

DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17**

[Docket No. FWS-R4-ES-2018-0046;
FF09E21000 FXES1111090000 201]

RIN 1018-BD12

Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule and Critical Habitat Designation for Atlantic Pigtoe

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; revisions and reopening of comment period.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce the reopening of the comment period on our October 11, 2018, proposed rule to list the Atlantic pigtoe (*Fusconaia masoni*) as a threatened species with a section 4(d) rule, and to designate critical habitat for the species, under the Endangered Species Act of 1973, as amended (Act). In this document, we present revisions to the section 4(d) rule language and to the critical habitat designation we proposed for the species on October 11, 2018. As a result of the critical habitat revisions, we now propose to designate a total of 566 miles (910 kilometers) as critical habitat for the Atlantic pigtoe across 18 units within portions of 14 counties in Virginia and 17 counties in North Carolina. This amounts to an increase of 24 miles (38 kilometers) in our proposed critical habitat designation for the species. We are reopening the comment period to allow all interested parties the opportunity to comment on the October 11, 2018, proposed rule, as well as the revisions described in this document. Comments previously submitted need not be resubmitted, as they will be fully considered in preparation of the final rule.

DATES: The comment period for the proposed rule published October 11, 2018, at 83 FR 51570 is reopened. So that we can fully consider your comments in our final determination, submit them on or before October 22, 2020. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. Eastern Time on the closing date.

ADDRESSES:

Document availability: You may obtain copies of the October 11, 2018, proposed rule and associated documents on the internet at <http://www.regulations.gov> under Docket No.

FWS-R4-ES-2018-0046 or by mail from the Raleigh Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Written comments: You may submit written comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: <http://www.regulations.gov>. In the Search box, enter FWS-R4-ES-2018-0046, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rule box to locate this document. You may submit a comment by clicking on "Comment Now!"

(2) *By hard copy:* Submit your comments by U.S. mail to: Public Comments Processing, Attn: FWS-R4-ES-2018-0046, U.S. Fish and Wildlife Service, MS: JAO/1N, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see Public Comments, below, for more information).

FOR FURTHER INFORMATION CONTACT: Pete Benjamin, Field Supervisor, U.S. Fish and Wildlife Service, Raleigh Ecological Services Field Office, 551F Pylon Drive, Raleigh, NC 27606; telephone 919-856-4520. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.

SUPPLEMENTARY INFORMATION:**Public Comments**

We will accept written comments and information during this reopened comment period on our October 11, 2018, proposed listing determination with section 4(d) rule and designation of critical habitat for the Atlantic pigtoe (83 FR 51570), the revisions to the section 4(d) rule and proposed critical habitat designation that are described in this document, and our draft economic assessment (DEA) of the proposed critical habitat designation. We will consider information and recommendations from all interested parties. We are particularly interested in comments concerning:

- (1) The Atlantic pigtoe's biology, range, and population trends, including:
 - (a) Biological or ecological requirements of the species, including habitat requirements for feeding, breeding, and sheltering;
 - (b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat, or both.

(2) Factors that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

(5) Information on activities that are necessary and advisable for the conservation of the Atlantic pigtoe to include in a section 4(d) rule for the species. In particular, we request information concerning the extent to which we should include any of the section 9 prohibitions in the 4(d) rule or whether any other forms of take should be excepted from the prohibitions in the 4(d) rule.

(6) The reasons why we should or should not designate habitat as "critical habitat" under section 4 of the Act, including whether there are threats to the species from human activity, the degree of which can be expected to increase due to the designation, and whether that increase in threat outweighs the benefit of designation such that the designation of critical habitat may not be prudent.

(7) Specific information on:

(a) The amount and distribution of Atlantic pigtoe habitat;

(b) What areas, that were occupied at the time of listing and that contain the physical or biological features essential to the conservation of the species, should be included in the designation and why;

(c) Special management considerations or protection that may be needed in critical habitat areas we are proposing, including managing for the potential effects of climate change; and

(d) What areas not occupied at the time of listing are essential for the conservation of the species and why.

(8) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed critical habitat.

(9) Any probable economic, national security, or other relevant impacts of designating any area that may be included in the final designation, and the benefits of including or excluding areas that may be impacted.

(10) Information on the extent to which the description of probable economic impacts in the DEA is a reasonable estimate of the likely economic impacts and the description of the environmental impacts in the draft environmental assessment is complete and accurate.

(11) Whether any specific areas we are proposing for critical habitat designation should be considered for exclusion under section 4(b)(2) of the Act, and whether the benefits of potentially excluding any specific area outweigh the benefits of including that area under section 4(b)(2) of the Act.

(12) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

If you submitted comments or information on the October 11, 2018, proposed rule or DEA during the comment period that was open from October 11, 2018, to December 10, 2018, please do not resubmit them. Any such comments are already part of the public record of this rulemaking proceeding, and we will fully consider them in the preparation of our final determination. Our final determination will take into consideration all written comments and any additional information we receive during both comment periods. The final decision may differ from this revised proposed rule, based on our review of all information we receive during this rulemaking proceeding.

You may submit your comments and materials by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit a comment via <http://www.regulations.gov>, your entire comment—including any personal identifying information—will be posted on the website. We will post all hardcopy comments on <http://www.regulations.gov> as well. If you submit a hardcopy comment that includes personal identifying information, you may request at the top of your document that we withhold this information from public review.

However, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing the proposed rule and

DEA, will be available for public inspection on <http://www.regulations.gov> at Docket No. FWS-R4-ES-2018-0046, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Raleigh Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**). You may obtain copies of the proposed rule and the DEA on the internet at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2018-0046, or by mail from the Raleigh Ecological Services Field Office.

Background

It is our intent to discuss in this document only those topics directly relevant to the revised proposed section 4(d) rule and designation of critical habitat. For more information on the species, its habitat, and previous Federal actions concerning the Atlantic pigtoe, refer to the proposed rule published in the **Federal Register** on October 11, 2018 (83 FR 51570).

In our October 11, 2018, proposed rule, we proposed to list the Atlantic pigtoe as a threatened species with a section 4(d) rule, including exceptions for species restoration efforts by State wildlife agencies, channel restoration projects, bank stabilization projects, and silvicultural practices and forest management activities. That rule also proposed to designate critical habitat in 16 units encompassing approximately 542 stream miles (872 kilometers) in Craig, Botetourt, Fluvanna, Buckingham, Nottoway, Lunenburg, Brunswick, Dinwiddie, Greensville, Mecklenburg, and Halifax Counties in Virginia, and in Rockingham, Granville, Vance, Franklin, Nash, Halifax, Warren, Edgecombe, Pitt, Person, Durham, Orange, Wake, Johnston, Wilson, Randolph, and Montgomery Counties in North Carolina. In addition, we announced the availability of a DEA of the proposed critical habitat designation. We accepted comments on the proposed rule and DEA for 60 days, ending December 10, 2018. Based on information we received during the public comment period, we propose to revise the proposed section 4(d) rule and critical habitat designation, and are therefore reopening the comment period to allow the public additional time to submit comments on both the October 11, 2018, proposed rule, as well as the revisions described in this document.

New Information and Revisions to Proposed Section 4(d) Rule

Section 4(d) of the Act states that the “Secretary shall issue such regulations as he deems necessary and advisable to

provide for the conservation” of species listed as threatened. The U.S. Supreme Court has noted that very similar statutory language demonstrates a large degree of deference to the agency (see *Webster v. Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean “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 [the Act] are no longer necessary.” Additionally, section 4(d) of the Act states that the Secretary “may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants.” Thus, regulations promulgated under section 4(d) of the Act provide the Secretary with wide latitude of discretion to select appropriate provisions tailored to the specific conservation needs of the threatened species. The statute grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary’s discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have approved rules developed under section 4(d) that include a taking prohibition for threatened wildlife, or include a limited taking prohibition (see *Alea Valley Alliance v. Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council v. National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also approved 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana v. Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species” (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Although the statute does not require the Service to make a “necessary and advisable” finding with respect to the adoption of specific prohibitions under section 9, we find that this rule is necessary and advisable to provide for the conservation of the Atlantic pigtoe. The Service proposed a species-specific 4(d) rule that is designed to address the Atlantic pigtoe’s specific threats and

conservation needs. It would promote conservation of the Atlantic pigtoe by encouraging management of the landscape in ways that meet both land management considerations and meeting the conservation needs of the Atlantic pigtoe. It would be one of many tools that the Service would use to promote the conservation of the Atlantic pigtoe. It would apply only if and when the Service makes final the listing of the Atlantic pigtoe as a threatened species.

As discussed under the October 11, 2018, proposed rule's *Summary of Biological Status and Threats* (83 FR 51570, pp. 83 FR 51572–51577), declines in water quality, loss of stream flow, riparian and instream fragmentation, and deterioration of instream habitats are affecting the status of the Atlantic pigtoe. These threats, which are expected to be exacerbated by continued urbanization and the effects of climate change, were central to our assessment of the future viability of the Atlantic pigtoe. Therefore, we prohibit actions that result in the incidental take of Atlantic pigtoe by altering or degrading the habitat. Regulating incidental take resulting from these activities would help preserve the species' remaining populations, slow its rate of decline, and decrease synergistic, negative effects from other stressors.

This 4(d) rule would provide for the conservation of the Atlantic pigtoe by prohibiting the following activities, except as otherwise authorized or permitted: Importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

Under the Act, "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulation at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating incidental and/or intentional take would help preserve the species' remaining populations, slow their rate of decline, and decrease synergistic, negative effects from other stressors. Therefore, we proposed to prohibit intentional take of the Atlantic pigtoe, including, but not limited to, capturing, handling, trapping, collecting, or other activities. In this proposed revision, we would change the way in which the provisions of the 4(d) rule for the Atlantic pigtoe would appear in 50 CFR 17.45, and we would no longer refer to

the prohibitions set forth at 50 CFR 17.31(a). Instead, we propose to refer to the prohibitions set forth at 50 CFR 17.21, which apply to endangered species. However, the substance of the prohibitions, and exceptions to those prohibitions, in the proposed 4(d) rule for the Atlantic pigtoe have not changed. As we stated in the October 11, 2018, proposed rule, the species needs active conservation to improve the quality of its habitat. By excepting some of the general prohibitions of 50 CFR 17.21, these excepted actions can encourage cooperation by landowners and other affected parties in implementing conservation measures. This would allow use of the land while at the same time ensuring the protection of suitable habitat and minimizing impact on the species.

We are retaining the exceptions to the prohibitions proposed in the October 11, 2018, section 4(d) rule. We believe that those actions and activities, while they may have some minimal level of disturbance to the Atlantic pigtoe, are unlikely to negatively impact the species' conservation and recovery efforts. The proposed exceptions to these prohibitions include (1) species restoration efforts by State wildlife agencies, (2) channel restoration projects, (3) bank stabilization projects, and (4) silvicultural practices and forest management activities.

