, compliance with the OMB Peer Review Bulletin satisfies any peer review requirements under the 1994 joint peer review policy. The Draft Biological Information and 4(b)(2) Source Document and the Draft Economic Impact Analysis prepared in support of this proposal are available on our Web site at *www.greateratlantic.fisheries.noaa.gov.* Comments received from peer reviewers on these documents will also be made available via our Web site at the time of publication of the proposed rule.

Classification

Takings (Executive Order 12630)

Under E.O. 12630, Federal agencies must consider the effects of their actions on constitutionally protected private property rights and avoid unnecessary takings of property. A taking of property includes actions that result in physical invasion or occupancy of private property, and regulations imposed on private property that substantially affect its value or use. In accordance with E.O. 12630, this proposed rule would not have significant takings implications. The designation of critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon are not expected to impose additional burdens on land use or affect property values. Therefore, a takings implication assessment is not required.

Regulatory Planning and Review (Executive Order 12866)

This proposed rule has been determined to be significant for purposes of E.O. 12866. A draft economic report has been prepared to support an impacts analysis under section 4(b)(2) of the ESA.

Federalism (Executive Order 13132)

Pursuant to the Executive Order on Federalism, E.O. 13132, we determined that this proposed rule does not have significant Federalism effects and that a Federalism assessment is not required. However, in keeping with Department of Commerce policies and consistent with ESA regulations at 50 CFR 424.16(c)(1)(ii), we will request information for this proposed rule from state resource agencies in Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Delaware, Maryland, and Virginia as well as appropriate authorities for the District of Columbia. The proposed designations may have some benefit to state and local resource agencies in that the proposed rule more clearly defines the physical and biological features essential to the conservation of the species and the areas on which those features are found.

Energy Supply, Distribution, and Use (Executive Order 13211)

Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking an action expected to lead to the promulgation of a final rule or regulation that is a significant regulatory action under E.O. 12866 and is likely to have a significant adverse effect on the supply, distribution, or use of energy. OMB Guidance on Implementing E.O. 13211 (July 13, 2001) states that significant adverse effects could include any of the following outcomes compared to a world without the regulatory action under consideration: (1) Reductions in crude oil supply in excess of 10,000 barrels per day; (2) reductions in fuel production in excess of 4,000 barrels per day; (3) reductions in coal production in excess of 5 million tons per year; (4) reductions in natural gas production in excess of 25 million mcf per year; (5) reductions in electricity production in excess of 1 billion kilowatt-hours per year or in excess of 500 megawatts of installed capacity; (6) increases in energy use required by the regulatory action that exceed any of the thresholds above; (7) increases in the cost of energy production in excess of one percent; (8) increases in the cost of energy distribution in excess of one percent; or (9) other similarly adverse outcomes. A regulatory action could also have significant adverse effects if it: (1) Adversely affects in a material way the productivity, competition, or prices in the energy sector; (2) adversely affects in a material way productivity, competition or prices within a region; (3) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency regarding energy; or (4) raises novel legal or policy issues adversely affecting the supply, distribution or use of energy arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866 and 13211.

This rule, if finalized, will not have a significant adverse effect on the supply, distribution, or use of energy. Therefore, we have not prepared a Statement of Energy Effects.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

We prepared an initial regulatory flexibility analysis (IRFA) pursuant to section 603 of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601, *et seq.*). The IRFA analyzes the impacts of this proposed rule, if enacted, on small entities. Specifically, the IRFA describes the economic impact on small entities in those areas where critical habitat is proposed, and is included as Appendix A of the Draft Biological Information and 4(b)(2) Source Document available at the location identified in the **ADDRESSES** section. A summary of the IRFA follows.

We determined that the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon warranted listing under the Endangered Species Act (ESA) and published notice of that decision on February 6, 2012 (77 FR 5880). We are required to designate critical habitat for each of the DPSs of Atlantic sturgeon (16 U.S.C. 1533(a)(3)). The critical habitat provisions of the ESA are intended to promote recovery of the ESA-listed species by prohibiting federal agency actions from destroying or adversely modifying the physical or biological features that are essential to conservation of the listed entity.

The ESA section 7 consultation requirement for critical habitat does not apply to citizens engaged in activities on private land that do not involve a Federal agency. However, there may be an impact to private citizens and small entities that are engaged in activities that involve a Federal agency action. For example, small businesses involved in construction activities such as breakwater, dock, pier, and harbor construction may be impacted if a federal agency must issue a permit for the work to be conducted, will provide funds for the work, or will otherwise be involved in carrying out the work. Such involvement by a federal agency triggers the need for section 7 consultation.

We considered three alternatives: (1) No action, (2) designating some of the identified critical habitat areas, or (3) designating all critical habitat areas identified for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon. Under the ''no action'' alternative, we would not designate critical habitat for the Gulf of Maine, New York Bight or Chesapeake Bay DPSs. By comparison, designating some of the identified critical habitat areas (*i.e.,* Alternative 2) could result in an increase in the number of section 7 consultations required to avoid adverse impacts relative to the ''no action'' alternative, while Alternative 3 would likely result in the greatest number of section 7 consultations relative to the other alternatives.

We have determined that the physical features forming the basis for our proposed critical habitat designations are essential to the conservation of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs. Therefore, we rejected the no action alternative and Alternative 2. We have analyzed the economic, national security, and other relevant impacts of designating all critical habitat identified for the DPSs. Our conservative identification of potential, incremental economic impacts indicates that any such impacts, if they were to occur, would be very small. Any incremental economic impacts will consist solely of the administrative costs of consultation; no project modifications are projected to be required to address impacts solely to the proposed critical habitat. No impacts to national security are expected as a consequence of the proposed critical habitat. Other relevant impacts include conservation benefits of the designation, both to the species and to society. While we cannot quantify or monetize the benefits, we believe that the benefits of this critical habitat designation would be incremental, and that they are not negligible.

The Small Business Administration has established numerical definitions of small businesses, or ''size standards,'' for all for-profit industries. Based on these size standards (*e.g.,* in millions of dollars or number of employees), King and Associates, Inc. (2014), concluded a high percent of business entities located in the counties that include one or more of the critical habitat units, an average of 99.8% across all units, are small businesses. However, data are not available to determine the location of these small business entities within each county in order to determine how many are located in or near areas proposed as critical habitat. Therefore, for purposes of projecting the impacts of administrative section 7 costs on small businesses in each critical habitat unit, King and Associates assumed that the

percentage of private entities involved in those consultations that are small entities is the same as the percentage of businesses that are small entities in the counties that include critical habitat units.

The same approach that was used by King and Associates to estimate low, medium, and high overall ESA section 7 administrative costs was used as a basis for developing low, medium, and high estimates of section 7 impacts on small entities. Impacted small entities may include contractors involved in construction activities such as breakwater, dock, pier, bridge, and harbor construction, contractors involved in restoration activities such as culvert replacements, and marina owners who must maintain pier and dock structures. King and Associates concluded that costs to small entities associated with the designation range from about $16,500 to $47,250 annually in the Gulf of Maine DPS, about $30,000 to $96,000 annually in the New York Bight DPS, and about $11,000 to $34,000 annually in the Chesapeake Bay DPS (King and Associates, Inc., 2014). We found no data to suggest that the designation would place small entities at a competitive disadvantage compared to large entities.

Coastal Zone Management Act

Under section 307(c)(1)(A) of the Coastal Zone Management Act (CZMA) (16 U.S.C. 1456(c)(1)(A)) and its implementing regulations, each Federal activity within or outside the coastal zone that has reasonably foreseeable effects on any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State coastal management programs. We have determined that any effects of this proposed designation of critical habitat on coastal uses and resources in Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, and Virginia are not reasonably foreseeable at this time. This proposed designation may trigger ESA section 7 obligations for federal agencies. These consultations will consider effects of Federal actions on coastal uses and resources to the extent they overlap with critical habitat. We considered the range of Federal actions that this designation may affect (*e.g.,* dredging, bridge construction/repair, water withdrawals) and which may affect coastal uses and resources in the affected States. However, we do not have sufficient information on the specifics of any future activities (*e.g.,* when, where and how they will be carried out) to characterize any of these as reasonable foreseeable. Therefore, because the effects are not reasonably foreseeable, we cannot make a determination as to whether the Federal activities will be consistent with any enforceable policies of approved State coastal management programs. Through the consultation process, we will receive information on proposed Federal actions and their effects on listed species and the designated critical habitat upon. We base any biological opinions on this information. It will then be up to the Federal action agencies to decide how to comply with the ESA in light of our biological opinion, as well as to ensure that their actions comply with the CZMA's Federal consistency requirement. At this time, we do not anticipate that this designation is likely to result in any additional management measures by other Federal agencies.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This proposed rule does not contain any new or revised collection of information. This rule, if adopted, would not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

This proposed rule will not produce a Federal mandate. The designation of critical habitat does not impose a legally-binding duty on non-Federal government entities or private parties. The only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7 of the ESA. Non-Federal entities which receive Federal funding, assistance, permits or otherwise require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat but, the Federal agency has the legally binding duty to avoid destruction or adverse modification of critical habitat.

We do not anticipate that this rule, if finalized, will significantly or uniquely affect small governments. Therefore, a Small Government Action Plan is not required.

Consultation and Coordination With Indian Tribal Governments (Executive Order 13175)

The longstanding and distinctive relationship between the Federal and tribal governments is defined by treaties, statutes, executive orders, judicial decisions, and agreements, which differentiate tribal governments from the other entities that deal with, or are affected by, the Federal Government. This relationship has given rise to a special Federal trust responsibility involving the legal responsibilities and obligations of the United States toward Indian Tribes and the application of fiduciary standards of due care with respect to Indian lands, tribal trust resources, and the exercise of tribal rights.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, outlines the responsibilities of the Federal Government in matters affecting tribal interests. If NMFS issues a regulation with tribal implications (defined as having a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes) we must consult with those governments or the Federal Government must provide funds necessary to pay direct compliance costs incurred by tribal governments. The proposed critical habitat designations for Gulf of Maine, New York Bight, and Chesapeake Bay Atlantic sturgeon DPSs do not have tribal implications.

References Cited

A complete list of all references cited in this rulemaking can be found at *www.greateratlantic.fisheries.noaa.gov,* and is available upon request from the NMFS Greater Atlantic Region Fisheries Office in Gloucester, Massachusetts (see **ADDRESSES**).

List of Subjects in 50 CFR Part 226

Endangered and threatened species.

Dated: May 24, 2016.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, we propose to amend 50 CFR part 226 as follows:

PART 226—DESIGNATED CRITICAL HABITAT

■ 1. The authority citation for part 226 continues to read as follows:

Authority: 16 U.S.C. 1533.

■ 2. Add § 226.225 to read as follows:

§ 226.225 Critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments of Atlantic Sturgeon.

Critical habitat is designated for the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments (DPSs) of Atlantic sturgeon as described in paragraphs (a) through (c) of this section. The textual descriptions in paragraphs (c) through (f) of this section are the definitive source for determining the critical habitat boundaries.

(a) The physical features essential for the conservation of Atlantic sturgeon belonging to the Gulf of Maine, New York Bight, and Chesapeake Bay Distinct Population Segments are those habitat components that support successful reproduction and recruitment. These are:

(1) Hard bottom substrate (*e.g.,* rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (*i.e.,* 0.0–0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;

(2) Aquatic habitat with a gradual downstream salinity gradient of 0.5–30 parts per thousand and soft substrate (*e.g.,* sand, mud) downstream of spawning sites for juvenile foraging and physiological development;

(3) Water of appropriate depth and absent physical barriers to passage (*e.g.,* locks, dams, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support:

(i) Unimpeded movement of adults to and from spawning sites;

(ii) Seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and

(iii) Staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (*e.g.,* ≥1.2 m) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river;

(4) Water, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support:

(i) Spawning;

(ii) Annual and interannual adult, subadult, larval, and juvenile survival; and

(iii) Larval, juvenile, and subadult growth, development, and recruitment (*e.g.,* 13 °C to 26 °C for spawning habitat and no more than 30 °C for juvenile rearing habitat, and 6 mg/L dissolved oxygen for juvenile rearing habitat).

(b) Critical habitat is designated for the following DPSs in the following states and counties:

DPS	State/district—counties
Gulf of Maine	ME—Androscoggin, Cumberland, Kennebec, Lincoln, Penobscot, Sagadahoc, Somerset, Waldo, York. NH—Rockingham, Stafford. MA—Essex.
New York Bight	CT—Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland. NJ—Bergen, Burlington, Camden, Cape May, Cumberland, Gloucester, Hudson, Mercer, Monmouth, Salem. NY—Albany, Bronx, Columbia, Dutchess, Greene, Kings, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Ulster, Westchester. DE—Kent, New Castle, Sussex. PA—Bucks, Delaware, Philadelphia.
Chesapeake Bay	D.C.—District of Columbia. MD—Charles, Montgomery, Prince George's, St. Mary's. VA—Arlington, Caroline, Charles City, Chesterfield, Dinwiddie, Essex, Fairfax, Gloucester, Hanover, Henrico, Isle of Wight, King George, James City, King and Queen, King William, Lancaster, Loudoun, Middlesex, New Kent, Northumberland, Prince George, Prince William, Richmond, Spotsylvania, Stafford, Surry, Westmoreland, York.

(c) *Critical habitat boundaries for the Gulf of Maine DPS.* Critical habitat for the Gulf of Maine DPS of Atlantic sturgeon is the waters of:

(1) Penobscot River main stem from the Milford Dam downstream to where the main stem river drainage discharges at its mouth into Penobscot Bay;

(2) Kennebec River main stem from the Ticonic Falls/Lockwood Dam downstream to where the main stem river discharges at its mouth into the Atlantic Ocean;

(3) Androscoggin River main stem from the Brunswick Dam downstream to where the main stem river drainage discharges into Merrymeeting Bay;

(4) Piscataqua River from its confluence with the Salmon Falls and Cocheco rivers downstream to where the main stem river discharges at its mouth into the Atlantic Ocean as well as the waters of the Cocheco River from its confluence with the Piscataqua River and upstream to the Cocheco Falls Dam, and waters of the Salmon Falls River from its confluence with the Piscataqua River and upstream to the Route 4 Dam; and,

(5) Merrimack River from the Essex Dam (also known as the Lawrence Dam) downstream to where the main stem river discharges at its mouth into the Atlantic Ocean.

(d) *Critical Habitat Boundaries of the New York Bight DPS.* Critical habitat for the New York Bight DPS of Atlantic sturgeon is the waters of:

(1) Connecticut River from the Holyoke Dam downstream to where the main stem river discharges at its mouth into Long Island Sound;

(2) Housatonic River from the Derby Dam downstream to where the main stem discharges at its mouth into Long Island Sound;

(3) Hudson River from the Troy Lock and Dam (also known as the Federal Dam) downstream to where the main stem river discharges at its mouth into New York City Harbor; and

(4) Delaware River at the crossing of the Trenton-Morrisville Route 1 Toll Bridge, downstream to where the main stem river discharges at its mouth into Delaware Bay.

(e) *Critical Habitat Boundaries of the Chesapeake Bay DPS.* Critical habitat for the Chesapeake Bay DPS of Atlantic sturgeon is the waters of:

(1) Susquehanna River from the Conowingo Dam downstream to where the main stem river discharges at its mouth into the Chesapeake Bay;

(2) Potomac River from the Little Falls Dam downstream to where the main stem river discharges at its mouth into the Chesapeake Bay;

(3) Rappahannock River from the U.S. Highway 1 Bridge, downstream to where the river discharges at its mouth into the Chesapeake Bay;

(4) York River from its confluence with the Mattaponi and Pamunkey rivers downstream to where the main stem river discharges at its mouth into the Chesapeake Bay as well as the waters of the Mattaponi River from its confluence with the York River and upstream to the Virginia State Route 360 Bridge of the Mattaponi River, and

waters of the Pamunkey River from its confluence with the York River and upstream to the Virginia State Route 360 Bridge crossing of the Pamunkey River; and

(5) James River from Boshers Dam downstream to where the main stem river discharges at its mouth into the Chesapeake Bay at Hampton Roads.

(f) *Sites owned or controlled by the Department of Defense.* Critical habitat for the New York Bight and Chesapeake Bay DPSs of Atlantic sturgeon do not include the following areas owned or controlled by the Department of Defense, or designated for its use, in the States of New York and Virginia.

(1) The Department of the Army, U.S. Military Academy—West Point, NY;

(2) The Department of the Air Force, Joint Base Langley—Eustis, VA;

(3) The Department of the Navy, Marine Corps Base Quantico, VA;

(4) The Department of the Navy, Naval Weapons Station Yorktown, VA; and,

(5) The Department of the Navy, Naval Support Facility Dahlgren, VA.

(g) Maps of the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs follow:

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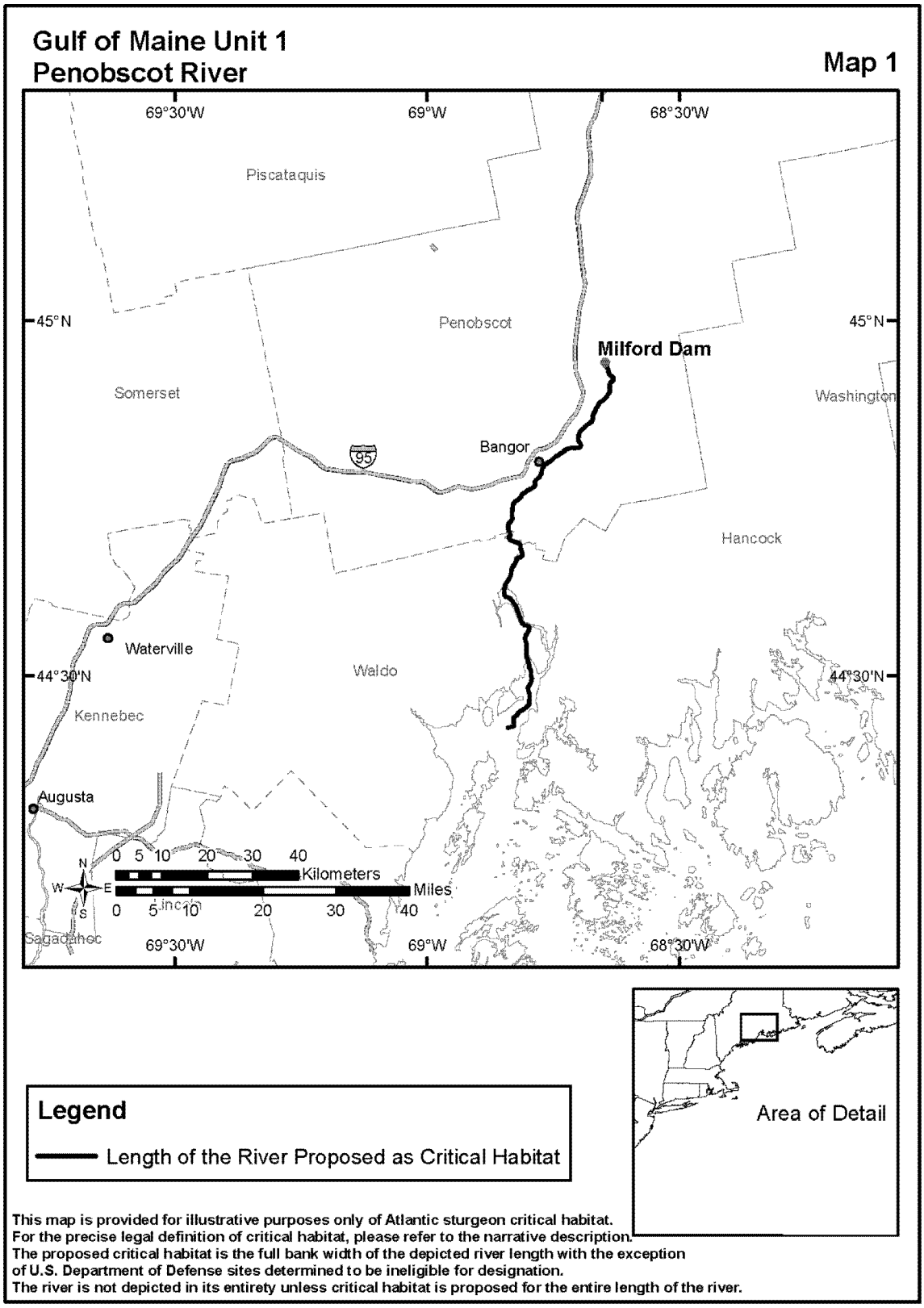
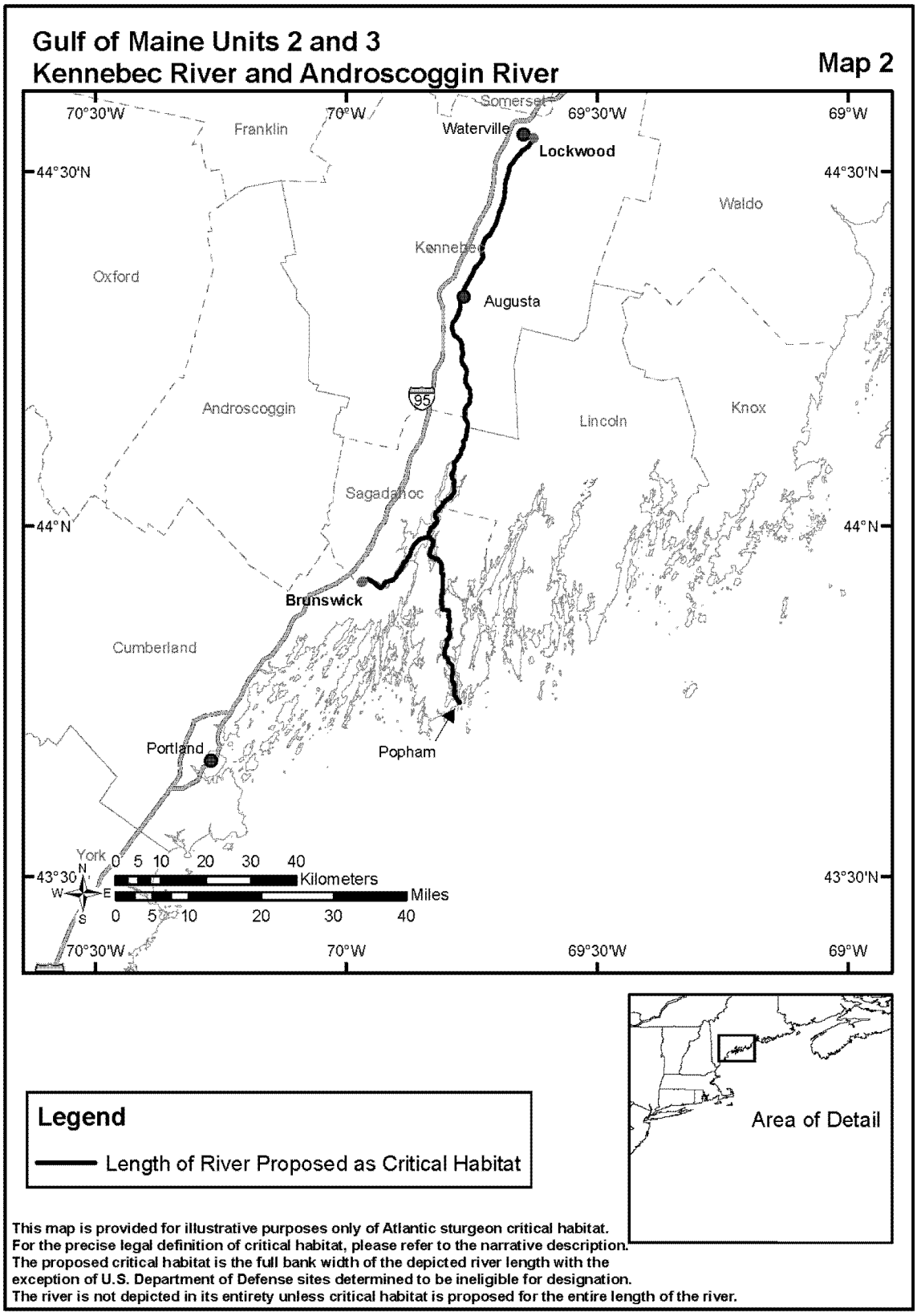

Gulf of Maine Unit 1
Penobscot River
Map 1
69°30'W
69°W
68°30'W
Piscataquis
45°N
Penobscot
Milford Dam
Somerset
Washington
Bangor
95
Hancock
Waterville
44°30'N
Waldo
Kennebec
Augusta
0 5 10 20 30 40 Kilometers
N
W E
S
0 5 10 20 30 40 Miles
Sagadahoc
Area of Detail
Legend
Length of the River Proposed as Critical Habitat
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.
The proposed critical habitat is the full bank width of the depicted river length with the exception of U.S. Department of Defense sites determined to be ineligible for designation.
The river is not depicted in its entirety unless critical habitat is proposed for the entire length of the river.


Gulf of Maine Units 2 and 3
Kennebec River and Androscoggin River
Map 2
70°30'W
70°W
69°30'W
69°W
44°30'N
44°N
43°30'N
Somerset
Franklin
Waterville
Lockwood
Waldo
Kennebec
Oxford
Augusta
95
Androscoggin
Lincoln
Knox
Sagadahoc
Brunswick
Cumberland
Portland
Popham
York
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
N
W
E
S
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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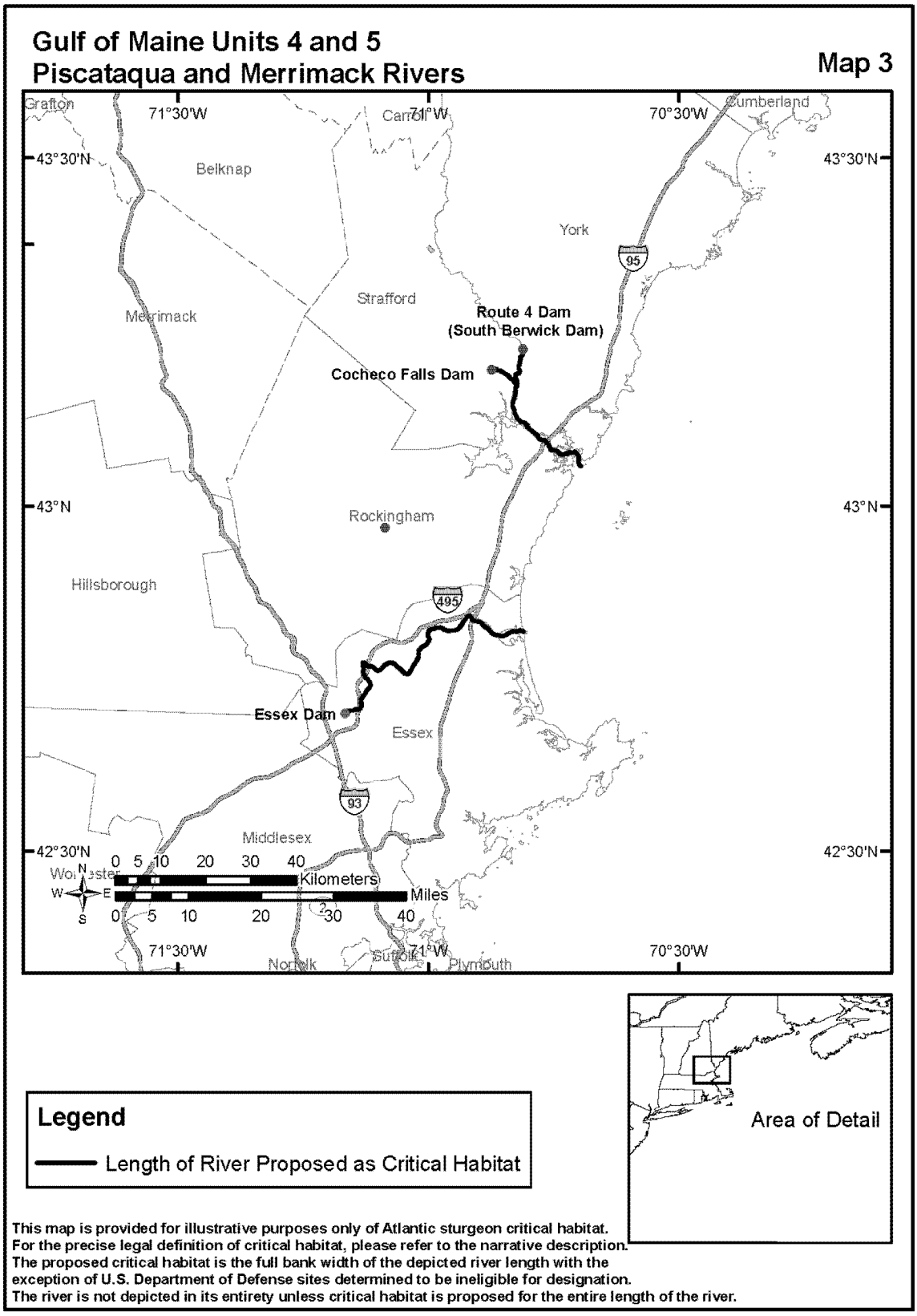
Gulf of Maine Units 4 and 5
Piscataqua and Merrimack Rivers
Map 3
Grafton
71°30'W
Carroll
71°W
70°30'W
Cumberland
43°30'N
Belknap
York
95
Strafford
Merrimack
Route 4 Dam
(South Berwick Dam)
Cocheco Falls Dam
43°N
Rockingham
Hillsborough
495
Essex Dam
Essex
93
Middlesex
42°30'N
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
N
W
E
S
Norfolk
Suffolk
Plymouth
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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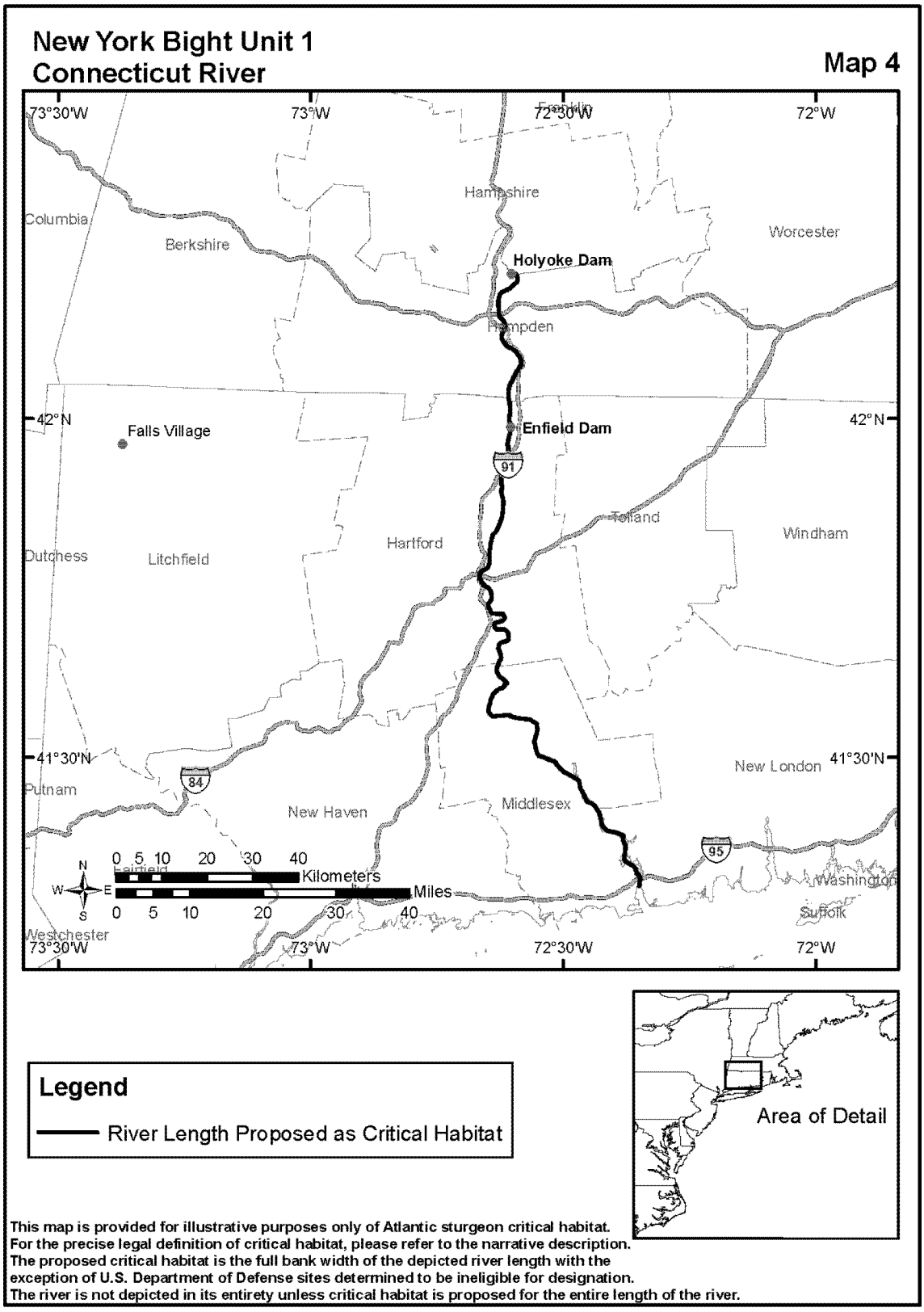
New York Bight Unit 1
Connecticut River
Map 4
73°30'W
73°W
72°30'W
72°W
42°N
41°30'N
Columbia
Berkshire
Hampshire
Worcester
Holyoke Dam
Hampden
Falls Village
Enfield Dam
91
Tolland
Windham
Dutchess
Litchfield
Hartford
84
Putnam
New Haven
Middlesex
New London
95
Fairfield
Washington
Suffolk
Westchester
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
N
W
E
S
Legend
River Length Proposed as Critical Habitat
Area of Detail
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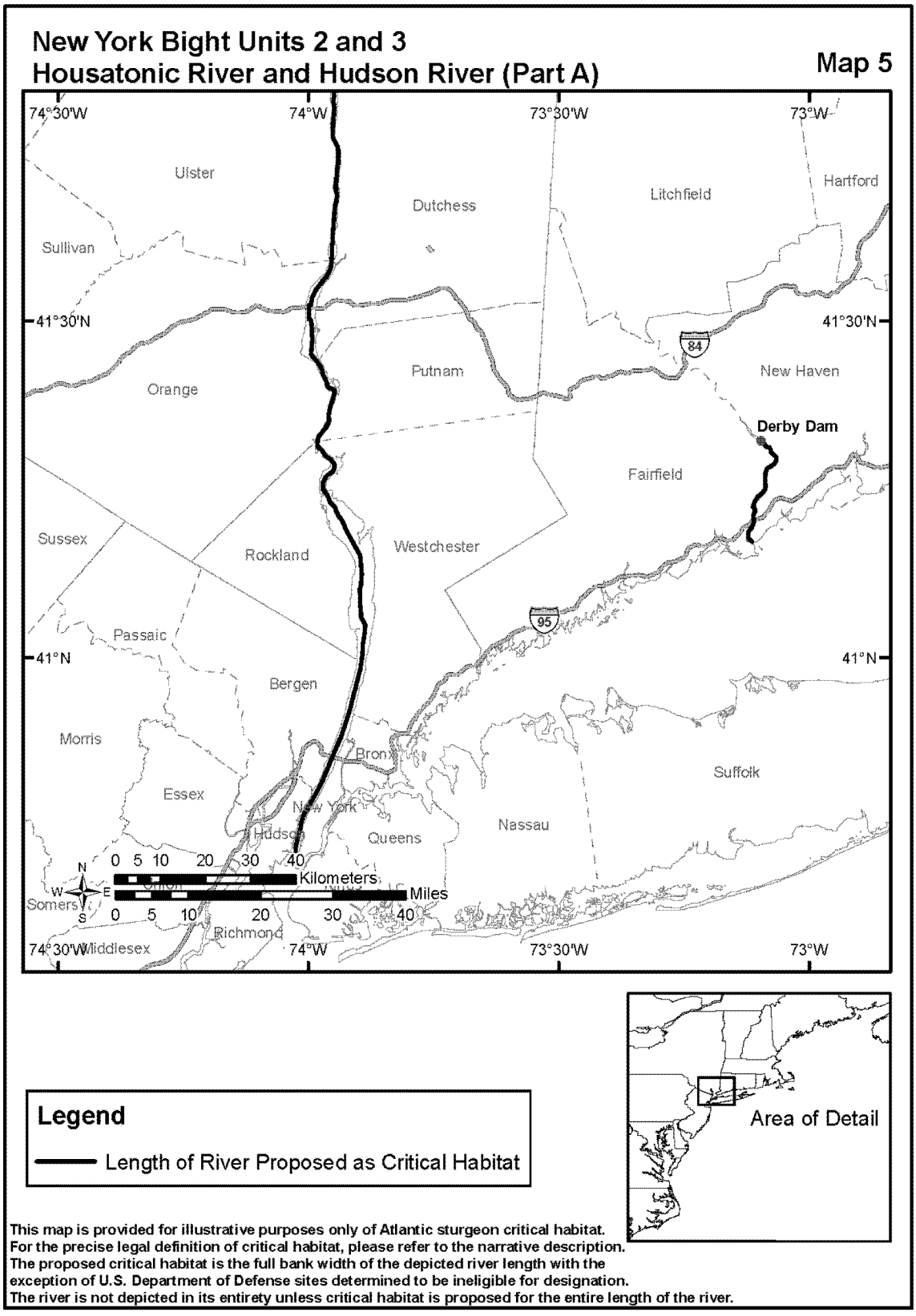
New York Bight Units 2 and 3
Housatonic River and Hudson River (Part A)
Map 5
74°30'W
74°W
73°30'W
73°W
41°30'N
41°N
Ulster
Sullivan
Orange
Dutchess
Putnam
Litchfield
Hartford
New Haven
Derby Dam
Fairfield
Sussex
Rockland
Westchester
Passaic
Bergen
Morris
Essex
Hudson
Queens
Nassau
Suffolk
Bronx
New York
Richmond
Middlesex
Somerset
Union
84
95
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
N
W
E
S
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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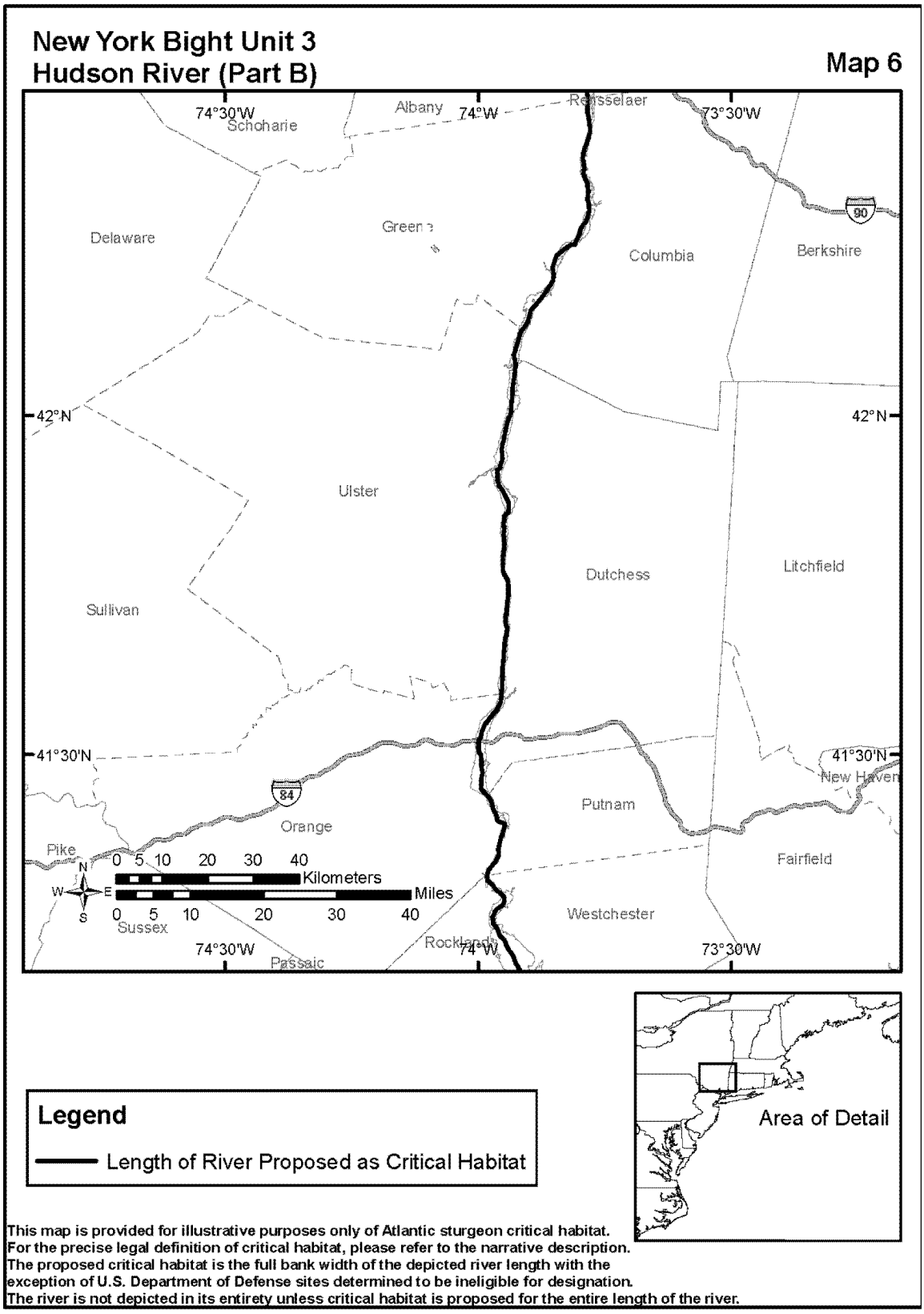

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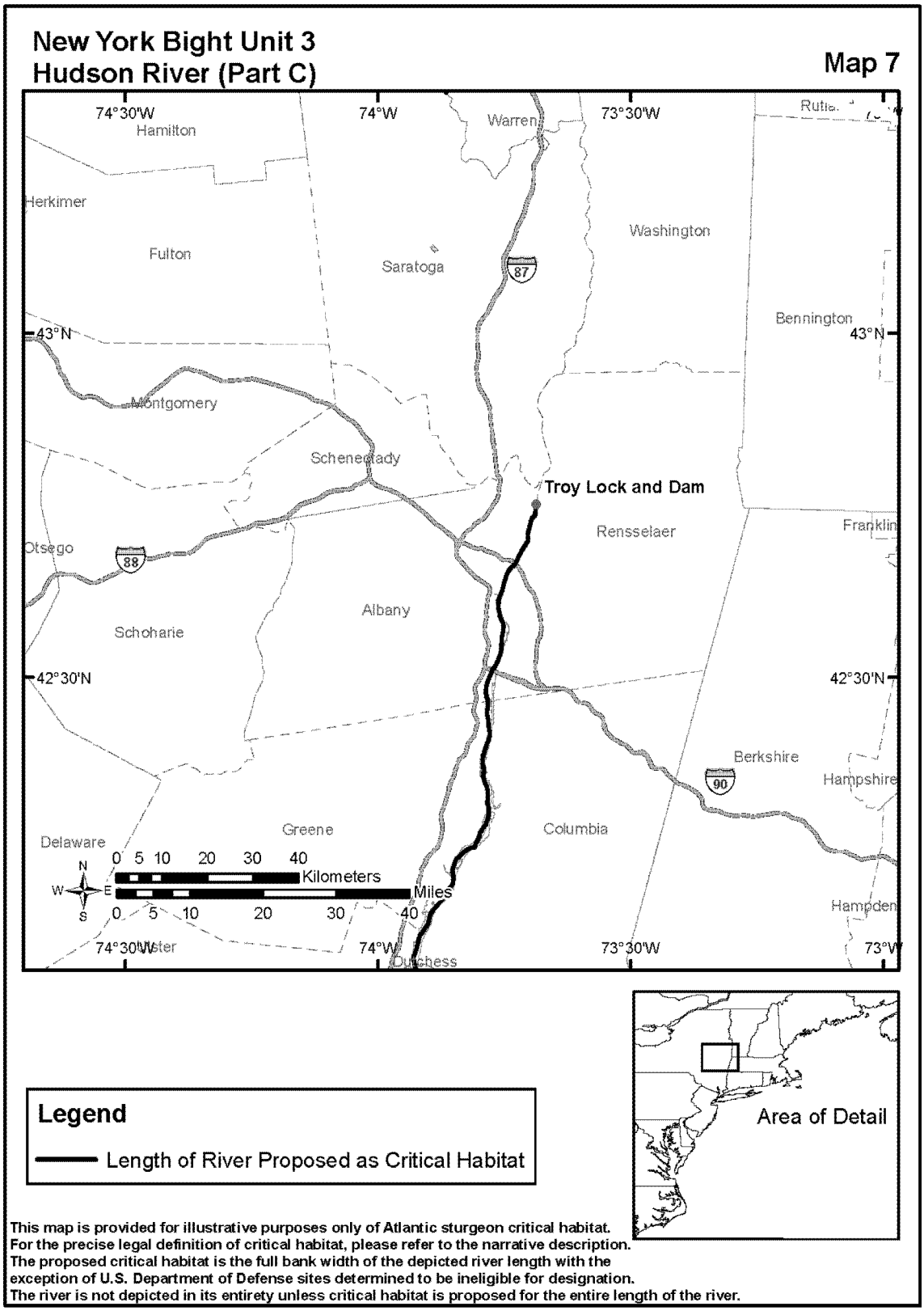
New York Bight Unit 3
Hudson River (Part C)
Map 7
74°30'W
74°W
73°30'W
Hamilton
Warren
Herkimer
Fulton
Saratoga
Washington
Bennington
43°N
Montgomery
Schenectady
Troy Lock and Dam
Rensselaer
Franklin
Otsego
Albany
Schoharie
42°30'N
Berkshire
Hampshire
Greene
Columbia
Delaware
Hampden
Ulster
Dutchess
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
N
W
E
S
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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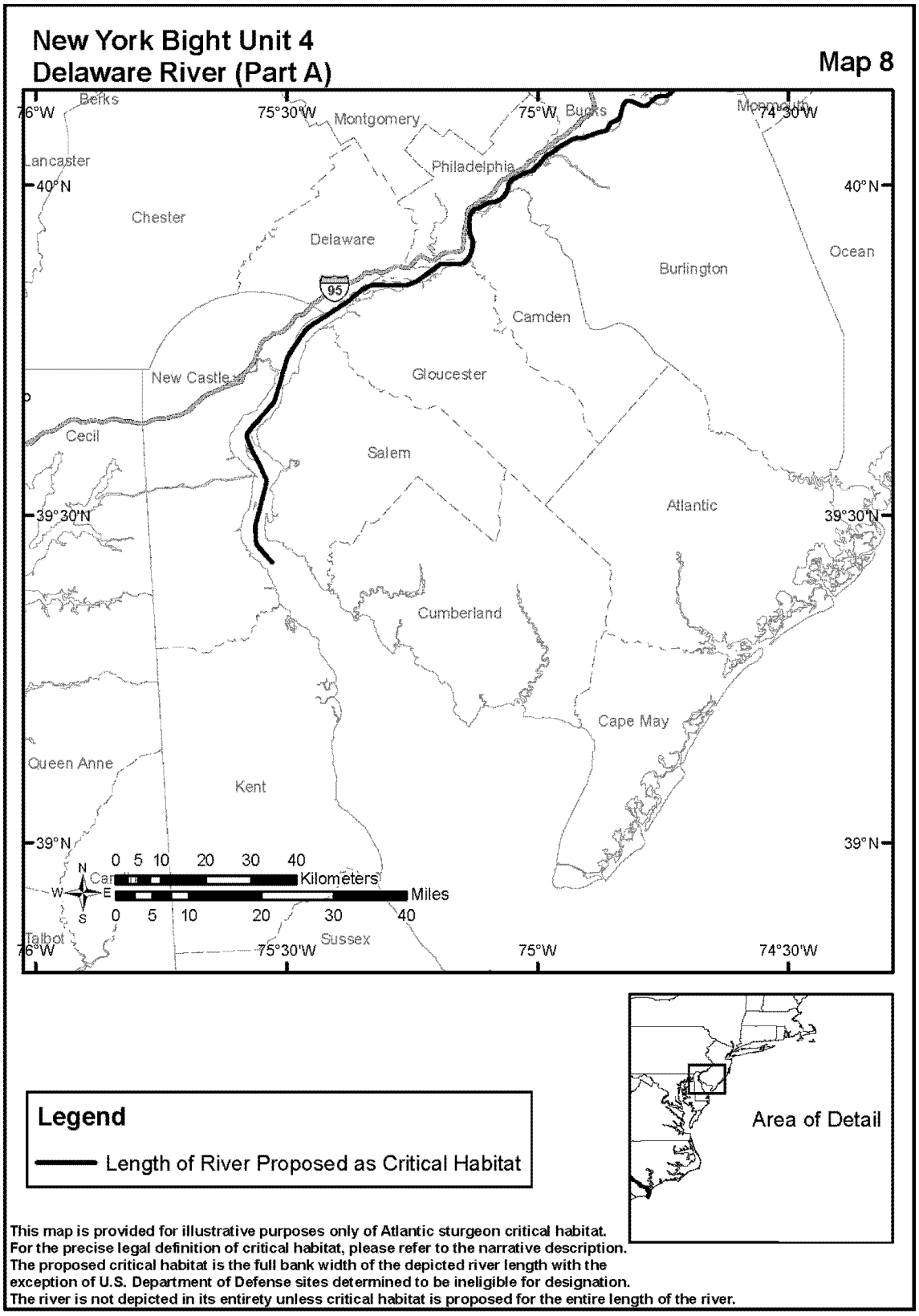
New York Bight Unit 4
Delaware River (Part A)
Map 8
Berks
Montgomery
Bucks
Monmouth
Lancaster
Philadelphia
Chester
Delaware
Burlington
Ocean
Camden
New Castle
Gloucester
Cecil
Salem
Atlantic
Cumberland
Cape May
Queen Anne
Kent
Talbot
Sussex
76°W
75°30'W
75°W
74°30'W
40°N
39°30'N
39°N
95
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
N
W
E
S
Legend
Length of River Proposed as Critical Habitat
Area of Detail
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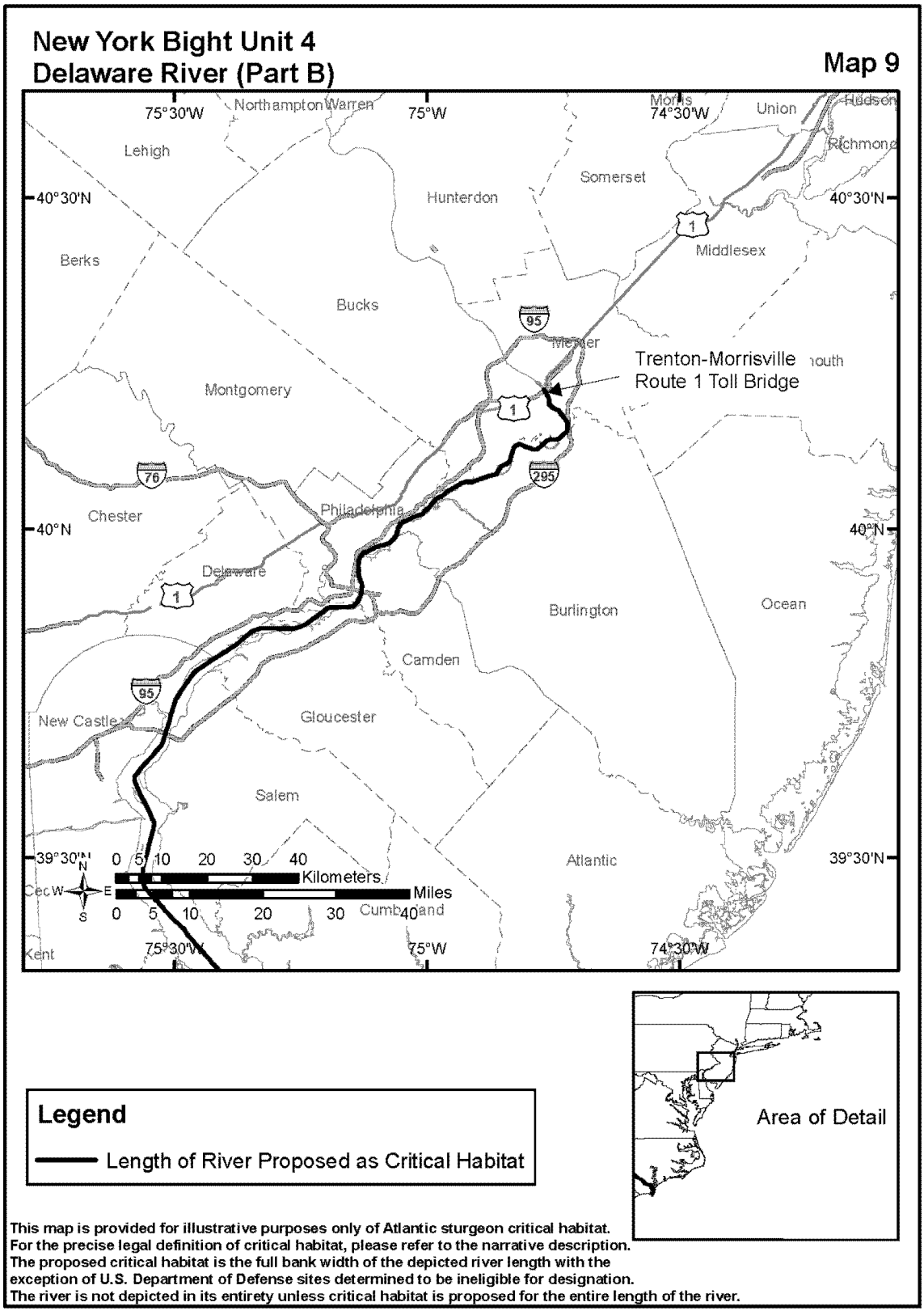
New York Bight Unit 4
Delaware River (Part B)
Map 9
75°30'W
75°W
74°30'W
40°30'N
40°N
39°30'N
Northampton
Warren
Morris
Union
Hudson
Lehigh
Somerset
Hunterdon
Middlesex
Berks
Bucks
Mercer
Trenton-Morrisville
Route 1 Toll Bridge
Montgomery
Chester
Philadelphia
Delaware
Burlington
Ocean
Camden
New Castle
Gloucester
Salem
Atlantic
Cumberland
Kent
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
N
W
E
S
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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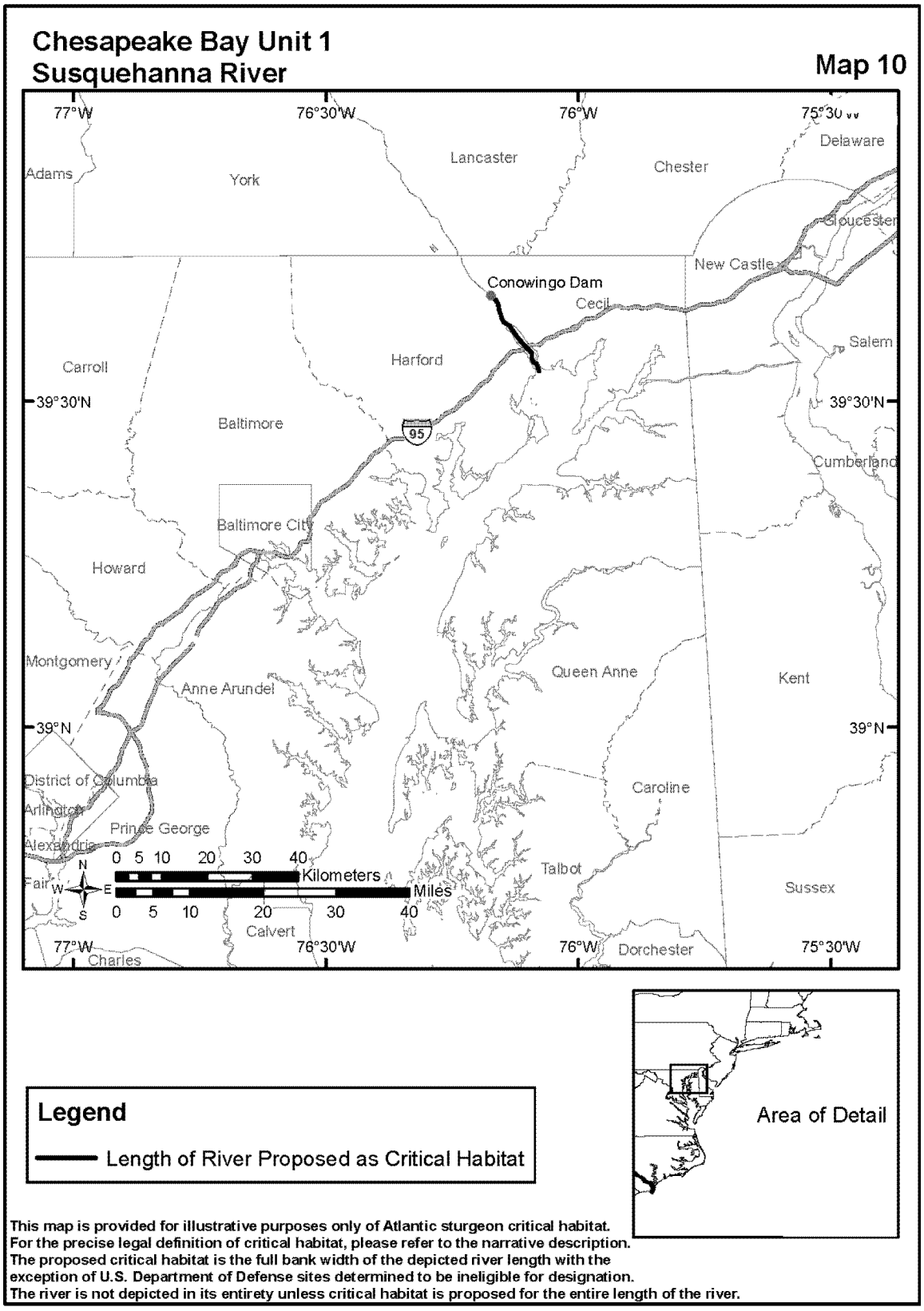

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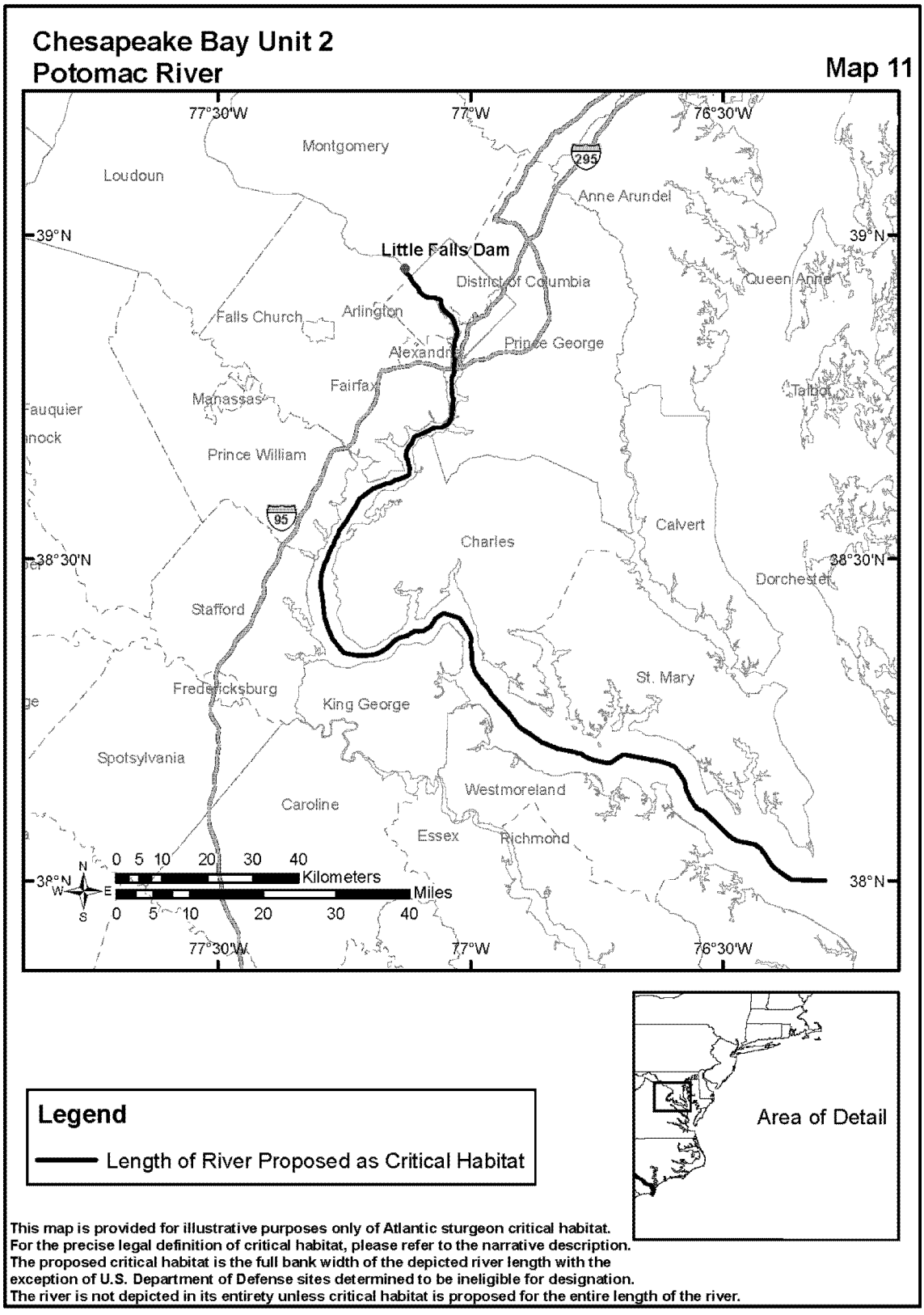
Chesapeake Bay Unit 2
Potomac River
Map 11
77°30'W
77°W
76°30'W
39°N
38°30'N
38°N
Montgomery
Loudoun
Anne Arundel
Little Falls Dam
District of Columbia
Queen Anne
Falls Church
Arlington
Alexandria
Prince George
Fairfax
Manassas
Talbot
Fauquier
Prince William
Calvert
Charles
Dorchester
Stafford
St. Mary
Fredericksburg
King George
Spotsylvania
Westmoreland
Caroline
Essex
Richmond
295
95
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
N
W
E
S
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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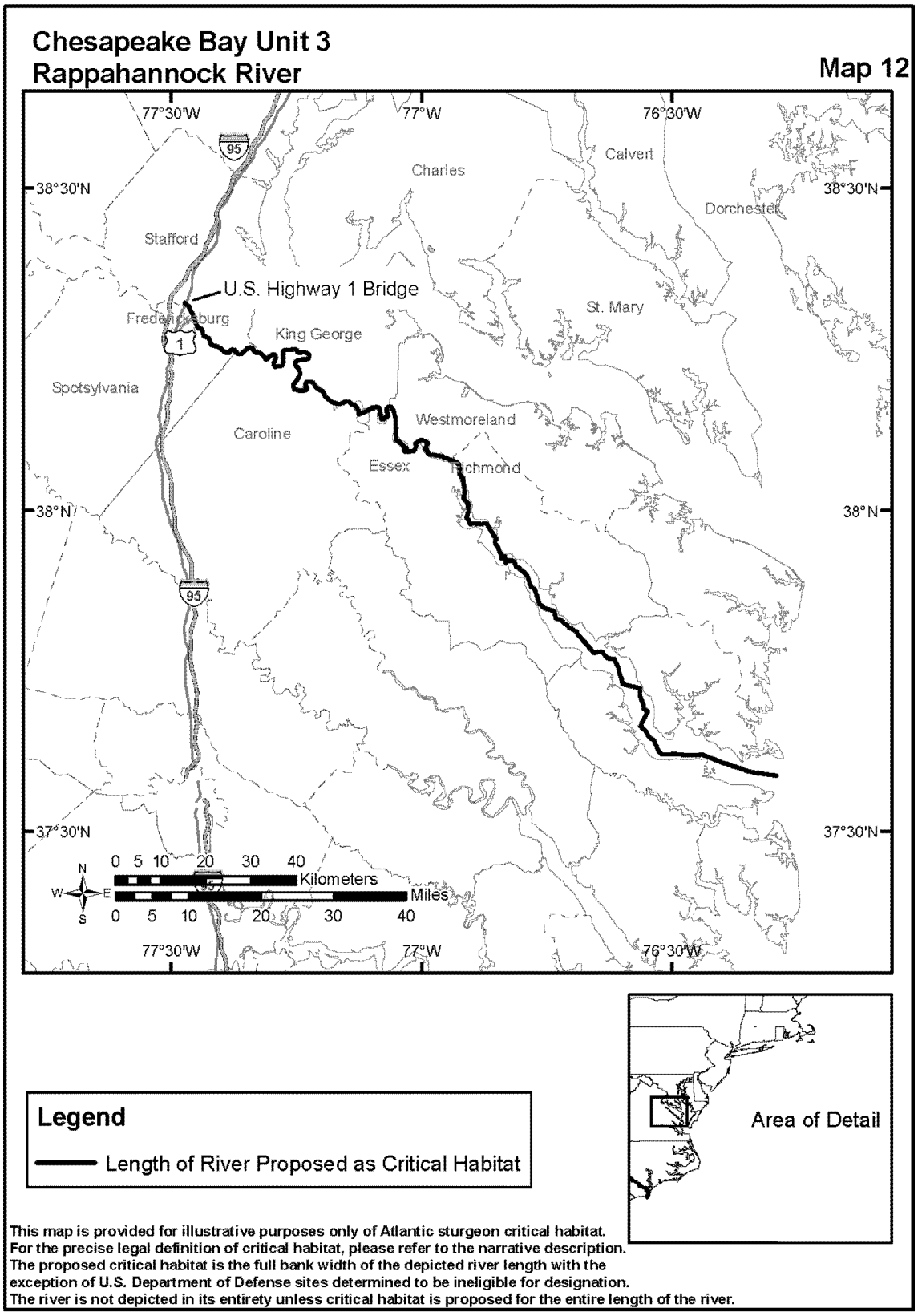
Chesapeake Bay Unit 3
Rappahannock River
Map 12
77°30'W
77°W
76°30'W
38°30'N
38°N
37°30'N
95
1
Charles
Calvert
Dorchester
Stafford
U.S. Highway 1 Bridge
Fredericksburg
King George
St. Mary
Spotsylvania
Caroline
Westmoreland
Essex
Richmond
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
N
W
E
S
Area of Detail
Legend
Length of River Proposed as Critical Habitat
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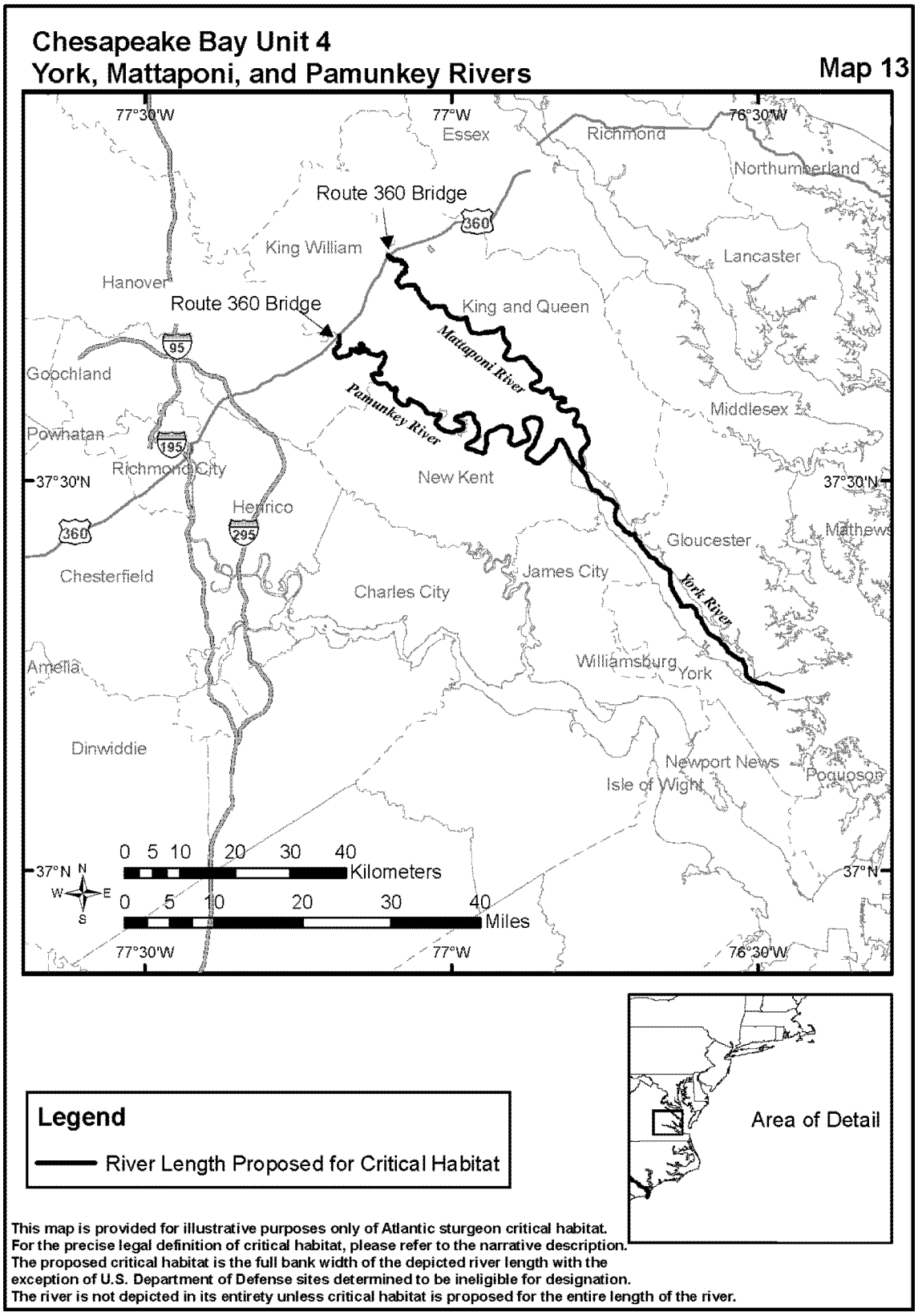
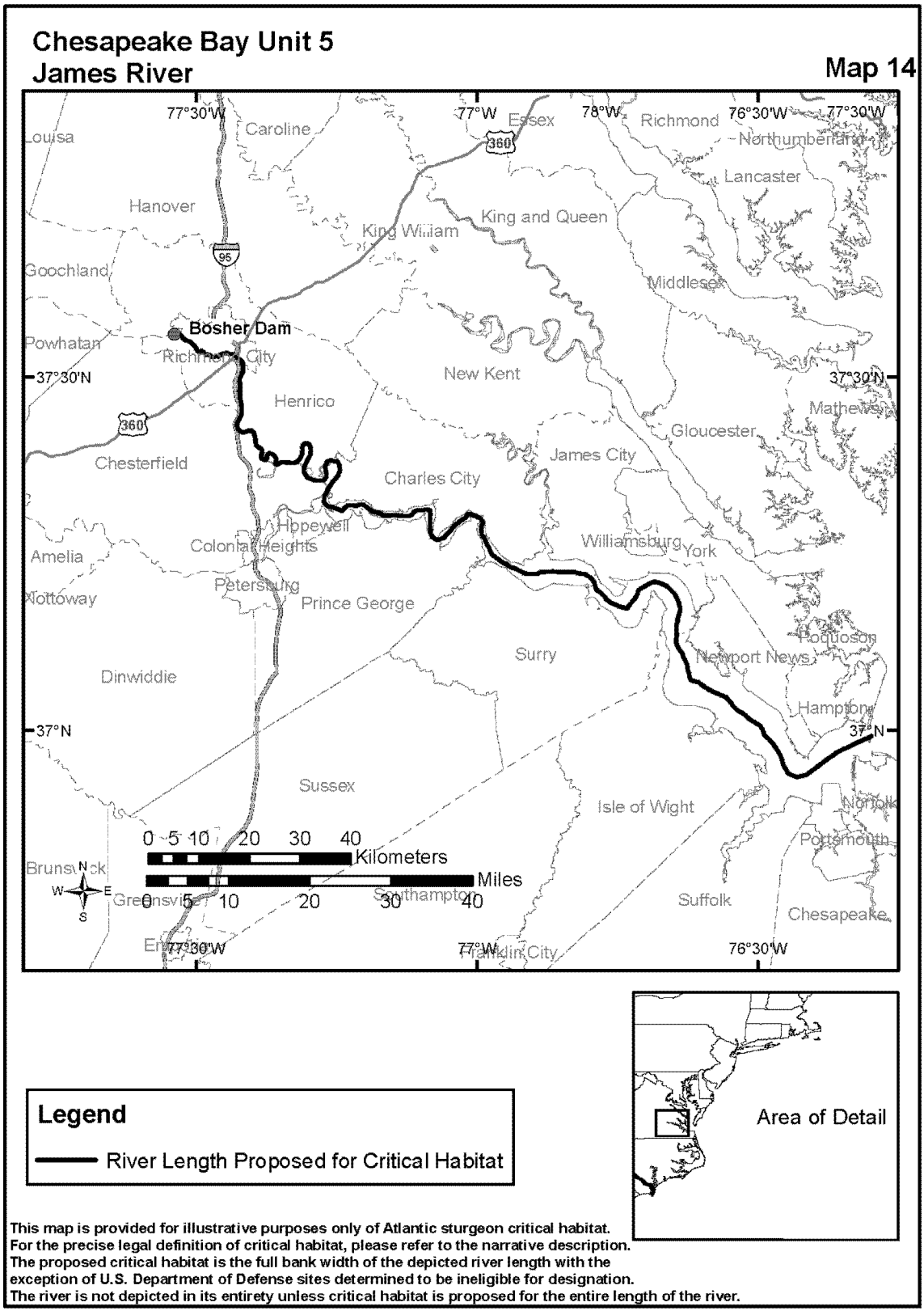

Chesapeake Bay Unit 4
York, Mattaponi, and Pamunkey Rivers
Map 13
77°30'W
77°W
76°30'W
Essex
Richmond
Northumberland
Route 360 Bridge
360
King William
Lancaster
Hanover
Route 360 Bridge
King and Queen
95
Mattaponi River
Pamunkey River
Goochland
Middlesex
Powhatan
195
Richmond City
37°30'N
New Kent
Henrico
295
Gloucester
Mathews
Chesterfield
James City
Charles City
York River
Amelia
Williamsburg
York
Dinwiddie
Newport News
Poquoson
Isle of Wight
0 5 10 20 30 40
Kilometers
37°N
N
W
E
S
0 5 10 20 30 40
Miles
Area of Detail
Legend
River Length Proposed for Critical Habitat
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.
The proposed critical habitat is the full bank width of the depicted river length with the exception of U.S. Department of Defense sites determined to be ineligible for designation.
The river is not depicted in its entirety unless critical habitat is proposed for the entire length of the river.



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Part VI

Department of Commerce

National Oceanic and Atmospheric Administration

50 CFR Part 226

Endangered and Threatened Species; Critical Habitat for the Endangered Carolina and South Atlantic Distinct Population Segments of Atlantic Sturgeon; Proposed Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 226

[Docket No. 150817733–6237–01]

RIN 0648–BF32

Endangered and Threatened Species; Critical Habitat for the Endangered Carolina and South Atlantic Distinct Population Segments of Atlantic Sturgeon

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: We, the NMFS, propose to designate critical habitat for the endangered Carolina distinct population segment of the Atlantic sturgeon (Carolina DPS of Atlantic sturgeon) and the endangered South Atlantic distinct population segment of the Atlantic sturgeon (South Atlantic DPS of Atlantic sturgeon) pursuant to section 4 of the Endangered Species Act (ESA). Specific occupied areas proposed for designation as critical habitat for the Carolina DPS of Atlantic sturgeon contain approximately 1,997 kilometers (km; 1,241 miles) of aquatic habitat within the following rivers: Roanoke, Tar-Pamlico, Neuse, Cape Fear, Northeast Cape Fear, Waccamaw, Pee Dee, Black, Santee, North Santee, South Santee, and Cooper, and the following other water body: Bull Creek. In addition, we propose to designate unoccupied areas for the Carolina DPS totaling 383 km (238 miles) of aquatic habitat within the Cape Fear, Santee, Wateree, Congaree, and Broad Rivers, and within Lake Marion, Lake Moultrie, rediversion canal, and diversion canal. Specific occupied areas proposed for designation as critical habitat for the South Atlantic DPS of Atlantic sturgeon contain approximately 2,911 km (1,809 miles) of aquatic habitat within the Edisto, Combahee-Salkehatchie, Savannah, Ogeechee, Altamaha, Ocmulgee, Oconee, Satilla, and St. Marys Rivers. In addition, we propose to designate an unoccupied area within the Savannah River for the South Atlantic DPS that contains 33 km (21 miles) of aquatic habitat. We have considered positive and negative economic, national security, and other relevant impacts of the proposed critical habitat. We do not propose to exclude any particular area from the proposed critical habitat.