During the comment period on the October 11, 2018, proposed rule, we received numerous comments from the public and peer reviewers on several of the exceptions to the prohibitions in the proposed 4(d) rule. As a result, we retain the four exceptions but propose to revise some of them. Below, we describe the four exceptions and their proposed revisions, if any.

The first exception for species restoration efforts by State wildlife agencies remains unchanged from what we proposed on October 11, 2018 (83 FR 51570, p. 83 FR 51593), and includes collection of broodstock, tissue collection for genetic analysis, captive propagation, and subsequent stocking into currently occupied and unoccupied areas within the historical range of the species. The Service recognizes our special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique

position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve Atlantic pigtoe that may result in otherwise prohibited take for wildlife without additional authorization.

We propose revisions to the second exception for channel restoration projects based on public comments received. This exception retains most of the language from the October 11, 2018, proposed rule for creation of natural, physically stable, ecologically functioning streams that are reconnected with their groundwater aquifer (83 FR 51570, p. 83 FR 51593). Second- to third-order, headwater streams reconstructed in this way would offer suitable habitats for the Atlantic pigtoe and contain stable channel features, such as pools, glides, runs, and riffles, which could be used by the species and its host fish for spawning, rearing, growth, feeding, migration, and other normal behaviors. In this document, we propose to add language that would require surveys and relocation for Atlantic pigtoes observed prior to commencement of restoration action.

The third exception for bank stabilization projects remains largely unchanged from what we proposed on October 11, 2018, except that we propose to include a requirement that appropriate "native" vegetation, including woody species appropriate for the region and habitat, should be used for stabilization. We propose this revision based on comments we received.

During the public comment period, the Service received several comments on the fourth exception for silvicultural practices and forest management activities, including seeking further clarification of the meaning of "highest standard" best management practices (BMPs). As a result, we propose to revise the language to clarify that the BMPs must result in protection of the habitat features that provide for the breeding, feeding, sheltering, and dispersal needs of the Atlantic pigtoe. Specifically concerning streamside management zones (SMZs), the proposed 4(d) rule has been revised to provide details about SMZ widths that

would be most protective of the habitat for the species, similar to those more substantial BMPs considered for “special/sensitive” streams that are designated “trout waters” and already implemented by both Virginia and North Carolina State forestry programs (North Carolina Forest Service (NCFS) 2006, entire; Virginia Department of Forestry (VADF) 2011, entire). SMZs for waterbodies that are occupied by the Atlantic pigtoe are intended to be similar to the trout water SMZs, as described in the Virginia BMP Technical Manual (VADF 2011, p. 37), the North Carolina Forestry BMP Manual to Protect Water Quality (NCFS 2006, pp. 21, 30–31), and life-history requirements as documented in the species status assessment (SSA) for the Atlantic pigtoe (USFWS 2019, pp. 5–11). In waterbodies that support listed freshwater mussel species, a wider SMZ is more effective at reducing sedimentation, maintaining lower water temperatures through shading, and introducing food (such as leaves and

insects) into the food chain (VADF 2011, p. 37). Ninety percent of the food in forested streams comes from bordering vegetation (NCWRC 2002, p. 6; USFWS 2006, p. 6; Stewart et al. 2000, p. 210; USFWS 2019, p. 55). Freshwater mussels require cool, well-oxygenated water, and a clean stream bottom (USFWS 2019, p. 11). A lack of these features limits the number of freshwater mussels a stream can support. Aquatic habitat and suitable water temperature can be maintained even during logging operations when streamside vegetation is left intact (VADF 2011, p. 37).

In addition, we propose to revise the 4(d) rule to provide details on how access roads, skid trails, and crossings can be used in a way that would be most protective of the habitat by reducing sedimentation (NCFS 2018, entire). Silted stream bottoms suffocate filter-feeding animals and decrease the stream’s insect population, an important source of food for host fish (VADF 2011, p. 37). Siltation also makes mussel and host fish reproduction difficult (USFWS

2019, pp. 29, 41, 47, 57). Transformed juvenile mussels require clean gravel/coarse sand substrates with oxygenated water to successfully become adults (USFWS 2019, p. 11). Lastly, a silted bottom substrate can result in mortality (USFWS 2019, pp. 29, 59).

Accordingly, we have clarified the intent of the fourth exception for silviculture practices and forest management activities to those that implement State-approved best management practices (BMPs), which include the following specifications for streamside management zones (SMZ), stream crossings, and access roads:

1. A two-zoned SMZ is established and maintained along each side of the margins of intermittent streams, perennial streams, and perennial waterbodies (see table for example of current specifications based on slope similar to Trout Waters (VADF 2011, p.15)). The SMZ is measured from the top of the stream bank, and is expected to confine visible sediment resulting from accelerated erosion.

TABLE 1—STREAMSIDE MANAGEMENT ZONE (SMZ) FOR WATERBODIES OCCUPIED BY ATLANTIC PIGTOE.

Percent slope of adjacent lands (%)	Zone 1 (no touch/no harvest; measured in feet)	Zone 2 (selective harvest allowed; measured in feet)	Total SMZ width (measured in feet)
0–10	50	16	66
11–20	50	25	75
21–45	50	50	100
46+	50	70	120

2. Access roads and skid trails that cross an intermittent stream, a perennial stream, or a perennial waterbody are installed using properly designed and constructed structures installed at right angles to the stream. Structures do not impede fish passage or stream flow, and minimize the amount of visible sediment that enters that stream or waterbody. Number of crossings is minimized, and stable sites for crossings are chosen. These crossings are installed so that:

- a. Stream flow is not obstructed or impeded;
- b. No intermittent stream channel, perennial stream channel, or perennial waterbody is used as an access road or skid trail;
- c. Crossings are provided with effective structures or native ground cover to protect the stream banks and stream channel from accelerated erosion;
- d. Crossings have sufficient water control devices to collect and divert surface flow from the access road or skid trail into undisturbed areas or other

control structures to restrain accelerated erosion and prevent visible sediment from entering intermittent streams, perennial streams, and perennial waterbodies; and

e. Native ground cover, or best management practices, that prevent visible sediment from entering intermittent streams, perennial streams, and perennial waterbodies are provided within 10 working days of initial disturbance and are maintained until the site is permanently stabilized.

3. All access roads and skid trails are located outside of SMZs unless no other alternative exists.

State-approved forestry BMPs are upheld by North Carolina’s Forest Practice Guidelines (FPGs) related to water quality standards, the Virginia Department of Forestry, and the Sustainable Forestry Initiative/Forest Stewardship Council/American Tree Farm System certification standards for both forest management and responsible fiber sourcing, and are publicly available on websites for these organizations, as follows:

- <https://www.stateforesters.org/bmps/>
- <https://www.ncforestservice.gov/publications/Forestry%20Leaflets/WQ01.pdf>
- http://www.dof.virginia.gov/infopubs/BMP-Technical-Guide_pub.pdf
- https://www.sfiprogram.org/wp-content/uploads/2015_2019StandardsandRulesSection2Oct2015.pdf
- <https://us.fsc.org/download.fsc-us-forest-management-standard-v1-0.95.htm>
- <https://www.treefarmssystem.org/certification-american-tree-farm-standards>

We reiterate that these actions and activities may have some minimal level of take of the Atlantic pigtoe, but are not expected to negatively impact the species’ conservation and recovery efforts. Rather, we expect they would have a net beneficial effect on the species. Across the species’ range, instream habitats have been degraded physically by sedimentation and by direct channel disturbance. The activities in the proposed 4(d) rule would correct some of these problems,

creating more favorable habitat conditions for the species.

Further, the proposed 4(d) rule would allow the issuance of permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act.

The Service recognizes the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the Atlantic pigtoe that may result in otherwise prohibited take without additional authorization.

Finally, the proposed 4(d) rule would allow take of the Atlantic pigtoe without a permit by any employee or agent of the Service or a State conservation agency designated by his agency for such purposes and when acting in the course of his official duties if such action is necessary to aid a sick, injured, or orphaned specimen; to dispose of a dead specimen; or to salvage a dead specimen which may be useful for scientific study. In addition, Federal and State law enforcement officers may possess, deliver, carry, transport, or ship Atlantic pigtoe taken in violation of the Act as necessary.

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability

of the Service to enter into partnerships for the management and protection of the Atlantic pigtoe. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service. Anyone undertaking activities that are not covered by the provisions and that may result in take would need to ensure, in consultation with the Service, that those activities are not likely to jeopardize the continued existence of the species where the entity is a Federal agency or there is a Federal nexus, or consider applying for a permit before proceeding with the activity (if there is no Federal nexus).

New Information and Revisions to Proposed Critical Habitat

During the public comment period, we received 12 comment letters containing over 80 comments on the proposed critical habitat designation. Some of the comments from the North Carolina Wildlife Resources Commission (NCWRC) provided information that recommended shortening proposed units to better match the Natural Heritage Program element occurrences. The NCWRC also provided new observation data collected since the first version of the SSA report, which was finalized in December 2016, including updated 2017 and 2018 survey records in Little Grassy Creek (Dan River Basin, Granville County, North Carolina), the Dan River (Rockingham County, North Carolina), and the Tar River (Nash County, North Carolina), and an updated 2015 survey location in Sturgeon Creek (Nottoway River Basin, Dinwiddie County, Virginia). We also determined we had accidentally omitted observations from 2011 in Sappony Creek (Nottoway River Basin, Dinwiddie County, Virginia) and the Nottoway River (in Brunswick, Dinwiddie, and Greensville Counties, Virginia) in the October 11, 2018, proposed rule (83 FR 51570). We also noted an error in the critical habitat table, where the measurement for the New Hope Creek unit is 4 river miles (6.4 kilometers (km)), not 6 river miles (9.7 km). This information had been included in the SSA report but not in the proposed critical habitat designation.