We are soliciting comments from the public on all aspects of the proposal, including our identification and consideration of impacts of the proposed action.

DATES: Comments on this proposal must be received by September 1, 2016.

Public hearing meetings: We will hold three public hearings on this proposed rule from 7 to 9 p.m. in the following locations: Brunswick, Georgia on Monday, June 20; Charleston, South Carolina on Tuesday, June 21; and, Morehead City, North Carolina, Thursday, June 23 (see **ADDRESSES**).

ADDRESSES: You may submit comments, identified by the docket number NOAA–NMFS–2015–0157, by any of the following methods:

- Electronic Submissions: Submit all electronic public comments via the Federal eRulemaking Portal. Go to *www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2015-0157* click the ''Comment Now'' icon, complete the required fields, and enter or attach your comments.
- Mail: Assistant Regional Administrator, Protected Resources Division, NMFS, Southeast Regional Office, 263 13th Avenue South, St. Petersburg, FL 33701.

Instructions: You must submit comments by one of the above methods to ensure that we receive, document, and consider them. Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered. All comments received are a part of the public record and will generally be posted to *http://www.regulations.gov* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

NMFS will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous). Attachments to electronic comments will be accepted in Microsoft Word, Excel, WordPerfect, or Adobe PDF file formats only.

Public hearings: The June 20, 2016, public hearing will be held at the Georgia Department of Natural Resources, Coastal Regional Headquarters, 1 Conservation Way, Brunswick, Georgia 31520. The June 21, 2016, public hearing will be held at the South Carolina Department of Natural Resources, Marine Resources Office, 217 Ft. Johnson Road, Charleston, SC 29412. The June 23, 2016, public hearing will be held at the Crystal Coast Civic Center, 2nd Floor, 3505 Arendell St, Morehead City, NC 28557. People needing reasonable accommodations in order to attend and participate or who have questions about the public hearings should contact Andrew Herndon, NMFS, Southeast Regional Office (SERO), as soon as possible (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Jason Rueter, NMFS, Southeast Regional Office, 727–824–5312, *Jason.Rueter@noaa.gov;* Andrew Herndon, Southeast Regional Office, 727–824–5312, *Andrew.Herndon@noaa.gov;* Lisa Manning, NMFS, Office of Protected Resources, 301–427–8466, *Lisa.Manning@noaa.gov.*

SUPPLEMENTARY INFORMATION: In accordance with section 4(b)(2) of the ESA and our implementing regulations (50 CFR 424.12), this proposed rule is based on the best scientific information available concerning the range, biology, habitat, threats to the habitat, and conservation objectives for the Carolina and South Atlantic DPSs of Atlantic sturgeon. We have reviewed the information (*e.g.,* provided in reports, peer-reviewed literature, and technical documents) and have used it to identify physical features essential to the conservation of each DPS, the specific areas within the occupied areas that contain the essential physical features that may require special management considerations or protections, unoccupied areas that are essential to the DPSs' conservation, the federal activities that may impact the essential features or areas, and the potential impacts of designating critical habitat for each DPS. The economic, national security, and other relevant impacts of the proposed critical habitat designations for each DPS are described in the draft document titled, Impact Analysis of Critical Habitat Designation for the Carolina and South Atlantic Distinct Population Segments of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). This supporting document is available at *http://sero.nmfs.noaa.gov/protected_resources/sturgeon/index.html* or upon request (see **ADDRESSES**).

Background

In 2012, we listed five DPSs of Atlantic sturgeon under the ESA: four were listed as endangered and one as threatened (77 FR 5880 and 5914; February 6, 2012). Two DPSs of Atlantic sturgeon, both endangered, occur within the southeastern United States (Carolina DPS and the South Atlantic DPS; 77 FR 5914; February 6, 2012); and three DPSs

of Atlantic sturgeon (the endangered New York Bight DPS and Chesapeake Bay DPS, and the threatened Gulf of Maine DPS; 77 FR 5880, February 6, 2012) occur in the northeast United States. On March 18, 2014, two non-governmental organizations filed a lawsuit alleging NMFS had violated the ESA by failing to issue proposed and final rules designating critical habitat for Atlantic sturgeon DPSs. Pursuant to a court-ordered settlement agreement, as modified, NMFS agreed to submit proposed rules designating critical habitat for all distinct population segments of Atlantic sturgeon to the **Federal Register** by May 30, 2016. This rule proposing to designate critical habitat for the Carolina and South Atlantic DPSs of Atlantic sturgeon is complemented by a concurrent rule proposing to designate critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs of Atlantic sturgeon.

Atlantic Sturgeon Natural History and Status

There are two subspecies of Atlantic sturgeon—the Gulf sturgeon (*Acipenser oxyrinchus desotoi*) and the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Historically, the Gulf sturgeon occurred from the Mississippi River east to Tampa Bay in Florida. Its present range extends from Lake Pontchartrain and the Pearl River system in Louisiana and Mississippi east to the Suwannee River in Florida. The Gulf sturgeon was listed as threatened under the ESA in 1991. This proposed rule addresses the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), which is distributed along the eastern coast of North America. Historically, sightings of Atlantic sturgeon have been reported from Hamilton Inlet, Labrador, Canada, south to the St. Johns River, Florida. Reported occurrences south of the St. Johns River, Florida, have been rare but have increased recently with the evolution of acoustic telemetry coupled with increased receiver arrays.

Although there is considerable variability among species, all sturgeon species (order *Acipenseriformes*) have some common life history traits. They all: (1) Occur within the Northern Hemisphere; (2) spawn in freshwater over hard bottom substrates; (3) generally do not spawn annually; (4) are benthic foragers; (5) mature relatively late and are relatively long lived; and, (6) are relatively sensitive to low dissolved oxygen levels (Dees, 1961; Sulak and Clugston, 1999; Billard and Lecointre, 2001; Secor and Niklitschek, 2002; Pikitch *et al.,* 2005).

Atlantic sturgeon have all of the above traits. They occur along the eastern coast of North America from Hamilton Inlet, Labrador, Canada to Cape Canaveral, Florida, USA (Bigelow and Welsh, 1924; Dees, 1961; Vladykov and Greeley, 1963; NMFS and USFWS, 2007; T. Savoy, CT DEEP, pers. comm.). Atlantic sturgeon are a long-lived, late-maturing, estuarine-dependent, anadromous species with a maximum lifespan of up to 60 years, although the typical lifespan is probably much shorter (Sulak and Randall, 2002; Balazik *et al.,* 2010). Atlantic sturgeon reach lengths up to 14 feet (ft) (4.27 meters [m]), and weigh over 800 pounds (363 kilograms). Many datasets demonstrate clinal variation in vital parameters of Atlantic sturgeon populations, with faster growth and earlier age at maturation in more southern systems. Atlantic sturgeon mature between the ages of 5 and 19 years in South Carolina (Smith *et al.,* 1982), between 11 and 21 years in the Hudson River (Young *et al.,* 1988), and between 22 and 34 years in the St. Lawrence River (Scott and Crossman, 1973). Atlantic sturgeon likely do not spawn every year. Multiple studies have shown that spawning intervals range from 1 to 5 years for males (Smith, 1985; Collins *et al.,* 2000; Caron *et al.* 2002) and 2 to 5 years for females (Vladykov and Greeley, 1963; Van Eenennaam *et al.,* 1996; Stevenson and Secor, 1999). Fecundity of Atlantic sturgeon has been correlated with age and body size, with egg production ranging from 400,000 to 8 million eggs per year (Smith *et al.,* 1982; Van Eenennaam and Doroshov, 1998; Dadswell, 2006). The average age at which 50 percent of maximum lifetime egg production is achieved is estimated to be 29 years, approximately 3 to 10 times longer than for other bony fish species examined (Boreman, 1997).

Analysis of stomach contents for adults, subadults (*i.e.,* sexually immature Atlantic sturgeon that have emigrated from the natal estuary), and juveniles (*i.e.,* sexually immature Atlantic sturgeon that have not yet emigrated from the natal estuary) confirms that Atlantic sturgeon are benthic foragers (Ryder, 1888; Bigelow and Schroeder, 1953; Johnson *et al.,* 1997; Secor *et al.,* 2000; NMFS and USFWS, 2007; Guilbard *et al.,* 2007; Hatin *et al.,* 2007; Savoy, 2007; Dzaugis, 2013; McLean *et al.,* 2013).

An anadromous species, Atlantic sturgeon spawn in freshwater of rivers that flow into a coastal estuary. Spawning adults migrate upriver in the spring, typically during February and March in southern systems, April and May in mid-Atlantic systems, and May and July in Canadian systems (Murawski and Pacheco, 1977; Smith, 1985; Bain, 1997; Smith and Clugston, 1997; Caron *et al.,* 2002). A fall spawning migration has been hypothesized for many years (Rogers and Weber, 1995; Weber and Jennings, 1996; Moser *et al.,* 1998) and was recently verified in the Roanoke River, North Carolina, and the Altamaha River, Georgia (Smith et. al., 2015; Ingram and Peterson in Post *et al.,* 2014). There is also a growing body of evidence that some Atlantic sturgeon river populations have two spawning seasons comprised of different spawning adults (Darden in Post *et al.,* 2014; Balazik and Musick, 2015).

Spawning typically occurs in flowing water upriver of the salt front of estuaries and below the fall line of large rivers (Borodin, 1925; Leland, 1968; Scott and Crossman, 1973; Crance, 1987; Bain *et al.,* 2000). The fall line is the boundary between an upland region of continental bedrock and an alluvial coastal plain, sometimes characterized by waterfalls or rapids. Spawning sites are well-oxygenated areas with flowing water ranging in temperature from 13 °Celsius (C; 55 °F (F)) to 26 °C (79 °F), and hard bottom substrate such as cobble, coarse sand, hard clay, and bedrock (Ryder, 1888; Dees, 1961; Vladykov and Greeley, 1963; Scott and Crossman, 1973; Gilbert, 1989; Smith and Clugston, 1997; Bain *et al.* 2000; Collins *et al.,* 2000; Balazik *et al.* 2012; Hager *et al.* 2014). Depth at which fish spawn and water depth leading to spawning sites may be highly variable. Atlantic sturgeon in spawning condition have been tracked and captured at depths up to 27m (Borodin 1925; Dees 1961; Hatin *et al.,* 2002; Balazik *et al.,* 2012; Hager *et al.,* 2014).

Within minutes of being fertilized, the eggs become sticky and adhere to the substrate for the relatively short and temperature-dependent period of larval development (Ryder, 1888; Vladykov and Greeley, 1963; Murawski and Pacheco, 1977; Smith *et al.,* 1980; Van den Avyle, 1984; Mohler, 2003). Hatching occurs approximately 94 to 140 hours after egg deposition at temperatures of 68.0 °F to 64.4 °F (20 to 18 °C), respectively. The newly emerged larvae assume a demersal existence (Smith *et al.,* 1980). The yolk sac larval stage is completed in about 8 to 12 days, during which time the larvae move downstream to rearing grounds (Kynard and Horgan, 2002). During the first half of their migration downstream, movement occurs only at night. During the day, larvae use benthic structure (*e.g.,* gravel matrix) as refuge (Kynard and Horgan, 2002). During the latter half

of migration, when larvae are more fully developed, movement to rearing grounds occurs during both the day and night.

Larval Atlantic sturgeon (*i.e.,* less than 4 weeks old, with total lengths (TL) less than 30 mm; Van Eenennaam *et al.,* 1996) are assumed to inhabit the same areas where they were spawned and live at or near the bottom (Ryder, 1888; Smith *et al.,* 1980; Bain *et al.,* 2000; Kynard and Horgan, 2002; Greene *et al.,* 2009). The best available information for behavior of larval Atlantic sturgeon is described from hatchery studies. Upon hatching, larvae are nourished by the yolk sac, are mostly pelagic (*e.g.,* exhibit a ''swim-up and drift-down'' behavior in hatchery tanks; Mohler, 2003), and move away from light (*i.e.,* negative photo-taxis; Kynard and Horgan, 2002; Mohler, 2003). Within days, larvae exhibit more benthic behavior until the yolk sac is absorbed at about 8 to 10 days post-hatching (Kynard and Horgan, 2002; Mohler, 2003). Post-yolk sac larvae occur in the water column but feed at the bottom of the water column (Mohler, 2003; Richardson *et al.,* 2007).

The next phase of development, referred to as the juvenile stage, lasts months to years in brackish waters of the natal estuary (Holland and Yelverton, 1973; Dovel and Berggen, 1983; Waldman *et al.,* 1996; Shirey *et al.,* 1997; Collins *et al.,* 2000; Secor *et al.,* 2000; Dadswell, 2006; Hatin *et al.,* 2007; NMFS and USFWS, 2007; Calvo *et al.,* 2010; Schueller and Peterson, 2010). Juveniles occur in oligohaline waters (salinity of 0.5 to 5 parts per thousand [ppt]) and mesohaline waters (salinity of 5 to 18 ppt) of the natal estuary during growth and development. They will eventually move into polyhaline waters (salinity of 18–30 ppt) before emigrating to the marine environment. Larger, presumably older, juveniles occur across a broader salinity range than smaller, presumably younger, juveniles (Bain, 1997; Shirey *et al.,* 1997; Haley, 1999; Bain *et al.,* 2000; Collins *et al.,* 2000; Secor *et al.,* 2000; Hatin *et al.,* 2007; McCord *et al.,* 2007; Munro *et al.,* 2007; Sweka *et al.,* 2007; Calvo *et al.,* 2010).

The distribution of Atlantic sturgeon juveniles in the natal estuary is a function of physiological development and habitat selection based on water quality factors of temperature, salinity, and dissolved oxygen (DO), which are inter-related environmental variables. In laboratory studies with salinities of 8 to 15 ppt and temperatures of 12 °C and 20 °C, juveniles less than a year old (also known as young-of-year [YOY]) had reduced growth at 40 percent dissolved oxygen saturation, grew best at 70 percent dissolved oxygen saturation, and selected conditions that supported growth (Niklitschek and Secor, 2009 I; Niklitschek and Secor, 2009 II). Similar results were obtained for age-1 juveniles (*i.e.,* greater than 1 year old and less than 2 years old), which have been shown to tolerate salinities of 33 ppt (*e.g.,* a salinity level associated with seawater), but grow faster in lower salinity waters (Niklitschek and Secor, 2009; Allen *et al.,* 2014). The best growth for both age groups occurred at DO concentrations greater than 6.5 milligrams per liter (mg/L). While specific DO concentrations at temperatures considered stressful for Atlantic sturgeon are not available, instantaneous minimum DO concentrations of 4.3 mg/L protect survival of shortnose sturgeon at temperatures greater than 29 °C (EPA, 2003). However, data from Secor and Niklitschek (2001) show that shortnose sturgeon are more tolerant of higher temperatures than Atlantic sturgeon, and the ''high temperature'' for Atlantic sturgeon is actually considered 26 °C (Secor and Gunderson, 1998).

Once suitably developed, Atlantic sturgeon leave the natal estuary and enter marine waters (*i.e.,* waters with salinity greater than 30 ppt) which marks the beginning of the subadult life stage. In the marine environment, subadults mix with adults and subadults from other river systems (Bowen and Avise, 1990; Wirgin *et al.,* 2012; Waldman *et al.,* 2013; O'Leary *et al.,* 2014). Atlantic sturgeon travel long distances in marine waters, aggregate in both ocean and estuarine areas at certain times of the year, and exhibit seasonal coastal movements in the spring and fall (Vladykov and Greeley, 1963; Oliver *et al.,* 2013).

The exact spawning locations for Carolina and South Atlantic DPS Atlantic sturgeon are unknown but inferred based on the location of freshwater, hard substrate, water depth, tracking of adults to upriver locations and the behavior of adults at those locations, historical accounts of where the caviar fishery occurred, capture of young-of-year and, in limited cases, capture of larvae and eggs. Spawning sites at multiple locations within the tidal-affected river likely help to ensure successful spawning given annual changes in the location of the salt wedge.

Critical Habitat Identification and Designation

Critical habitat represents the habitat essential for the species' recovery and provides for the conservation of listed species in several ways (78 FR 53058, August 28, 2013). For example, specifying the geographic location of critical habitat facilitates implementation of Section 7(a)(1) of the ESA by identifying areas where Federal agencies can focus their conservation programs and use their authorities to further the purposes of the ESA. Designating critical habitat also provides a significant regulatory protection by ensuring that the Federal Government considers the effects of its actions in accordance with Section 7(a)(2) of the ESA and avoids or modifies those actions that are likely to destroy or adversely modify critical habitat. This requirement is in addition to the Section 7 requirement that Federal agencies ensure that their actions are not likely to jeopardize the continued existence of ESA-listed species. Critical habitat requirements do not apply to citizens engaged in activities on private land that do not involve a Federal agency. However, designating critical habitat can help focus the efforts of other conservation partners (*e.g.,* State and local governments, individuals and nongovernmental organizations).

Section 3(5)(A) of the ESA defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the ESA, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species (16 U.S.C. 1532[5][A]). Conservation is defined in Section 3 of the ESA as ''to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary'' (16 U.S.C. 1532[3]). Therefore, critical habitat is the habitat essential for the species' recovery. However, Section 3(5)(C) of the ESA clarifies that except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.

To identify and designate critical habitat, we considered information on the distribution of Atlantic sturgeon, the major life stages, habitat requirements of

those life stages, and conservation objectives that can be supported by identifiable physical or biological features (hereafter also referred to as ''PBFs'' or ''essential features''). In the final rule listing the Carolina and South Atlantic DPSs of Atlantic sturgeon (77 FR 5978, February 6, 2012), habitat curtailment and alteration, bycatch in commercial fisheries, and inadequacy of existing regulatory mechanisms were found to be the threats contributing to the endangered status of both DPSs. The Carolina and South Atlantic DPSs were found to be at 3% and 6% of their historical abundances, respectively, due to these threats. Therefore, we evaluated physical and biological features of the marine, estuarine, and riverine habitats of Atlantic sturgeon to determine what features are essential to the conservation of each DPS.

Accordingly, our step-wise approach for identifying potential critical habitat areas for the Carolina and South Atlantic DPSs was to determine: the geographical area occupied by each DPS at the time of listing; the physical or biological features essential to the conservation of the DPSs; whether those features require special management considerations or protection; the specific areas of the occupied geographical area where these features occur; and, whether any unoccupied areas are essential to the conservation of either DPS.

Geographical Area Occupied by the Species

''Geographical area occupied'' in the definition of critical habitat is interpreted to mean the entire range of the species at the time it was listed, inclusive of all areas they use and move through seasonally (81 FR 7413; February 11, 2016). The marine ranges of the Carolina and South Atlantic DPSs of Atlantic sturgeon extend from the Hamilton Inlet, Labrador, Canada, to Cape Canaveral, Florida (77 FR 5880, February 6, 2012). We did not consider geographical areas within Canadian jurisdiction (*e.g.,* Minas Basin, Bay of Fundy), because we cannot designate critical habitat areas outside of U.S. jurisdiction (50 CFR 424.12(g)).

The listing rule identified the known spawning rivers for each of the Atlantic sturgeon DPSs but did not describe the in-river ranges for the DPSs. The river ranges of each DPS consist of all areas downstream of either the fall line or the first obstacle to upstream migration (*e.g.,* the lowest hydropower dam without fish passage for sturgeon) on each river within the range of the DPS. We identified the Carolina DPS freshwater range as occurring in the watersheds from the Roanoke River southward along North Carolina and South Carolina coastal areas to the Cooper River, South Carolina. The South Atlantic DPS freshwater range occurs from the Ashepoo-Combahee-Edisto (ACE) Basin in South Carolina to the St. Johns River, Florida.

Physical or Biological Features Essential for Conservation That May Require Special Management or Protection

Within the geographical area occupied, critical habitat consists of specific areas on which are found those PBFs essential to the conservation of the species and that may require special management considerations or protection. PBFs are defined as the features that support the life-history needs of the species, including water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. 50 CFR 424.02.

Within the area occupied by Atlantic sturgeon, we considered the various types of habitat utilized by the DPSs for various life functions. Atlantic sturgeon spend the majority of their adult lives in offshore marine waters. They are known to travel extensively up and down the East Coast. As summarized in a number of summary documents including the Atlantic Sturgeon Status Review (NMFS and USFWS, 2007) and the Atlantic States Marine Fisheries Commission's (ASMFC) review of Atlantic coast diadromous fish habitat (Green *et al.,* 2009), Atlantic sturgeon are benthic foragers and prey upon a variety of species in marine and estuarine environments (Bigelow and Schroeder, 1953; Scott and Crossman, 1973; Johnson *et al.,* 1997; Guilbard *et al.,* 2007; Savoy, 2007; Dzaugis, 2013; McLean *et al.,* 2013). In the ocean, Atlantic sturgeon typically occur in waters less than 50 m deep, travel long distances, exhibit seasonal coastal movements, and aggregate in estuarine and ocean waters at certain times of the year (Vladykov and Greeley, 1963; Holland and Yelverton 1973; Dovel and Berggren, 1983; Dadswell *et al.,* 1984; Gilbert, 1989; Johnson *et al.,* 1997; Rochard *et al.,* 1997; Kynard *et al.,* 2000; Savoy and Pacileo, 2003; Eyler *et al.,* 2004; Stein *et al.,* 2004; Dadswell, 2006; Eyler, 2006; Laney *et al.,* 2007; NMFS and USFWS, 2007; Dunton *et al.,* 2010; Erickson *et al.,* 2011; Dunton *et al.,* 2012; Oliver *et al.,* 2013; Wirgin *et al.,* 2015). Several winter congregations of Atlantic sturgeon in the marine environment are known to occur, though the exact location and importance of those areas in the southeast is not known, nor whether Atlantic sturgeon are drawn to particular areas based on physical or biological features of the habitat. While we can identify general movement patterns and behavior in the marine environment (*e.g.,* aggregating behavior), due to the paucity of data on the DPSs' offshore needs and specific habitat utilization, we could not at this time identify PBFs essential to conservation in the marine environment for the Carolina or South Atlantic DPSs.

Atlantic sturgeon utilize estuarine areas for foraging, growth, and movement. Atlantic sturgeon subadults and adults in non-spawning condition use estuarine waters seasonally, presumably for foraging opportunities, although evidence in the form of stomach content collection and analysis is limited (Savoy and Pacileo, 2007; Dzaugis, 2013). We considered all studies that have collected Atlantic sturgeon stomach contents. All of the prey species identified are indicative of benthic foraging, but different types of prey were consumed and different substrates were identified for the areas where Atlantic sturgeon were foraging (Bigelow and Schroeder, 1953; Johnson *et al.,* 1997; NMFS and USFWS, 2007; Guilbard *et al.,* 2007; Savoy, 2007; Dzaugis, 2013; McLean *et al.,* 2013). Adding to our uncertainty of the essential features that support successful foraging for growth and survival of subadults and adults, Atlantic sturgeon move between estuarine environments in the spring through fall and can occur in estuarine environments during the winter as well (Savoy and Pacileo, 2003; Simpson, 2008; Collins *et al.,* 2000; Balazik *et al.,* 2012). Subadult Atlantic sturgeon spawned in one riverine system may utilize multiple estuaries for foraging and growth, including those not directly connected to their natal river. The benthic invertebrates that comprise the diet of Atlantic sturgeon are found in soft substrates that are common and widespread in most estuaries. Limited data are available to differentiate areas of preferred prey items or higher prey abundance within or across estuaries. Due to the paucity of data on specific habitat or resource utilization, we could not at this time identify any specific

PBFs essential for the conservation of the Carolina and South Atlantic DPSs that support adult and subadult foraging in estuarine or marine environments.

Atlantic sturgeon spawning behavior and early life history have been extensively studied and are fairly well understood, though the exact location of spawning sites on many rivers (particularly in the Southeast) is not known, or can change from time to time as water depth and substrate availability changes. However, there is substantial information in the scientific literature indicating the physical characteristics of Atlantic sturgeon spawning and early life history habitat. Therefore, to evaluate potential critical habitat, we focused on identifying the physical or biological features that support Atlantic sturgeon reproduction and survival of early life stages.

The scientific literature indicates that Atlantic sturgeon spawning occurs well upstream, at or near the fall line of rivers, over hard substrate consisting of rock, pebbles, gravel, cobble, limestone, or boulders (Gilbert, 1989; Smith and Clugston, 1997). Hard substrate is required so that highly adhesive Atlantic sturgeon eggs have a surface to adhere to during their initial development and young fry can utilize the interstitial spaces between rocks, pebbles, cobble, etc., to hide from predators during downstream movement and maturation (Gilbert, 1989; Smith and Clugston, 1997).

Very low salinity (*i.e.,* 0.0–0.5 ppt) is another important feature of Atlantic sturgeon spawning habitat. Exposure to even low levels of salinity can kill Atlantic sturgeon during their first few weeks of life, thus their downstream movement is limited until they can endure brackish waters (Bain *et al.,* 2000). Shortnose sturgeon tend to spawn 200–300 km upriver, preventing the youngest life stages from salt exposure too early in their development (Parker and Kynard, 2005; Kynard, 1997). Parker and Kynard (2005) also noted that long larval/early juvenile downstream movement is common in both shortnose sturgeon from the Savannah River and Gulf sturgeon (a sub-species of Atlantic sturgeon), and that this may be a widespread adaptation of sturgeon inhabiting river systems in the southern United States. Due to their similar life history, Atlantic sturgeon most likely adapted a similar spawning strategy. Therefore, it is essential that the spawning area has low salinity, and that the spawning location is far enough upstream to allow newly-spawned Atlantic sturgeon to develop and mature on their downstream movement before encountering saline water. During their downstream movement, it is important for developing fish to forage in areas of soft substrate and to encounter transitional salinity zones to allow physiological adaptations to higher salinity waters.

Minimum water depths for Atlantic sturgeon spawning are necessary to: (1) Allow adult fish to access spawning substrate, (2) adequately hydrate and aerate newly deposited eggs, and (3) facilitate successful development and downstream movement of newly spawned Atlantic sturgeon. However, water depth at these important spawning areas in the Southeast can be dynamic and portions of rivers may be dry or have little water at times due to natural seasonal river fluctuations, temporary drought conditions, and/or regulation by manmade structures such as dams; thus, these sites require protection to provide consistent services for sturgeon. The scientific literature indicates that Atlantic sturgeon spawn in water depths from 3–27 m (9.8–88.6 ft) (Borodin, 1925; Leland, 1968; Scott and Crossman, 1973; Crance, 1987; Bain *et al.,* 2000). However, much of this information is derived from studies of Atlantic sturgeon in northern United States and Canadian river systems. Atlantic sturgeon in the Southeast are likely spawning in much shallower water depths based on repeated observations by biologists of sturgeon with lacerations on their undersides from moving into extremely shallow water to spawn on hard substrate. In the Southeast, water depths no less than 1.2 m (4 ft) are deep enough to accommodate the body depth and spawning behavior of adult Atlantic sturgeon.

We considered fluid dynamic features as another potential essential feature of Atlantic sturgeon spawning critical habitat. The scientific literature provides information on the importance of appropriate water velocity within Atlantic sturgeon spawning habitat and provides optimal flows for some rivers. Atlantic sturgeon spawn directly on top of gravel in fast flowing sections often containing eddies or other current breaks. Eddies promote position holding between spawning individuals, trap gametes facilitating fertilization, and diminish the probability of egg dislocation by currents—facilitating immediate adhesion of eggs to the gravel substrate (Sulak and Clugston, 1999). However, velocity data are lacking for many rivers, and where data are available, the wide fluctuations in velocity rates on a daily, monthly, seasonal, and annual basis make it difficult to identify a range of water velocity necessary for the conservation of the species. However, we do know that water flow must be continuous.

Adult Atlantic sturgeon must be able to safely and efficiently move from downstream areas into upstream spawning habitats in order to successfully spawn. In addition, larvae and juvenile Atlantic sturgeon must be able to safely and efficiently travel from the upstream spawning areas downstream to nursery and foraging habitat. Therefore, an essential feature for Atlantic sturgeon spawning is unobstructed migratory pathways for safe movement of adults to and from upstream spawning areas as well as providing safe movement for the larvae and juveniles moving downstream. An unobstructed migratory pathway means an unobstructed river or a dammed river that still allows for passage.

Water quality can be a critically limiting factor to Atlantic sturgeon in the shallow, warm, poorly oxygenated rivers of the southeast United States. Conditions in these river systems can change rapidly, particularly in rivers managed for hydropower production, and conditions can quickly become suboptimal or lethal for sturgeon. We considered essential water quality features that support movement and spawning of adults and growth and development of juvenile Atlantic sturgeon. The distribution of Atlantic sturgeon juveniles in the natal estuary is a function of physiological development and habitat selection based on water quality factors of temperature, salinity, and dissolved oxygen, which are inter-related environmental variables. In laboratory studies with salinities of 8 to 15 parts per thousand and temperatures of 12 °C and 20 °C, juveniles less than a year old (YOY) had reduced growth at 40 percent dissolved oxygen saturation, grew best at 70 percent dissolved oxygen saturation, and selected conditions that supported growth (Niklitschek and Secor, 2009 I; Niklitschek and Secor, 2009 II). Results obtained for age-1 juveniles (*i.e.,* greater than 1 year old and less than 2 years old) indicated that they can tolerate salinities of 33 parts per thousand (*i.e.,* a salinity level associated with seawater), but grow faster in lower salinity waters (Niklitschek and Secor, 2009; Allen *et al.,* 2014). The best growth for both age groups occurred at dissolved oxygen concentrations greater than 6.5 mg/L. While specific dissolved concentrations at temperatures considered stressful for Atlantic sturgeon are not available, instantaneous minimum concentrations of 4.3 mg/L protect survival of shortnose sturgeon at temperatures greater than 29 °C (EPA, 2003). However, data from

Secor and Niklitschek (2001) show that shortnose sturgeon are more tolerant of higher temperatures than Atlantic sturgeon, thus the ''stressful temperature'' for Atlantic sturgeon is considered 26 °C (Secor and Gunderson, 1998).

In summary, within the area occupied by Atlantic sturgeon, we considered the various types of habitat utilized by the species for various life functions. We determined that Atlantic sturgeon spend the majority of their adult lives in offshore marine waters where they are known to travel extensively up and down the East Coast. However, we could not identify any PBFs in marine waters essential for the conservation of the species. We also determined Atlantic sturgeon utilize estuarine areas for foraging, growth, and movement. The ability of subadults to find and access food is necessary for continued survival, growth, and physiological development to the adult life stage. Likewise, given that Atlantic sturgeon mature late and do not necessarily spawn annually, increased adult survival would improve the chances that adult Atlantic sturgeon spawn more than once. Therefore, we determined a conservation objective for the Carolina and South Atlantic DPSs is to increase the abundance of each DPS by facilitating increased survival of all life stages. After examining the information available on spawning and early life history behavior and habitat, we also concluded that facilitating adult reproduction and juvenile and subadult recruitment into the adult population are other conservation objectives for the Carolina and South Atlantic DPSs of Atlantic sturgeon. We could not identify any specific PBFs essential for the conservation of the species that support adult and subadult foraging in estuarine or marine environments. We determined that protecting spawning areas, juvenile development habitat, the migratory corridors that allow adults to reach the spawning areas and newly spawned sturgeon to make a safe downstream migration, and water quality to support all life stages, will facilitate meeting the conservation objectives discussed above.

Given the biological needs and tolerances, and environmental conditions for Atlantic sturgeon in southeast rivers as summarized above, and the habitat-based conservation objectives, the physical features essential for conservation are:

- Suitable hard bottom substrate (*e.g.,* rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (*i.e.,* 0.0–0.5 ppt range) for settlement of fertilized eggs and refuge, growth, and development of early life stages;
- Transitional salinity zones inclusive of waters with a gradual downstream gradient of 0.5–30 ppt and soft substrate (*e.g.,* sand, mud) downstream of spawning sites for juvenile foraging and physiological development;
- Water of appropriate depth and absent physical barriers to passage (*e.g.,* locks, dams, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) Unimpeded movement of adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and (3) staging, resting, or holding of subadults and spawning condition adults. Water depths in main river channels must be deep enough to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river. Water depths of at least 1.2 m are generally deep enough to facilitate effective adult migration and spawning behavior.
- Water quality conditions, especially in the bottom meter of the water column, with temperature and oxygen values that support: (1) Spawning; (2) annual and inter-annual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment. Appropriate temperature and oxygen values will vary interdependently, and depending on salinity in a particular habitat. For example, 6.0 mg/L D.O. for juvenile rearing habitat is considered optimal, whereas D.O. less than 5.0 mg/L for longer than 30 days is considered suboptimal when water temperature is greater than 25 °C. In temperatures greater than 26 °C, D.O. greater than 4.3 mg/L is needed to protect survival and growth. Temperatures of 13 °C to 26 °C for spawning habitat are considered optimal.

Need for Special Management Considerations or Protection

We concluded that each of the essential features defined above may require special management considerations or protection. Barriers (*e.g.,* dams, tidal turbines) to generate power or control water flow in rivers used by Atlantic sturgeon can damage or destroy bottom habitat needed for spawning and rearing of juveniles, restrict movement of adults to and from spawning grounds, prevent juveniles from accessing the full range of salinity exposure in the natal estuary, and alter water quality parameters, including water depth, temperature and dissolved oxygen, to the detriment of sturgeon reproduction, growth, and survival. Water withdrawals can similarly adversely impact water quality for Atlantic sturgeon spawning, recruitment, and development. Land development and commercial and recreational activities on a river can contribute to sediment deposition that affects water quality necessary for successful spawning and recruitment. A build-up of fine sediments may, for example, reduce the suitability of hard spawning substrate for Atlantic sturgeon egg adherence and reduce the interstitial spaces used by larvae for refuge from predators. Dredging to remove sediment build-up, to deepen harbors and facilitate vessel traffic, or to mine construction materials, may remove or alter hard substrate that is necessary for egg adherence and as refuge for larvae or soft substrate needed for juvenile foraging, and may change the water depth resulting in shifts in the salt wedge within the estuary or change other characteristics of the water quality (*e.g.,* temperature, dissolved oxygen) necessary for the developing eggs, larvae, and juveniles.

The features essential for successful Atlantic sturgeon reproduction and recruitment may also require special management considerations or protection as a result of global climate change. Conditions in Southeast rivers used by sturgeon already threaten the species' survival and recovery due to exceedances of temperature tolerances and the sensitivity of sturgeon to low dissolved oxygen levels; these impacts will worsen as a result of global climate change and predicted warming of the southeast region. Many communities and commercial facilities withdraw water from the rivers containing the features essential to Atlantic sturgeon reproduction. Water withdrawals during drought events can affect flows, depths, and the position of the salt wedge, further impacting the water flow necessary for successful sturgeon reproduction and affect dissolved oxygen levels. Attempts by communities to control water during floods (*e.g.,* spilling water from dams upriver of Atlantic sturgeon spawning and rearing habitat) can similarly alter flows to the point of dislodging fertilized eggs, washing early life stages downstream into more saline habitat before being developmentally ready, and create barriers (*e.g.,* from debris) to upstream and downstream passage of adults and juveniles. We therefore conclude that the physical features essential to the conservation of the Carolina and South Atlantic DPSs may require special

management considerations or protections.

Specific Areas Containing the Essential Features Within the Geographical Area Occupied by the Species

To identify where the essential features occur within areas occupied by Atlantic sturgeon, we reviewed the best available scientific information, including the 2007 Atlantic sturgeon status review (ASSRT, 2007), the ESA listing rules (77 FR 5914; February 6, 2012), scientific research reports, information and data gathered during the peer-review process, and a database developed by the U.S. Geological Survey for mapping environmental parameters within East Coast Rivers to identify sturgeon habitat. We also considered information on the location of sturgeon spawning activity from scientific reports, as active spawning in an area would indicate that the essential features necessary for spawning are likely present. Information on documented spawning in specific areas in the Southeast is rare, but some does exist. For example, large sections of the Altamaha River have been found to support Atlantic sturgeon spawning activities for many years (Peterson *et al.,* 2006; Peterson *et al.,* 2008). We reviewed reports from a NMFS-funded multi-year, multi-state research project on movement and migration of Atlantic sturgeon (Species Recovery Grant number NA10NMF4720036, Post *et al.,* 2014). In these reports, researchers determined which portions of Southeastern rivers support spawning activities by looking at the upriver extent of sturgeon movements during spawning season.

There are large areas of most rivers where data are still lacking. The available data also represent a snapshot in time, while the exact location of a habitat feature may change over time (*e.g.,* water depth fluctuates seasonally, as well as annually, and even hard substrate may shift position). For example, some data indicate a change in substrate type with in a given location from year to year (*e.g.,* from sand to gravel). It is not always clear whether such changes are due to an actual shift in substrate sediments or if the substrate sample was collected in a slightly different location between samplings. Although the habitat features may vary even at the same location, if any of the available data regarding a particular feature fell within the suitable range (*i.e.,* salinity of 0–0.5 ppt, water depths from 1.2–27 m, or hard substrate [gravel, cobble, etc.]), we considered that the essential feature is present in the area.

When data were not available for certain rivers or portions of occupied rivers, we used our general knowledge of Atlantic sturgeon spawning and applied river-specific information to determine the location of features essential to spawning. We considered salinity tolerance during the earliest life stages to determine appropriate habitat for larvae to develop as they mature. Available telemetry data suggest that most Atlantic sturgeon spawning activity in the Savannah and Altamaha start around river kilometer (RKM) 100 (Post *et al.,* 2014). Similar evidence from the Edisto, Neuse, and Tar-Pamlico rivers indicates spawning activity starts around RKM 80. Peer review comments on the Draft Economic and Biological Information to Inform Atlantic Sturgeon Critical Habitat Designation indicated that Atlantic sturgeon spawn below the fall line, unlike shortnose sturgeon that may spawn well above the fall line.

In order to encompass all areas important for Atlantic sturgeon spawning, reproduction, and recruitment within rivers where spawning is believed to occur or may occur, we identified specific areas of critical habitat from the mouth (RKM 0) of each spawning river to the upstream extent of the spawning habitat. Other than an unexplained report of an Atlantic sturgeon carcass upstream of dams in the Santee Cooper system, we have no evidence that Atlantic sturgeon can pass upstream of dams (*i.e.,* through turbines or fishways for shad and herring) and thus we are considering those upstream areas as unoccupied for the purpose of this rulemaking. Manmade barriers currently restrict upstream movement of Atlantic sturgeon in the Cape Fear, Santee-Cooper, and Savannah River systems. In other rivers, either the fall line, or for those rivers that do not reach the fall line, an easily identifiable landmark (*e.g.,* a bridge) near the headwaters is considered the upstream extent of spawning habitat.

To identify specific habitats used by an Atlantic sturgeon DPS in occupied rivers, we considered available information that described: (1) Capture location and/or tracking locations of Atlantic sturgeon identified to its DPS by genetic analysis; (2) capture location and/or tracking locations of adult Atlantic sturgeon identified to its DPS based on the presence of a tag that was applied when the sturgeon was captured as a juvenile in its natal estuary; (3) capture or detection location of adults in spawning condition (*i.e.,* extruding eggs or milt) or post-spawning condition (*e.g.,* concave abdomen for females); (4) capture or detection of YOY and other juvenile age classes; and, (5) collection of eggs or larvae.

Large Coastal Rivers that Lack Essential Features

Several large coastal rivers within the geographic area occupied by the Carolina and South Atlantic DPSs of Atlantic sturgeon do not appear to support spawning and juvenile recruitment or to contain suitable habitat features to support spawning. These rivers are the Chowan and New Rivers in North Carolina; the Waccamaw (above its confluence with Bull Creek which links it to the Pee Dee River), Sampit, Ashley, Ashepoo, and Broad-Coosawhatchie Rivers in South Carolina; and the St. Johns River, Florida. We have no information, current or historic, of Atlantic sturgeon using the Chowan and New Rivers in North Carolina. Recent telemetry work by Post *et al.* (2014) indicates that Atlantic sturgeon do not utilize the Sampit, Ashley, Ashepoo, and Broad-Coosawhatchie Rivers in South Carolina. These rivers are short, coastal plains rivers that most likely do not contain suitable habitat for Atlantic sturgeon. Post *et al.* (2014) also found Atlantic sturgeon only use the portion of the Waccamaw River downstream of Bull Creek. Due to man-made structures and alterations, spawning areas in the St. Johns River are not accessible and therefore do not support a reproducing population. For these reasons, we are not designating these coastal rivers, or portions of the rivers, as critical habitat. For rivers we are proposing to designate as critical habitat, we have historical or current information that they support spawning and juvenile recruitment as described below.

Roanoke River

The Roanoke River was identified as a spawning river for Atlantic sturgeon based on the capture of juveniles, the collection of eggs, and the tracking location of adults. Further, there was information indicating the historical use of the Roanoke River by Atlantic sturgeon.

Atlantic sturgeon were historically abundant in the Roanoke River and Albemarle Sound, but declined dramatically in response to intense fishing effort in the late 1800's (Armstrong and Hightower, 2002). There is still a population present in the Albemarle Sound and Roanoke River (Armstrong and Hightower, 2002; Smith *et al.,* 2014). DNA analyses of juveniles captured in Albemarle Sound indicate that these fish are genetically distinct from Atlantic sturgeon collected in

other systems (Wirgin *et al.,* 2000; King *et al.,* 2001).

Historical records and recent research provide accounts of Atlantic Sturgeon spawning within the fall zone (RKM 204–242) of the Roanoke River (Yarrow, 1874; Worth, 1904; Armstrong and Hightower, 2002; Smith *et al.,* 2014). Atlantic sturgeon remains from archaeological sites on the Roanoke River have been found as far upstream as RKM 261, approximately 19 miles above the upper end of the fall zone (Armstrong and Hightower, 2002; VanDerwarker, 2001); however, that was prior to the construction of dams now located throughout the river. The farthest downstream dam, the Roanoke Rapids Dam, is located near the fall line at RKM 221. No fish passage exists at this dam, so all Atlantic sturgeon are restricted to the lower 17 RKM of fall zone habitat, which extends from the Roanoke Rapids Dam to Weldon, North Carolina at RKM 204 (Armstrong and Hightower, 2002; Smith *et al.,* 2014).

Historic and current data indicate that spawning occurs in the Roanoke River, where both adults and small juveniles have been captured. Since 1990, the North Carolina Division of Marine Fisheries (NCDMF) has conducted the Albemarle Sound Independent Gill Net Survey (IGNS). From 1990 to 2006, 842 sturgeon were captured ranging from 15.3 to 100 centimeters (cm) fork length (FL), averaging 47.2 cm FL. One hundred and thirty-three (16%) of the 842 sturgeon captured were classified as YOY (41 cm TL, 35 cm FL); the others were subadults (ASSRT, 2007). A recent study by Smith *et al.* (2014), using acoustic telemetry data and egg collection during the fall of 2013, identified a spawning location near Weldon, North Carolina (RKM 204). The location contains the first shoals encountered by Atlantic sturgeon as they move upstream to spawn (Smith *et al.,* 2014). The channel in this area is approximately 100 m wide and the substrate is primarily bedrock, along with fine gravel and coarse sediments in low-flow areas (Smith *et al.,* 2014). During the study, 38 eggs were collected during 21 days that spawning pads were deployed (Smith *et al.,* 2014).

A scientific survey also shows the presence of adult Atlantic sturgeon in the Roanoke River. Using side-scan sonar, Flowers and Hightower (2015) conducted surveys near the freshwater-saltwater interface with repeated surveys performed over 3 days. The surveys detected 4 Atlantic sturgeon greater than 1 m total length. Based on these detections, an abundance estimate for riverine Atlantic sturgeon of 10.9 (95% confidence interval 3–36) fish greater than 1 m was calculated for the Roanoke River. This estimate does not account for fish less than 1 m total length, occurring in riverine reaches not surveyed, or in marine waters.

Tar-Pamlico River

The Tar-Pamlico River was identified as a spawning river for Atlantic sturgeon based on the evidence of spawning and the capture of juveniles. The Tar-Pamlico River, one of two major tributaries to Pamlico Sound, is dammed. However, all riverine habitat is accessible to Atlantic sturgeon in the Tar-Pamlico River, because the lower-most dam, the Rocky Mount Mill Pond Dam (RKM199), is located at the fall line.

Evidence of spawning was reported by Hoff (1980), after the capture of very young juveniles in the Tar River. Two juveniles were observed dead on the bank of Banjo Creek, a tributary to the Pamlico System (ASSRT, 2007). A sampling program similar to the Albemarle Sound IGNS collected 14 Atlantic sturgeon in 2004. These fish ranged in size from 460 to 802 mm FL and averaged 575 mm FL. The NCDMF Observer Program reported the capture of 12 Atlantic sturgeon in the Pamlico Sound from April 2004 to December 2005; these fish averaged 600 mm TL(ASSRT, 2007).

Neuse River

The Neuse River was identified as a spawning river for Atlantic sturgeon based on the evidence of spawning and the capture of juveniles. Evidence of spawning was reported by Hoff (1980), who noted captures of very young juveniles in the Neuse River. An independent gill net survey was initiated in 2001 following the Albemarle Sound IGNS methodology. Collections were low during the periods of 2001–2003, ranging from zero to one fish/year. However, in 2004, this survey collected 14 Atlantic sturgeon ranging from 460 to 802 mm FL, and averaging 575 mm FL. During the same time period (2002–2003), four Atlantic sturgeon (561–992 mm FL) were captured by North Carolina State University personnel sampling in the Neuse River (Oakley, 2003). Similarly, the NCDMF Observer Program documented the capture of 12 Atlantic sturgeon in the Pamlico Sound from April 2004 to December 2005; none of these were YOY or spawning adults, averaging approximately 600 mm TL (ASSRT, 2007).

Cape Fear River System

The Cape Fear and Northeast Cape Fear Rivers were identified as spawning rivers for Atlantic sturgeon based on the capture of juveniles, the capture of adults in spawning condition, and the tracking location of adults, and information indicating the historical use by Atlantic sturgeon. In the late 1800's, the Cape Fear River had the largest landings of sturgeon in the southeastern United States (Moser and Ross, 1995). While species identification (*i.e.,* shortnose or Atlantic sturgeon) is not possible, these landings suggest large populations of both species. The Cape Fear River is tidally influenced by diurnal tides up to at least RKM 96. The River is also dredged extensively to maintain a depth of 12 m up to RKM 49 and then a depth of 4 m up to Lock and Dam 1. There are numerous deep holes (>10 m) throughout this extent.

A gill net survey for adult shortnose and juvenile Atlantic sturgeon was conducted in the Cape Fear River drainage from 1990 to 1992, and replicated from 1997 to 2005. Each sampling period included two overnight sets. The 1990–1992 survey captured 100 Atlantic sturgeon below Lock and Dam #1 (RKM 95). In 1997, 16 Atlantic sturgeon were captured below Lock and Dam #1, an additional 60 Atlantic sturgeon were caught in the Brunswick (a tributary of the Cape Fear River), and 12 were caught in the Northeast Cape River (Moser *et al.* 1998). Additionally, Ross *et al.* (1988 in Moser and Ross, 1995) reported the capture of a gravid female in the Cape Fear River.

Recent telemetry work conducted in the Cape Fear and Northeast Cape Fear River showed that subadult Atlantic sturgeon movement and distribution followed seasonal patterns (Loeffler and Collier in Post *et al.,* 2014). During summer months, Atlantic sturgeon distribution was shifted upriver with limited large-scale movements; during the coldest time of year, subadult fish were absent from the rivers and had migrated to the estuary or ocean (Loeffler and Collier in Post *et al.,* 2014). The high inter-annual return rates of tagged fish to the system demonstrate that Atlantic sturgeon have fidelity to these rivers; this implies that the Cape Fear River system may be the natal system for these fish (Loeffler and Collier in Post *et al.,* 2014).

Further evidence of the importance of this system is demonstrated by the movement patterns of one of five adult Atlantic sturgeon tagged during the study that has shown site fidelity. This individual fish was in ripe and running condition at the time of tagging. This fish subsequently returned to the Cape Fear system each of the following years (2013 and 2014) and has been detected farther upstream in both the Cape Fear

(RKM 95) and Northeast Cape Fear (RKM 132) rivers than any tagged subadult fish during this study. This fish did not use the fish passage rock arch ramp at Lock and Dam #1; however, at the time when it was present at the base of the dam, the rock arch ramp structure was only partially complete. In all years of the study this fish had movement patterns that are consistent with spawning behavior and demonstrate that both the Northeast Cape Fear and Cape Fear Rivers may be important spawning areas. While telemetry data have not indicated Atlantic sturgeon presence above Lock and Dam #1, we believe the fish passage present at the dam is successful or that fish pass through the lock. We base this determination on reports of Atlantic sturgeon above Lock and Dam #1 (J. Hightower, NCSU, pers. comm. To J. Rueter, NMFS, July 21, 2015).

Pee Dee River System

The Pee Dee River System was identified as providing spawning habitat used by Atlantic sturgeon based on the capture of juveniles, the capture of adults in spawning condition, and the tracking location of adults. Captures of age-1 juveniles from the Waccamaw River during the early 1980s suggest that a reproducing population of Atlantic sturgeon existed in that river, although the fish could have been from the nearby Pee Dee River (Collins and Smith1997). In 2003 and 2004, nine Atlantic sturgeon (48.4–112.2 cm FL) were captured in the Waccamaw River during the South Carolina Department of Natural Resources annual American shad gill net survey. While these fish were not considered YOY, Collins *et al.* (1996) note that unlike northern populations, in South Carolina, YOY are considered to be less than 50 cm TL or 42.5 cm FL, because growth rates are greater in the warmer southern waters compared to cooler northern waters. Therefore, the capture of a 48.4 cm FL sturgeon provides some evidence that YOY may be present in the Waccamaw River. Based on telemetry data, these YOY were thought to have been spawned in the Pee Dee River, and then traveled downstream through Bull Creek, and into the Waccamaw River. (B. Post, SCDNR, pers. comm. to J. Rueter, NMFS, July 9, 2015).

Based on preliminary analyses of sturgeon detections during their study, Post *et al.* (2014) concluded the Pee Dee River system appears to be utilized by Atlantic sturgeon for summer/winter seasonal habitat as well as for spawning. From 2011 to 2014, 41 sturgeon were detected in upstream areas of the Pee Dee River that considered spawning areas. All 10 Atlantic sturgeon that were originally implanted with transmitters in the Pee Dee System were later detected displaying upstream and downstream movement. Distinct movement patterns were evident for these fish as similar patterns were observed each year of the study period. Two of the 10 fish originally tagged in the Pee Dee System and many tagged fish from other systems made spawning runs in the Pee Dee River (Post *et al.,* 2014).

Black River, South Carolina

The Black River was identified as a spawning river for Atlantic sturgeon based on the capture of juveniles and the tracking location of adults. During a telemetry study from 2011 to 2014, Post *et al.* (2014) detected 10 juveniles and 10 adults utilizing the Black River. An adult male was detected at the last receiver station in the river one year (RKM 70.4) and the next to last receiver station in a subsequent year. While the receiver stations were not at the fall line, they were very far upriver, and it is likely that the only reason this fish traveled so far upriver was to spawn (B. Post, SCDNR, pers. comm. to J. Rueter, NMFS PRD, July 9, 2015). Juveniles were located as far upstream as RKM 42.1, suggesting the Black River is also an important foraging/refuge habitat.

Santee and Cooper Rivers

The Santee-Cooper River system was identified as a spawning river system for Atlantic sturgeon based on the capture of YOY. The Santee River basin is the second largest watershed on the Atlantic Coast of the United States; however with the completion of Wilson Dam in the 1940s, upstream fish migrations were restricted to the lowermost 145 RKMs of the Santee River. Following construction of the Wilson and Pinopolis Dams, the connectivity between the coastal plain and piedmont was lost. In the 1980s, a fish passage facility at the St. Stephen powerhouse, designed to pass American shad and blueback herring, was completed that attempted to restore connectivity throughout the system. (Fish passage and fishway mean any structure on or around artificial barriers to facilitate diadromous fishes' natural migration). The passage facility has not been successful for Atlantic sturgeon (Post *et al.,* 2014). However, in 2007 an Atlantic sturgeon entered the fish passage facility at the fishway to the lift, presumably in an attempt to migrate upstream to spawn, and was subsequently physically removed and then released downstream into the Santee River (A. Crosby, SCDNR, pers. comm.).

Historically, the Cooper River was a small coastal plain river that fed into Charleston Harbor. The completion of the Santee Cooper hydropower project in the 1940s dramatically changed river discharge in the Cooper River. From the 1940s into the 1980s, nearly all river discharge of the Santee River was diverted through the Santee Cooper project, run through the hydroelectric units in Pinopolis Dam, and discharged down the Tailrace Canal and into the Cooper River. In the 1980s, the Rediversion Project redirected part of the system's discharge back to the Santee River; however, a significant discharge of freshwater still flows into the Cooper River. The Cooper River provides the dominant freshwater input for the Charleston Harbor and provides 77 RKM of riverine habitat (Post *et al.,* 2014).

The capture of 151 subadults, including age-1 fish in 1997 indicates a population exists in the Santee River (Collins and Smith, 1997). Four juvenile Atlantic sturgeon, including YOY, were captured in the winter of 2003 in the Santee (N = 1) and Cooper (N = 3) Rivers (McCord, 2004). These data support the existence of a spawning population, but South Carolina Department of Natural Resources biologists working in the Santee-Cooper system believe the smaller fish are pushed into the system from the Pee Dee and/or Waccamaw River during flooding conditions (McCord, 2004). This hypothesis is based on the lack of access to suitable spawning habitat due to the locations of the Wilson Dam and St. Stephen Powerhouse on the Santee River and the Pinopolis Dam on the Cooper River. Nonetheless, the Santee-Cooper River system appears to be important foraging and refuge habitat and could serve as important spawning habitat once access to historical spawning grounds is restored through a fishway prescription under the Federal Power Act (NMFS 2007).

In a recent telemetry study by Post *et al.* (2014), four Atlantic sturgeon were tagged in the Santee River from 2011 to 2014. Of the four Atlantic sturgeon tagged in the Santee River, one was detected in the river, one was detected at the mouth of the river, and the other two have not been detected in the Santee River system since being tagged. There was no detectable spawning run or pattern of movement for the tagged fish that remained in the Santee River (Post *et al.,* 2014). There were no Atlantic sturgeon captured in the Cooper River during the Post *et al.,* 2014 study. There were seven Atlantic sturgeon detected in the Cooper River that had been tagged in other systems.

The Atlantic sturgeon that were detected in the Cooper River were more commonly detected in the saltwater tidal zone, with the exception of one that made a presumed spawning run to Pinopolis Dam in the fall of 2013 (Post *et al.,* 2014).

Edisto River

The Edisto is the largest river in the Ashepoo, Combahee, Edisto (ACE) Basin; begins in the transition zone between piedmont and coastal plain; and is unimpeded for its entire length. It is the longest free flowing blackwater river in South Carolina. During excessive rainy seasons it will inundate lowlands and swamps, and the flow basin increases to a mile wide or more. The Edisto River was identified as a spawning river for Atlantic sturgeon based on the capture of an adult in spawning condition and capture location and tracking of adults.

Spawning adults (39 in 1998) and YOY (1,331 from 1994–2001) have been captured in the ACE basin (Collins and Smith, 1997; ASSRT, 2007). One gravid female was captured in the Edisto River during sampling efforts in 1997 (ASSRT, 2007). Seventy-six Atlantic sturgeon were tagged in the Edisto River during a 2011 to 2014 telemetry study (Post *et al.,* 2014). Fifty-eight of the 76 Atlantic sturgeon tagged were detected in the Edisto River during the study. Distinct movement patterns of Atlantic sturgeon were evident. Fish entered the river between April and June and were detected in the saltwater tidal zone until water temperature decreased below 25° C. They then moved into the freshwater tidal area, and some fish made presumed spawning migrations in the fall around September–October. Spawning migrations were thought to be occurring based on fish movements upstream to the presumed spawning zone between RKM 78 and 210. Fish stayed in these presumed spawning zones for an average of 22 days. The tagged Atlantic sturgeon left the river system by November. A number of tagged individuals were detected making such movements during multiple years of the study. Only those fish that were tagged in the Edisto River were detected upstream near presumed spawning grounds, while fish detected in the Edisto River, but tagged elsewhere, were not detected near the presumed spawning areas. In the winter and spring, Atlantic sturgeon were generally absent from the system except for a few fish that remained in the saltwater tidal zone (Post *et al.,* 2014).

Combahee—Salkehatchie River

The Combahee—Salkehatchie River was identified as a spawning river for Atlantic sturgeon based on capture location and tracking locations of adults and the spawning condition of an adult. Spawning adults (39 in 1998) and YOY (1,331 from 1994–2001) have been captured in the ACE basin (Collins and Smith, 1997; ASSRT, 2007). One running ripe male was captured in the Combahee River during a sampling program in 1997 (ASSRT, 2007). Seven Atlantic sturgeon were captured and five were tagged during a 2010 and 2011 telemetry study (Post *et al.,* 2014). Atlantic sturgeon that were tagged in the Combahee River were absent from the system for the majority of the study period. An Atlantic sturgeon that was tagged in June of 2011 left the system in the fall of 2011, returned in July 2012 and left the system again in the fall of 2012. This fish was detected the farthest upstream of any tagged Atlantic sturgeon in the Combahee River (RKM 56). Another individual was identified as a running ripe male at capture in the Combahee River in March 2011, was relocated exhibiting spawning behavior in the North East Cape Fear River, NC in March, 2012, and in 2014 was detected from February–April in the Pee Dee System.

Savannah River

The Savannah River was identified as a spawning river for Atlantic sturgeon based on capture location and tracking locations of adults and the collection of larvae. Forty three Atlantic sturgeon larvae were collected in upstream locations (RKM 113–283) near presumed spawning locations (Collins and Smith, 1997). Seven Atlantic sturgeon were also tagged from 2011 to 2014 and distinct movement patterns were evident (Post *et al.,* 2014). In 2011, one individual was detected travelling upstream in mid-April and remained at a presumed spawning area (RKM 200 to 301) through mid-September. Two Atlantic sturgeon migrated into the system and upstream to presumed spawning grounds in 2012. The first entered the system in mid-August and returned downriver in mid-September; the other entered the system in mid-September and returned downriver in mid-October. Four Atlantic sturgeon entered the Savannah River and migrated upstream during the late summer and fall months in 2013. Two Atlantic sturgeon previously tagged in the Savannah River made upstream spawning movements; this was the second year (2011) one of these fish was detected making similar upstream movements. These two fish were also detected immediately upstream of the New Savannah Bluff Lock and Dam (RKM 301). It is unknown if they passed through the lock or swam over the dam during high flows. There is a strong possibility that one fish may have been detected by the receiver directly upstream while still remaining downstream of the dam and while flow control gates were in a full open position. Atlantic sturgeon in the Savannah River were documented displaying similar behavior three years in a row—migrating upstream during the fall and then being absent from the system during spring and summer.

Ogeechee River

The Ogeechee River was identified as a spawning river for Atlantic sturgeon based on tracking of adults and YOY. Seventeen Atlantic sturgeon considered to be YOY (less than 30 cm TL) were collected in 2003 by the Army's Environmental and Natural Resources Division (AENRD) at Fort Stewart, Georgia. An additional 137 fish were captured by the AENRD in 2004. Nine of these fish measured less than 41 cm TL and were considered YOY. During a telemetry study from 2011 to 2014, there were no capture or tagging efforts conducted in the Ogeechee River; however, 40 Atlantic sturgeon were detected in the Ogeechee River (Ingram and Peterson in Post *et al.,* 2014).

Altamaha River

The Altamaha River and its major tributaries the Oconee and Ocmulgee Rivers were identified as spawning rivers for Atlantic sturgeon based on capture location and tracking of adults and the capture of adults in spawning condition. The Altamaha River supports one of the healthiest Atlantic sturgeon subpopulations in the Southeast, with over 2,000 subadults captured in trammel nets, 800 of which were nominally age-1 as indicated by size (ASSRT, 2007). A survey targeting Atlantic sturgeon was initiated in 2003 by the University of Georgia. By October 2005, 1,022 Atlantic sturgeon had been captured using trammel and large gill nets. Two hundred and sixty-seven of these fish were collected during the spring spawning run in 2004 (N = 74 adults) and 2005 (N = 139 adults). From these captures, 308 (2004) and 378 (2005) adults were estimated to have participated in the spring spawning run, representing 1.5% of Georgia's historical spawning stock (females) as estimated from U.S. Fish Commission landing records (Schueller and Peterson 2006, Secor 2002).

In a telemetry study by Peterson *et al.* (2006), most tagged adult Atlantic sturgeon were found between RKM 215 and 420 in October and November when water temperatures were appropriate for spawning. There are swift currents and rocky substrates throughout this stretch of river (Peterson *et al.,* 2006). Two hundred thirteen adults in spawning condition were captured in the Altamaha system in 2004–2005 (Peterson *et al.,* 2006).

Forty-five adult Atlantic sturgeon were captured and tagged from 2011 to 2013 (Ingram and Peterson in Post *et al.,* 2014). Telemetry data from the tagged individuals indicated that the fish were present in the system from April through December. Twenty-six fish made significant (≤ 160 RKM) migrations upstream with eight fish making the migration in at least two of the years and four making the migration in all three years of the study. No site fidelity was apparent based on these data; however, an upriver site near the confluence of the Ocmulgee (RKM 340–350) was visited by multiple fish in multiple years. Fish migrated upstream into both the Ocmulgee and Oconee Rivers, but the majority entered the Ocmulgee River. The maximum extent of these upriver migrations was RKM 408 in the Ocmulgee River and RKM 356 in the Oconee River (Ingram and Peterson in Post *et al.,* 2014).

Two general migration patterns were observed for fish in this system. Early upriver migrations that began in April—May typically occurred in two steps, with fish remaining at mid-river locations during the summer months before continuing upstream in the fall. The late-year migrations, however, were typically initiated in August or September and were generally non-stop. Regardless of which migration pattern was used during upstream migration, all fish exhibited a one-step pattern of migrating downstream in December and early January (Ingram and Peterson in Post *et al.,* 2014).

Satilla River

The Satilla River was identified as a spawning river for Atlantic sturgeon based on the capture of adults in spawning condition. Ong *et al.* (1996) captured four reproductively mature Atlantic sturgeon on spawning grounds during the spawning season in the Satilla River.

St. Marys River

The St. Marys River was identified as a spawning river for Atlantic sturgeon based on the capture of YOY Atlantic sturgeon. Atlantic sturgeon were once thought to be extirpated in the St. Marys River. However, nine Atlantic sturgeon were captured in sampling efforts between May 19 and June 9, 2014. Captured fish ranged in size from 293 mm (YOY) to 932 mm (subadult). This is a possible indication of a slow and protracted recovery in the St. Marys (D. Peterson, UGA, pers. comm. to J. Rueter, NMFS PRD, July 8, 2015).

Unoccupied Critical Habitat Areas

ESA section 3(5)(A)(ii) defines critical habitat to include specific areas outside the geographical area occupied if the areas are determined by the Secretary to be essential for the conservation of the species. Our regulations at 50 CFR 424.12(g) also state: ''The Secretary will not designate critical habitat within foreign countries or in other areas outside of the jurisdiction of the United States.'' At the present time, the geographical area occupied by the Carolina and South Atlantic DPS of Atlantic sturgeon which is within the jurisdiction of the United States is limited to waters off the U.S. east coast from Maine through Florida, seaward to the boundary of the U.S. Exclusive Economic Zone, and upstream in freshwater systems to the fall line or the first impediment to fish passage. We have identified three areas outside the geographical area occupied by these species that are essential for their conservation, and therefore are proposing to designate these unoccupied areas as critical habitat for the Carolina and South Atlantic DPS of Atlantic sturgeon. For the Carolina DPS, we have identified the Cape Fear River from Huske Lock and Dam (Lock and Dam #3) downstream to Lock and Dam #2. We also identified the rivers of the Santee-Cooper basin from the Parr Shoals Dam on the Broad River and the Wateree Dam on the Wateree River downstream to the Wilson Dam and St. Stephen Powerhouse on the Santee River and Pinopolis Dam on the Cooper River. For the South Atlantic DPS we have identified the Savannah River from the Augusta Diversion Dam downstream to the New Savannah Bluff Lock and Dam.

As stated previously, the key habitat-based conservation objectives for these DPSs are facilitating adult reproduction and facilitating recruitment into the adult population by protecting spawning areas, juvenile development habitat, and the migratory corridors that allow adults to reach the spawning areas and newly spawned sturgeon to make a safe downstream movement. To successfully fulfill these conservation objectives, the areas above the dams on these three systems need to be protected until it becomes accessible to the species. Available data suggest that these unoccupied areas did historically, or could, serve as spawning habitat for Atlantic sturgeon should they become accessible in the future.

Telemetry data from the Cape Fear River discussed above (Loeffler and Collier in Post *et al.,* 2014) indicate that Atlantic sturgeon make spawning movements up the Cape Fear River before being stopped at Lock and Dam #1; in one case the fish went downstream and then moved up the Northeast Cape Fear River. However, there have been reports of Atlantic sturgeon above Lock and Dam #1 (J. Hightower, NCSU, pers. comm. To J. Rueter, NMFS, July 21, 2015). It is likely the fish moving up to Lock and Dam #2 are attempting to reach historic upstream spawning areas. Using the fall line as a guide, only 33 percent of the historical habitat is available to Atlantic sturgeon below Lock and Dam #1 (96 km of 292 km). In some years, the salt water interface reaches Lock and Dam #1; so, spawning adults in the Cape Fear River either do not spawn in such years or spawn in the major tributaries of the Cape Fear River (*i.e.,* Black River or Northeast Cape Fear rivers) that are not obstructed by dams. There may be some exposed outcrops that would provide suitable substrate necessary for spawning between Lock and Dam #2 and Huske Lock and Dam (J. Facendola, NCDMF pers. comm. to J. Rueter, NMFS, July 20, 2015). The primary goal of the Cape Fear River Partnership is restoring access to historic migratory fish habitat. Their 2013 action plan identifies passage at Lock and Dam #2 as a priority and includes Atlantic sturgeon as a target species (Cape Fear River Partnership, 2013). In September 2015, the North Carolina General Assembly approved $250,000 to be used towards the design and engineering of a rock arch weir to help with fish passage at Lock and Dam #2 and matching funds are currently being sought. These efforts indicate to us it is likely a rock arch weir will provide passage at Lock and Dam #2 so that sturgeon can utilize the habitat upstream of Lock and Dam #2 up to the Huske Lock and Dam in the future. We propose to include the area from Huske Lock and Dam (Lock and Dam #3) downstream to Lock and Dam #2 as unoccupied critical habitat on the Cape Fear River because Atlantic sturgeon behavior indicates they are attempting to move upstream to spawning habitat located beyond this barrier, and we consider this historical spawning habitat essential to the conservation of the DPS.

The lowermost dams on the Santee and Cooper Rivers limit, and may

eliminate altogether, viable spawning grounds for Atlantic sturgeon. Using the fall line as the upper region of spawning habitat, it is estimated that only 38 percent of the historical habitat is available to Atlantic sturgeon in the Santee-Cooper River system today. There are a number of anecdotal reports of Atlantic sturgeon making spawning runs to the dams and either returning downstream or attempting to spawn at the dams. These dams may not be far enough upstream for eggs and larvae to develop before entering higher salinity waters where they perish. The Santee Cooper Diversion Dam and Canal Project created two reservoirs: the Wilson Dam on the Santee River created Lake Marion, and the Pinopolis Dam on the Cooper River created Lake Moultrie. Currently, relicensing by the Federal Energy Regulatory Commission (FERC) for the South Carolina Public Service Authority (SCPSA) Hydroelectric Project, located in South Carolina is ongoing. Fish passage past these two dams was prescribed as part of the relicensing. Once this passage is constructed, the first dam Atlantic sturgeon will encounter is the abandoned Granby Lock and Dam on the Congaree River. This dam could represent a hindrance, but likely not a complete obstacle, to upstream movements of Atlantic sturgeon because remnant parts of the dam may deter bottom oriented species. Above the Granby Lock and Dam, Atlantic sturgeon will encounter the Columbia Dam on the Broad River. In 2002 we prescribed a fishway to be constructed at the Columbia Dam for American shad, blueback herring, and American eel. Concurrently we reserved authority to prescribe a fishway for sturgeon, because although such a fishway was warranted, a safe and effective passage mechanism was not yet established. The fishway constructed to pass the target species (American shad, blueback herring, and American eel) incorporated ''sturgeon friendly'' features as sturgeon are potential future target species. Field work conducted during consultation by NMFS Habitat Conservation Division established that excellent spawning and juvenile rearing habitat exists in the 24 miles of large river shoals between the Columbia Dam and the next upstream dam, the Parr Shoals Dam (DOC, 2002). While sturgeon have not been documented as currently passing through the Columbia Dam fishway, our reservation of authority in the 2002 FERC relicensing provides us the expectation the Columbia Dam will be passable in the future so that sturgeon can utilize the upstream 24-miles of shoal habitat for spawning and rearing. Additionally, we have information on a population of shortnose sturgeon that has been stranded above Pinopolis and Wilson Dams for decades, and there is a good deal of data on their spawning activity in the Congaree, Broad, and Wateree Rivers. Shortnose sturgeon spawning habitat requirements are similar to Atlantic sturgeon, thus we believe these unoccupied areas contain suitable spawning habitat for Atlantic sturgeon. We conclude that these unoccupied spawning habitats are essential to the conservation of the DPS, and therefore, we are proposing to designate unoccupied critical habitat from the Wateree Dam on the Wateree River and from the Parr Shoals Dam on the Broad River downstream to the Wilson Dam and St. Stephen Powerhouse on the Santee River and the Pinopolis Dam on the Cooper River.

The Savannah River has some fish passage at New Savannah Bluff Lock and Dam, but successful passage of Atlantic sturgeon is not believed to occur. The historical primary spawning habitat for Atlantic sturgeon (and only shoal habitat on the Savannah River), the Augusta Shoals, is not accessible to Atlantic sturgeon because it lies above the New Savannah Bluff Lock and Dam. Sturgeon are currently frequently seen at the base of the New Savannah Bluff Lock and Dam during spawning season, indicating either crowding below the dam or individual motivation to spawn farther upriver, or both. We conclude this unoccupied area is essential to the conservation of the DPS and therefore, we propose to designate the Savannah River from the Augusta Diversion Dam downstream to the New Savannah Bluff Lock and Dam as critical habitat.

Application of ESA Section 4(a)(3)(B)(i) (Military Lands)

Section 4(a)(3)(B) of the ESA prohibits designating as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DOD), or designated for its use, that are subject to an Integrated Natural Resources Management Plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. The legislative history to this provision explains:

> The conferees would expect the [Secretary] to assess an INRMP's potential contribution to species conservation, giving due regard to those habitat protection, maintenance, and improvement projects and other related activities specified in the plan that address the particular conservation and protection needs of the species for which critical habitat would otherwise be proposed. Consistent with current practice, the Secretary would establish criteria that would be used to determine if an INRMP benefits the listed species for which critical habitat would be proposed (Conference Committee report, 149 Cong. Rec. H. 10563 (November 6, 2003)).

In February 2014 and October 2015, we requested information from the DOD to assist in our analysis. Specifically, we asked for a list of facilities that occur within the potential critical habitat areas for the Carolina and South Atlantic DPSs of Atlantic sturgeon and available INRMPs for those facilities. We received information on two INRMPs for DOD facilities on or near the banks of rivers included in the proposed designation—the Naval Submarine Base Kings Bay (GA), on the St. Marys River and Joint Base Charleston (SC), on the Cooper River. At neither base does the Navy own or control, or have designated for its use, lands or geographic areas being proposed as critical habitat. Thus, there are no areas where the INRMP prohibition is applicable. Notably, the Department of Navy response indicated a desire to review and revise applicable INRMPs to provide appropriate and feasible conservation benefits to the species if possible.

Application of ESA Section 4(b)(2)

Section 4(b)(2) of the ESA requires that we consider the economic impact, impact on national security, and any other relevant impact, of designating any particular area as critical habitat. Additionally, the Secretary has the discretion to consider excluding any area from critical habitat if she determines, based upon the best scientific and commercial data available, the benefits of exclusion (that is, avoiding some or all of the impacts that would result from designation) outweigh the benefits of designation. The Secretary may not exclude an area from designation if exclusion will result in the extinction of the species. Because the authority to exclude is discretionary, exclusion is not required for any particular area under any circumstances.

The ESA provides the USFWS and NMFS (the Services) with broad discretion in how to consider impacts. *See,* H.R. Rep. No. 95–1625, at 17, reprinted in 1978 U.S.C.C.A.N. 9453, 9467 (1978) (''Economics and any other relevant impact shall be considered by the Secretary in setting the limits of critical habitat for such a species. The Secretary is not required to give economics or any other ''relevant impact'' predominant consideration in

his specification of critical habitat . . . The consideration and weight given to any particular impact is completely within the Secretary's discretion.''). Courts have noted the ESA does not contain requirements for any particular methods or approaches. *See, e.g., Bldg. Indus. Ass'n of the Bay Area et al.* v. *U.S. Dep't. of Commerce et al.,* No. 13–15132, 9th Cir., July 7, 2015 (upholding district court's ruling that the ESA does not require the agency to follow a specific methodology when designating critical habitat under section 4(b)(2). For this proposed rule, we followed the same approach to describing and evaluating impacts as we have for recent critical habitat rulemakings in the NMFS Southeast Region.

The following discussion of impacts summarizes the analysis contained in our Draft Impact Analysis of Critical Habitat Designation for the Carolina and South Atlantic Distinct Population Segments of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) (Draft Impacts Analysis), which identifies the economic, national security, and other relevant impacts that we projected would result from including each of the fourteen occupied and three unoccupied specific areas in the proposed critical habitat designation. We considered these impacts when deciding whether to exercise our discretion to propose excluding particular areas from the designation. Both positive and negative impacts were identified and considered (these terms are used interchangeably with benefits and costs, respectively). Impacts were evaluated in quantitative terms where feasible, but qualitative appraisals were used where that is more appropriate to particular impacts. The Draft Impacts Analysis Report is available on NMFS's Southeast Regional Office Web site at *http://sero.nmfs.noaa.gov/protected_resources/sturgeon/index.html.*

The primary impacts of a critical habitat designation result from the ESA Section 7(a)(2) requirement that Federal agencies ensure their actions are not likely to result in the destruction or adverse modification of critical habitat, and that they consult with NMFS in fulfilling this requirement. Determining these impacts is complicated by the fact that Section 7(a)(2) also requires that Federal agencies ensure their actions are not likely to jeopardize the species' continued existence. One incremental impact of designation is the extent to which Federal agencies modify their proposed actions to ensure they are not likely to destroy or adversely modify the critical habitat beyond any modifications they would make because of listing and the jeopardy requirement. When the same modification would be required due to impacts to both the species and critical habitat, the impact of the designation is coextensive with the ESA listing of the species (*i.e.,* attributable to both the listing of the species and the designation critical habitat). Relevant, existing regulatory protections are referred to as the ''baseline'' and are also discussed in the Draft Impacts Analysis. In this case, notable baseline protections include the ESA listings of not only Atlantic sturgeon, but the co-occurring shortnose sturgeon.

The Draft Impacts Analysis Report describes the projected future federal activities that would trigger Section 7 consultation requirements because they may affect the essential features, and consequently may result in economic costs or negative impacts. The report also identifies the potential national security and other relevant impacts that may arise due to the proposed critical habitat designation, such as positive impacts that may arise from conservation of the species and its habitat, state and local protections that may be triggered as a result of designation, and education of the public to the importance of an area for species conservation.

Economic Impacts

Economic impacts of the critical habitat designation result through implementation of Section 7 of the ESA in consultations with Federal agencies to ensure their proposed actions are not likely to destroy or adversely modify critical habitat. These economic impacts may include both administrative and project modification costs; economic impacts that may be associated with the conservation benefits of the designation are described later.