Therefore, in this document, we propose certain revisions to the critical habitat designation we proposed for the Atlantic pigtoe on October 11, 2018 (83 FR 51570). Because of these revisions, the numbering for most of the critical habitat units has changed from the October 11, 2018, proposed rule, although the names and descriptions

remain the same. All revised changes to unit numbers are described below and listed in Table 2. Specifically, we propose to add two units based on updated observations of the species in locations previously considered historical; the new Unit 4 is 4 miles (6.6 km) of Sappony Creek in the Chowan River Basin in Dinwiddie County, Virginia (J. Stanhope 2019, pers. comm.), and the new Unit 9 is 3 miles (4.8 km) of Little Grassy Creek in the Roanoke River Basin in Granville County, North Carolina (NCWRC 2018, p.6). We also propose to revise Unit 5 (previously Unit 4) to add 3.5 river miles (5.6 km) of Sturgeon Creek based on a 2015 observation of Atlantic pigtoe not included in the October 11, 2018, proposed rule, and 10.3 river miles (16.6 km) of Nottoway River based on accidental omission of data in the October 11, 2018, proposed rule (J. Stanhope 2018, pers. comm.). We propose to revise Unit 7 (previously Unit 6) to add 7 miles (11.3 km) of the Dan River in Rockingham County, North Carolina, based on a 2017 observation of Atlantic pigtoe (NCWRC 2018, p.6). We propose to revise Unit 10 (previously Unit 8) to remove two portions from this unit totaling 3.75 miles (3.4 miles (5.5 km) from unnamed tributary to Bear Swamp Creek and 0.35 miles (0.6 km) from unnamed tributary to Cub Creek) to better match the Natural Heritage Element Occurrence data, and add one portion of 10 miles (16.1 km) to the Tar River in Nash County, North Carolina, based on a 2016 observation of Atlantic pigtoe. We also propose to revise Unit 11 (previously, Unit 9) to remove 8 miles (12.9 km) from Sandy Creek to better match the Natural Heritage Element Occurrence data in response to the public comments from the NCWRC. All of the additional stream miles are currently occupied, contain most or all of the physical or biological features to support life-history functions essential to the conservation of the Atlantic pigtoe, and may require special management considerations or protection from threats as described in the October 11, 2018, proposed rule (83 FR 51570). For clarity, we also propose to add short textual descriptions of each proposed unit in the regulatory text of the critical habitat designation.

The DEA for the proposed critical habitat designation has not been revised. The counties containing the new units (Units 4 and 9) and the revised units (Units 7, 10, and 11) are included in the DEA's analysis that uses the consultation efforts occurring in counties, which overlap with the October 11, 2018, proposed designation

for Atlantic pigtoe critical habitat, as the basis of determining incremental costs. The revised Unit 5 (previously Unit 4) includes 0.99 river miles (1.6 km) in Sussex County, Virginia, which was not considered in our DEA. However, given the small amount of habitat and zero consultation efforts on co-occurring species (yellow lance and Roanoke logperch) to date in this area of the Unit, we do not anticipate an increase in the overall incremental costs of designating critical habitat for the Atlantic pigtoe.

Revised Proposed Critical Habitat Designation

In total, we now propose to designate approximately 566 miles (910 kilometers) in 18 units in Virginia and North Carolina as critical habitat for the Atlantic pigtoe. The proposed critical habitat areas described below constitute our best assessment, at this time, of areas that meet the definition of critical habitat, and all units are considered currently occupied by the species. Those 18 units are: (1) Craig Creek, (2) Mill Creek, (3) Middle James River, (4) Sappony Creek, (5) Nottoway River Subbasin, (6) Meherrin River, (7) Dan

River, (8) Aarons Creek, (9) Little Grassy Creek, (10) Upper/Middle Tar River Subbasin, (11) Sandy/Swift Creek, (12) Fishing Creek Subbasin, (13) Lower Tar River, (14) Upper Neuse River Subbasin, (15) Middle Neuse River Subbasin, (16) New Hope Creek, (17) Deep River Subbasin, and (18) Little River Subbasin. Table 2 shows the name, land ownership of the riparian areas surrounding the units, and approximate river miles of the proposed designated units for the Atlantic pigtoe. Where appropriate, Table 2 also notes the previous number for units for which the numbering has changed.

TABLE 2—REVISED PROPOSED CRITICAL HABITAT UNITS FOR THE ATLANTIC PIGTOE

Critical habitat unit	Riparian ownership	River miles (kilometers)	Proposed changes	Previous unit numbering
Unit 1. JR1—Craig Creek	Private; Federal	29 (46.7)	None	Unit 1: JR1
Unit 2. JR2—Mill Creek	Federal	1 (1.6)	None	Unit 2: JR2
Unit 3. JR3—Middle James River	Private	3 (4.8)	None	Unit 3: JR3
Unit 4. CR1—Sappony Creek	Private	4 (6.6)	New Unit	New Unit
Unit 5. CR2—Nottoway River Subbasin	Private; Federal	64 (103)	+ 14 mi (22.5 km)	Unit 4: CR1
Unit 6. CR3—Meherrin River	Private	5 (8)	None	Unit 5: CR2
Unit 7. RR1—Dan River	Private	14 (22.5)	+7 mi (11.2 km)	Unit 6: RR1
Unit 8. RR2—Aarons Creek	Private	12 (19.3)	None	Unit 7: RR2
Unit 9. RR3—Little Grassy Creek	Private	3 (4.8)	New Unit	New Unit
Unit 10. TR1—Upper/Middle Tar River Subbasin	Private; Easements	91 (146.5)	+6 mi (9.7 km)	Unit 8: TR1
Unit 11. TR2—Sandy/Swift Creek	Private; State; Easements.	50 (80.5)	– 8 mi (12.8 km)	Unit 9: TR2
Unit 12. TR3—Fishing Creek Subbasin	Private; State; Easements.	85 (136.8)	None	Unit 10: TR3
Unit 13. TR4—Lower Tar River	Private; State; Easements.	30 (48.3)	None	Unit 11: TR4
Unit 14. NR1—Upper Neuse River Subbasin	Private; Federal; State; Easements.	60 (95)	None	Unit 12: NR1
Unit 15. NR2—Middle Neuse River Subbasin	Private; State; County; Easements.	61 (98.2)	None	Unit 13: NR2
Unit 16. CF1—New Hope Creek	Private; Easements	4 (6.4)	– 2 mi (3.3 km)	Unit 14: CF1
Unit 17. CF2—Deep River Subbasin	Private	10 (16.1)	None	Unit 15: CF2
Unit 18. YR1—Little River Subbasin	Private; Easements	40 (64.4)	None	Unit 16: YR1
Total		566 (910)	+24 mi (38 km).	

Note: Distances may not sum due to rounding.

The revised proposed critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under Proposed Regulation Promulgation. For units where there is no change from the October 11, 2018, proposed rule, please refer to information at <http://www.regulations.gov> under Docket No. FWS–R4–ES–2018–0046. We include more detailed information on the boundaries of the revised proposed critical habitat designation in the discussion of new and revised proposed individual units below.

Unit 4: CR1—Sappony Creek

This is a new unit. Unit 4 consists of 4 river miles (6.6 river km) of Sappony Creek in Dinwiddie County, Virginia.

The proposed designated area begins just upstream of the Seaboard Railroad crossing and ends just downstream of the Shippings Road (SR 709) crossing. The riparian areas on either side of the river are privately owned. The unit currently supports all breeding, feeding, and sheltering needs for the species.

Special management considerations or protection may be required to address excess sediment and pollutants that enter the creek and serve as indicators of other forms of pollution such as bacteria and toxins, reducing water quality for the species. Sources of these types of pollution are likely agricultural and silvicultural runoff.

Unit 5: CR2—Nottoway River Subbasin

Revised Unit 5 (previously Unit 4) consists of 64 river miles (103 river km)

of the Nottoway River and a portion of Sturgeon Creek in Nottoway, Lunenburg, Brunswick, Dinwiddie, Greensville, and Sussex Counties, Virginia. The proposed designation begins downstream of the Nottoway River's confluence with Dickerson Creek and ends at Little Mill Road, and includes Sturgeon Creek downstream of Old Stage Road. We propose to revise this unit to add 3.5 river miles (5.6 km) of Sturgeon Creek based on a 2015 observation of Atlantic pigtoe not included in the October 11, 2018, proposed rule, and 10.3 river miles (16.6 km) of Nottoway River based on accidental omission of data in that proposed rule. Land bordering the river is primarily privately owned, except for some land (14 miles) that is part of the Fort Pickett National Guard Installation

and therefore is owned by the United States. The unit currently supports all breeding, feeding, and sheltering needs of the species.

Special management considerations or protection may be required within this unit to address a variety of threats. In the past decade, the Nottoway River suffered from several seasonal drought events, which not only caused very low dissolved oxygen conditions but also decreased food delivery because of minimal flows. In addition, these conditions led to increased predation rates on potential host fishes that were concentrated into low-flow refugia (e.g., pools). Urban stormwater and nonpoint source pollution have been identified as contributing to water quality issues in this unit; therefore, special management considerations for riparian buffer restoration, reduced surface and groundwater withdrawals, and stormwater retrofits will benefit the habitat in this unit. Additional threats to this system include oil and gas pipeline projects that propose to cross streams at locations where the species occurs. Additional special management considerations or protection may be required within this unit to address low water levels as a result of water withdrawals and drought, as well as recommendation of alternate routes for oil and gas pipelines, or directional bore for those projects.

Unit 7: RR1—Dan River

Revised Unit 7 (previously Unit 6) consists of 14 river miles (22.5 river km) of the Dan River along the border of Virginia and North Carolina from NC Highway 700 near Eden, North Carolina, into Pittsylvania County, Virginia, and downstream to the confluence with Williamson Creek in Rockingham County, North Carolina. We propose to revise this unit to add 7 miles (11.3 km) in Rockingham County, North Carolina, based on a 2017 observation of Atlantic pigtoe. The land on either side of the proposed critical habitat unit is privately owned. The unit currently supports all breeding, feeding, and sheltering needs for the species.

Special management considerations or protection may be required within this unit to address threats. For example, a Duke Energy coal ash spill occurred upstream of this unit in February 2014; subsequent actions related to mitigating the effects of the spill will ultimately benefit the habitat in this unit, potentially allowing species restoration efforts.

Unit 9: RR3—Little Grassy Creek

This is a new unit. Unit 9 consists of 3 river miles (4.8 river km) of Little

Grassy Creek in Granville County, North Carolina. The proposed designated area begins at the Davis Chapel Road crossing and ends at the confluence with Grassy Creek. The riparian areas on either side of the river are privately owned. The unit currently supports all breeding, feeding, and sheltering needs for the species.

Special management considerations or protection may be required to address excess sediment and pollutants that enter the creek and serve as indicators of other forms of pollution such as bacteria and toxins, reducing water quality for the species. Sources of these types of pollution are likely agricultural and silvicultural runoff.

Unit 10: TR1—Upper/Middle Tar River Subbasin

This revised unit (previously Unit 8) consists of 91 miles (146.5 km) of the mainstem of the upper and middle Tar River as well as several tributaries (Bear Swamp Creek, Fox Creek, Crooked Creek, Cub Creek, and Shelton Creek), in Granville, Vance, Franklin, and Nash Counties, North Carolina. The portion of Cub Creek starts near Hobgood Road and continues to the confluence with the Tar River; the Tar River portion starts just upstream of the NC 158 bridge and goes downstream to the NC 581 crossing; the Shelton Creek portion starts upstream of NC 158 downstream to the confluence with the Tar River; the Bear Swamp Creek portion begins upstream of Dyking Road downstream to the confluence with the Tar River (and includes an unnamed tributary upstream of Beasley Road); the Fox Creek portion begins downstream of NC 561 to the confluence with the Tar River; and the Crooked Creek portion begins upstream of NC 98 crossing downstream to confluence with Tar River. We propose revisions to remove two portions from this unit (3.4 miles (5.5 km) from unnamed tributary to Bear Swamp Creek and 0.35 miles (0.6 km) from unnamed tributary to Cub Creek) based on Natural Heritage Element Occurrence data, and to add 10 miles (16.1 km) to the Tar River in Nash County, North Carolina, based on a 2016 observation of Atlantic pigtoe. Land bordering the river and creeks is mostly (79 mi (119 km)) privately owned, except for some areas (12 mi (17 km)) in public ownership or easements. The unit currently supports all breeding, feeding, and sheltering needs for the species.