We examined the ESA Section 7 consultation record over the last 10 years, as compiled in our Public Consultation Tracking System (PCTS) database, to identify the types of Federal activities that may adversely affect proposed Atlantic sturgeon critical habitat. We requested that federal action agencies provide us with information on future consultations if we omitted any future actions likely to affect the proposed critical habitat. No new categories of activities were identified through this process. Of the types of past consultations that ''may affect'' some or all of the essential features in any unit of proposed critical habitat, we determined that no activities would solely affect the essential features. That is, all categories of the activities identified have potential routes of adverse effects to both Atlantic or shortnose sturgeon and the critical habitat.

Fourteen categories of activities implemented by ten different federal entities were identified as likely to recur in the future and have the potential to affect the essential features (total number of projected consultations over 10 years indicated in parentheses):

1. U.S. Army Corps of Engineers (USACE)—Navigation maintenance dredging, harbor expansion (14)
2. USACE—Water Resources Development Act (WRDA) flood control, ecosystem restoration studies (6)
3. USACE—WRDA dam operations, repair, fishway construction (3)
4. USACE—Section 404/Rivers and Harbors Act (RHA) section 10 permitting—dredge, fill, construction (20)
5. Federal Highway Administration (FHWA)—Bridge repair, replacement (67)
6. U.S. Coast Guard (USCG)—Bridge repair, replacement permitting (3)
7. FERC—Hydropower licensing (5)
8. FERC—Liquefied Natural Gas (LNG) facilities, pipelines authorization (5)
9. Nuclear Regulatory Commission (NRC)—Nuclear power plant construction/operation licensing (8)
10. NMFS—ESA research and incidental take permitting (section 10) (46)
11. U.S. Fish and Wildlife Service (USFWS)—Fishery management grants (11)
12. Environmental Protection Agency (EPA)—Nationwide pesticide authorizations (9)
13. Federal Emergency Management Agency (FEMA)—Disaster assistance/preparation grants (5)
14. Department of Energy (DOE)—Nuclear fuel management (3)

We estimate that 205 activities will require consultation over the next 10 years and will require analysis of impacts to Atlantic sturgeon critical habitat. As discussed in more detail in our Draft Impacts Analysis, all the activities identified as having the potential to adversely affect one or more of the proposed essential features, also have the potential to take Atlantic sturgeon. For most, if not all, of the projected future activities, if the effects to critical habitat will be adverse and require formal consultation, those effects would also constitute adverse effects to the species, either directly when they are in the project area, or indirectly due to the effects on their habitat. This is due to the conservation functions that the features are being designated to provide. For example,

water quality is being identified as an essential feature to facilitate successful spawning, annual and inter-annual adult, larval, and juvenile survival, and larva, juvenile and subadult growth, development, and recruitment. Effects to the water quality feature that impede that conservation objective could injure or kill individual Atlantic sturgeon, for example by preventing adult reproduction, or rendering reproduction ineffective or resulting in reduced growth or mortality of larvae, juveniles or subadults. In these circumstances, the same project modifications would be required to address effects to both the species and effects to the critical habitat. Thus, projects that adversely affect the proposed essential features are likely to always also adversely affect the species and the project impacts would not be incremental.

For some of the projected activities, it may be feasible to conduct the action when sturgeon are out of the action area. If effects to critical habitat are temporary such that the essential features return to their pre-project condition by the time the sturgeon return and need to use the features, there might not be any adverse effects to either the species or the critical habitat. In these circumstances, consultations would be fully incremental consultations only on critical habitat, and the consultations would be informal (*i.e.,* impacts to critical habitat would not be permanent and would not be significant). This would likely only apply to actions that affect just spawning habitat in the upper parts of the rivers, as sturgeon of various ages are present year-round in the lower reaches of the rivers and the estuaries. The costs of fully incremental, informal consultations are higher than the marginal costs of adding critical habitat analyses to coextensive, formal consultations. Thus, to be conservative and avoid underestimating incremental impacts of this designation, and based on the activities involved, we assumed that two categories of activities could result in incremental, informal consultations. Those activities, both implemented by the USACE, are section Clean Water Act section 404/Rivers and Harbors Act permitting and WRDA dam operations/repair.

Administrative costs include the cost of time spent in meetings, preparing letters, and in some cases, developing a biological assessment and biological opinion, identifying and designing reasonable and prudent measures (RPMs), and so forth. For this impacts report, we estimated per-project administrative costs based on critical habitat economic analyses by Industrial Economics, Inc. (IEc). (2014a, 2014b). These impacts reports estimate administrative costs for different categories of consultations as follows: (1) New consultations resulting entirely from critical habitat designation; (2) new consultations considering only adverse modification (unoccupied habitat); (3) re-initiation of consultation to address adverse modification; and, (4) additional consultation effort to address adverse modification in a new consultation. Most of the projected future consultations we project to result from this proposed rulemaking will be coextensive formal consultations on new actions that would be evaluating impacts to sturgeon as well as impacts to critical habitat, and the administrative costs for these 182 consultations would be in category 4 above. The remaining 23 actions are projected to involve incremental informal consultation due to impacts to critical habitat alone. Based on IEc (2014a, b), we project that each formal consultation will result in the following additional costs to address critical habitat impacts: $1,400 in NMFS costs; $1,600 in action agency costs; $880 in third party (*e.g.,* permittee) costs, if applicable; and $1,200 in costs to the action agency or third party to prepare a Biological Assessment (BA). Costs for the incremental informal consultations would be as follows: $1,900 in NMFS' costs; $2,300 in action agency costs; $1,500 in third party (*e.g.,* permittee) costs, if applicable; and $1,500 in costs to the action agency or third party to prepare a BA. Costs of the 9 EPA nationwide consultations were treated differently. These consultations will involve all listed species and designated critical habitat under NMFS's jurisdiction, and thus costs attributable solely to this proposed rule are expected to be very small. To be conservative, we added 9 consultations to each unit, and 9 to each DPS's total number of consultations. We spread the costs of these consultations ($5,080 each) evenly across all units included in this proposed rule and the companion proposed rule to designate critical habitat for the Gulf of Maine, New York Bight, and Chesapeake Bay DPSs. This resulted in a total cost of $1,474.84 per unit.

In our impacts analysis, we concluded that none of the projected future activities are likely to require project modifications to avoid adverse effects to critical habitat features that would be different from modifications required to avoid adverse effects to sturgeon. In other words, we projected no incremental costs in proposed critical habitat units other than the administrative costs of consultations. While there may be serious adverse impacts to critical habitat from projected future projects that require project modifications to avoid destroying or adversely modifying critical habitat, impacts of these magnitudes to the essential features as defined, would also result in adverse effects to Atlantic sturgeon, either directly when they are in the project area, or indirectly as harm, resulting from impacts to their habitat that result in injury or death to sturgeons. The same project modifications would be required to avoid destroying or adversely modifying critical habitat and avoiding jeopardy or minimizing take of Atlantic sturgeon caused by impacts to its habitat.

Based on our draft impacts analysis, we project that the costs that will result from the proposed designation will total $1,092,793 over the next 10 years. The total incremental cost resulting from the designation for the Carolina DPS is $503,954, and the total incremental cost resulting from the designation for the South Atlantic DPS is $588,839, over 10 years. The per-unit costs vary widely. The annual per-unit costs range from $147 (Unoccupied Cape Fear River unit, Carolina DPS) to $23,051 (Occupied Savannah River unit, South Atlantic DPS).

National Security Impacts

Previous critical habitat designations have recognized that impacts to national security result if a designation would trigger future ESA Section 7 consultations because a proposed military activity ''may affect'' the physical or biological feature(s) essential to the listed species' conservation. Anticipated interference with mission-essential training or testing or unit readiness, through the additional commitment of resources to an adverse modification analysis and expected requirements to modify the action to prevent adverse modification of critical habitat, has been identified as a negative impact of critical habitat designations. (See, *e.g.,* Proposed Designation of Critical Habitat for Southern Resident Killer Whales; 69 FR 75608, Dec. 17, 2004, at 75633.)

On February 14, 2014, and again in October 7, 2015, NMFS sent letters to DOD and the Department of Homeland Security requesting information on national security impacts of the proposed critical habitat designation, and we received responses from the Navy, Air Force, Army, and USCG. We discuss the information contained within the responses thoroughly in the

Draft Impacts Analysis and summarize the information below.

The Navy's first submission provided information on its facilities and operations. However, the Navy was not able to make a full assessment whether there would be any national security impacts. The Navy indicated that as we define our essential features and areas more precisely, they would be able to provide a more detailed response to our requests and would update their INRMPs as necessary for the protection of Atlantic sturgeon and its critical habitat. The Navy's second submission noted that Naval Submarine Base Kings Bay was adjacent to the South Atlantic DPS critical habitat unit in the St. Marys River. The Navy stated it did not own or control any land or waters within the St. Marys channel, but that the TRIDENT-class submarines used 4.9 km of the waterway transiting to and from the Atlantic Ocean. The Navy stated that any operational or dredging restrictions that would impede maintenance of the channel from the Intracoastal Waterway and St. Marys channel intersection, downstream, could pose a national security risk. The USACE is typically the lead action agency with us for dredging actions, and the Navy would be the permit applicant. We determined that dredging has the potential to affect critical habitat, but we also concluded that consultations for effects of dredging on critical habitat will be fully-coextensive with consultations to address impacts to sturgeon. The effects of dredging on essential features would also result in injury or death to individual sturgeon, and thus constitute take. Removal or covering of spawning substrate could prevent effective spawning or result in death of eggs or larvae that are spawned. Changing the salinity regime by deepening harbors and parts of rivers could result in permanent decreases if available foraging and developmental habitat for juveniles. These types of adverse effects are not likely to be temporary and limited to periods of sturgeon absence. Thus, adverse effects of dredging activities are likely to be coextensive formal consultations to address impacts to both the species and the essential features, and thus no new requirements or project modifications are anticipated as a result of the proposed critical habitat designation. Therefore, we find there will be no impact on national security as a consequence of the proposed designation for these actions.

The Navy and Air Force expressed concern that designating the Cooper River, including the area of the river on the west side adjacent to the Joint Base Charleston Naval Weapons Station, could have significant impacts on the Navy's ability to adequately support mission-essential military operations, thereby impacting national security. The Navy and Air Force were concerned designation of critical habitat could affect training facilities and the maintenance of these facilities. Additional concerns were expressed regarding shipping and receiving operations from two waterfront facilities. Because no specifics were given on how designation of critical habitat could affect these activities, and because we determined there are no routes of effects to essential features from these activities based on the information provided, we concluded that designation of critical habitat will have no impact on these activities and thus will not result in impacts to national security

The Army noted that Military Ocean Terminal-Sunny Point, North Carolina, was located on the Cape Fear River and Fort Stewart, Georgia, was located on the Ogeechee River. However, the Army was not able to make a full assessment whether there would be any national security impacts and concluded that technical assessments between the installations and regional levels of NMFS would identify any specific impacts.

The USCG provided information on its facilities and operations. However, the USCG was not able to make a full assessment whether there would be any national security impacts. The USCG indicated that as we define our essential features and areas more precisely, they would be able to provide a more detailed response to our requests. The USCG consulted with us three times on authorizations for bridge repairs or replacements. If conducted in the future, these activities may affect proposed critical habitat features, but the effects would be fully coextensive with effects to listed sturgeon. Based on this information regarding potential future USCG action in proposed Atlantic sturgeon critical habitat, we do not expect any national security impacts as a consequence of the proposed critical habitat designation.

Based on a review of our consultation database, and the information provided by the Navy, Air Force, Army, and USCG on their activities conducted within the specific areas proposed for designation as Atlantic sturgeon critical habitat, we determined that only one military action identified as a potential area of national security impact has routes of potential adverse effects to proposed critical habitat—river channel dredging. As discussed, this activity will require consultation due to potential impacts to listed Atlantic and shortnose sturgeon, and any project modifications needed to address impacts to these species would also address impacts to critical habitat. Thus, no incremental project modification impacts are expected due to this designation. On this basis, we conclude there will be no national security impacts associated with the proposed critical habitat for the Carolina and South Atlantic DPSs of Atlantic sturgeon.

Other Relevant Impacts

Other relevant impacts of critical habitat designations can include conservation benefits to the species and to society, and impacts to governmental and private entities. Our Draft Impacts Analysis discusses conservation benefits of designating the 14 occupied and 3 unoccupied areas, and the benefits of conserving the Carolina and South Atlantic sturgeon DPSs to society, in both ecological and economic metrics.

As discussed in the Draft Impacts Analysis and summarized here, Atlantic sturgeon currently provide a range of benefits to society. Given the positive benefits of protecting the physical features essential to the conservation of these DPSs, this protection will in turn contribute to an increase in the benefits of this species to society in the future as the species recovers. While we cannot quantify nor monetize these benefits, we believe they are not negligible and would be an incremental benefit of this designation. However, although the features are essential to the conservation of Atlantic sturgeon DPSs, critical habitat designation alone will not bring about the recovery of the species. The benefits of conserving Atlantic sturgeon are, and will continue to be, the result of several laws and regulations.

We identified in the Draft Impacts Analysis both consumptive (*e.g.,* commercial and recreational fishing) and non-consumptive (*e.g.,* wildlife viewing) activities that occur in the areas proposed as critical habitat. Commercial and recreational fishing are components of the economy related to the ecosystem services provided by the resources within the proposed Atlantic sturgeon critical habitat areas. The essential features provide for abundant fish species diversity.

Education and awareness benefits stem from the critical habitat designation when non-federal government entities or members of the general public responsible for, or interested in, Atlantic sturgeon conservation change their behavior or activities when they become aware of the designation and the importance of

the critical habitat areas and features. Designation of critical habitat raises the public's awareness that there are special considerations that may need to be taken within the area. Similarly, state and local governments may be prompted to carry out programs to complement the critical habitat designation and benefit the Carolina and South Atlantic DPSs of Atlantic sturgeon. Those programs would likely result in additional impacts of the designation. However, it is impossible to quantify the beneficial effects of the awareness gained or the secondary impacts from state and local programs resulting from the critical habitat designation.

Discretionary Exclusions Under Section 4(b)(2)

On the basis of our impacts analysis, we are not proposing to exercise our discretion to propose excluding any particular areas from the proposed critical habitat designation.

Our conservative identification of potential incremental economic impacts indicates that any such impacts would be very small—$50,395 annually for the Carolina DPS critical habitat and $58,884 annually for the South Atlantic DPS critical habitat. These costs will result from very few (about 20) Federal ESA section 7 consultations annually. These consultations will be spread over 4 states and over 3,300 river miles (4,900 river kilometers). Incremental economic impacts will consist solely of the administrative costs of consultation; no project modifications are projected to be required to address impacts solely to the proposed critical habitat. Further, the analysis indicates that there is no particular area within the units designated as critical habitat where economic impacts would be particularly high or concentrated. No impacts to national security are expected. Other relevant impacts include conservation benefits of the designation, both to the species and to society. Because the features that form the basis of the critical habitat designation are essential to the conservation of the Carolina and South Atlantic DPSs of Atlantic sturgeon, the protection of critical habitat from destruction or adverse modification may at minimum prevent loss of the benefits currently provided by the species and may contribute to an increase in the benefits of these species to society in the future. While we cannot quantify nor monetize the benefits, we believe they are not negligible and would be an incremental benefit of this designation. Therefore, we have concluded that there is no basis to exclude any particular area from the proposed critical habitat units.

Proposed Critical Habitat Designation

Critical habitat must be defined by specific limits using reference points and lines as found on standard topographic maps of the area, and cannot use ephemeral reference points (50 CFR 424.12(c)). When several habitats, each satisfying the requirements for designation as critical habitat, are located in proximity to one another, an inclusive area may be designated as critical habitat (50 CFR 424.12(d)).

The habitat containing the physical features that are essential to the conservation of the Carolina and South Atlantic DPSs and that may require special management considerations or protection is aquatic habitat of main stem rivers flowing into a coastal estuary. Atlantic sturgeon typically cannot pass dams or natural features such as waterfalls and rapids found at the fall line of rivers. Therefore, we are defining each critical habitat unit by an upriver GPS position or landmark on the main stem river (*e.g.,* the most downriver dam) and all waters of the main stem downriver of that location to river kilometer zero (RKM 0). Main stem river is the primary segment of a river and any portions thereof that depart from and rejoin the primary segment. Thus, channels and cuts that depart from and rejoin the main channel are included (*e.g.,* Middle and Front Rivers are part of the Savannah River).

In order to include areas of dynamic water depth containing suitable spawning habitat, we are relying on the ordinary high water mark (OHWM) to delineate the lateral boundaries of the specific critical habitat areas. Federal regulations at 33 CFR 328.3(e) define OHWM as ''that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.''

Occupied Critical Habitat Unit Descriptions

Carolina Unit 1, Roanoke Unit. Roanoke River in Bertie, Halifax, Martin, Northampton, and Washington Counties in North Carolina. Carolina Unit 1 includes the Roanoke River main stem from the Roanoke Rapids Dam downstream to RKM 0.

Carolina Unit 2, Tar-Pamlico Unit. Tar-Pamlico River in Beaufort, Edgecombe, Hyde, Nash, Pamlico, and Pitt Counties in North Carolina. Carolina Unit 2 includes the Tar-Pamlico River main stem from the Rocky Mount Millpond Dam downstream to RKM 0.

Carolina Unit 3, Neuse Unit. Neuse River in Carteret, Craven, Duplin, Johnston, Lenoir, Pamlico, Pitt, Wake, and Wayne Counties in North Carolina. Carolina Unit 3 includes the Neuse River main stem from the Milburnie Dam downstream to RKM 0. The Neuse River, one of two major tributaries to Pamlico Sound, is dammed. It is likely that Atlantic sturgeon historically utilized habitat in the Neuse River up to the falls at RKM 378 where a dam (Falls Dam) is now located, although this site is above the fall line (ASSRT, 2007). Spawning migration may be impeded to historic habitat above the Milburnie Dam (RKM 349).

Carolina Unit 4, Cape Fear Unit. Cape Fear River in Bladen, Brunswick, Columbus, Cumberland, New Hanover, and Pender Counties in North Carolina and the Northeast Cape Fear River in Duplin, New Hanover, Pender, and Wayne Counties in North Carolina. Carolina Unit 4 includes the Cape Fear River main stem from Lock and Dam #2 downstream to RKM 0 and the Northeast Cape Fear River from the upstream side of Rones Chapel Road Bridge downstream to the confluence with the Cape Fear River.

Carolina Unit 5, Pee Dee Unit. Pee Dee River in Anson and Richmond Counties in North Carolina and Chesterfield, Darlington, Dillon, Florence, Georgetown, Horry, Marion, Marlboro, and Williamsburg Counties in South Carolina; Waccamaw River in Georgetown County in South Carolina; and Bull Creek in Georgetown County in South Carolina. Carolina Unit 5 includes the Pee Dee River main stem from Blewett Falls Dam downstream to RKM 0, the Waccamaw River from Bull Creek downstream to RKM 0, and Bull Creek from the Pee Dee River to the confluence with the Waccamaw River.

Carolina Unit 6. Black River Unit. Black River in Clarendon, Georgetown, Lee, Sumter, and Williamsburg Counties in South Carolina. Carolina Unit 6 includes the Black River main stem from Interstate Highway 20 downstream to RKM 0.

Carolina Unit 7, Santee-Cooper Unit. Santee River in Berkeley, Georgetown, and Williamsburg Counties in South Carolina; North Santee River in Georgetown County in South Carolina; South Santee River in Charleston County in South Carolina; and the

Cooper River in Berkeley and Charleston Counties in South Carolina. Carolina Unit 7 includes the Santee River main stem from the Wilson and St. Stephen Dams downstream to the fork of the North Santee River and South Santee River distributaries, the Rediversion Canal from the St. Stephen Powerhouse downstream to the confluence with the Santee River, the North Santee River from the fork of the Santee River and South Santee River downstream to RKM 0, the South Santee River from the fork of the Santee River and North Santee River downstream to RKM 0, the Tailrace Canal from Pinopolis Dam downstream to the West Branch Cooper River, the West Branch Cooper River from the Tailrace Canal downstream to the confluence with the East Branch Cooper River, and the Cooper River from confluence of the West Branch Cooper River and East Branch Cooper River tributaries downstream to RKM 0.

South Atlantic Unit 1, Edisto Unit. The North Fork Edisto in Lexington, and Orangeburg Counties in South Carolina; the South Fork Edisto in Aiken, Bamberg, Barnwell, Edgefield, and Orangeburg Counties in South Carolina; the Edisto River in Bamberg, Charleston, Colleton, Dorchester, and Orangeburg Counties in South Carolina; the North Edisto in Charleston and Colleton Counties in South Carolina; and the South Edisto in Charleston and Colleton Counties in South Carolina. South Atlantic Unit 1 includes the North Fork Edisto River from Cones Pond downstream to the confluence with the South Fork Edisto River, the South Fork Edisto River from Highway 121 downstream to the confluence with the North Fork Edisto River, the Edisto River main stem from the confluence of the North Fork Edisto River and South Fork Edisto River tributaries downstream to the fork at the North Edisto River and South Edisto River distributaries, the North Edisto River from the Edisto River downstream to RKM 0, and the South Edisto River from the Edisto River downstream to RKM 0.

South Atlantic Unit 2, Combahee-Salkehatchie Unit. Combahee-Salkehatchie River in Allendale, Bamberg, Barnwell, Beaufort, Colleton, and Hampton Counties in South Carolina. South Atlantic Unit 2 includes the main stem Combahee—Salkehatchie River from the confluence of Buck Creek and Rosemary Creek with the Salkehatchie River downstream to the Combahee River, the Combahee River from the Salkehatchie River downstream to RKM 0.

South Atlantic Unit 3, Savannah Unit. Savannah River in Aiken, Allendale, Barnwell, Edgefield, Hampton, Jasper and McCormick Counties in South Carolina and Burke, Chatham, Columbia, Effingham, Richmond, and Screven Counties in Georgia. South Atlantic Unit 3 includes the main stem Savannah River from the New Savannah Bluff Lock and Dam downstream to RKM 0.

South Atlantic Unit 4, Ogeechee Unit. Ogeechee River in Bryan, Bulloch, Burke, Chatham, Effingham, Emanuel, Glascock, Jefferson, Jenkins, Screven, and Washington Counties in Georgia. South Atlantic Unit 4 includes the main stem Ogeechee River from the confluence of the North Fork and South Fork Ogeechee Rivers downstream to RKM 0.

South Atlantic Unit 5, Altamaha Unit. Altamaha River in Appling, Jeff Davis, Long, McIntosh, Montgomery, Tattnall, Toombs, and Wheeler Counties in Georgia; the Oconee River in Baldwin, Hancock, Johnson, Laurens, Montgomery, Washington, Wheeler, and Wilkinson Counties in Georgia; and the Ocmulgee River in Ben Hill, Bibb, Bleckley, Dodge, Houston, Jasper, Jeff Davis, Jones, Plaski, Telfair, Twiggs, Wheeler, and Wilcox Counties in Georgia. South Atlantic Unit 5 includes the main stem Ocmulgee River from Juliette Dam downstream to the confluence with the Oconee River, the Oconee River from Sinclair Dam downstream to the confluence with the Ocmulgee, and the Altamaha River from the confluence of the Ocmulgee and Oconee downstream to RKM 0.

South Atlantic Unit 6, Satilla Unit. Satilla River in Atkinson, Brantley, Camden, Charlton, Coffee, Glynn, Irwin, Pierce, Ware, and Wayne Counties in Georgia. South Atlantic Unit 6 includes the main stem Satilla River from the confluence of Satilla Creek and Wiggins Creek downstream to RKM 0.

South Atlantic Unit 7, St. Marys Unit. St. Marys River in Camden and Charlton Counties in Georgia and Baker and Nassau Counties in Florida. South Atlantic Unit 7 includes the main stem St. Marys River from the confluence of Middle Prong St. Marys and the St. Marys Rivers downstream to RKM 0.

Unoccupied Critical Habitat Unit Descriptions

Carolina Unoccupied Unit 1. Cape Fear River in Bladen County in North Carolina. Carolina Unoccupied Unit 1 includes the main stem Cape Fear River from Huske Lock and Dam (Lock and Dam #3) downstream to Lock and Dam #2.

Carolina Unoccupied Unit 2. Wateree River in Kershaw, Richland, and Sumter Counties in South Carolina; Broad River in Lexington and Richland Counties in South Carolina; Congaree River in Calhoun and Richland Counties in South Carolina; Santee River in Calhoun and Sumter Counties in South Carolina; Lake Marion in Berkeley, Calhoun, Clarendon, Orangeburg, and Sumter Counties in South Carolina; Diversion Canal in Orangeburg County in South Carolina; and, Lake Moultrie in Berkeley and Orangeburg Counties in South Carolina. Carolina Unoccupied Unit 2 includes the Wateree River from the Wateree Dam downstream to the confluence with the Congaree River, the Broad River from the Parr Shoals Dam downstream to the confluence with the Saluda River, the Congaree River from the confluence of the Saluda and Broad Rivers downstream to the Santee River, the Santee River from the confluence of the Congaree and Wateree Rivers downstream to Lake Marion, Lake Marion from the Santee River downstream to the Diversion Canal, the Diversion Canal from Lake Marion downstream to Lake Moultrie, Lake Moultrie from the Diversion Canal downstream to the Pinopolis Dam and the Rediversion Canal, the Rediversion Canal from Lake Moultrie downstream to the St. Stephen Powerhouse.

South Atlantic Unoccupied Unit 1. Savannah River in Aiken and Edgefield Counties in South Carolina and Columbia and Richmond Counties in Georgia. South Atlantic Unoccupied Unit 1 includes the Savannah River from the Augusta Diversion Dam downstream to the New Savannah Bluff Lock and Dam.

Table 1. Critical Habitat Units and Extents of the Units.

Critical Habitat Unit Name	DPS Nomenclature	Water Body	State	Upper extent	River kilometers	River miles
Roanoke	Carolina Unit 1 (C1)	Roanoke River	North Carolina	Roanoke Rapids Dam	213	132
Tar - Pamlico	Carolina Unit 2 (C2)	Tar - Pamlico River	North Carolina	Rocky Mount Mill Pond Dam	199	124
Neuse	Carolina Unit 3 (C3)	Neuse River	North Carolina	Milburnie Dam	345	214
Cape Fear	Carolina Unit 4 (C4)	Cape Fear River	North Carolina	Lock and Dam #2	151	94
		Northeast Cape Fear River	North Carolina	Upstream side of Rones Chapel Road Bridge	218	136
Cape Fear Unoccupied	Carolina Unoccupied Unit 1 (CU1)	Cape Fear River	North Carolina	Huske Lock and Dam (a.k.a. Lock and Dam #3)	37	23
Pee Dee	Carolina Unit 5 (C5)	Pee Dee River	North Carolina/South Carolina	Blewett Falls Dam	310	192
		Waccamaw River	South Carolina	Bull Creek (a.k.a. Big Bull Creek)	35	22
		Bull Creek (a.k.a. Big Bull Creek)	South Carolina	Pee Dee River	17	11
Black	Carolina Unit 6 (C6)	Black River	South Carolina	Interstate Highway 20	253	157
Santee - Cooper	Carolina Unit 7 (C7)	Santee River	South Carolina	Wilson Dam	114	71
		Rediversion Canal	South Carolina	St. Stephens Dam	8	5
		North Santee River	South Carolina	Confluence of Santee River	29	18
		South Santee River	South Carolina	Confluence of Santee River	27	17
		Tailrace Canal - West Branch Cooper River	South Carolina	Pinopolis Dam	29	18
		Cooper River	South Carolina	Confluence of the West Branch Cooper and East Branch Cooper Rivers	48	30
Santee - Cooper Unoccupied	Carolina Unoccupied Unit 2 (CU2)	Wateree River	South Carolina	Wateree Dam	124	77
		Broad River	South Carolina	Parr Shoals	43	27
		Congaree River	South Carolina	Confluence of Saluda and Broad Rivers	84	52
		Santee River (up river of Lake Marion)	South Carolina	Confluence of Congaree and Wateree Rivers	13	8
		Lake Marion	South Carolina	Santee River (upstream of Lake Marion)	50	31
		Diversion Canal	South Carolina	Lake Marion	8	5
		Lake Moultrie	South Carolina	Diversion Canal	16	10
		Rediversion Canal	South Carolina	Lake Moultrie	8	5
Edisto	South Atlantic Unit 1 (SA1)	North Fork Edisto River	South Carolina	Cones Pond just north of I-20 (approximately 33.8035 N, 80.4702 W)	155	96
		South Fork Edisto River	South Carolina	State Hwy 121	175	109
		Edisto River	South Carolina	Confluence of the North Fork Edisto and South Fork Edisto Rivers	163	101
		North Edisto River	South Carolina	Edisto River	29	18
		South Edisto River	South Carolina	Edisto River	31	19
Combahee - Salkehatchie	South Atlantic Unit 2 (SA2)	Combahee - Salkehatchie River	South Carolina	Confluence of Buck and Rosemary Creeks with (Approximately 33.2906 N, 81.4326 W)	185	115
Savannah	South Atlantic Unit 3 (SA3)	Savannah River	South Carolina/Georgia	New Savannah Bluff Lock and Dam	338	210
Savannah Unoccupied	South Atlantic Unoccupied Unit 1 (SA	Savannah River	South Carolina/Georgia	Augusta Diversion Dam	33	20
Ogeechee	South Atlantic Unit 4 (SA4)	Ogeechee River	Georgia	Confluence of North Fork and South Fork Ogeechee Rivers (Approximately 33.5200 N, 82.9095 W)	448	278
Altamaha	South Atlantic Unit 5 (SA5)	Oconee River	Georgia	Sinclair Dam	227	141
		Ocmulgee River	Georgia	Juliette Dam	363	226
		Altamaha River	Georgia	Confluence of Oconee and Ocmulgee Rivers	216	134
Satilla	South Atlantic Unit 6 (SA6)	Satilla River	Georgia	Confluence of Satilla and Wiggins Creeks (Approximately 31.5041 N, 83.0818 W)	378	235
St. Marys	South Atlantic Unit 7 (SA7)	St. Marys River	Georgia/Florida	Confluence of Middle Prong St. Marys and St. Marys Rivers (Approximately 30.4233 N, 82.2094 W)	203	126

Effects of Critical Habitat Designations

Section 7(a)(2) of the ESA requires Federal agencies, including NMFS, to insure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify designated critical habitat. Federal agencies are also required to confer with NMFS regarding any actions likely to jeopardize a species proposed for listing under the ESA, or likely to destroy or adversely modify proposed critical habitat, pursuant to Section 7(a)(4). A conference involves informal discussions in which NMFS may recommend conservation measures to minimize or avoid adverse effects. The discussions and conservation recommendations are to be documented in a conference report provided to the Federal agency. If requested by the Federal agency, a formal conference report may be issued, including a biological opinion prepared according to 50 CFR 402.14. A formal conference report may be adopted as the biological opinion when the species is listed or critical habitat designated, if no significant new information or changes to the action alter the content of the opinion. When a species is listed or critical habitat is designated, Federal agencies must consult with NMFS on any agency actions to be conducted in an area where the species is present and that may affect the species or its critical habitat. During the consultation, NMFS would evaluate the agency action to determine whether the action may adversely affect listed species or critical habitat and issue its findings in a biological opinion. If NMFS concludes in the biological opinion that the agency action would likely result in the destruction or adverse modification of critical habitat, NMFS would also recommend any reasonable and prudent alternatives to the action. Reasonable and prudent alternatives are defined in 50 CFR 402.02 as alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that would avoid the destruction or adverse modification of critical habitat. Regulations at 50 CFR 402.16 require federal agencies that have retained discretionary involvement or control over an action, or where such discretionary involvement or control is authorized by law, to reinitiate consultation on previously reviewed actions in instances where: (1) Critical habitat is subsequently designated; or (2) new information or changes to the action may result in effects to critical habitat not previously considered in the biological opinion. Consequently, some Federal agencies may request reinitiation of consultation or conference with NMFS on actions for which formal consultation has been completed, if those actions may affect designated critical habitat or adversely modify or destroy proposed critical habitat. Activities subject to the ESA Section 7 consultation process include activities on Federal lands and activities on private or state lands requiring a permit from a Federal agency or some other Federal action, including funding. In the marine and aquatic environments, activities subject to the ESA Section 7 consultation process include activities in Federal waters and in state waters that: (1) Have the potential to affect listed species or critical habitat; and (2) are carried out by a Federal agency, need a permit or license from a Federal agency, or receive funding from a Federal agency. ESA Section 7 consultation would not be required for Federal actions that do not affect listed species or critical habitat and for actions that are not Federally funded, authorized, or carried out.

Activities That May be Affected

Section 4(b)(8) of the ESA requires that we describe briefly and evaluate in any proposed or final regulation to designate critical habitat, those activities that may adversely modify such habitat or that may be affected by such designation. As described in our Draft Impacts Analysis, a wide variety of activities may affect critical habitat and, when carried out, funded, or authorized by a Federal agency, will require an ESA Section 7 consultation because they may affect one or more of the essential features of critical habitat. Such activities include in-water construction for a variety of federal actions, dredging for navigation, harbor expansion or sand and gravel mining, flood control projects, bridge repair and replacement, hydropower licensing, natural gas facility and pipeline construction, ESA research and incidental take permits or fishery research grants, and Clean Water Act TMDL program management. Private entities may also be affected by these proposed critical habitat designations if they are a proponent of a project that requires a Federal permit, Federal funding is received, or the entity is involved in or receives benefits from a Federal project. Future activities will need to be evaluated with respect to their potential to destroy or adversely modify critical habitat. For example, activities may adversely modify the substrate essential feature by removing or altering the substrate. The open passage feature may be adversely modified by the placement of structures such as dams and tidal turbines, research nets, or altering the water depth so that fish cannot swim. The salinity feature may be adversely modified by activities that impact fresh water input such as operation of water control structures and water withdrawals, and impacts to water depth such as dredging. The water quality feature may be adversely modified by land development as well as commercial and recreational activities on rivers that contribute to nutrient loading which could result in decreased dissolved oxygen levels and increased water temperature, and increased sediment deposition that reduces Atlantic sturgeon egg adherence on hard spawning substrate and reduces the interstitial spaces used by larvae for refuge from predators. Dredging to remove sediment build-up or to facilitate vessel traffic may remove or alter hard substrate that is necessary for egg adherence and as refuge for larvae, and may change the water depth resulting in shifts in the salt wedge within the estuary or change other characteristics of the water quality (*e.g.,* temperature, dissolved oxygen) necessary for the developing eggs, larvae, and juveniles. These activities would require ESA Section 7 consultation when they are implemented, funded, or carried out by a federal agency.

Questions regarding whether specific activities will constitute destruction or adverse modification of critical habitat should be directed to us (see **ADDRESSES** and **FOR FURTHER INFORMATION CONTACT**).

Public Comments Solicited

We request that interested persons submit comments, information, and suggestions concerning this proposed rule during the comment period (see **DATES**). We are soliciting comments or suggestions from the public, other concerned governments and agencies, the scientific community, industry, or any other interested party concerning this proposed rule, including any foreseeable economic, national security, or other relevant impact resulting from the proposed designations. You may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES**). Copies of the proposed rule and supporting documentation can be found on the NMFS Southeast Region Web site

at *http://sero.nmfs.noaa.gov/*. We will consider all comments pertaining to this designation received during the comment period in preparing the final rule. Accordingly, the final designation may differ from this proposal.

Information Quality Act and Peer Review

The data and analyses supporting this proposed action have undergone a pre-dissemination review and have been determined to be in compliance with applicable information quality guidelines implementing the Information Quality Act (Section 515 of Public Law 106–554). On July 1, 1994, a joint USFWS/NMFS policy for peer review was issued stating that the Services would solicit independent peer review to ensure the best biological and commercial data is used in the development of rulemaking actions and draft recovery plans under the ESA (59 FR 34270). In addition, on December 16, 2004, the Office of Management and Budget (OMB) issued its Final Information Quality Bulletin for Peer Review (Bulletin). The Bulletin was published in the **Federal Register** on January 14, 2005 (70 FR 2664), and went into effect on June 16, 2005. The primary purpose of the Bulletin is to improve the quality and credibility of scientific information disseminated by the Federal government by requiring peer review of 'influential scientific information'' and ''highly influential scientific information'' prior to public dissemination. ''Influential scientific information'' is defined as ''information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions.'' The Bulletin provides agencies broad discretion in determining the appropriate process and level of peer review. Stricter standards were established for the peer review of ''highly influential scientific assessments,'' defined as information whose ''dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest.''

The information in the Draft Impacts Analysis Report supporting this proposed critical habitat rule is considered influential scientific information and subject to peer review. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of the information used to draft this document, and incorporated the peer review comments into this draft prior to dissemination of this proposed rulemaking. For this action, compliance with the OMB Peer Review Bulletin satisfies any peer review requirements under the 1994 joint peer review policy. Comments received from peer reviewers are available on our Web site at *http://sero.nmfs.noaa.gov/protected_resources/sturgeon/index.html.*

Classification

Takings (Executive Order 12630)

Under E.O. 12630, Federal agencies must consider the effects of their actions on constitutionally protected private property rights and avoid unnecessary takings of property. A taking of property includes actions that result in physical invasion or occupancy of private property, and regulations imposed on private property that substantially affect its value or use. In accordance with E.O. 12630, this proposed rule would not have significant takings implications. A takings implication assessment is not required.

Regulatory Planning and Review (Executive Order 12866)

This proposed rule has been determined to be significant for purposes of E.O. 12866 because it may create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. A draft economic impacts report has been prepared to support an impacts analysis under section 4(b)(2) of the ESA.

Federalism (Executive Order 13132)

Pursuant to the Executive Order on Federalism, E.O. 13132, we determined that this proposed rule does not have significant Federalism effects and that a Federalism assessment is not required. However, in keeping with Department of Commerce policies and consistent with ESA regulations at 50 CFR 424.16(c)(1)(ii), we will request information for this proposed rule from state resource agencies in North Carolina, South Carolina, Georgia, and Florida. The proposed designations may have some benefit to state and local resource agencies in that the proposed rule more clearly defines the physical and biological features essential to the conservation of the species and the areas on which those features are found.

Energy Supply, Distribution, and Use (Executive Order 13211)

Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking an action expected to lead to the promulgation of a final rule or regulation that is a significant regulatory action under E.O. 12866 and is likely to have a significant adverse effect on the supply, distribution, or use of energy. OMB Guidance on Implementing E.O. 13211 (July 13, 2001) states that significant adverse effects could include any of the following outcomes compared to a world without the regulatory action under consideration: (1) Reductions in crude oil supply in excess of 10,000 barrels per day; (2) reductions in fuel production in excess of 4,000 barrels per day; (3) reductions in coal production in excess of 5 million tons per year; (4) reductions in natural gas production in excess of 25 million cubic feet per year; (5) reductions in electricity production in excess of 1 billion kilowatt-hours per year or in excess of 500 megawatts of installed capacity; (6) increases in energy use required by the regulatory action that exceed any of the thresholds above; (7) increases in the cost of energy production in excess of one percent; (8) increases in the cost of energy distribution in excess of one percent; or (9) other similarly adverse outcomes. A regulatory action could also have significant adverse effects if it: (1) Adversely affects in a material way the productivity, competition, or prices in the energy sector; (2) adversely affects in a material way productivity, competition or prices within a region; (3) creates a serious inconsistency or otherwise interferes with an action taken or planned by another agency regarding energy; or (4) raises novel legal or policy issues adversely affecting the supply, distribution or use of energy arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866 and 13211.

This rule, if finalized, will not have a significant adverse effect on the supply, distribution, or use of energy. Therefore, we have not prepared a Statement of Energy Effects.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

We prepared an initial regulatory flexibility analysis (IRFA) pursuant to section 603 of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601, *et seq.*). The IRFA analyzes the impacts to those areas where critical habitat is proposed and is included as Appendix A of the Draft Impacts Analysis Report and is available upon request (see **ADDRESSES** section). The IRFA is summarized below, as required by section 603 of the RFA. The IRFA describes the economic impact this proposed rule, if adopted, would have on small entities.

As discussed previously and in our IRFA, the designation of critical habitat is required under the ESA, and in this particular case, is also required

pursuant to a court-ordered settlement agreement. The purpose of the critical habitat designation, as required by the ESA, is to designate, to the maximum extent prudent and determinable, the specific areas that contain the physical or biological features essential to the conservation of the species and that may require special management considerations or protections. The proposed critical habitat rule does not directly apply to any particular entity, small or large. The rule would operate in conjunction with ESA Section 7(a)(2), which requires that federal agencies insure, in consultation with NMFS, that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Consultations may result in economic impacts to federal agencies and proponents of proposed actions (*e.g.,* permittees, applicants, grantees). Those economic impacts may be in the form of administrative costs of participating in a Section 7 consultation and, if the consultation results in required measures to protect critical habitat, project modification costs.

We evaluated whether predicted future federal actions would affect Atlantic sturgeon, the essential features of the proposed critical habitat, or both, or whether there were other identifiable baseline impacts that might be coextensive with impacts to habitat features, such as impacts to shortnose sturgeon. If a proposed action affects only listed sturgeon or affects both listed sturgeon and essential features, the administrative and project modification costs are not necessarily attributable solely to critical habitat designation. In these circumstances, the added administrative costs associated with addressing critical habitat in a consultation were considered incremental impacts of the proposed designation. There could also be incremental project modification costs for consultations with coextensive impacts, if an action is considered likely to require unique project modifications to specifically address impacts to the features. If a proposed action would only affect the essential features, the administrative and project modification costs would be attributable to the critical habitat designation and thus treated as incremental impacts of the designation.

For most, if not all, of the federal activities predicted to occur in the next 10 years, if the effects to critical habitat will be adverse and require formal consultation, those effects would also constitute adverse effects to Atlantic sturgeon or shortnose sturgeon, either directly when they are in the project area, or indirectly due to the effects on their habitat. Thus, as discussed previously, projects that adversely affect the proposed essential features are likely to always also adversely affect the species and the project impacts would not be incremental. Therefore, the only costs of this class of actions that are attributable to this rule are the administrative costs of adding critical habitat analyses to a consultation that would occur anyway, due to impacts to sturgeon species.

For some of the predicted future federal activities, it may be feasible to conduct the action when sturgeon are out of the action area. If effects to critical habitat are temporary such that the essential features return to their pre-project condition by the time the sturgeon return and need to use the features, there might not be any adverse effects to either the species or the critical habitat. In these circumstances, consultations would be fully incremental consultations only on critical habitat, and the consultations would be informal. This would likely only apply to actions that affect just spawning habitat in the upper parts of the rivers, as sturgeon of various ages are present year-round in the lower reaches of the rivers and the estuaries. Because the costs of fully incremental informal consultations are higher than the marginal costs of adding critical habitat analyses to coextensive formal consultations, we conservatively assumed future actions will be incremental informal consultations, where applicable. Thus, the costs of these future activities that are attributable to the rule would consist of the full costs of informal consultation, to NMFS, to the action agency, and to any third party proponent of the action (*e.g.,* applicant, permittee).

Ten different federal entities implemented or approved 14 different categories of activities in the areas covered by the proposed critical habitat units that required consultations in the past. All categories of activities implemented by these federal entities were identified as having the potential to affect the essential features. The total number of projected consultations over 10 years is indicated in parentheses below.

1. USACE—Navigation maintenance dredging, harbor expansion (14)
2. USACE—WRDA flood control, ecosystem restoration studies (6)
3. USACE—WRDA dam operations, repair, fishway construction (3)
4. USACE—Section 404/RHA section 10 permitting—dredge, fill, construction (20)
5. FHWA—Bridge repair, replacement (67)
6. USCG—Bridge repair, replacement permitting (3)
7. FERC—Hydropower licensing (5)
8. FERC—LNG facilities, pipelines authorization (5)
9. NRC—Nuclear power plant construction/operation licensing (8)
10. NMFS—ESA research or incidental take permitting (section 10) (46)
11. USFWS—Fishery management grants (11)
12. EPA—Nationwide pesticide authorizations (9)
13. FEMA—Disaster assistance/ preparation grants (5)
14. DOE—Nuclear fuel management (3)

We predict that a total of 205 federal actions will require consultation due to impacts to critical habitat over the next 10 years; of these, we project that 179 actions could involve third parties that might be small entities. One hundred fifty-six projected future federal actions that could involve third parties will consist of coextensive formal consultations considering impacts to both sturgeon and critical habitat. The administrative costs of consultation to third parties per consultation from these actions will either be $880 or $2,080, depending upon whether they bear the costs of completing a biological assessment. The 23 projected future actions that would be fully incremental and that could involve third parties would result in either $1,500 or $3,000 in costs to such third parties per consultation, depending upon whether they bear the costs of completing a biological assessment. Given the EPA consultations will be national in scope and involve all of NMFS's listed species and designated critical habitats, costs to third parties involved in the these consultations that are attributable to this rulemaking are conservatively estimated to be $25,072 for all units over 10 years.

Businesses in North American Industry Classification System (NAICS) Subsector 325320, Pesticide and Other Agricultural Chemical Manufacturing, could be involved in the 5 nationwide EPA pesticide authorization consultations. A small business in this Subsector is defined by the SBA as having 1,000 employees (*https://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf).*

Businesses in North American Industry Classification System (NAICS) Sector 22 (Utilities) could be involved in 18 actions projected to occur in federal action categories 7–9. For hydropower power generation and natural gas distribution enterprises, a small business is defined by the SBA as

one having a total of 500 employees. For nuclear power generation, a small business is defined by the SBA as one having a total of 750 employees. Businesses in NAICS Sector 54 could be involved as contractors assisting with the ESA consultation in any of the 179 projected future federal actions that could involve third parties. Relevant subsectors could include 541370, Surveying and Mapping, 541620, Environmental Consulting Services, or 541690, Other Scientific and Technical Consulting Services. A small business in any of these subsectors is defined by the SBA as one having average annual receipts of $15 million.

Businesses in NAICS Sector 23, Construction, could be involved in a number of categories of projected future actions, where they could incur administrative costs of construction. Businesses in subsector 237120, Oil and Gas Pipeline and Related Structures Construction, could be involved in the 3 FERC LNG pipeline consultations. A small business in this subsector has average annual receipts of $36.5 million. Businesses in subsector 237310, Highway, Street, and Bridge Construction, could be involved in the 70 FHWA and USCG bridge repair, replacement consultations. A small business in this subsector has average annual receipts of $36.5 million.

Businesses in subsector 238, Other Specialty Trade Contractors, could be involved as construction contractors in the 20 future USACE section 404/RHA permitting actions and the 5 FEMA disaster assistance actions. Small businesses in this subsector have average annual receipts of $15 million.

Cities could be involved in many of the 70 FHWA and USCG bridge repair, replacement projects, and some proportion of the 20 USACE section 404/RHA permitting actions. The SBA defines a small governmental jurisdiction as cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000.

Our consultation database does not track the identity of past third parties involved in consultations, or whether the third parties were small entities; therefore we have no basis to determine the percentage of the 179 third parties that may potentially be involved in future consultations due to impacts to proposed critical habitat that may be small businesses, small nonprofits, or small government jurisdictions.

There is no indication in the data evaluated in the Draft Impacts Analysis Report, which serves as the basis for this IRFA, that the designation would place small entities at a competitive disadvantage compared to large entities. Incremental economic impacts due to the designation proposed for the Carolina and South Atlantic DPSs will be minimal overall. These costs will result from participation in the Section 7 consultation process, and will be spread over 14 river systems totaling over 3,300 river miles in 4 states. Federal agencies will bear the majority of the costs (59% to 83%), which will be limited to administrative costs of consultation for all parties involved. There are no apparent concentrations of costs. Assuming a third party would be involved and incur costs for each of the 179 projects in all of the categories of federal activity that involved third parties in the past, the costs to third parties that could be involved in the projected future consultations, other than the EPA consultations, would be between $880 and $2,080 for each action for coextensive formal consultations, and between $1,500 and $3,000 for each fully incremental informal consultation. The total costs over the next 10 years to all third parties for these 2 classes of actions would be between $30,000 and $60,000 for the incremental informal consultations and between $136,400 and $322,400 for the coextensive consultations. The total costs over the next 10 years to third parties involved in the EPA consultations are conservatively estimated to be $25,072 across all units.

Even though we cannot determine relative numbers of small and large entities that may be affected by the designation of critical habitat, there is no indication that affected project applicants would be limited to, nor disproportionately comprised of, small entities. It is unclear whether small entities would be placed at a competitive disadvantage compared to large entities. However, as described in the Draft Impacts Analysis Report, consultations and project modifications will be required based on the type of permitted action and its associated impacts on the essential critical habitat features.

It is unlikely that the proposed rule will significantly reduce profits or revenue for small businesses, if they are involved in future consultations required by this rulemaking, given costs will be limited to administrative costs of participating in the consultation process and the maximum cost of a single consultation to a third party is projected to be $3,000.

We encourage all small businesses, small nonprofits and small governmental jurisdictions that may be affected by this rule to provide comment on the potential economic impacts of the proposed designation, to improve the above analysis.

There are no record-keeping or reporting requirements associated with the proposed rule. Similarly, there are no other compliance requirements in the rule. There are no professional skills necessary for preparation of any report or record, although consultants are frequently involved on behalf of project proponents, for example in preparing biological assessments of the impacts of a proposed action on listed species and critical habitat. Federal laws and regulations that directly and indirectly protect the Carolina and South Atlantic DPSs of Atlantic sturgeon are listed and discussed in the Draft Impacts Analysis Report. No federal laws or regulations duplicate or conflict with the proposed rule. Existing federal laws and regulations overlap with the proposed rule only to the extent that they provide protection to marine natural resources. However, no existing laws or regulations specifically address negative impacts to, or require the avoidance of the destruction or adverse modification of, the essential features of critical habitat for the Carolina and South Atlantic DPSs of Atlantic sturgeon.

We considered a no action (status quo) alternative to the proposed designation under which NMFS would not propose critical habitat for the Carolina and South Atlantic DPSs of Atlantic sturgeon. Under this alternative, conservation and recovery of the listed species would depend upon the protection provided under the ''jeopardy'' provisions of Section 7 of the ESA. Compared to the status quo, there would be no increase in the number of ESA consultations or project modifications in the future that would not otherwise be required due to the listing of the Carolina and South Atlantic DPSs of Atlantic sturgeon. However, we have determined that the physical features forming the basis for our proposed critical habitat designation are essential to the conservation of the Carolina and South Atlantic DPSs of Atlantic sturgeon. Thus, the lack of protection of the essential features from adverse modification and/or destruction could result in decline in abundance of the Carolina and South Atlantic DPSs of Atlantic sturgeon, and loss of associated economic and other values this species provides to society. Thus, the no action alternative is not necessarily a ''no cost'' alternative for small entities.

We also considered an alternative of including all large coastal rivers from the North Carolina/Virginia border southward to the St Johns River, Florida, in the designation. Several large coastal rivers within the geographic area

occupied by the Carolina and South Atlantic DPSs of Atlantic sturgeon do not appear to support spawning and juvenile recruitment or to contain suitable habitat features to support spawning. These rivers are the Chowan and New Rivers in North Carolina; the Waccamaw (above its confluence with Bull Creek which links it to the Pee Dee River), Sampit, Ashley, Ashepoo, and Broad-Coosawhatchie Rivers in South Carolina; and the St. Johns River, Florida. We have no information, current or historic, of Atlantic sturgeon utilizing the Chowan and New Rivers in North Carolina. Recent telemetry work by Post *et al.* (2014) indicates that Atlantic sturgeon do not utilize the Sampit, Ashley, Ashepoo, and Broad-Coosawhatchie Rivers in South Carolina. These rivers are short, coastal plains rivers that most likely do not contain suitable habitat for Atlantic sturgeon. Post *et al.* (2014) also found Atlantic sturgeon only utilized the portion of the Waccamaw River downstream of Bull Creek. Due to man-made structures and alterations, spawning areas in the St. Johns are not accessible and therefore do not support a reproducing population. For these reasons, we are not designating these coastal rivers, or portions of the rivers, as critical habitat.

Coastal Zone Management Act

We have determined that this action will have no reasonably foreseeable effects on the enforceable policies of approved Coastal Zone Management Programs of North Carolina, South Carolina, Georgia and Florida. Upon publication of this proposed rule, these determinations will be submitted for review by the responsible state agencies under section 307 of the Coastal Zone Management Act.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This proposed rule does not contain any new or revised collection of information. This rule, if adopted, would not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

This proposed rule will not produce a Federal mandate. The designation of critical habitat does not impose a legally-binding duty on non-Federal government entities or private parties. The only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under Section 7 of the ESA. Non-Federal entities which receive Federal funding, assistance, permits or otherwise require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, but the Federal agency has the legally binding duty to avoid destruction or adverse modification of critical habitat.

We do not anticipate that this rule, if finalized, will significantly or uniquely affect small governments. Therefore, a Small Government Action Plan is not required.

Consultation and Coordination With Indian Tribal Governments (Executive Order 13175)

The longstanding and distinctive relationship between the Federal and tribal governments is defined by treaties, statutes, executive orders, judicial decisions, and agreements, which differentiate tribal governments from the other entities that deal with, or are affected by, the Federal Government.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, outlines the responsibilities of the Federal Government in matters affecting tribal interests. If NMFS issues a regulation with tribal implications (defined as having a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes) we must consult with those governments or the Federal Government must provide funds necessary to pay direct compliance costs incurred by tribal governments. The proposed critical habitat designations for the Carolina and South Atlantic DPSs do not have tribal implications.

References Cited

A complete list of all references cited in this rulemaking can be found on our Web site at *http://sero.nmfs.noaa.gov/protected_resources/sturgeon/index.html* and is available upon request from the NMFS Southeast Region Fisheries Office in St. Petersburg, Florida (see **ADDRESSES**).

List of Subjects in 50 CFR part 226

Endangered and threatened species.

Dated: May 24, 2016.

Samuel D Rauch, III

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, we propose to amend 50 CFR part 226 as follows:

PART 226—DESIGNATED CRITICAL HABITAT

■ 1. The authority citation for part 226 continues to read as follows:

Authority: 16 U.S.C. 1533.

■ 2. Add § 226.226 to read as follows:

§ 226.226 Critical habitat for the Carolina and South Atlantic distinct population Segments of Atlantic sturgeon.

Critical habitat is designated for the Carolina and South Atlantic DPSs of Atlantic sturgeon as described in paragraphs (a) through (b) of this section. The textual descriptions in paragraphs (c) through (d) of this section are the definitive source for determining the critical habitat boundaries.

(a) The physical features essential for the conservation of Atlantic sturgeon belonging to the Carolina and South Atlantic Distinct Population Segments are those habitat components that support successful reproduction and recruitment. These are:

(1) Suitable hard bottom substrate (*e.g.,* rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (*i.e.,* 0.0–0.5 parts per thousand range) for settlement of fertilized eggs and refuge, growth, and development of early life stages;

(2) Transitional salinity zones inclusive of waters with a gradual downstream gradient of 0.5–30 parts per thousand and soft substrate (*e.g.,* sand, mud) downstream of spawning sites for juvenile foraging and physiological development;

(3) Water of appropriate depth and absent physical barriers to passage (*e.g.,* locks, dams, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support:

(i) Unimpeded movement of adults to and from spawning sites;

(ii) Seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary; and

(iii) Staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (at least 1.2 m) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river;

(4) Water quality conditions, especially in the bottom meter of the water column, with temperature and oxygen values that support:

(i) Spawning;

(ii) Annual and inter-annual adult, subadult, larval, and juvenile survival; and

(iii) Larval, juvenile, and subadult growth, development, and recruitment.

Appropriate temperature and oxygen values will vary interdependently, and depending on salinity in a particular habitat. For example, 6 mg/L dissolved oxygen (D.O.) for juvenile rearing habitat is considered optimal, whereas D.O. less than 5.0 mg/L for longer than 30 days is considered suboptimal when water temperature is greater than 25°C. In temperatures greater than 26°C, D.O. greater than 4.3 mg/L is needed to protect survival and growth. Temperatures of 13° C to 26° C for spawning habitat are considered optimal

(b) Critical habitat is designated for the following DPSs in the following states and counties:

DPS	State—Counties
Carolina	NC—Anson, Bertie, Beaufort, Bladen, Brunswick, Carteret, Craven, Columbus, Duplin, Edgecombe, Halifax, Hyde, Johnston, Lenoir, Martin, Nash, New Hanover, Northampton, Pamlico, Pender, Pitt, Richmond, Wake, Washington, and Wayne SC—Berkeley, Calhoun, Charleston, Chesterfield, Clarendon, Darlington, Dillon, Fairfield, Florence, Kershaw, Georgetown, Horry, Lee, Lexington, Marion, Marlboro, Newberry, Orangeburg, Richland, Sumter, and Williamsburg
South Atlantic	SC—Aiken, Allendale, Bamberg, Barnwell, Beaufort, Charleston, Colleton, Dorchester, Edgefield, Hampton, Jasper, Lexington, and Orangeburg GA—Appling, Atkinson, Baldwin, Ben Hill, Bibb, Bleckley, Brantley, Bryan, Bulloch, Burke, Camden, Charlton, Chatham, Coffee, Columbia, Dodge, Effingham, Emanuel, Glascock, Glynn, Hancock, Houston, Irwin, Jasper, Jeff Davis, Jefferson, Jenkins, Johnson, Jones, Laurens, Long, McIntosh, Montgomery, Pierce, Plaski, Richmond, Screven, Tattnall, Telfair, Toombs, Twiggs, Ware, Washington, Wayne, Wheeler, and Wilkinson FL—Baker and Nassau

(c) *Critical Habitat Boundaries of the Carolina DPS.* The lateral extent for all critical habitat units for the Carolina DPS of Atlantic sturgeon is the ordinary high water mark on each bank of the river and shorelines. Critical habitat for the Carolina DPS of Atlantic sturgeon is:

(1) Carolina Unit 1 includes the Roanoke River main stem from the Roanoke Rapids Dam downstream to RKM 0;

(2) Carolina Unit 2 includes the Tar-Pamlico River main stem from the Rocky Mount Millpond Dam downstream to RKM 0;

(3) Carolina Unit 3 includes the Neuse River main stem from the Milburnie Dam downstream to RKM 0;

(4) Carolina Unit 4 includes the Cape Fear River main stem from Lock and Dam #2 downstream to RKM 0 and the Northeast Cape Fear River from the upstream side of Rones Chapel Road Bridge downstream to the confluence with the Cape Fear River;

(5) Carolina Unit 5 includes the Pee Dee River main stem from Blewett Falls Dam downstream to RKM 0, the Waccamaw River from Bull Creek downstream to RKM 0, and Bull Creek from the Pee Dee River to the confluence with the Waccamaw River;

(6) Carolina Unit 6 includes the Black River main stem from Interstate Highway 20 downstream to RKM 0;

(7) Carolina Unit 7 includes the Santee River main stem from the Wilson Dam downstream to the fork of the North Santee River and South Santee River distributaries, the Rediversion Canal from the St. Stephen Powerhouse downstream to the confluence with the Santee River, the North Santee River from the fork of the Santee River and South Santee River downstream to RKM 0, the South Santee River from the fork of the Santee River and North Santee River downstream to RKM 0, the Tailrace Canal from Pinopolis Dam downstream to the West Branch Cooper River, the West Branch Cooper River from the Tailrace Canal downstream to the confluence with the East Branch Cooper River, and the Cooper River from confluence of the West Branch Cooper River and East Branch Cooper River tributaries downstream to RKM 0;

(8) Carolina Unoccupied Unit 1 includes the Cape Fear River from Huske Lock and Dam (Lock and Dam #3) downstream to Lock and Dam #2; and

(9) Carolina Unoccupied Unit 2 includes the Wateree River from the Wateree Dam downstream to the confluence with the Congaree River, the Broad River from the Parr Shoals Dam downstream to the confluence with the Saluda River, the Congaree River from the confluence of the Saluda River and Broad River downstream to the Santee River, the Santee River from the confluence of the Congaree River and Wateree River downstream to Lake Marion, Lake Marion from the Santee River downstream to the Diversion Canal, the Diversion Canal from Lake Marion downstream to Lake Moultrie, Lake Moultrie from the Diversion Canal downstream to the Pinopolis Dam and the Rediversion Canal, the Rediversion Canal from Lake Moultrie downstream to the St. Stephen Powerhouse.

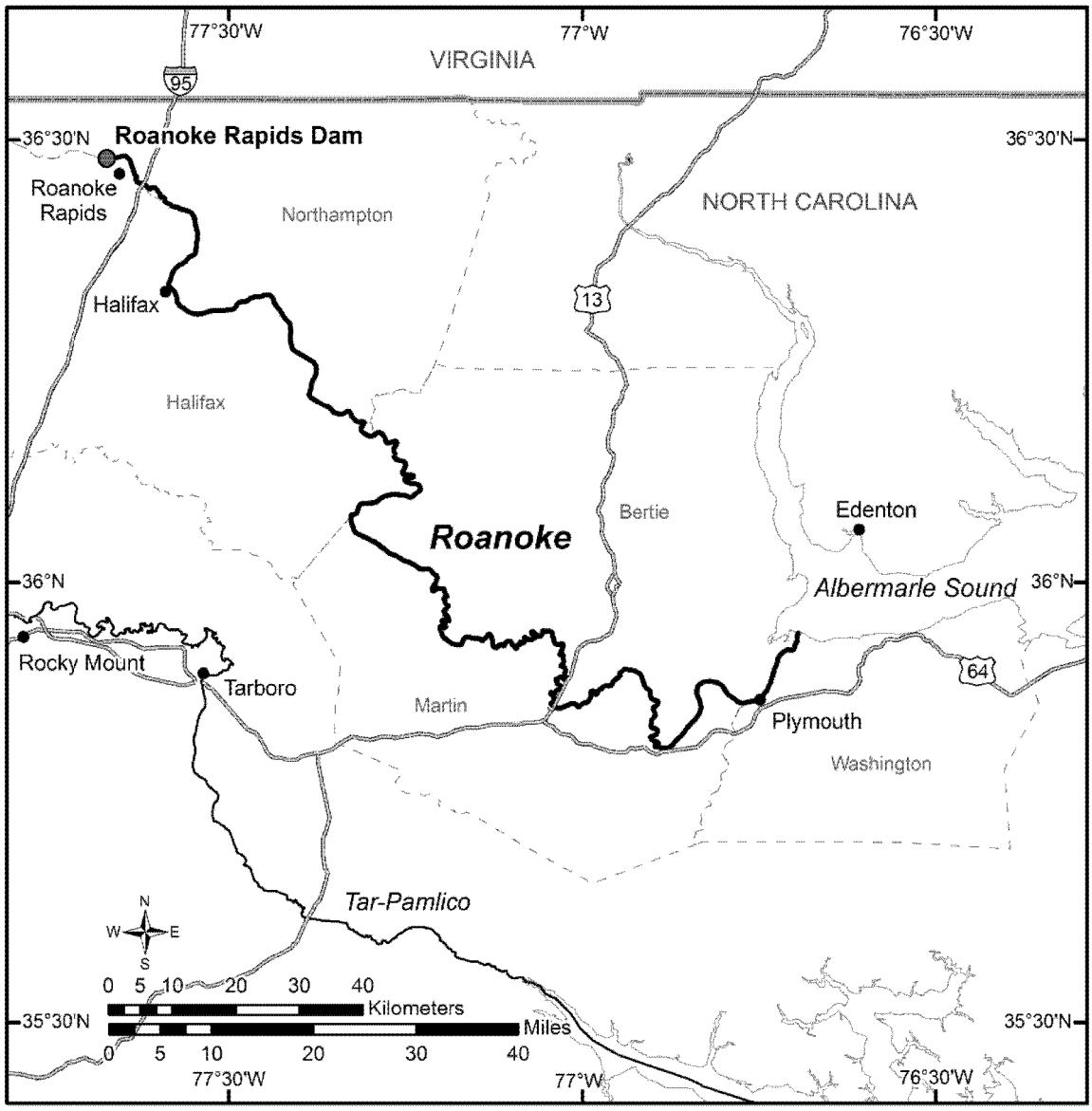
(d) *Areas Not Included in Critical Habitat.* Pursuant to ESA section 3(5)(A)(i), all areas containing existing (already constructed) federally authorized or permitted man-made structures such as aids-to-navigation (ATONs), artificial reefs, boat ramps, docks, pilings, maintained channels, or marinas.

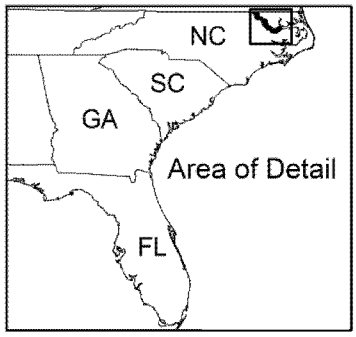
(e) Maps of The Carolina DPS follow:

BILLING CODE 35101–22–P

Carolina Unit 1
Roanoke Unit

Map 1

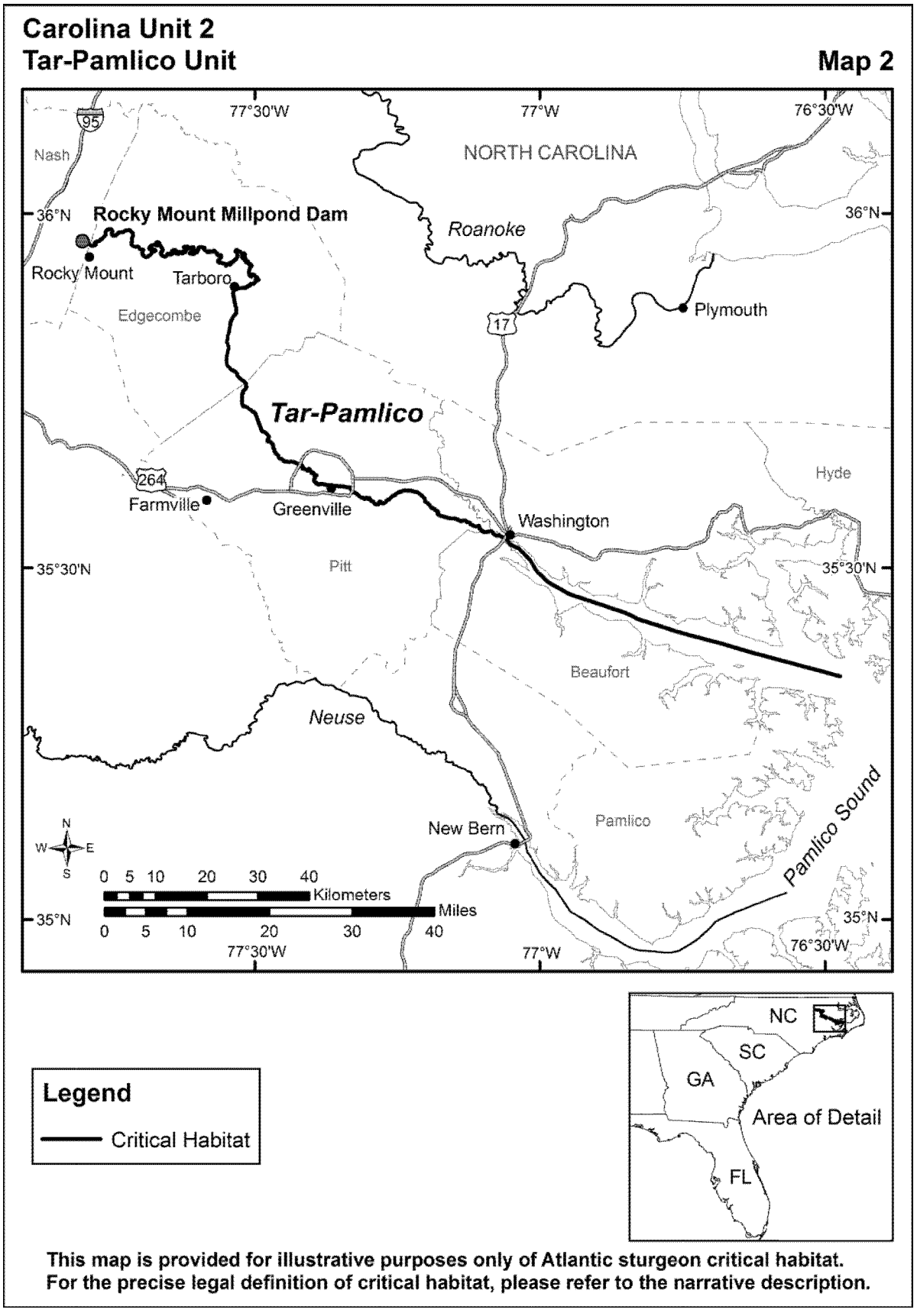


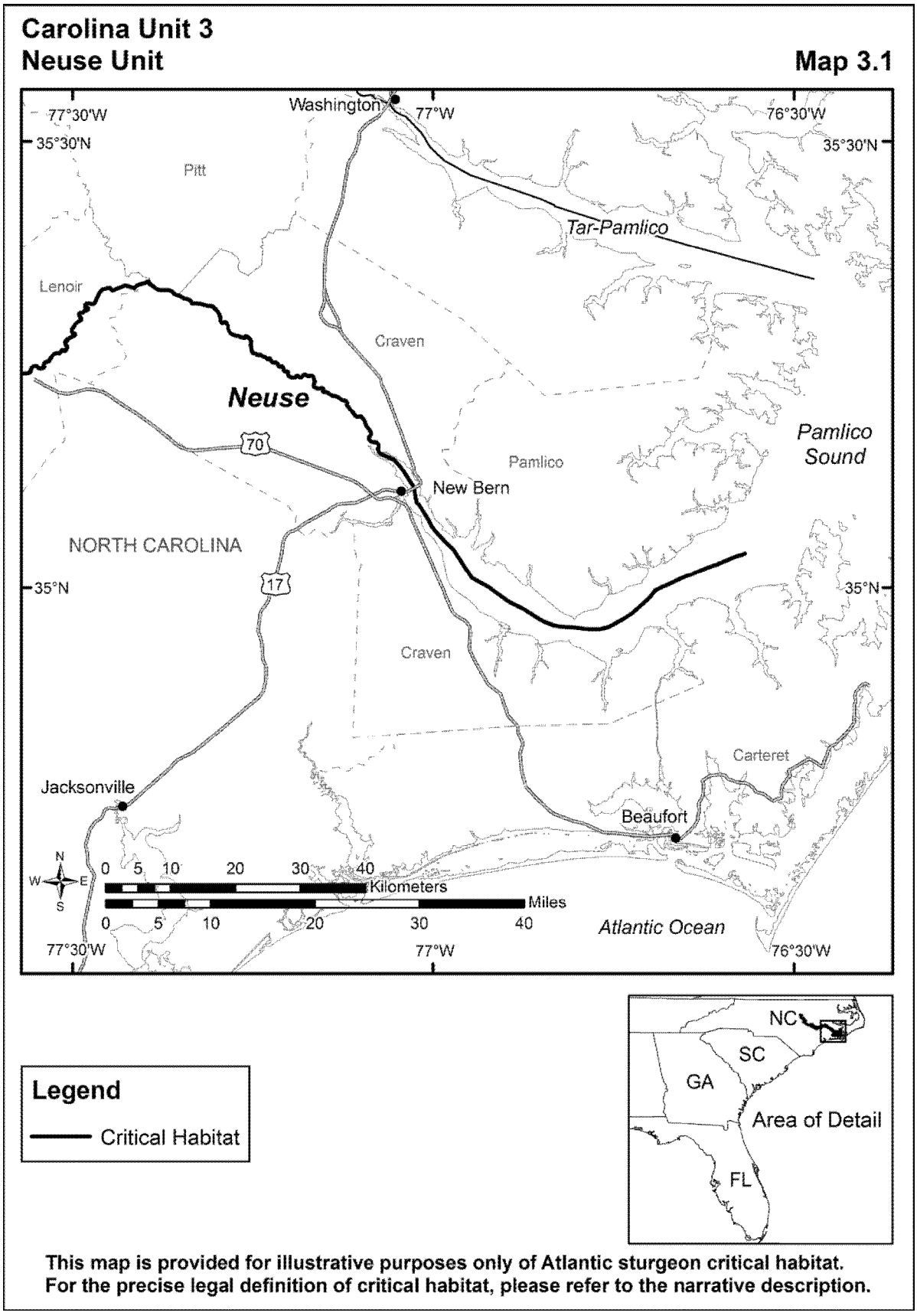


Legend

Critical Habitat

This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat. For the precise legal definition of critical habitat, please refer to the narrative description.


Carolina Unit 2
Tar-Pamlico Unit
Map 2
77°30'W
77°W
76°30'W
NORTH CAROLINA
Nash
95
36°N
Rocky Mount Millpond Dam
Roanoke
Rocky Mount
Tarboro
Edgecombe
17
Plymouth
Tar-Pamlico
264
Farmville
Greenville
Washington
Hyde
35°30'N
Pitt
Beaufort
Neuse
Pamlico
New Bern
Pamlico Sound
35°N
N
W
E
S
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
NC
SC
GA
FL
Area of Detail
Legend
Critical Habitat
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.