Special management considerations or protection may be required within this unit to address a variety of threats. Excessive amounts of nitrogen and phosphorus run off the land or are

discharged into the waters, causing too much growth of microscopic or macroscopic vegetation and leading to extremely low levels of dissolved oxygen. As a result, there are six “impaired” stream reaches (as identified on the State’s Clean Water Act section 303d list) totaling approximately 32 miles in the unit. Expansion or addition of new wastewater discharges are also a threat to habitat in this unit. Special management focused on agricultural BMPs, implementing highest levels of treatment of wastewater practicable, maintenance of forested buffers, and connection of protected riparian corridors will benefit habitat for the species in this unit.

Unit 11: TR2—Sandy/Swift Creek

This revised unit (previously Unit 9) consists of a 50-mile (80.5-km) segment of Sandy/Swift Creek beginning at Southerland Mill Road downstream to NC 301 in Granville, Vance, Franklin, and Nash Counties, North Carolina. We propose to revise this unit to remove 8 miles (12.9 km) from the upstream limit of Sandy Creek based on Natural Heritage Element Occurrence data in response to comments from the NCWRC. Land bordering the river and creeks is mostly (50 mi (80 km)) privately owned, with some areas (8 mi (13 km)) covered by protective easements held by a local land trust and the North Carolina Division of Mitigation Services. The unit currently supports all breeding, feeding, and sheltering needs for the species.

Special management considerations or protection may be required within this unit to address a variety of threats. Excessive amounts of nitrogen and phosphorus run off the land or are discharged into the waters, causing excessive growth of microscopic or macroscopic vegetation and leading to extremely low levels of dissolved oxygen; there is one “impaired” stream reach totaling approximately 5 miles (8 km) in this unit. Special management focused on agricultural BMPs, maintenance of forested buffers, and connection of protected riparian corridors will benefit habitat for the species in this unit.

References Cited

A complete list of references cited in this document is available on the internet at <http://www.regulations.gov> and upon request from the Raleigh Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this document are the staff members of the U.S. Fish

and Wildlife Service Species Assessment Team and Raleigh Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to further amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as proposed to be amended at 83 FR 51570 (October 11, 2018) as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Add § 17.45 to read as set forth below:

§ 17.45 Special rules—snails and clams.

(a) Atlantic pigtoe (Fusconaia masoni).

(1) Prohibitions. Except as noted in paragraph (a)(2) of this section and § 17.4, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(2) Exceptions from prohibitions. In regard to this species, you may:

(i) Conduct activities as authorized by a permit under § 17.32.

(ii) Take as set forth at § 17.21(c)(3) and (c)(4) for endangered wildlife.

(iii) Take as set forth at § 17.31(b).

(iv) Possess and engage in other acts, as set forth at § 17.21(d)(2) for endangered wildlife.

(v) Take incidental to the following activities:

(A) Species restoration efforts by State wildlife agencies, including collection of broodstock, tissue collection for genetic analysis, captive propagation, and subsequent stocking into currently occupied and unoccupied areas within the historical range of the species.

(B) Channel restoration projects that create natural, physically stable, ecologically functioning streams (or stream and wetland systems) that are reconnected with their groundwater aquifers. These projects can be accomplished using a variety of methods, but the desired outcome is a natural channel with low shear stress (force of water moving against the channel); bank heights that enable reconnection to the floodplain; a reconnection of surface and groundwater systems, resulting in perennial flows in the channel; riffles and pools comprised of existing soil, rock, and wood instead of large imported materials; low compaction of soils within adjacent riparian areas; and inclusion of riparian wetlands. Prior to restoration action, surveys to determine presence of Atlantic pigtoe must be performed, and if located, mussels must be relocated prior to project implementation.

(C) Bank stabilization projects that use bioengineering methods to replace pre-existing, bare, eroding stream banks with vegetated, stable stream banks, thereby reducing bank erosion and instream sedimentation and improving habitat conditions for the species. Following these bioengineering methods, stream banks may be stabilized using native species live stakes (live, vegetative cuttings inserted or tamped into the ground in a manner that allows the stake to take root and grow), native species live fascines (live branch cuttings, usually willows, bound together into long, cigar shaped bundles), or native species brush layering (cuttings or branches of easily

rooted tree species layered between successive lifts of soil fill). Native vegetation includes woody species appropriate for the region and habitat conditions. These methods must not include the sole use of quarried rock (rip-rap) or the use of rock baskets or gabion structures.

(D) Silviculture practices and forest management activities that implement State-approved best management practices for sensitive areas, including a two-zoned streamside management zone (SMZ) (Zone 1 width is a 50-foot minimum with no harvest allowed; Zone 2 width is variable depending on slope and includes selective harvest) established and maintained along each side of the margins of intermittent streams, perennial streams, and perennial waterbodies. The SMZ is measured from the top of the stream bank, and will confine visible sediment resulting from accelerated erosion. Access roads and skid trails that cross an intermittent stream, a perennial stream, or a perennial waterbody must be installed using properly designed and constructed structures installed at right angles to the stream, must not impede fish passage or stream flow, and must minimize the amount of visible sediment that enters that stream or waterbody. The number of crossings must be minimized, stable sites for crossings must be chosen, and access roads and skid trails must be located outside of SMZs unless no other alternative exists.

(b) [Reserved]

3. Amend § 17.95(f), the entry proposed at 83 FR 51570 for “Atlantic Pigtoe (Fusconaia masoni)”, by revising paragraphs (5) through (21) and by adding paragraphs (22) and (23), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(f) Clams and Snails.

* * * * *

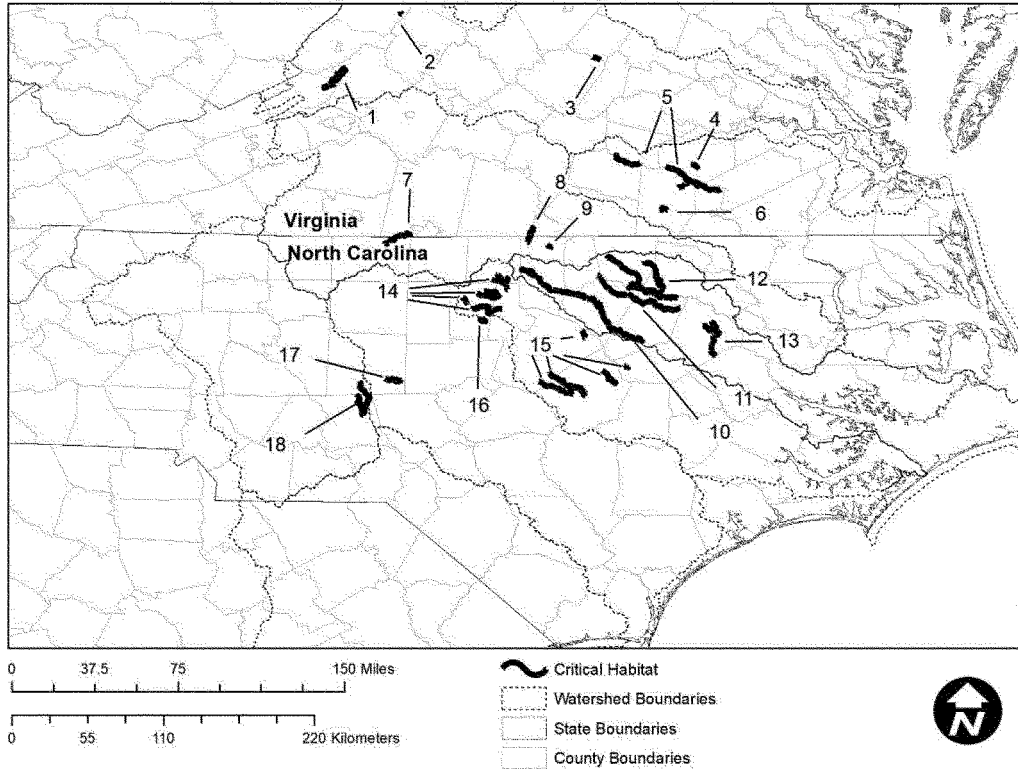
Atlantic Pigtoe (Fusconaia masoni)

* * * * *

(5) Note: Index map follows:

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Index Map of Critical Habitat Units for Atlantic Pigtoe

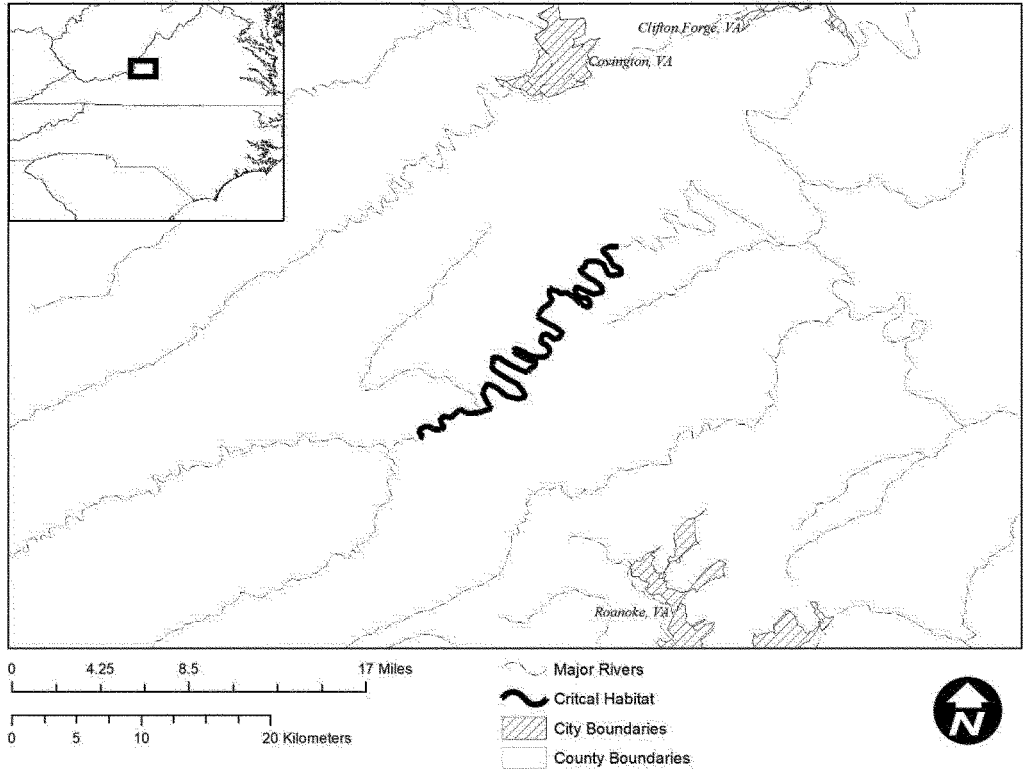


(6) Unit 1: JR1—Craig Creek, Craig and Botetourt Counties, Virginia.
 (i) This unit consists of 29 river miles (46.7 river kilometers) of Craig Creek

near VA Route 616 west of New Castle downstream to just below VA Route 817 crossing.