Carolina Unit 3
Neuse Unit
Map 3.1
77°30'W
35°30'N
Washington
77°W
76°30'W
35°30'N
Pitt
Tar-Pamlico
Lenoir
Craven
Neuse
70
Pamlico
Pamlico Sound
New Bern
NORTH CAROLINA
35°N
17
35°N
Craven
Carteret
Jacksonville
Beaufort
N
W
E
S
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
Atlantic Ocean
77°30'W
77°W
76°30'W
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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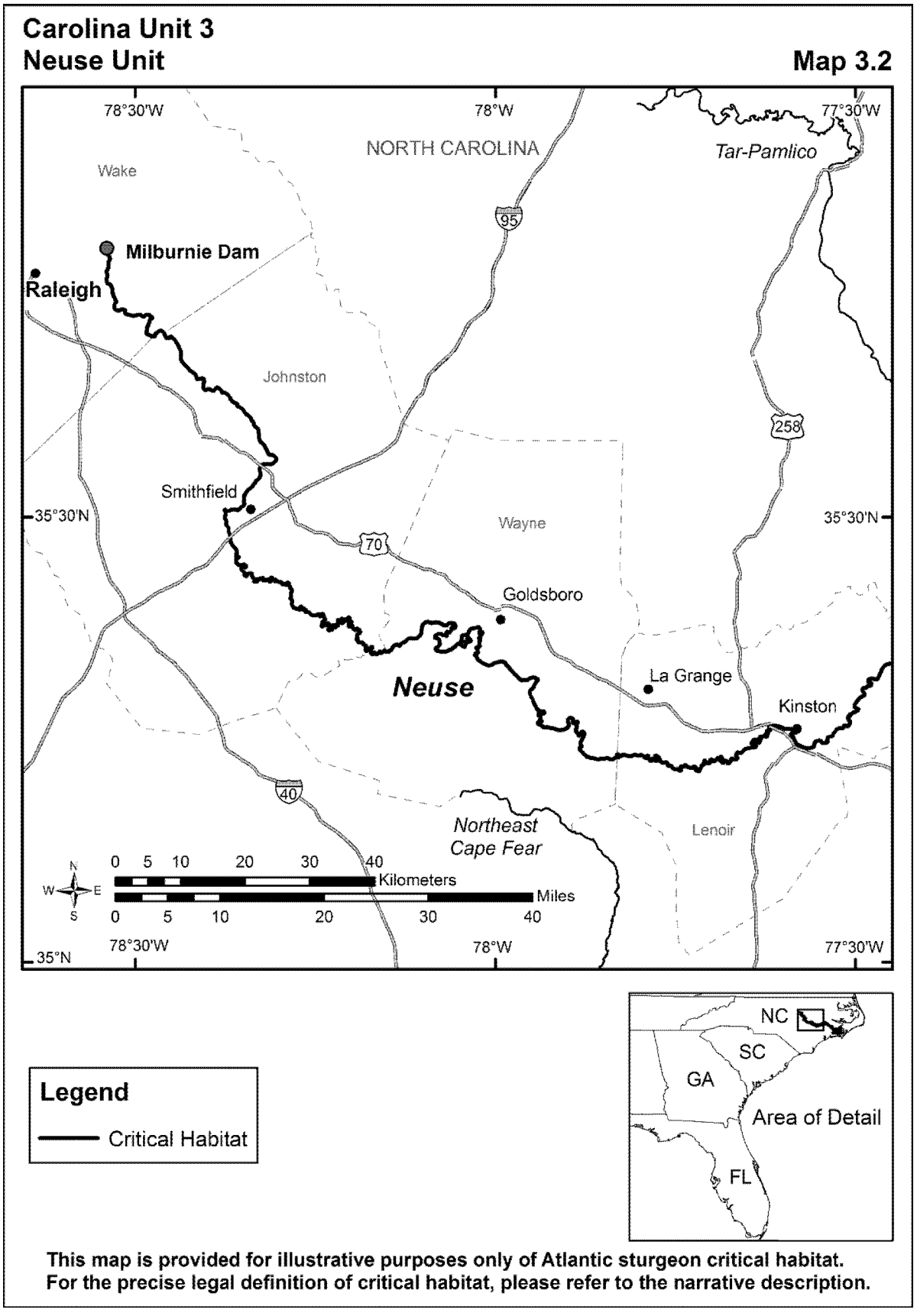
Carolina Unit 3
Neuse Unit
Map 3.2
78°30'W
78°W
77°30'W
NORTH CAROLINA
Tar-Pamlico
Wake
95
Milburnie Dam
Raleigh
Johnston
258
Smithfield
35°30'N
Wayne
70
Goldsboro
Neuse
La Grange
Kinston
40
Northeast
Cape Fear
Lenoir
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
N
W
E
S
35°N
NC
SC
GA
FL
Area of Detail
Legend
Critical Habitat
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
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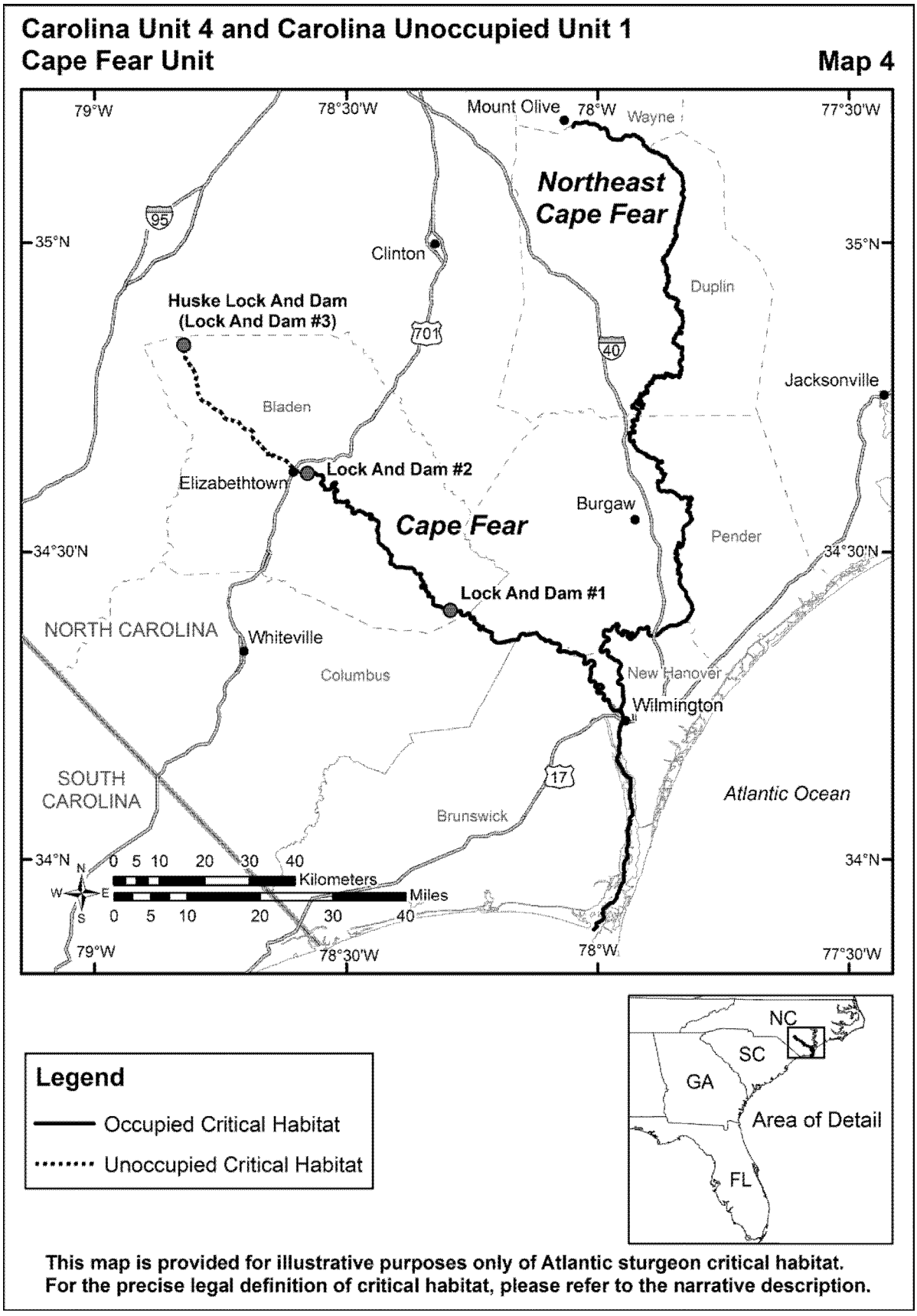
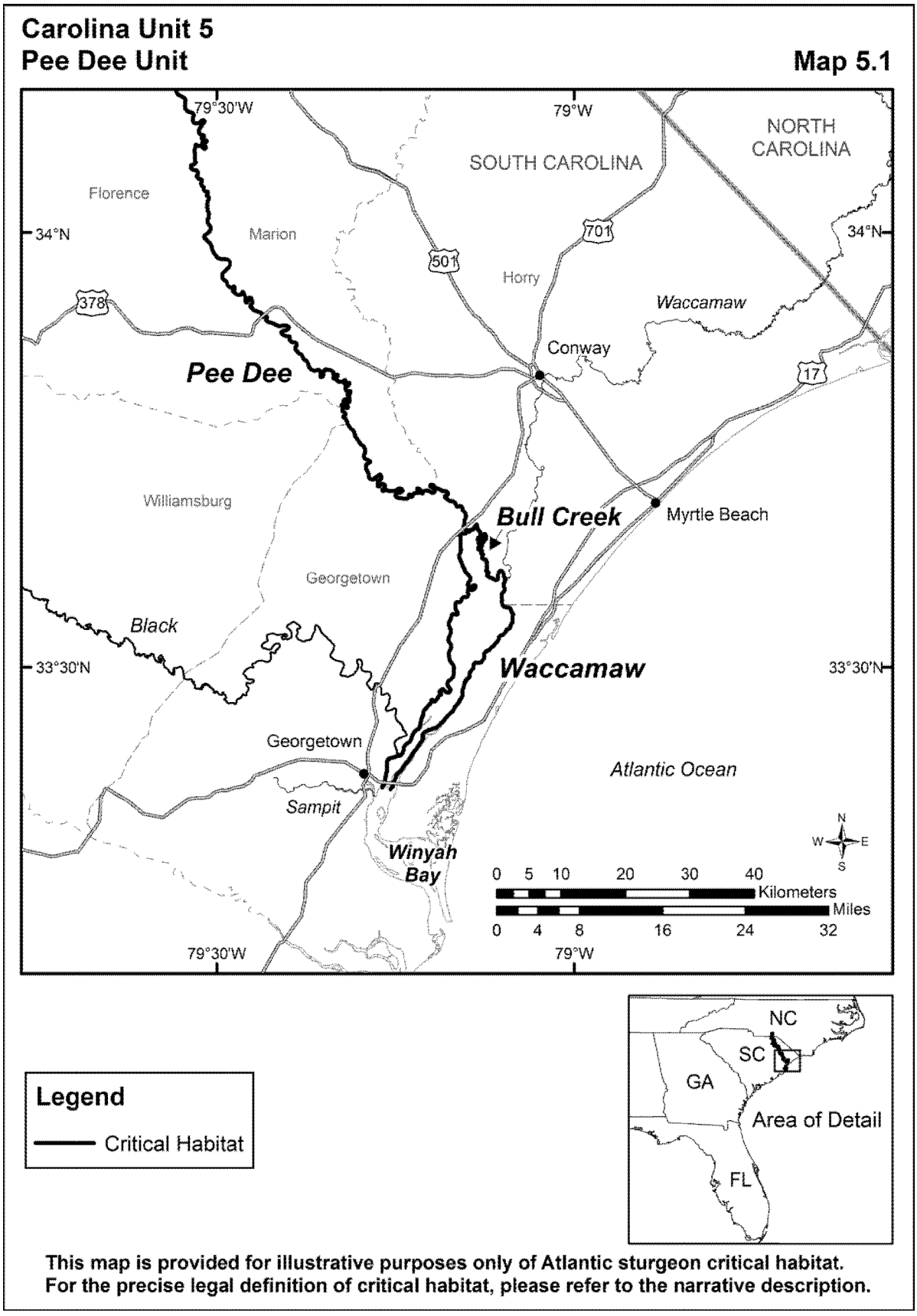

Carolina Unit 4 and Carolina Unoccupied Unit 1
Cape Fear Unit
Map 4
79°W
78°30'W
78°W
77°30'W
35°N
34°30'N
34°N
Mount Olive
Wayne
Northeast
Cape Fear
Clinton
Duplin
Huske Lock And Dam
(Lock And Dam #3)
Jacksonville
Bladen
Lock And Dam #2
Elizabethtown
Burgaw
Cape Fear
Pender
Lock And Dam #1
NORTH CAROLINA
Whiteville
Columbus
New Hanover
Wilmington
SOUTH
CAROLINA
Brunswick
Atlantic Ocean
95
701
40
17
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
N
W
E
S
Legend
Occupied Critical Habitat
Unoccupied Critical Habitat
NC
SC
GA
FL
Area of Detail
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.


Carolina Unit 5
Pee Dee Unit
Map 5.1
79°30'W
79°W
NORTH CAROLINA
SOUTH CAROLINA
Florence
Marion
Horry
34°N
701
501
378
Waccamaw
Conway
17
Pee Dee
Williamsburg
Bull Creek
Myrtle Beach
Georgetown
Black
33°30'N
Waccamaw
Georgetown
Atlantic Ocean
Sampit
Winyah Bay
N
W
E
S
0 5 10 20 30 40
Kilometers
Miles
0 4 8 16 24 32
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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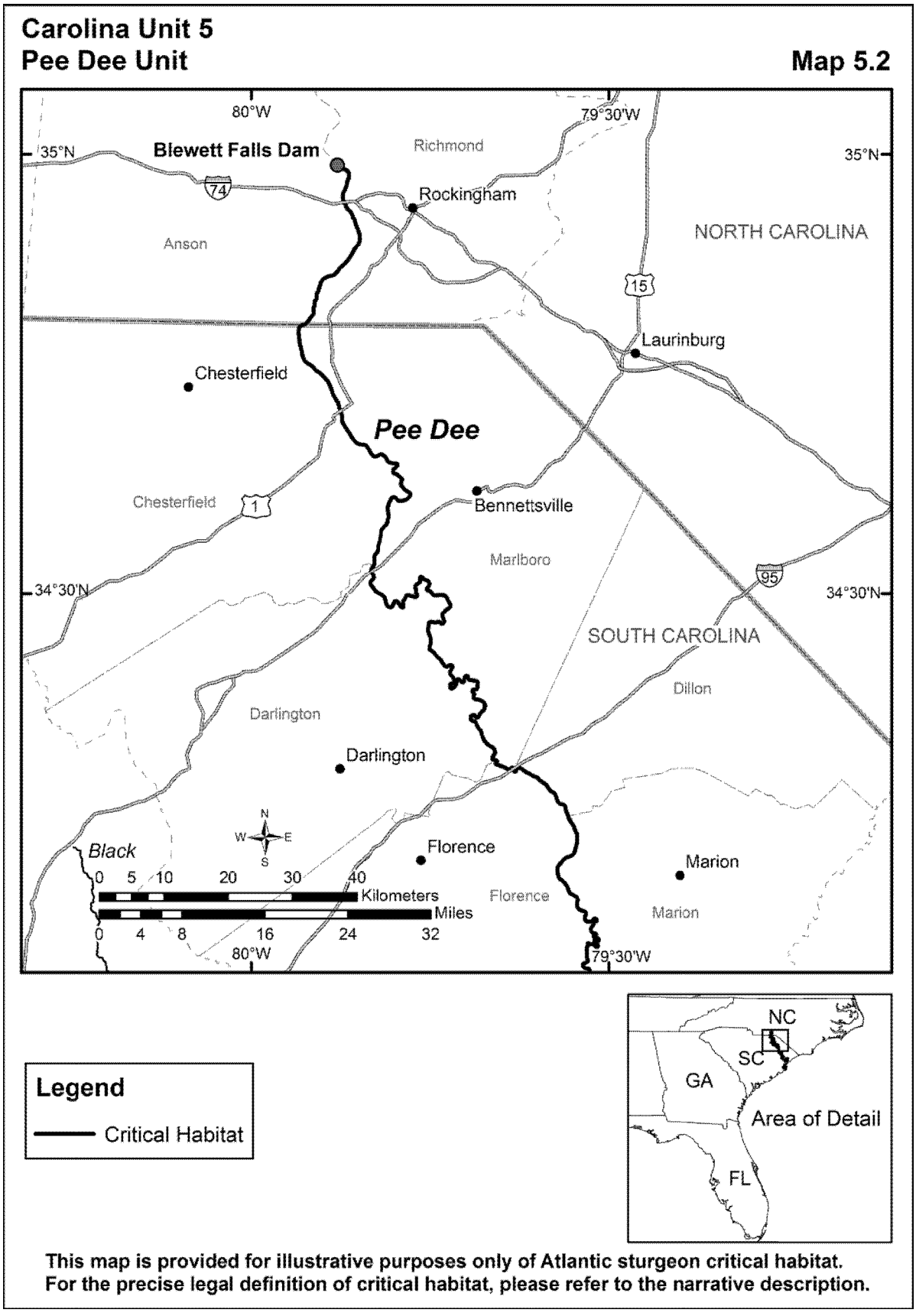
For the precise legal definition of critical habitat, please refer to the narrative description.


Carolina Unit 5
Pee Dee Unit
Map 5.2
80°W
79°30'W
35°N
Blewett Falls Dam
Richmond
Rockingham
NORTH CAROLINA
Anson
74
15
Laurinburg
Chesterfield
Pee Dee
Chesterfield
1
Bennettsville
Marlboro
34°30'N
95
SOUTH CAROLINA
Dillon
Darlington
Darlington
N
W
E
S
Black
Florence
Marion
0 5 10 20 30 40
Kilometers
Florence
Miles
Marion
0 4 8 16 24 32
80°W
79°30'W
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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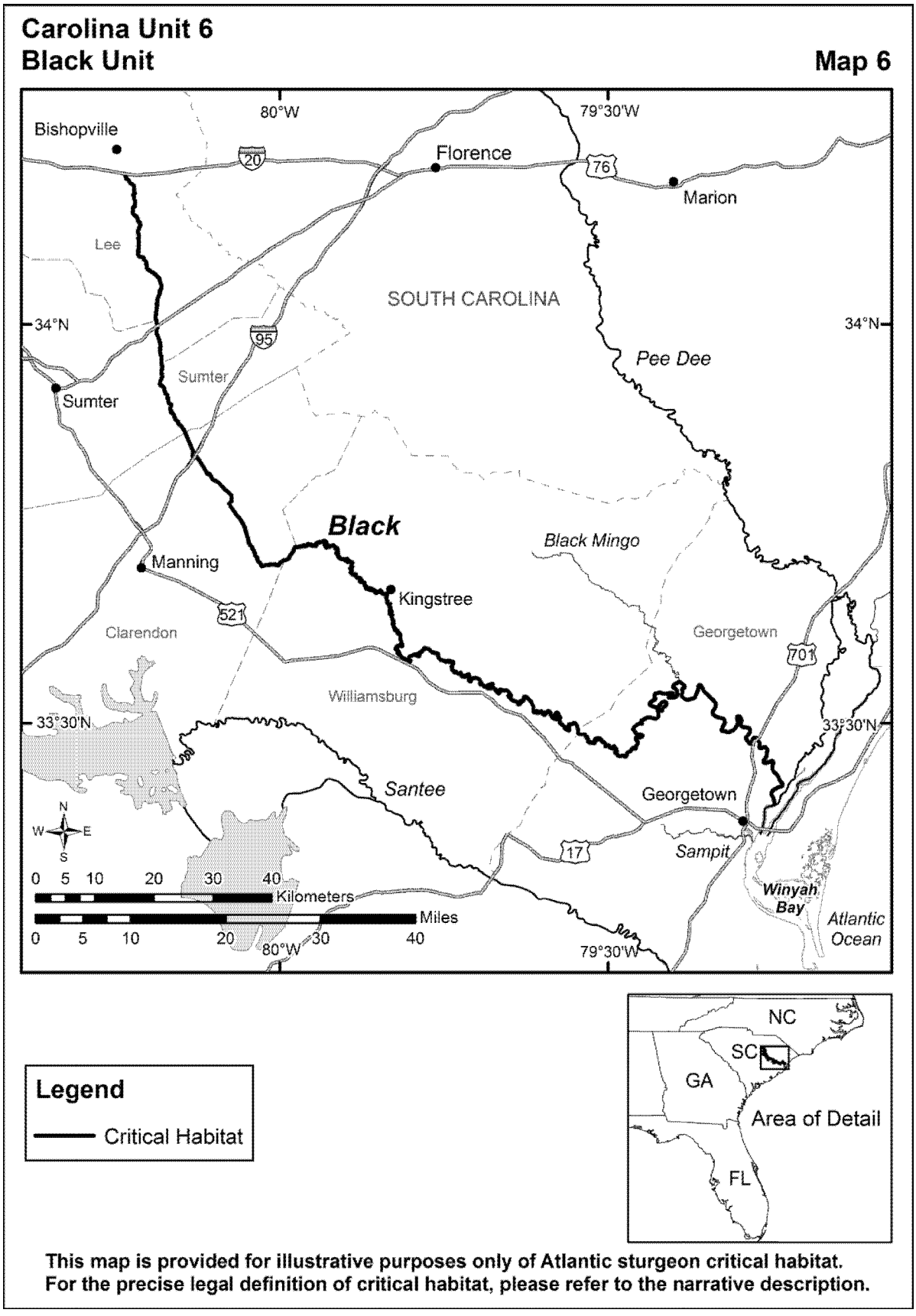
Carolina Unit 6
Black Unit
Map 6
Bishopville
80°W
79°30'W
Florence
20
76
Marion
Lee
SOUTH CAROLINA
34°N
95
Pee Dee
Sumter
Sumter
Black
Black Mingo
Manning
Kingstree
521
Clarendon
Georgetown
701
Williamsburg
33°30'N
Santee
Georgetown
N
W
E
S
17
Sampit
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
Winyah Bay
Atlantic Ocean
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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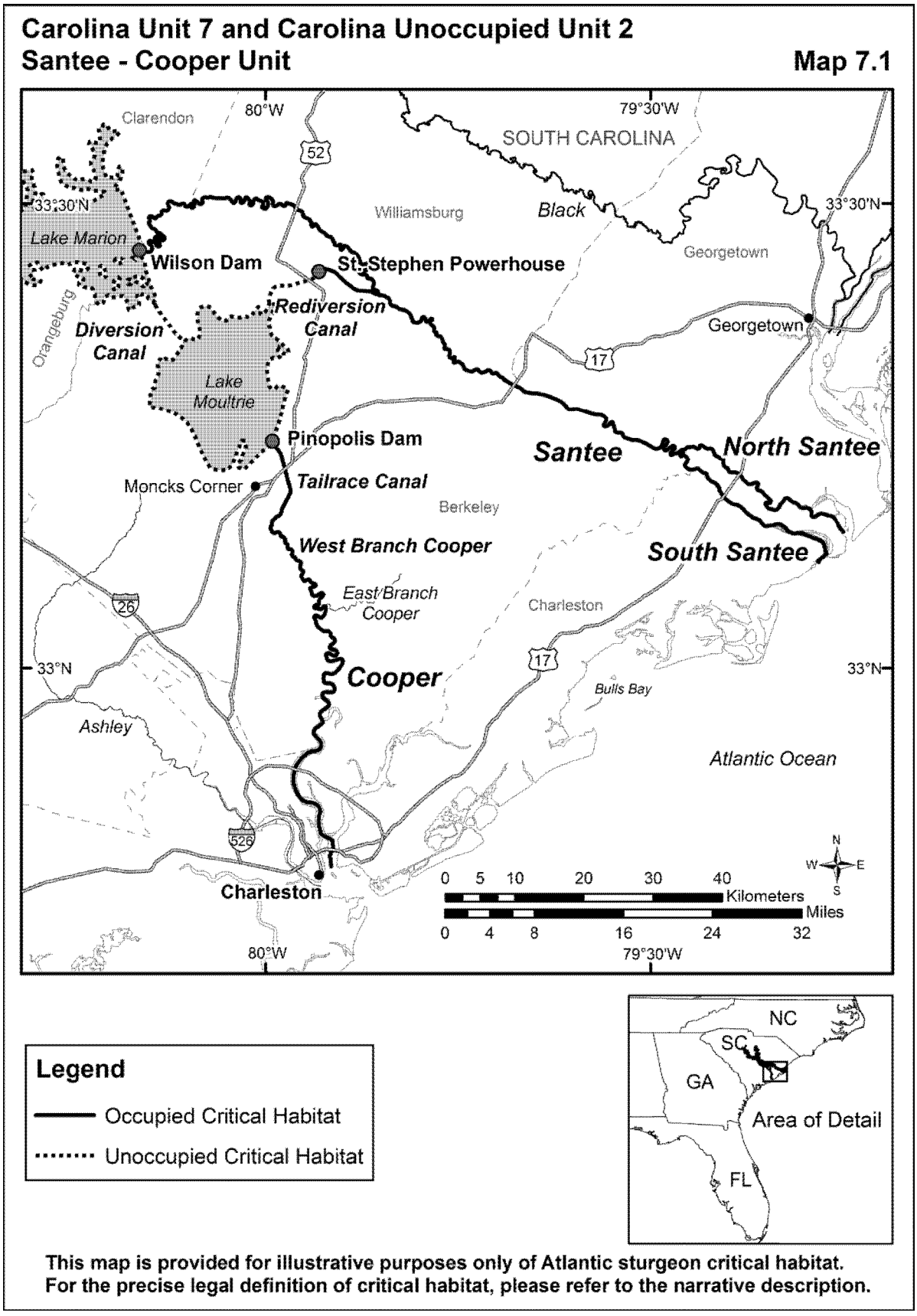
Carolina Unit 7 and Carolina Unoccupied Unit 2
Santee - Cooper Unit
Map 7.1
Clarendon
80°W
79°30'W
SOUTH CAROLINA
52
33°30'N
Williamsburg
Black
Lake Marion
Wilson Dam
St. Stephen Powerhouse
Georgetown
Rediversion Canal
Diversion Canal
Orangeburg
Georgetown
17
Lake Moultrie
Pinopolis Dam
Santee
North Santee
Moncks Corner
Tailrace Canal
Berkeley
West Branch Cooper
South Santee
East Branch Cooper
Charleston
26
33°N
Cooper
17
Bulls Bay
Ashley
Atlantic Ocean
526
Charleston
N
W
E
S
0 5 10 20 30 40
Kilometers
Miles
0 4 8 16 24 32
80°W
79°30'W
Legend
Occupied Critical Habitat
Unoccupied Critical Habitat
NC
SC
GA
FL
Area of Detail
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
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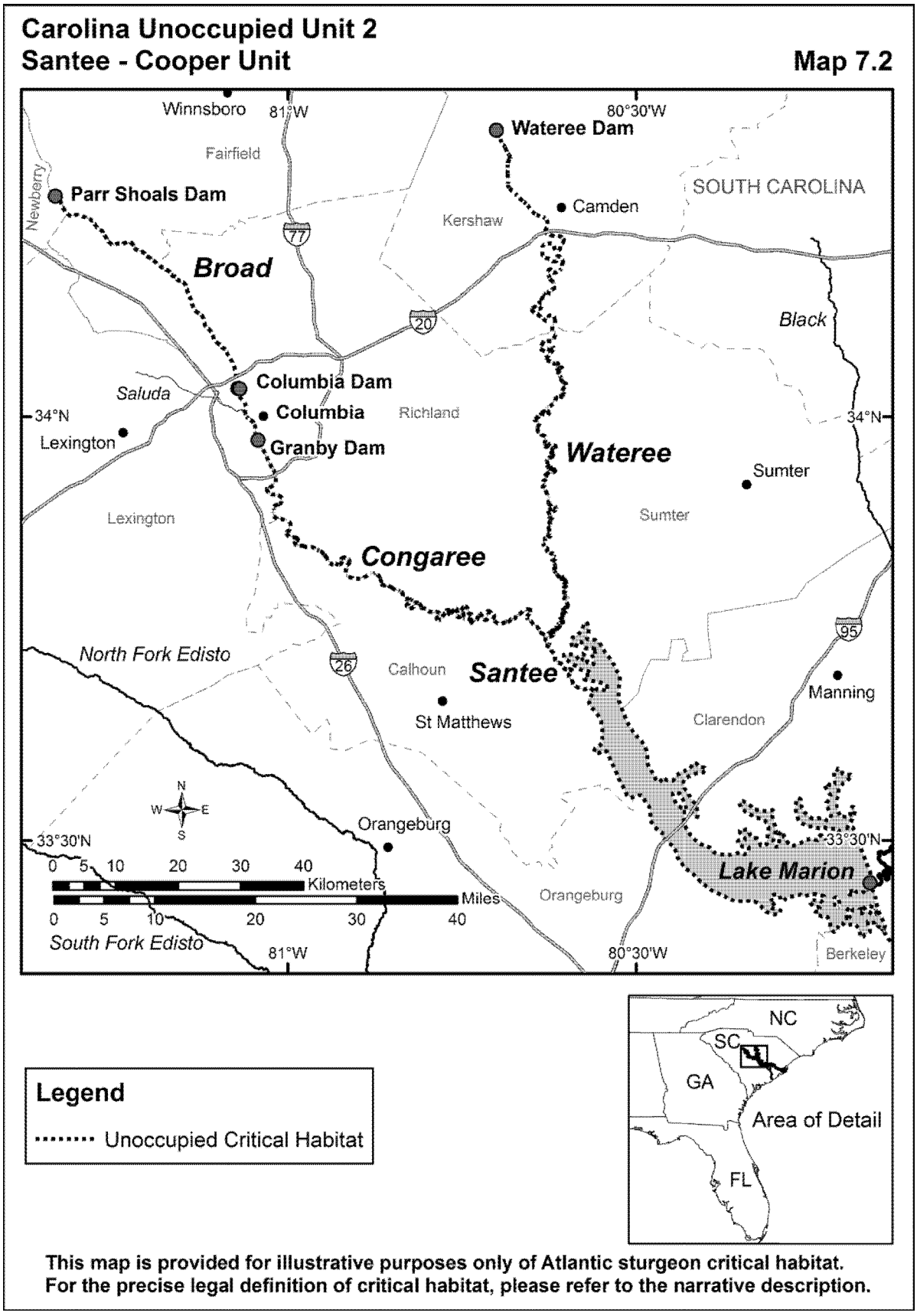


(d) *Critical Habitat Boundaries of the South Atlantic DPS.* The lateral extent for all critical habitat units for the South Atlantic DPS of Atlantic sturgeon is the ordinary high water mark on each bank of the river and shorelines. Critical

habitat for the South Atlantic DPS of Atlantic sturgeon is:

(1) South Atlantic Unit 1 includes the North Fork Edisto River from Cones Pond downstream to the confluence with the South Fork Edisto River, the South Fork Edisto River from Highway 121 downstream to the confluence with the North Fork Edisto River, the Edisto River main stem from the confluence of the North Fork Edisto River and South Fork Edisto River tributaries downstream to the fork at the North Edisto River and South Edisto River distributaries, the North Edisto River from the Edisto River downstream to RKM 0, and the South Edisto River from the Edisto River downstream to RKM 0;

(2) South Atlantic Unit 2 includes the main stem Combahee—Salkehatchie River from the confluence of Buck and Rosemary Creeks with the Salkehatchie River downstream to the Combahee River, the Combahee River from the Salkehatchie River downstream to RKM 0;

(3) South Atlantic Unit 3 includes the main stem Savannah River from the New Savannah Bluff Lock and Dam downstream to RKM 0;

(4) South Atlantic Unit 4 includes the main stem Ogeechee River from the confluence of the North Fork Ogeechee River and South Fork Ogeechee River downstream to RKM 0;

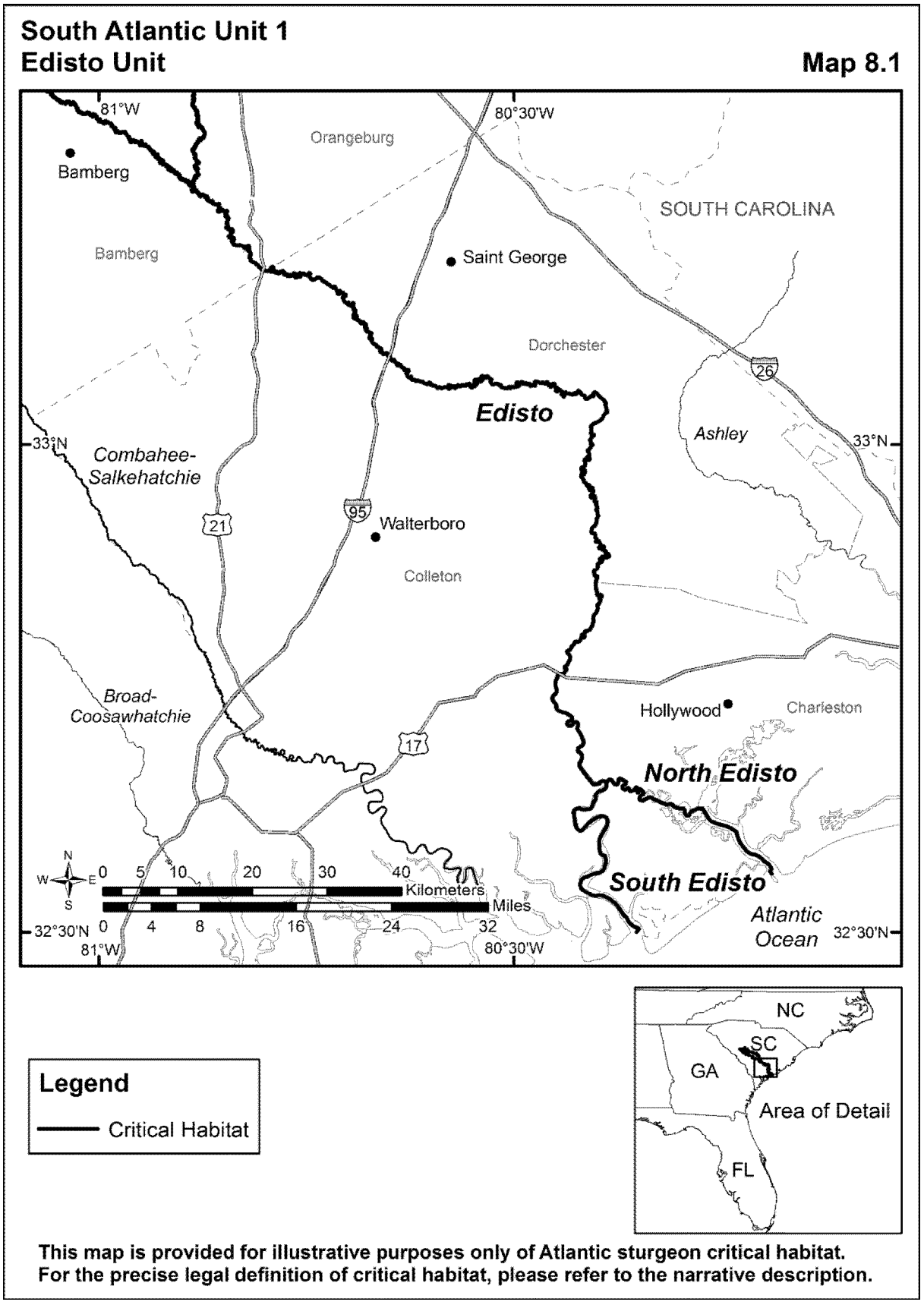
(5) South Atlantic Unit 5 includes the main stem Oconee River from Sinclair Dam downstream to the confluence with the Ocmulgee River, the main stem Ocmulgee River from Juliette Dam downstream to the confluence with the Oconee River, and the main stem Altamaha River from the confluence of the Oconee River and Ocmulgee River downstream to RKM 0;

(6) South Atlantic Unit 6 includes the main stem Satilla River from the confluence of Satilla and Wiggins Creeks downstream to RKM 0;

(7) South Atlantic Unit 7 includes the main stem St. Marys River from the confluence of Middle Prong St. Marys and the St. Marys Rivers downstream to RKM 0; and

(8) South Atlantic Unoccupied Unit 1 includes the main stem Savannah River from the Augusta Diversion Dam downstream to the New Savannah Bluff Lock and Dam.

(9) Maps of the South Atlantic DPS follow:


South Atlantic Unit 1
Edisto Unit
Map 8.1
81°W
80°30'W
Orangeburg
Bamberg
SOUTH CAROLINA
Bamberg
Saint George
Dorchester
26
Edisto
Ashley
33°N
Combahee-
Salkehatchie
95
21
Walterboro
Colleton
Broad-
Coosawhatchie
Hollywood
Charleston
17
North Edisto
South Edisto
Atlantic
Ocean
32°30'N
N
W
E
S
0 5 10 20 30 40
Kilometers
Miles
0 4 8 16 24 32
Legend
Critical Habitat
NC
SC
GA
Area of Detail
FL
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
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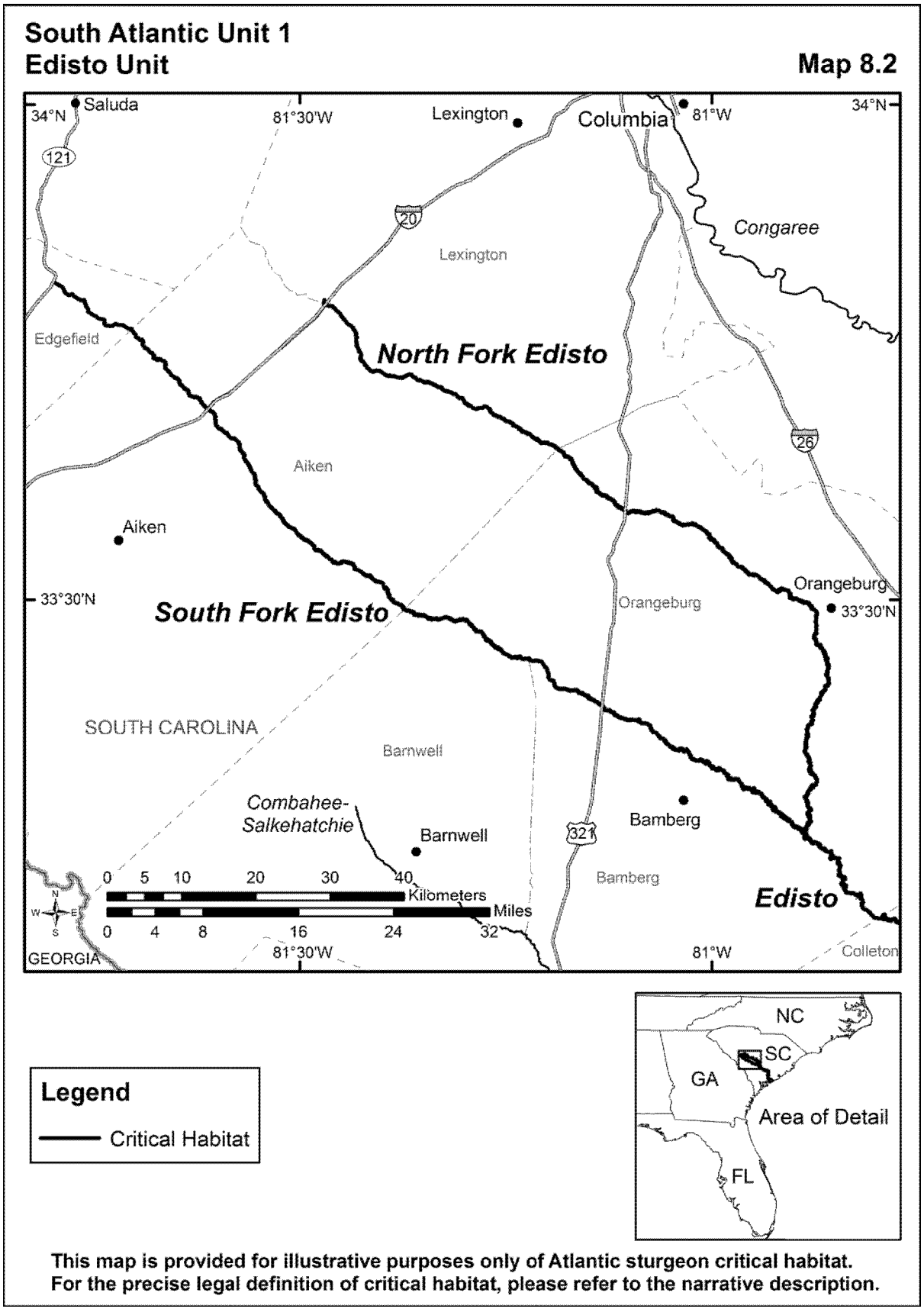
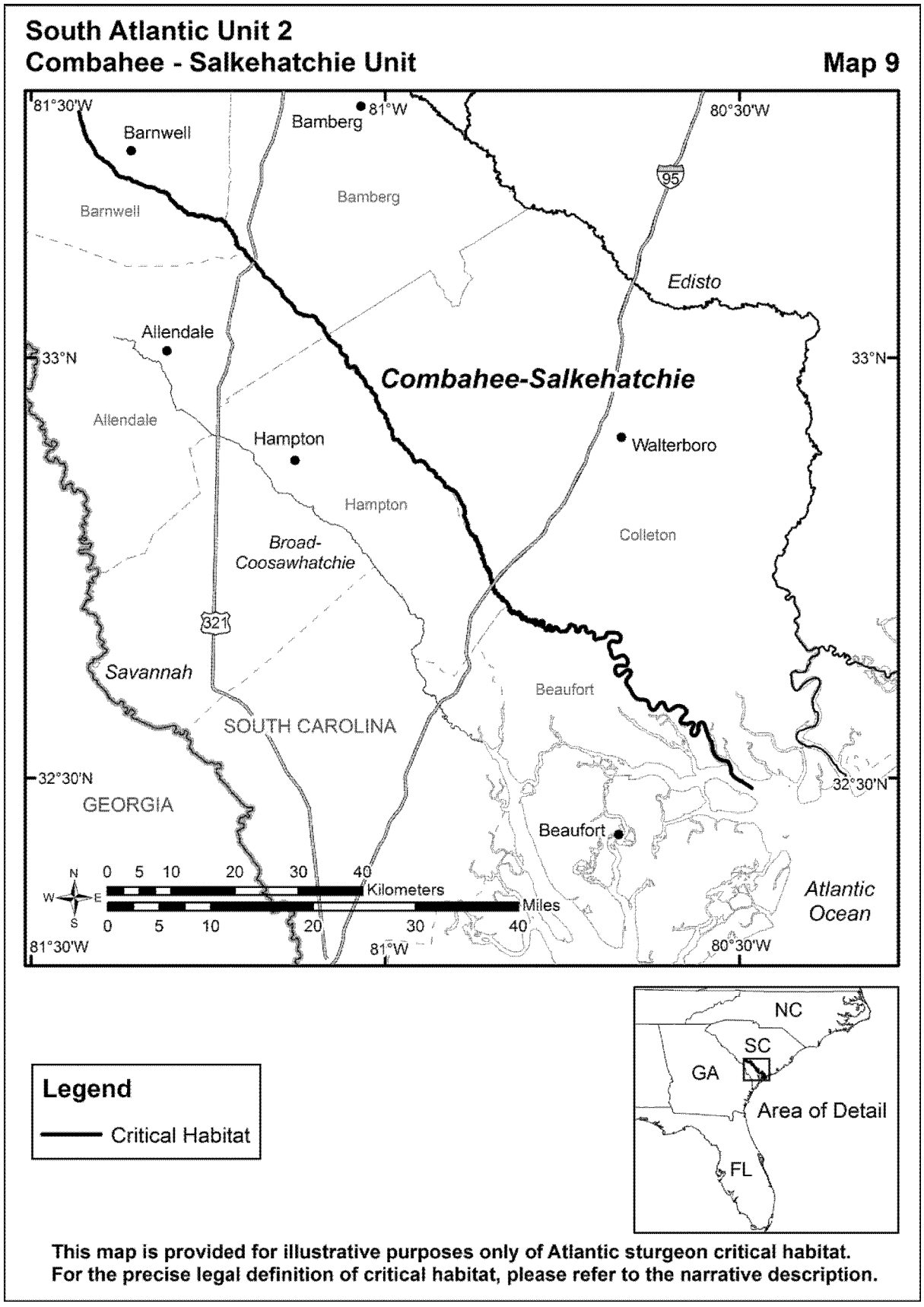

South Atlantic Unit 1
Edisto Unit
Map 8.2
Saluda
34°N
81°30'W
Lexington
Columbia
81°W
34°N
121
20
Congaree
Lexington
Edgefield
North Fork Edisto
26
Aiken
Aiken
33°30'N
South Fork Edisto
Orangeburg
Orangeburg
33°30'N
SOUTH CAROLINA
Barnwell
Combahee-
Salkehatchie
Barnwell
Bamberg
321
Bamberg
Edisto
0 5 10 20 30 40
Kilometers
0 4 8 16 24 32
Miles
N
W
E
S
GEORGIA
81°30'W
81°W
Colleton
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.