(ii) Map of Unit 1 (Craig Creek) follows:

Map of Unit 1 - JR1 Craig Creek Critical Habitat Unit for Atlantic Pigtoe

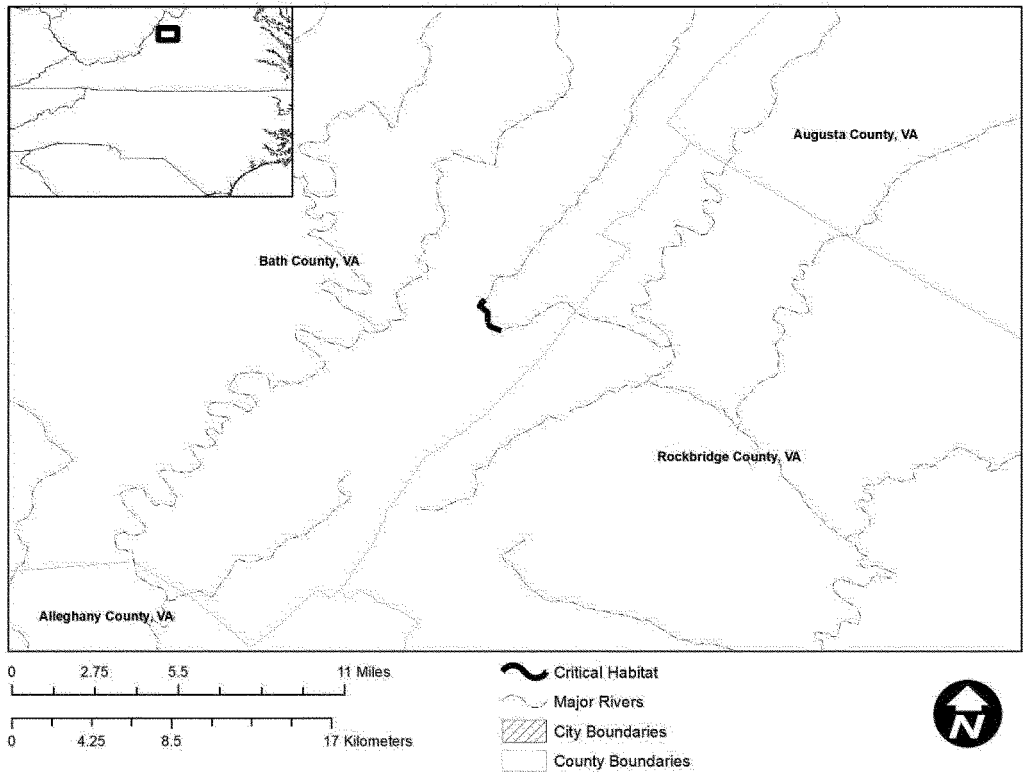


(7) Unit 2: JR2—Mill Creek, Bath County, Virginia.

(i) This unit consists of a 1-mile (1.6-kilometer) segment of Mill Creek at the VA 39 (Mountain Valley Road) crossing.

(ii) Map of Unit 2 (Mill Creek) follows:

Map of Unit 2 - JR2 - Mill Creek Critical Habitat Unit for Atlantic Pigtoe



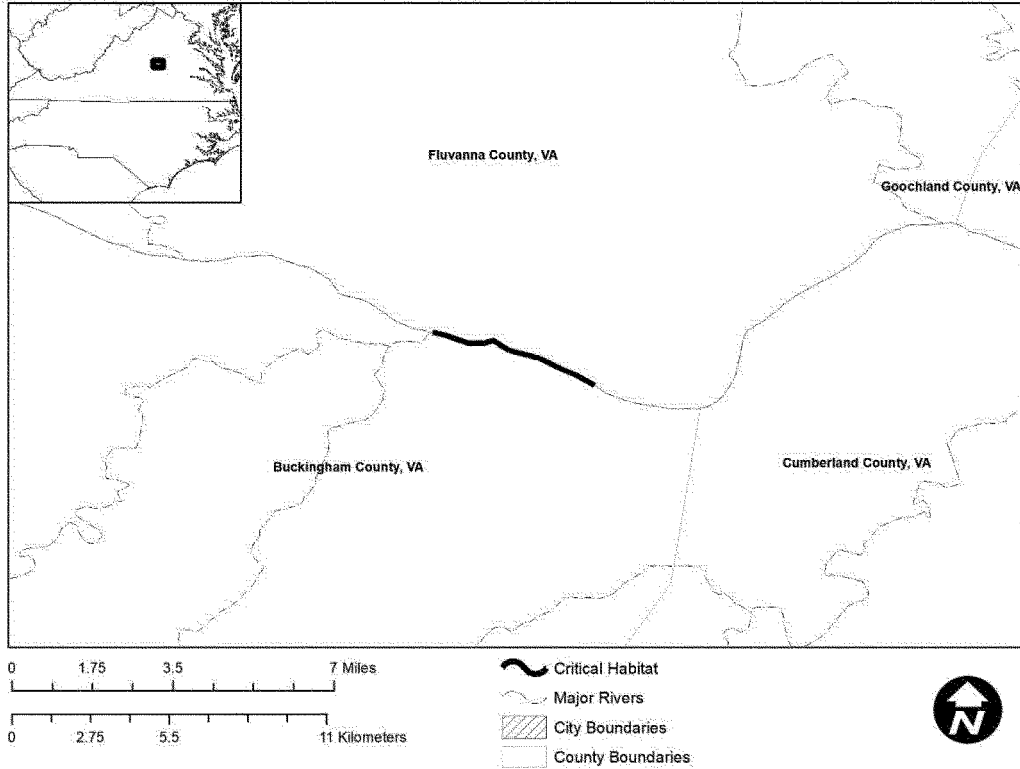
(8) Unit 3: JR3—Middle James River, Fluvanna and Buckingham Counties, Virginia.

(i) This unit consists of a 3-mile (4.8-kilometer) segment of the Middle James

River downstream of its confluence with the Slate River, under the crossing of VA Hwy 15 (James Madison Highway) along the boundary of Fluvanna and Buckingham Counties, Virginia.

(ii) Map of Unit 3 (Middle James River) follows:

Map of Unit 3 - JR3 - Middle James River Critical Habitat Unit for Atlantic Pigtoe



(9) Unit 4: CR1—Sappony Creek, Dinwiddie County, Virginia.

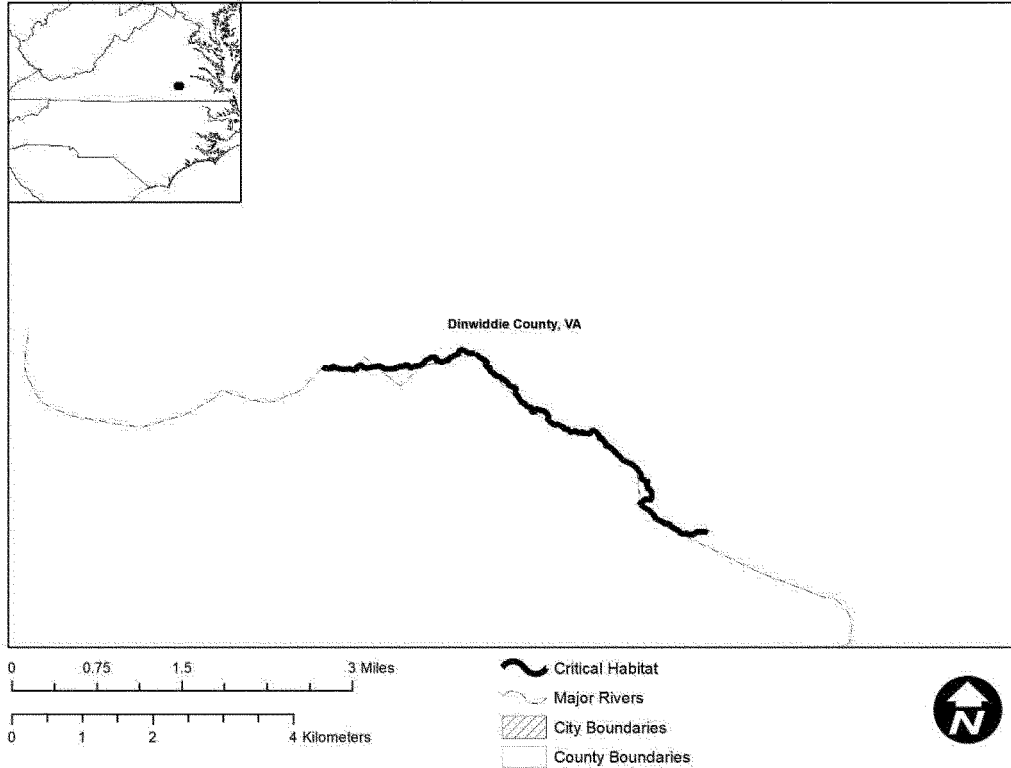
(i) This unit consists of 4 river miles (6.6 river kilometers) of Sappony Creek

in Dinwiddie County, Virginia. The designated area begins just upstream of the Seaboard Railroad crossing and ends

just downstream of the Shippings Road (SR 709) crossing.

(ii) Map of Unit 4 (Sappony Creek) follows:

Map of Unit 4 - CR1 - Sappony Creek Critical Habitat Unit for Atlantic Pigtoe



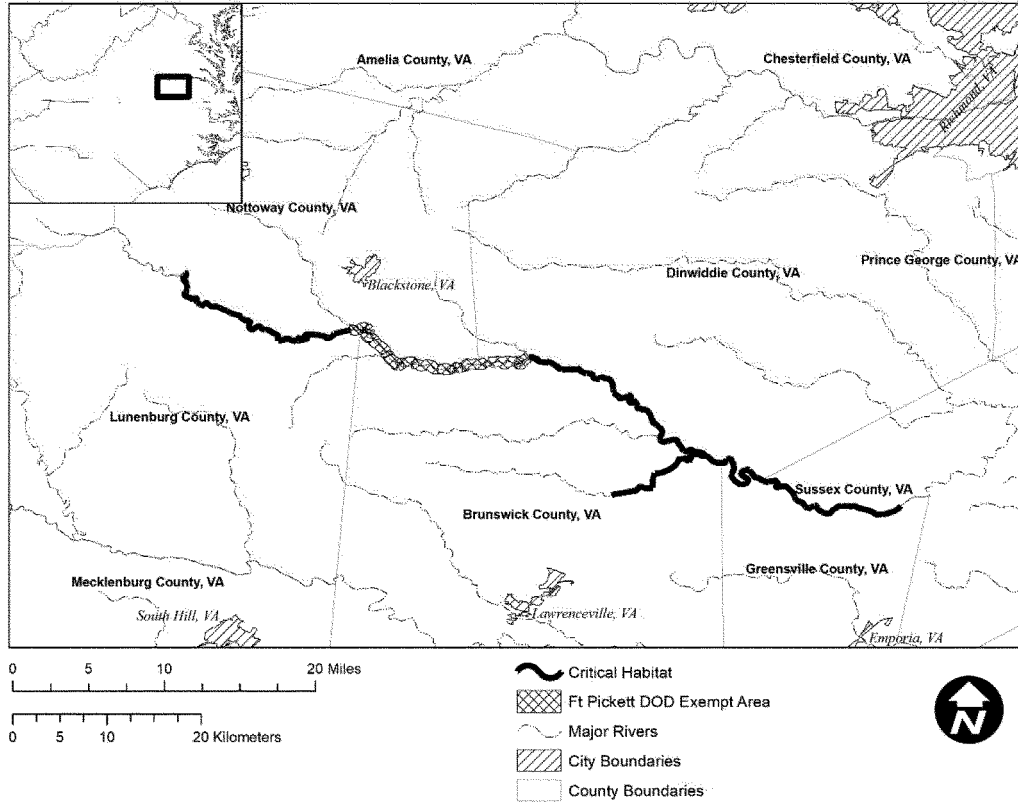
(10) Unit 5: CR2—Nottoway River Subbasin, Nottoway, Lunenburg, Brunswick, Dinwiddie, Greensville, and Sussex Counties, Virginia.

(i) This unit consists of 64 river miles (103 river kilometers) of the Nottoway River, and a portion of Sturgeon Creek. The designation begins downstream of the Nottoway River's confluence with

Dickerson Creek and ends at Little Mill Road, and includes Sturgeon Creek downstream of Old Stage Road.

(ii) Map of Unit 5 (Nottoway River Subbasin) follows:

Map of Unit 5 - CR2 - Nottoway River Subbasin Critical Habitat Unit for Atlantic Pigtoe



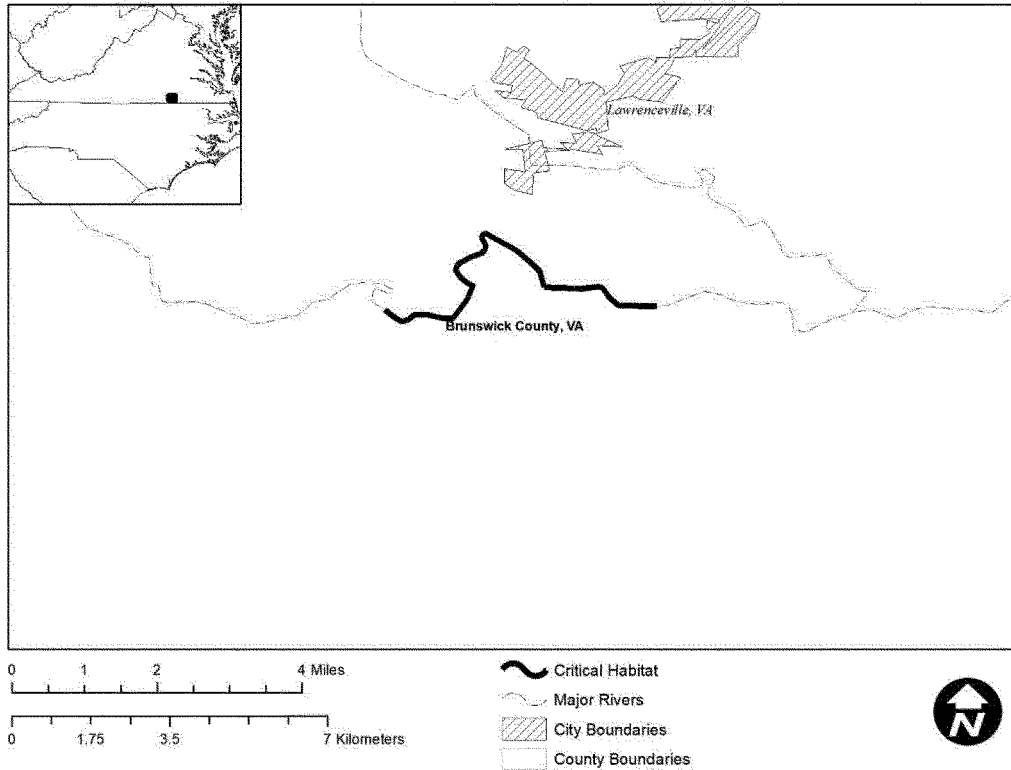
(11) Unit 6: CR3—Meherrin River, Brunswick County, Virginia.

(i) This unit consists of 5 miles (8 kilometers) of the Meherrin River from

approximately 1.5 river miles below the confluence with Saddletree Creek under VA Hwy 46 (Christana Highway) to VA 715 (Iron Bridge Road).

(ii) Map of Unit 6 (Meherrin River) follows:

Map of Unit 6 - CR4 - Meherrin River Critical Habitat Unit for Atlantic Pigtoe



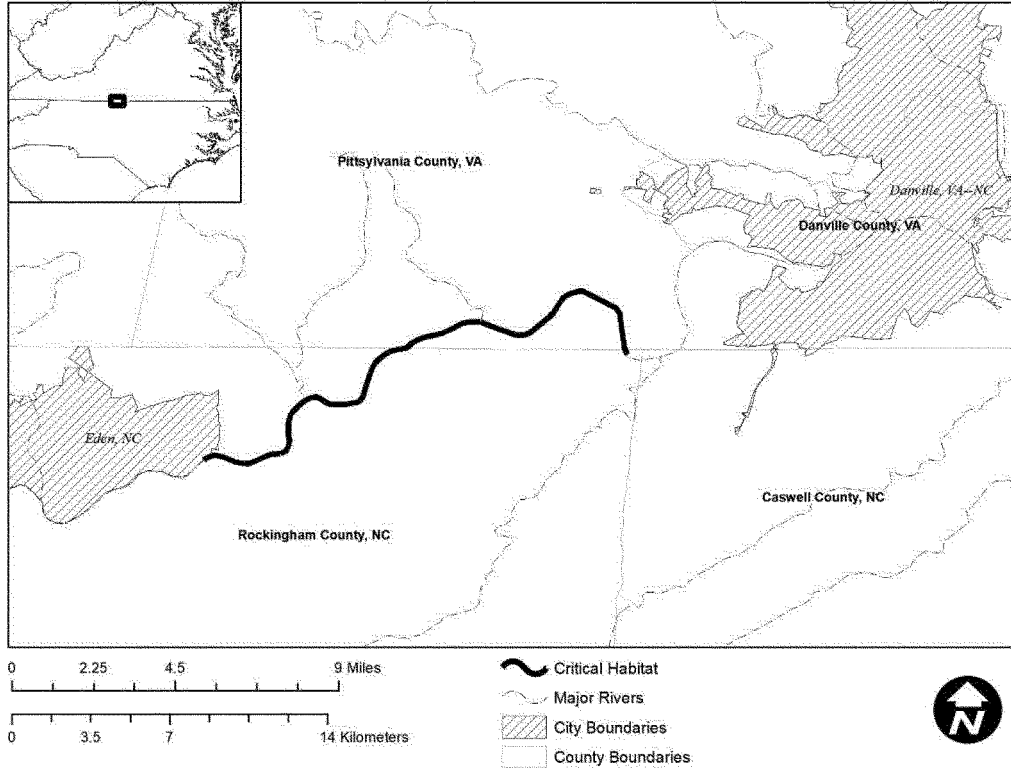
(12) Unit 7: RR1—Dan River, Pittsylvania County, Virginia, and Rockingham County, North Carolina.
 (i) This unit consists of 14 river miles (22.5 river kilometers) of the Dan River

along the border of Virginia and North Carolina from NC Highway 700 near Eden, North Carolina, into Pittsylvania County, Virginia, and downstream to

the confluence with Williamson Creek in Rockingham County, North Carolina.

(ii) Map of Unit 7 (Dan River) follows:

Map of Unit 7 - RR1 - Dan River Critical Habitat Unit for Atlantic Pigtoe



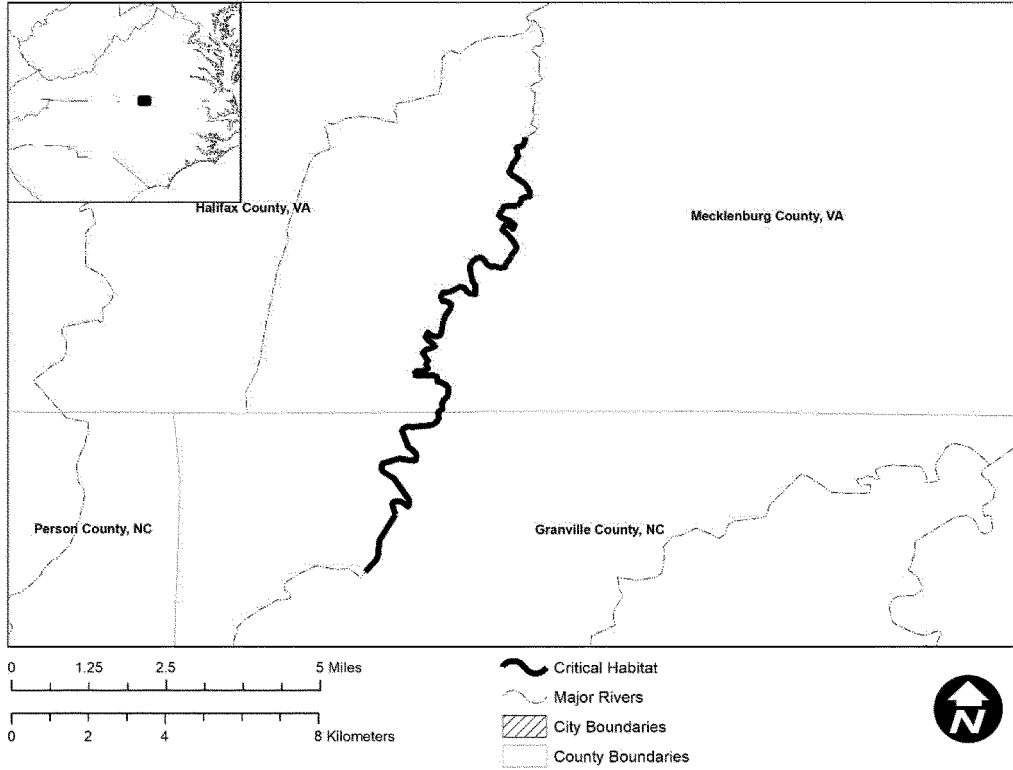
(13) Unit 8: RR2—Aarons Creek, Granville County, North Carolina, and Mecklenburg and Halifax Counties, Virginia.