South Atlantic Unit 2
Combahee - Salkehatchie Unit
Map 9
81°30'W
81°W
80°30'W
Barnwell
Bamberg
Barnwell
Bamberg
95
Edisto
Allendale
33°N
Combahee-Salkehatchie
Allendale
Hampton
Walterboro
Hampton
Colleton
Broad-
Coosawhatchie
321
Savannah
Beaufort
SOUTH CAROLINA
32°30'N
GEORGIA
Beaufort
N
W
E
S
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
Atlantic
Ocean
Legend
Critical Habitat
NC
SC
GA
Area of Detail
FL
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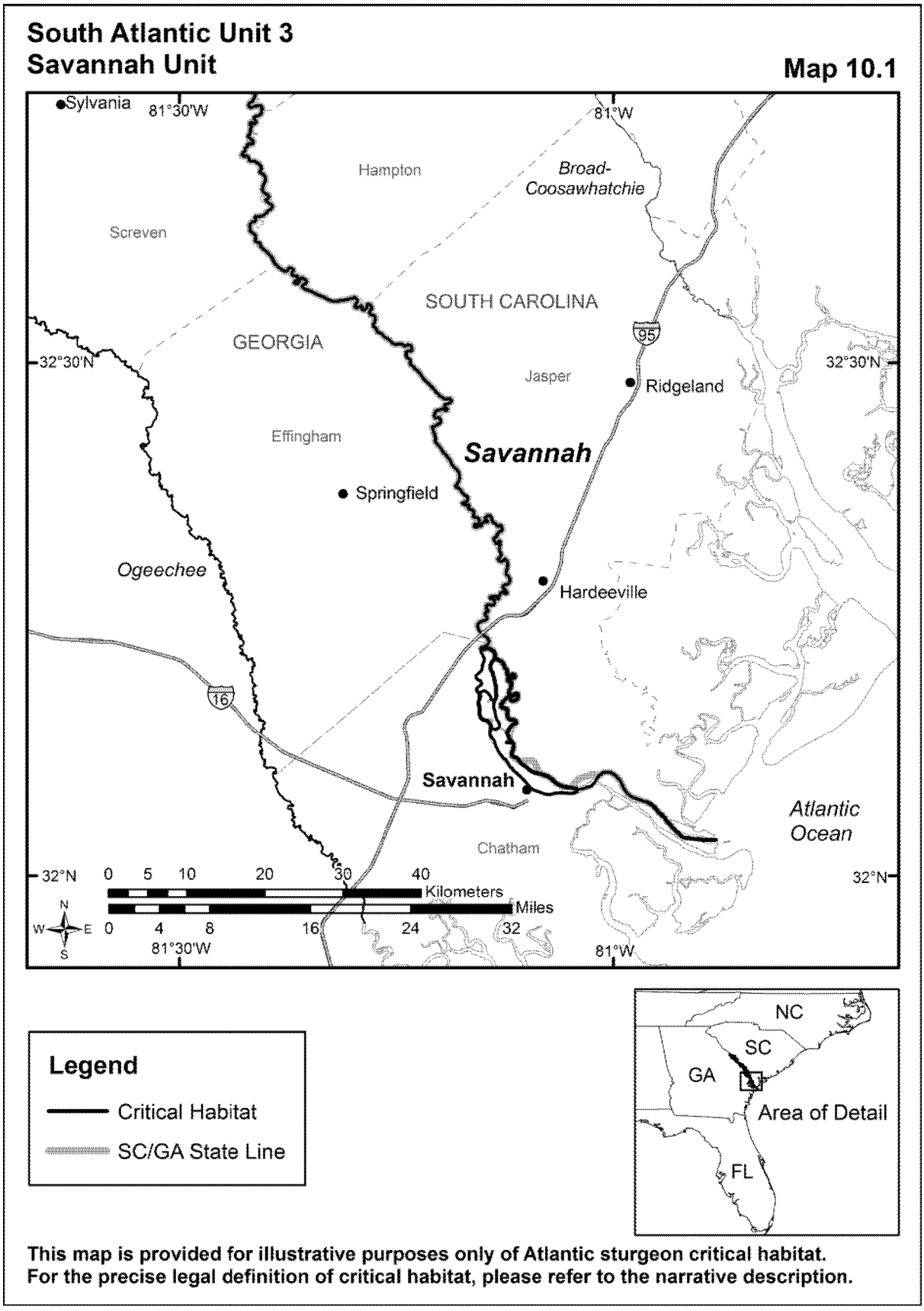
South Atlantic Unit 3
Savannah Unit
Map 10.1
Sylvania
81°30'W
81°W
Hampton
Broad-
Coosawhatchie
Screven
SOUTH CAROLINA
GEORGIA
95
32°30'N
Jasper
Ridgeland
Effingham
Savannah
Springfield
Ogeechee
Hardeeville
16
Savannah
Atlantic
Ocean
Chatham
32°N
0 5 10 20 30 40
Kilometers
Miles
0 4 8 16 24 32
N
W E
S
Legend
Critical Habitat
SC/GA State Line
NC
SC
GA
Area of Detail
FL
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
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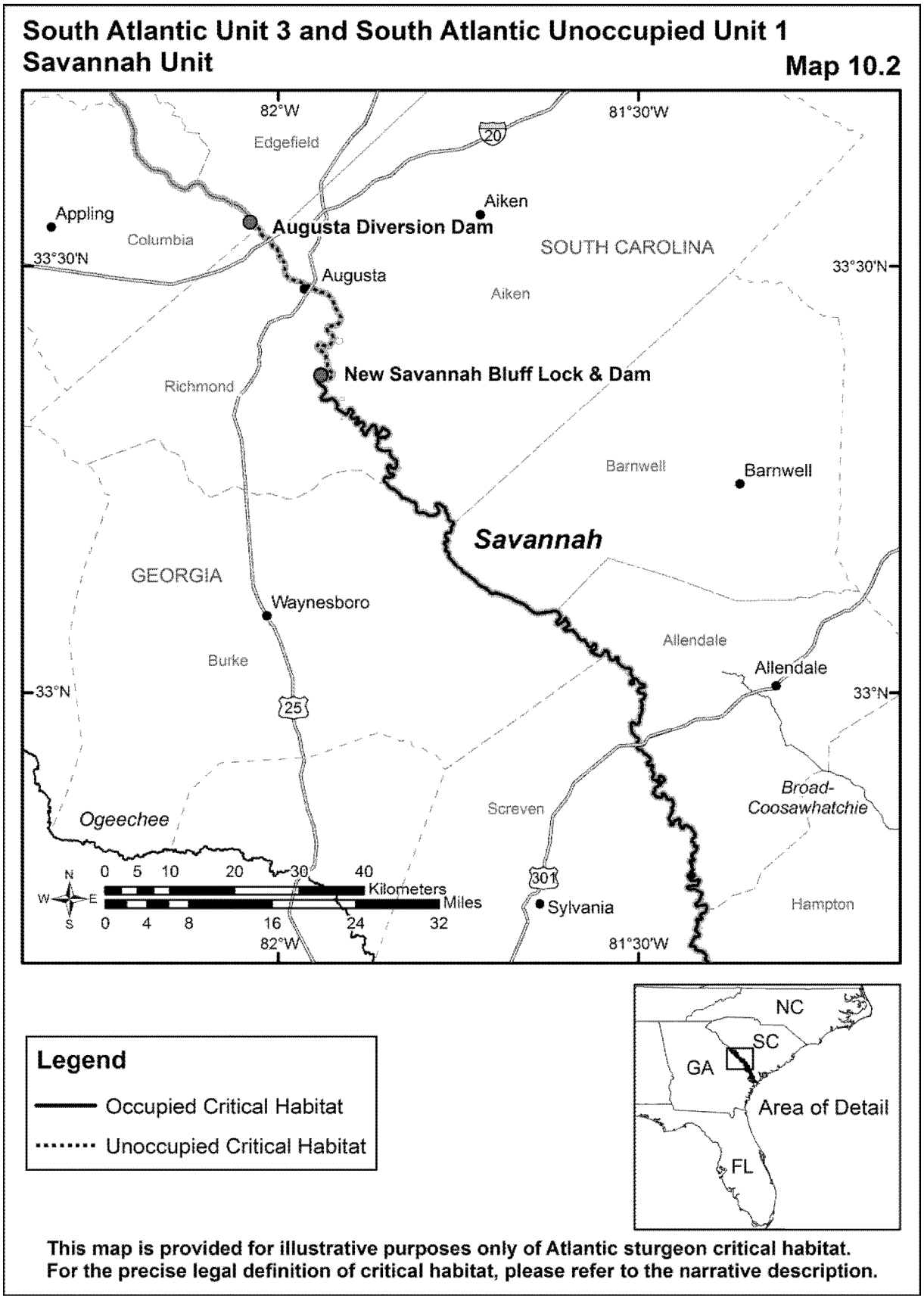
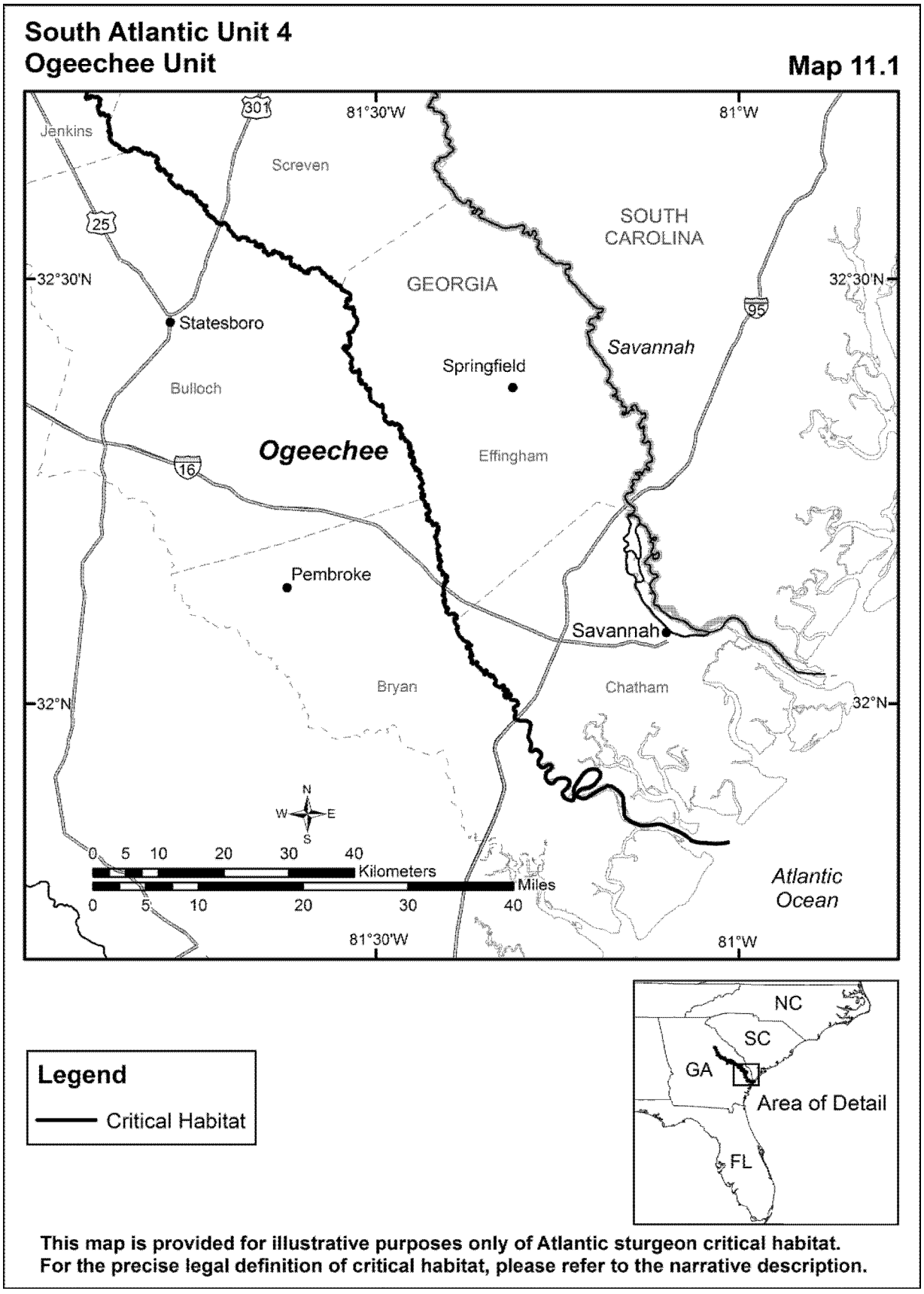

South Atlantic Unit 3 and South Atlantic Unoccupied Unit 1
Savannah Unit
Map 10.2
82°W
81°30'W
Edgefield
20
Aiken
Appling
Augusta Diversion Dam
Columbia
SOUTH CAROLINA
33°30'N
Augusta
Aiken
New Savannah Bluff Lock & Dam
Richmond
Barnwell
Barnwell
Savannah
GEORGIA
Waynesboro
Allendale
Burke
Allendale
33°N
25
Broad-
Coosawhatchie
Ogeechee
Screven
N
W
E
S
0 5 10 20 30 40
Kilometers
0 4 8 16 24 32
Miles
301
Sylvania
Hampton
82°W
81°30'W
Legend
Occupied Critical Habitat
Unoccupied Critical Habitat
NC
SC
GA
Area of Detail
FL
This map is provided for illustrative purposes only of Atlantic sturgeon critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.


South Atlantic Unit 4
Ogeechee Unit
Map 11.1
Jenkins
Screven
301
81°30'W
81°W
25
SOUTH CAROLINA
32°30'N
GEORGIA
95
Statesboro
Savannah
Springfield
Bulloch
Ogeechee
Effingham
16
Pembroke
Savannah
Bryan
Chatham
32°N
N
W
E
S
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
Atlantic Ocean
81°30'W
81°W
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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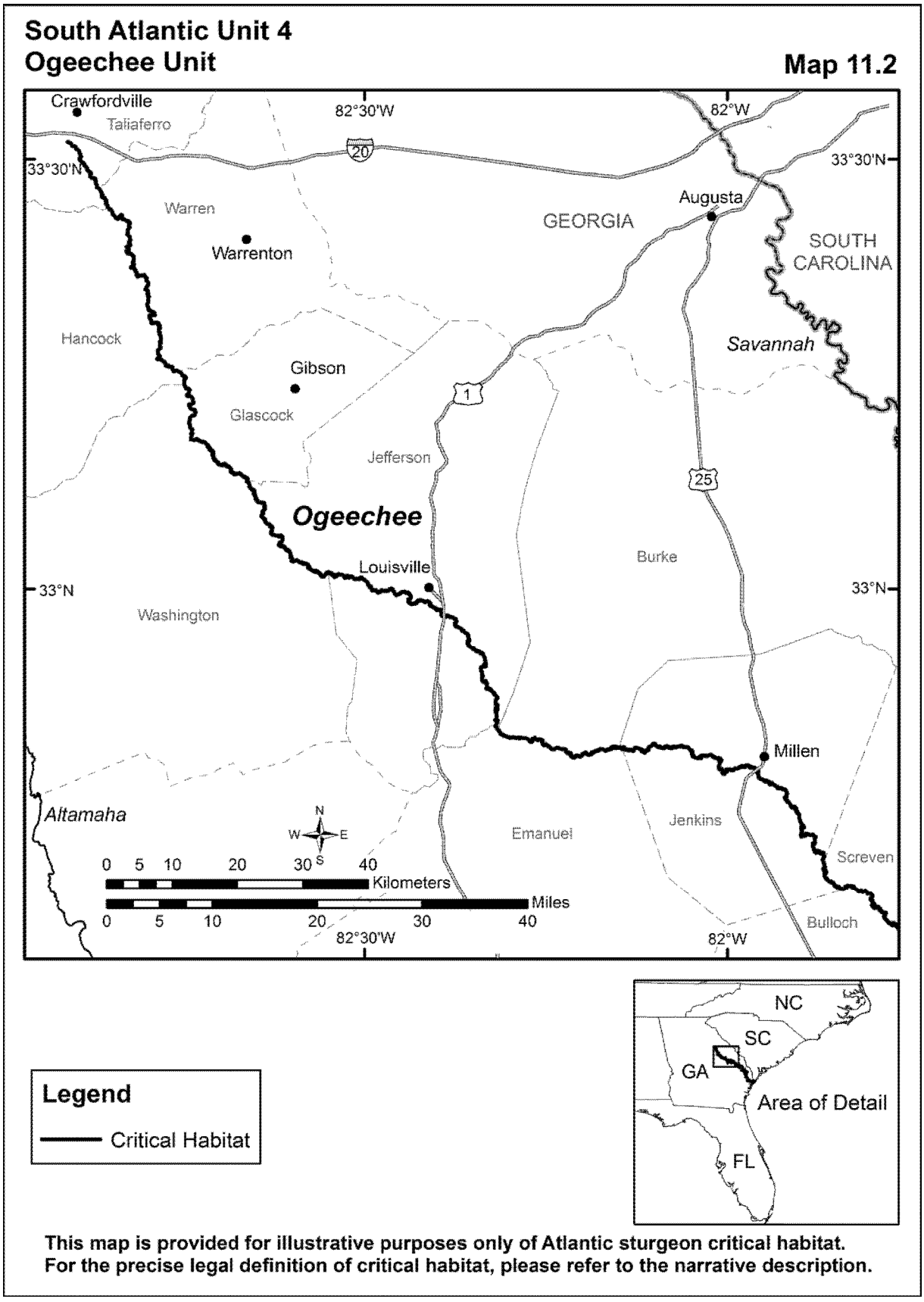
South Atlantic Unit 4
Ogeechee Unit
Map 11.2
Crawfordville
Taliaferro
82°30'W
82°W
33°30'N
20
Warren
Warrenton
GEORGIA
Augusta
SOUTH CAROLINA
Savannah
Hancock
Gibson
Glascock
1
Jefferson
25
Ogeechee
Louisville
Burke
33°N
Washington
Millen
Altamaha
N
W
E
S
Emanuel
Jenkins
Screven
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
Bulloch
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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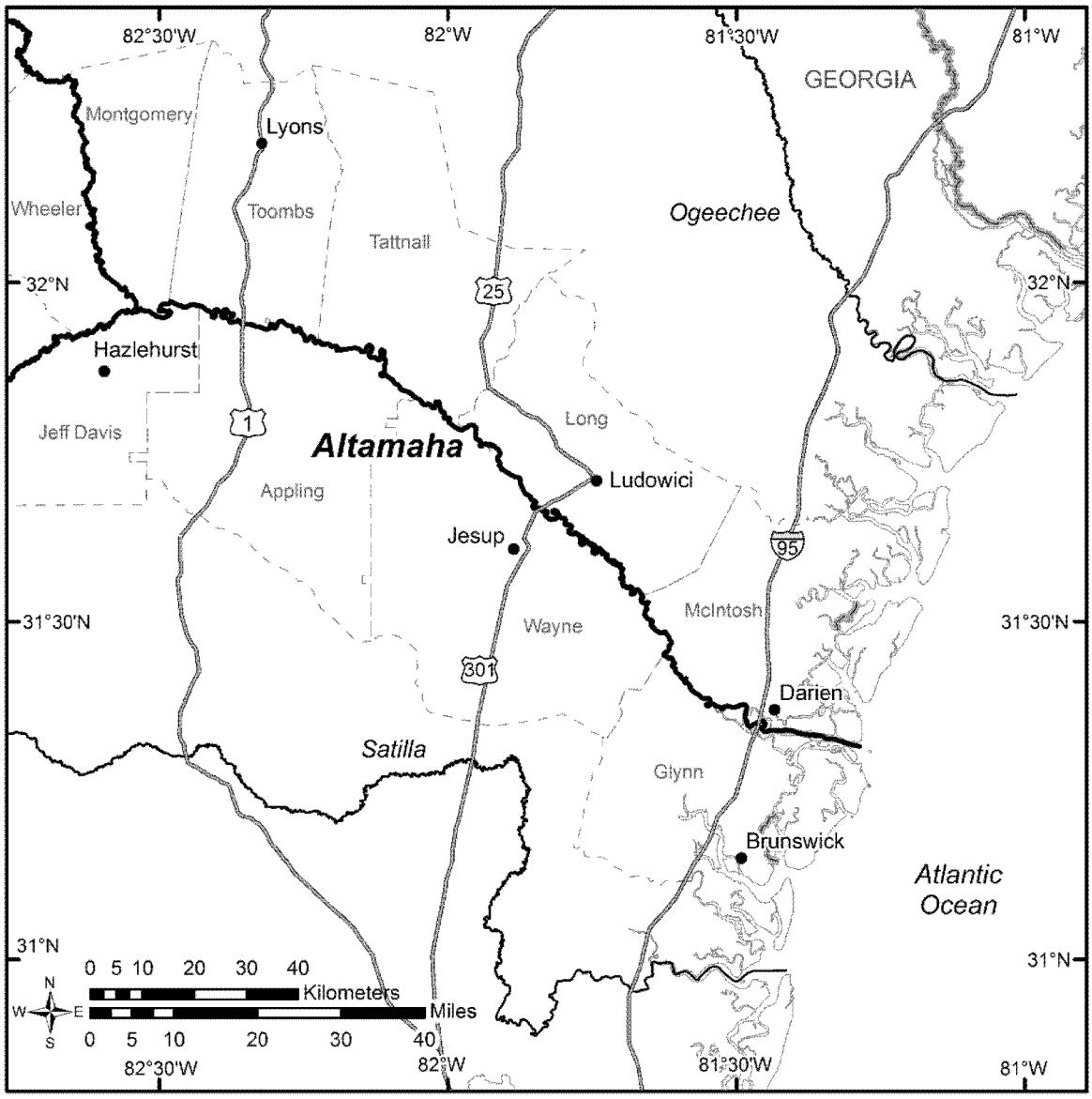
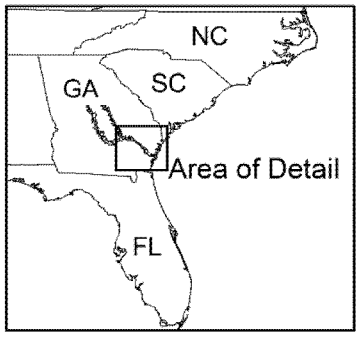
South Atlantic Unit 5
Altamaha Unit

Map 12.1





Legend

Critical Habitat

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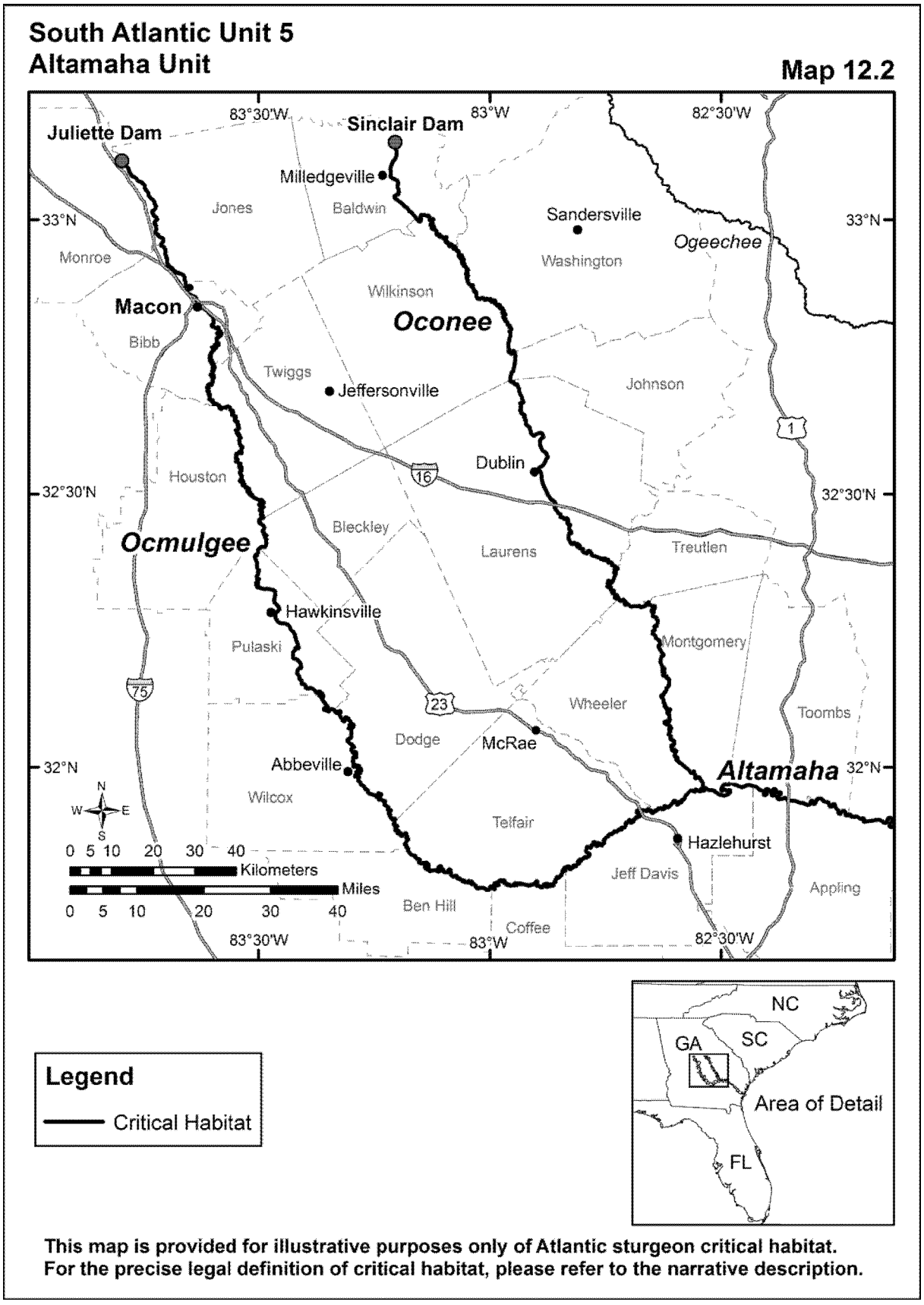
South Atlantic Unit 5
Altamaha Unit
Map 12.2
Juliette Dam
Sinclair Dam
Milledgeville
Sandersville
Macon
Oconee
Ogeechee
Jeffersonville
Dublin
Ocmulgee
Hawkinsville
McRae
Abbeville
Altamaha
Hazlehurst
Jones
Baldwin
Monroe
Washington
Wilkinson
Bibb
Twiggs
Johnson
Houston
Bleckley
Laurens
Treutlen
Pulaski
Montgomery
Wheeler
Toombs
Dodge
Wilcox
Telfair
Jeff Davis
Appling
Ben Hill
Coffee
83°30'W
83°W
82°30'W
33°N
32°30'N
32°N
16
1
75
23
0 5 10 20 30 40
Kilometers
0 5 10 20 30 40
Miles
N
W
E
S
Legend
Critical Habitat
NC
SC
GA
FL
Area of Detail
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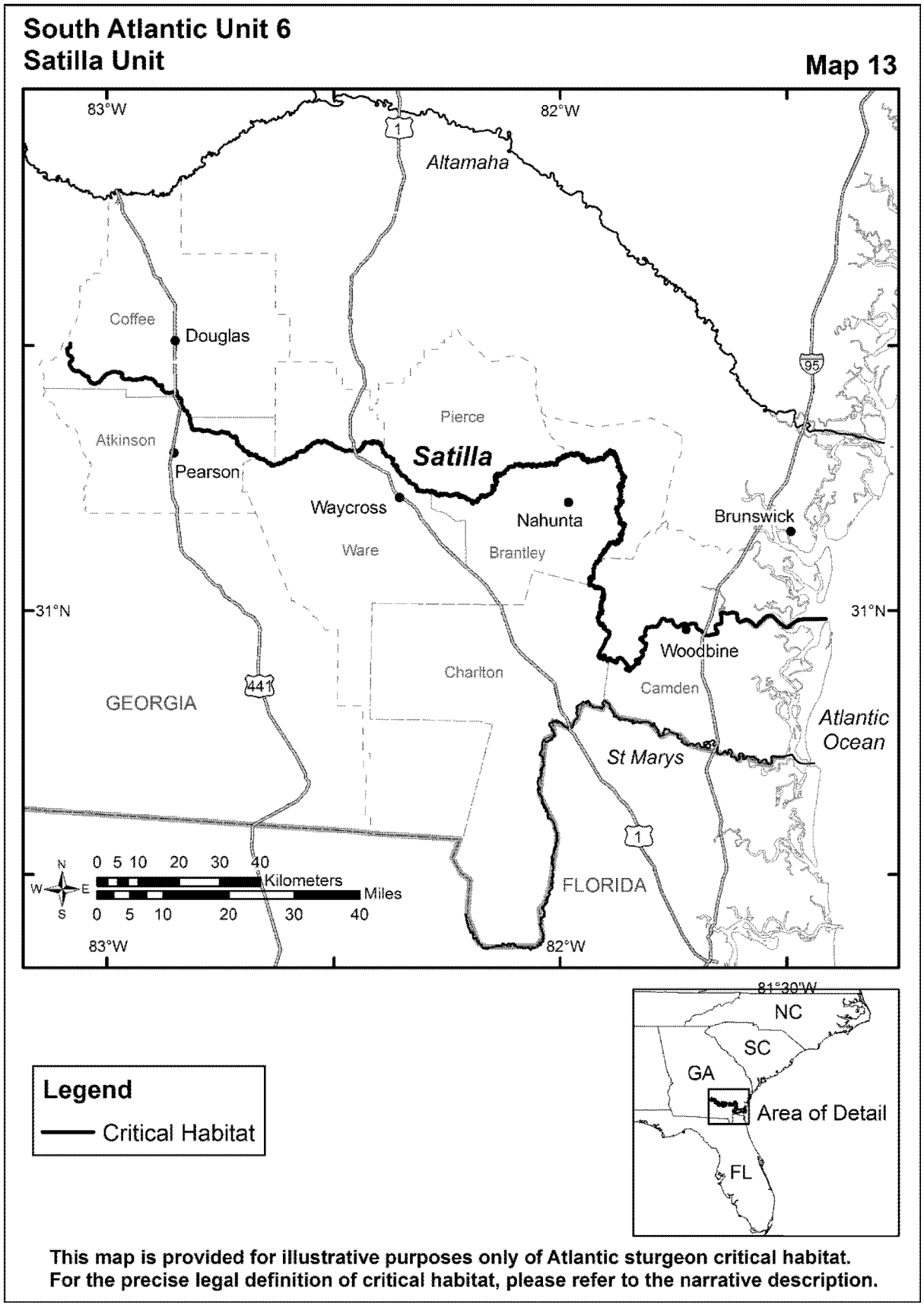
South Atlantic Unit 6
Satilla Unit
Map 13
83°W
82°W
Altamaha
Coffee
Douglas
Atkinson
Pearson
Pierce
Satilla
Waycross
Nahunta
Brunswick
Ware
Brantley
31°N
Woodbine
Charlton
Camden
GEORGIA
Atlantic Ocean
St Marys
FLORIDA
0 5 10 20 30 40
Kilometers
Miles
0 5 10 20 30 40
81°30'W
NC
SC
GA
Area of Detail
FL
Legend
Critical Habitat
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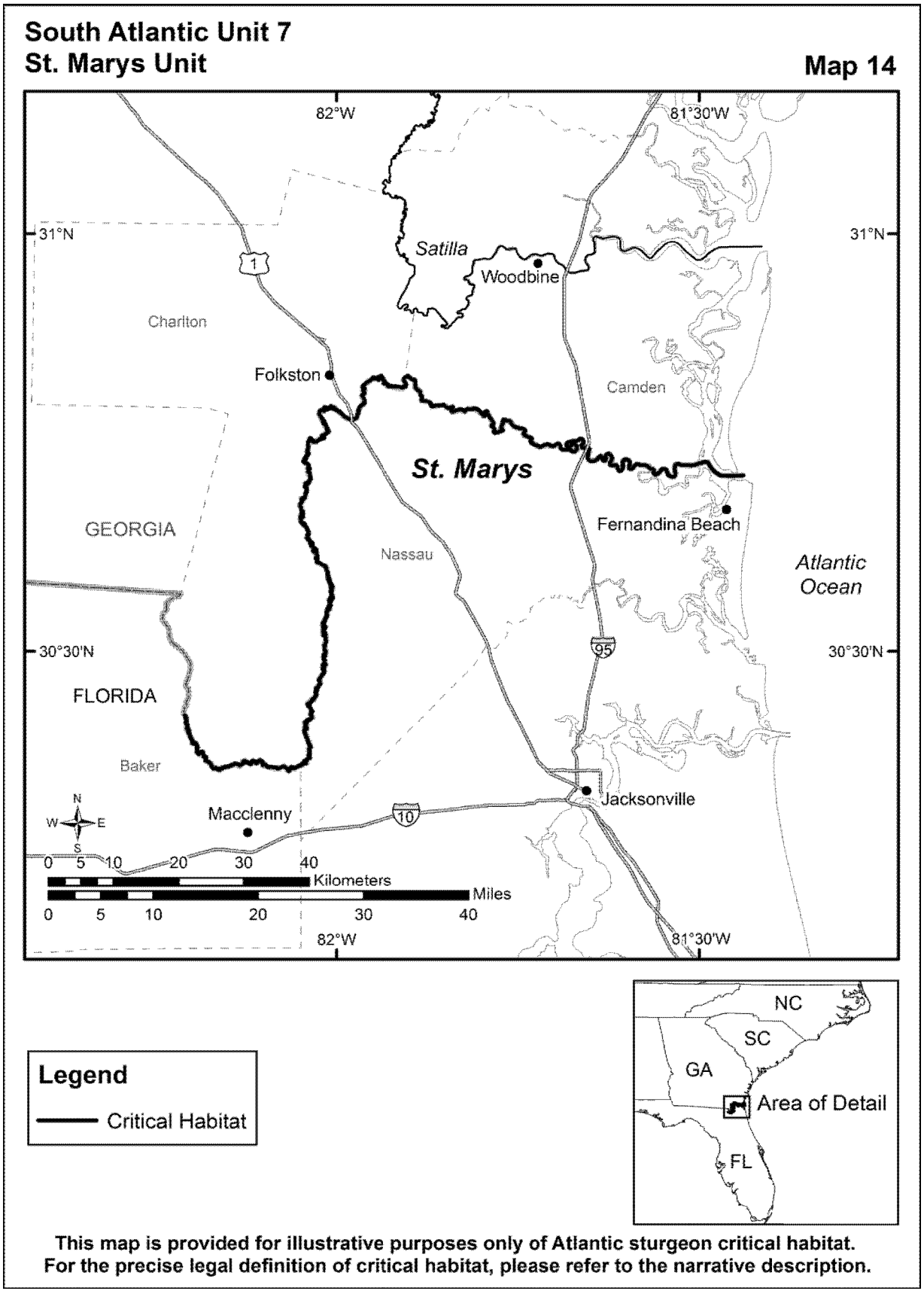

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