(i) This unit consists of 12 miles (19.3 kilometers) of Aarons Creek, from NC 96 in Granville County, North Carolina, downstream across the North Carolina-Virginia border to VA 602 (White House

Road) along the Mecklenburg County-Halifax County line in Virginia.

(ii) Map of Unit 8 (Aarons Creek) follows:

Map of Unit 8 - RR2 - Aarons Creek Critical Habitat Unit for Atlantic Pigtoe



(14) Unit 9: RR3—Little Grassy Creek, Granville County, North Carolina.

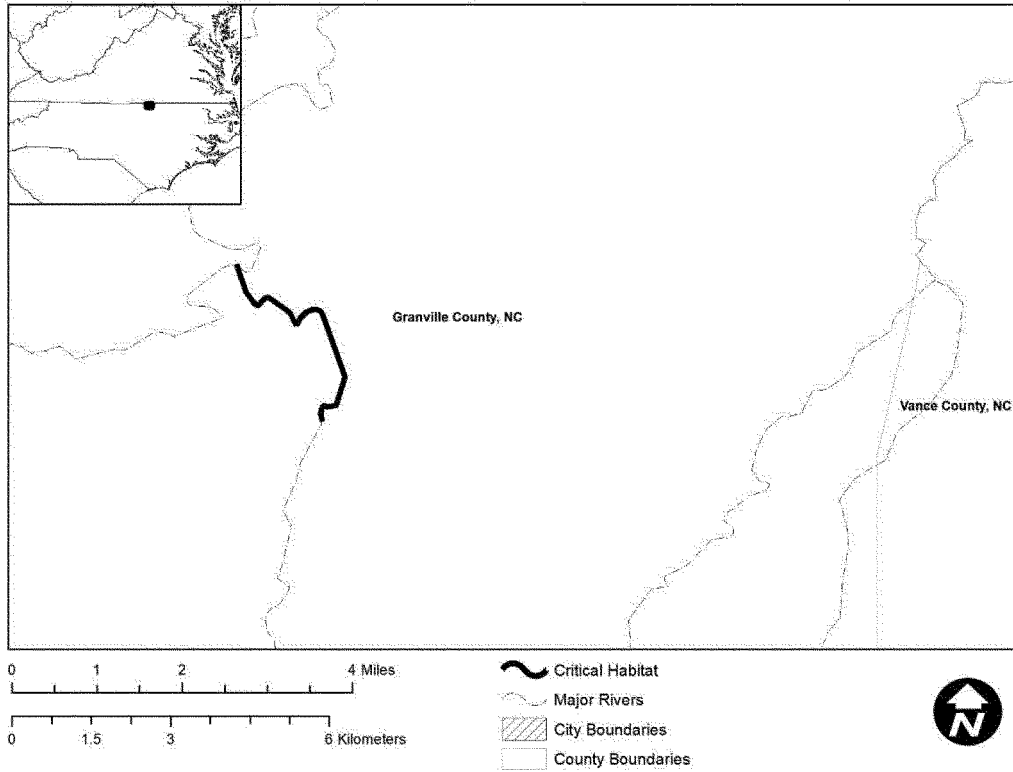
(i) This unit consists of 3 river miles (4.8 river kilometers) of Little Grassy

Creek in Granville County, North Carolina. The designated area begins at the Davis Chapel Road crossing and

ends at the confluence with Grassy Creek.

(ii) Map of Unit 9 (Little Grassy Creek) follows:

Map of Unit 9 - RR3 - Little Grassy Creek Critical Habitat Unit for Atlantic Pigtoe



(15) Unit 10: TR1—Upper/Middle Tar River Subbasin, Granville, Vance, Franklin, and Nash Counties, North Carolina.

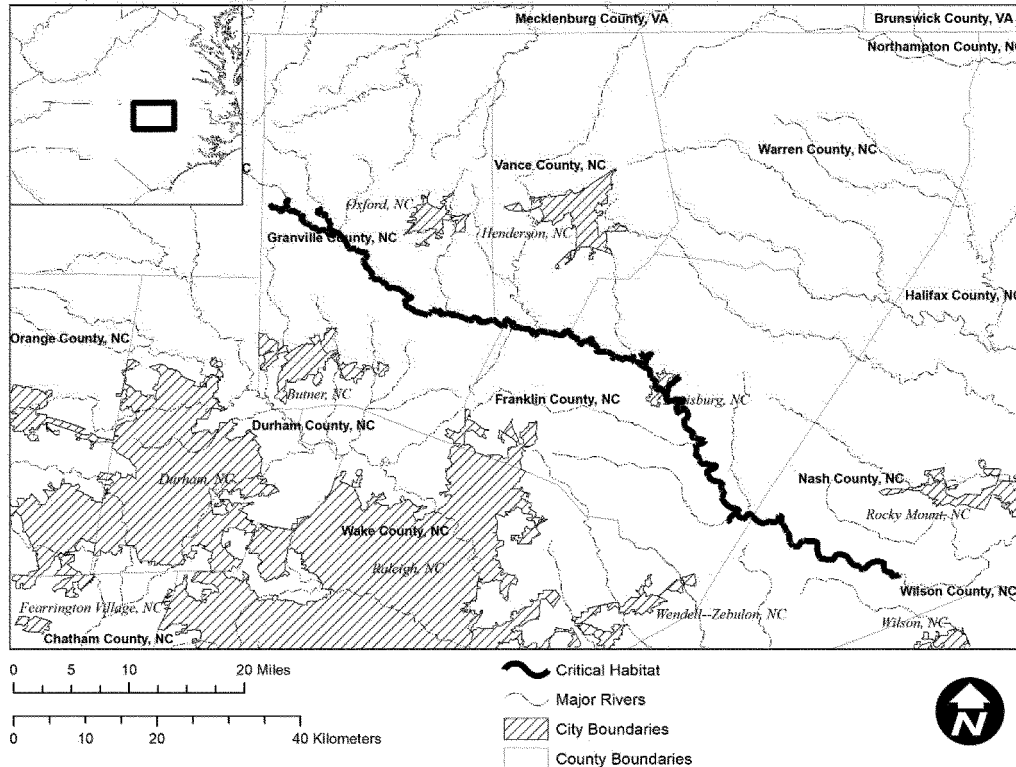
(i) This unit consists of 91 miles (146.5 kilometers) of the mainstem of the upper and middle Tar River as well as several tributaries (Bear Swamp Creek, Fox Creek, Crooked Creek, Cub Creek, and Shelton Creek), all in North Carolina. The portion of Cub Creek

starts near Hobgood Road and continues to the confluence with the Tar River; the Tar River portion starts just upstream of the NC 158 bridge and goes downstream to the NC 581 crossing; the Shelton Creek portion starts upstream of NC 158 downstream to the confluence with the Tar River; the Bear Swamp Creek portion begins upstream of Dyking Road downstream to the confluence with the Tar River (and includes an unnamed

tributary upstream of Beasley Road); the Fox Creek portion begins downstream of NC 561 to the confluence with the Tar River; and the Crooked Creek portion begins upstream of NC 98 crossing downstream to confluence with Tar River.

(ii) Map of Unit 10 (Upper/Middle Tar River Subbasin) follows:

**Map of Unit 10 - TR1 -
Upper/Middle Tar River Subbasin Critical Habitat Unit for Atlantic Pigtoe**



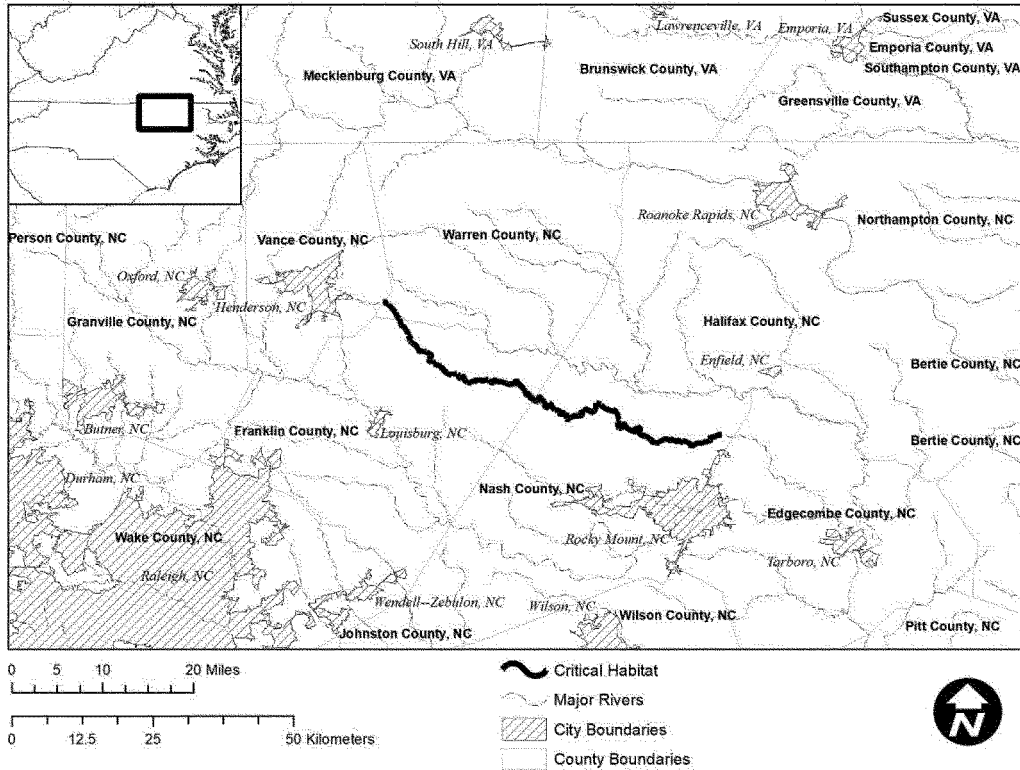
(16) Unit 11: TR2—Sandy/Swift Creek, Warren, Franklin, and Nash Counties, North Carolina.

(i) This unit consists of a 50-mile (80.5-kilometer) segment of Sandy/Swift Creek beginning at Vance/Warren

county line downstream to NC 301 in Franklin County.

(ii) Map of Unit 11 (Sandy/Swift Creek) follows:

Map of Unit 11 - TR2 - Sandy/Swift Creek Critical Habitat Unit for Atlantic Pigtoe



(17) Unit 12: TR3—Fishing Creek Subbasin, Warren, Halifax, Franklin, and Nash Counties, North Carolina.

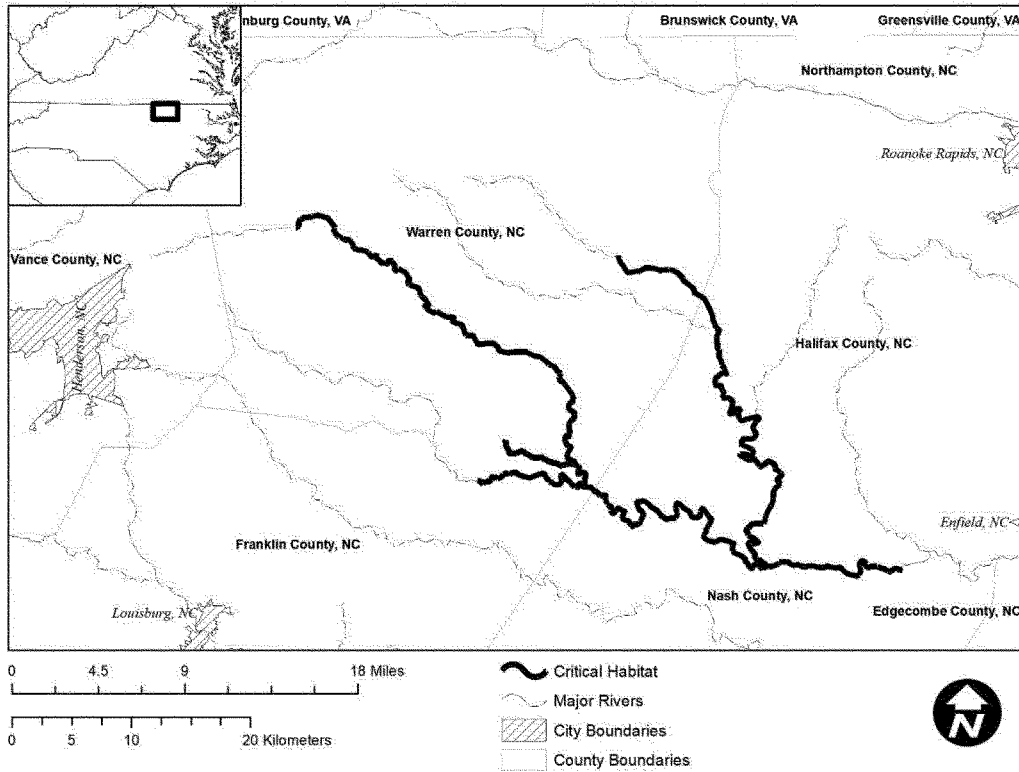
(i) This unit consists of 85 miles (136.8 kilometers) in Fishing Creek, Little Fishing Creek, Shocco Creek, and Maple Branch. The Shocco Creek

portion begins downstream of the NC 58 bridge and continues to the confluence with Fishing Creek; the entirety of Maple Branch is included, down to the confluence with Fishing Creek; Fishing Creek begins at Axtell Ridgeway Road (SR 1112) downstream to I-95; and

Little Fishing Creek begins upstream of Briston Brown Road (SR 1532) downstream to the confluence with Fishing Creek.

(ii) Map of Unit 12 (Fishing Creek Subbasin) follows:

Map of Unit 12 - TR3 - Fishing Creek Subbasin Critical Habitat Unit for Atlantic Pigtoe



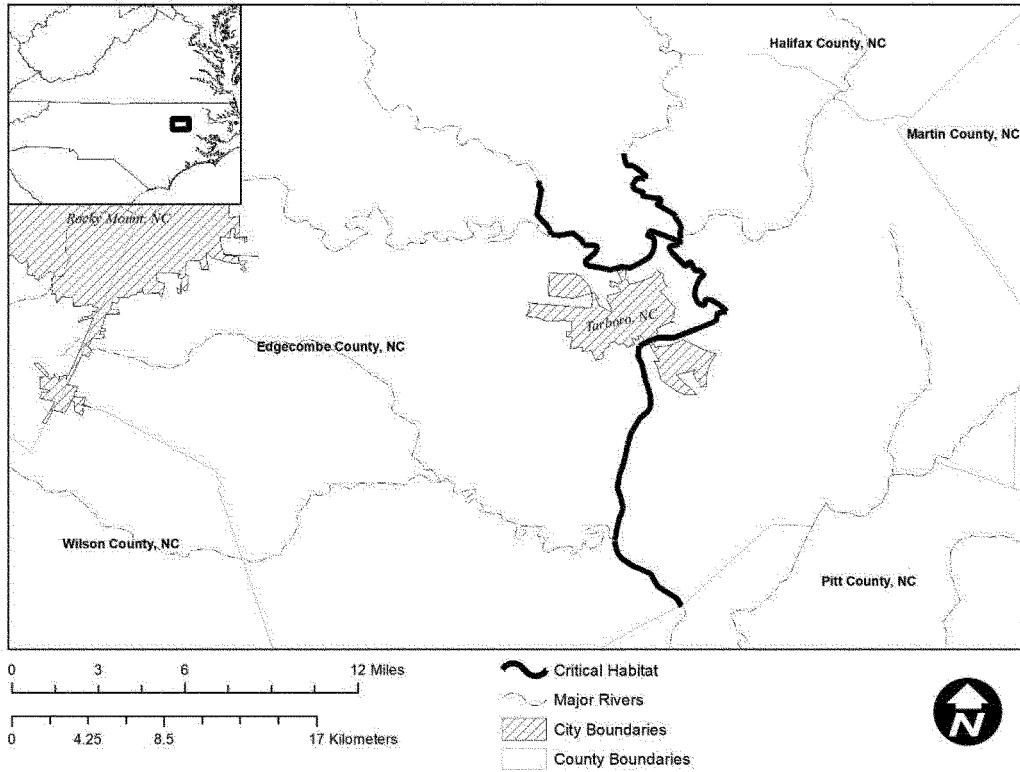
(18) Unit 13: TR4—Lower Tar River, Edgecombe and Pitt Counties, North Carolina.

(i) This unit consists of 30 miles (48.3 kilometers) of the Lower Tar River,

lower Swift Creek, and Fishing Creek in Edgecombe County, North Carolina, from NC 97 near Leggett, North Carolina, to the Edgecombe-Pitt County line near NC 33.

(ii) Map of Unit 13 (Lower Tar River) follows:

Map of Unit 13 - TR4 - Lower Tar River Critical Habitat Unit for Atlantic Pigtoe



(19) Unit 14: NR1—Upper Neuse River Subbasin, Person, Durham, and Orange Counties, North Carolina.

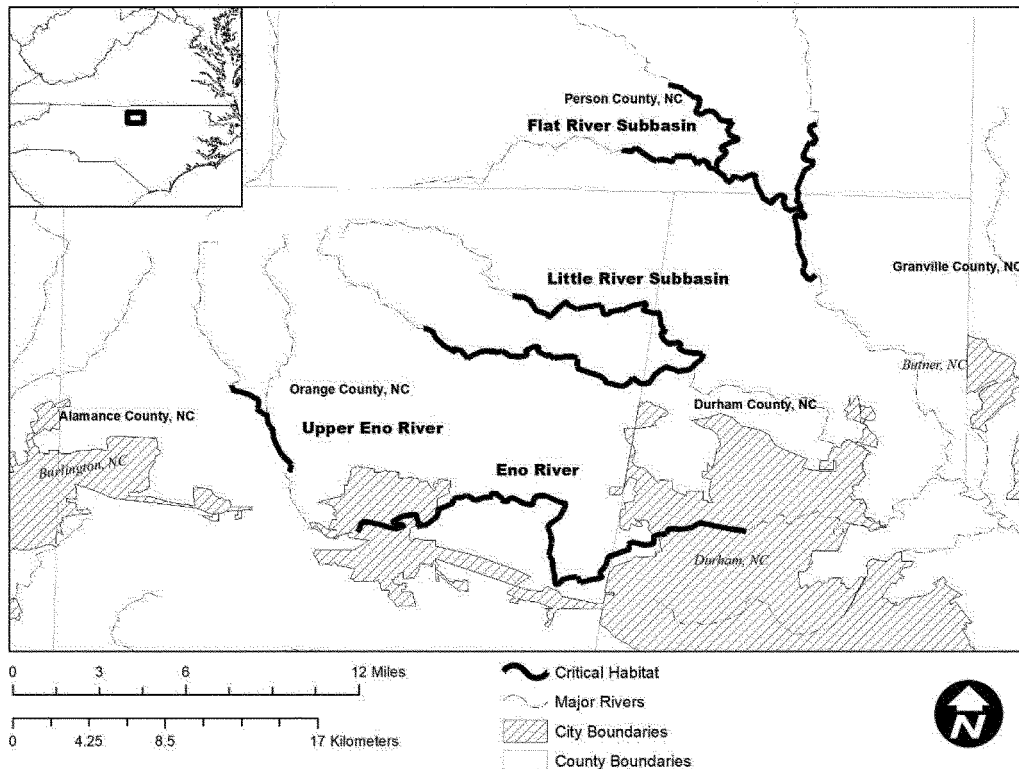
(i) This unit consists of 60 river miles (95 river kilometers) in four reaches including Flat River, Little River, Eno River, and the Upper Eno River. The Flat River reach consists of 19 river miles (30.6 river kilometers) in the Flat River Subbasin in Person and Durham Counties, North Carolina, including the South Flat River downstream of Dick

Coleman Road, the North Flat River near Parsonage Road, and Deep Creek near Helena-Moriah Road downstream where each river converges into the Flat River downstream of State Forest Road. The Little River Subbasin includes 18 river miles (29 river kilometers) of the North Fork and South Fork Little Rivers in Orange and Durham Counties, North Carolina. The Upper Eno River reach consists of 4 river miles (6.4 river kilometers) in Orange County, North

Carolina, including the West Fork Eno River upstream of Cedar Grove Road to the confluence with McGowan Creek. The Eno River reach consists of 18 river miles (29 river kilometers) in Orange and Durham Counties, North Carolina, from below Eno Mountain Road to NC 15–501.

(ii) Map of Unit 14 (Upper Neuse River Subbasin) follows:

Map of Unit 14 - NR1 - Upper Neuse River Subbasin Critical Habitat Unit for Atlantic Pigtoe



(20) Unit 15: NR2—Middle Neuse River Subbasin, Wake, Johnston, and Wilson Counties, North Carolina.

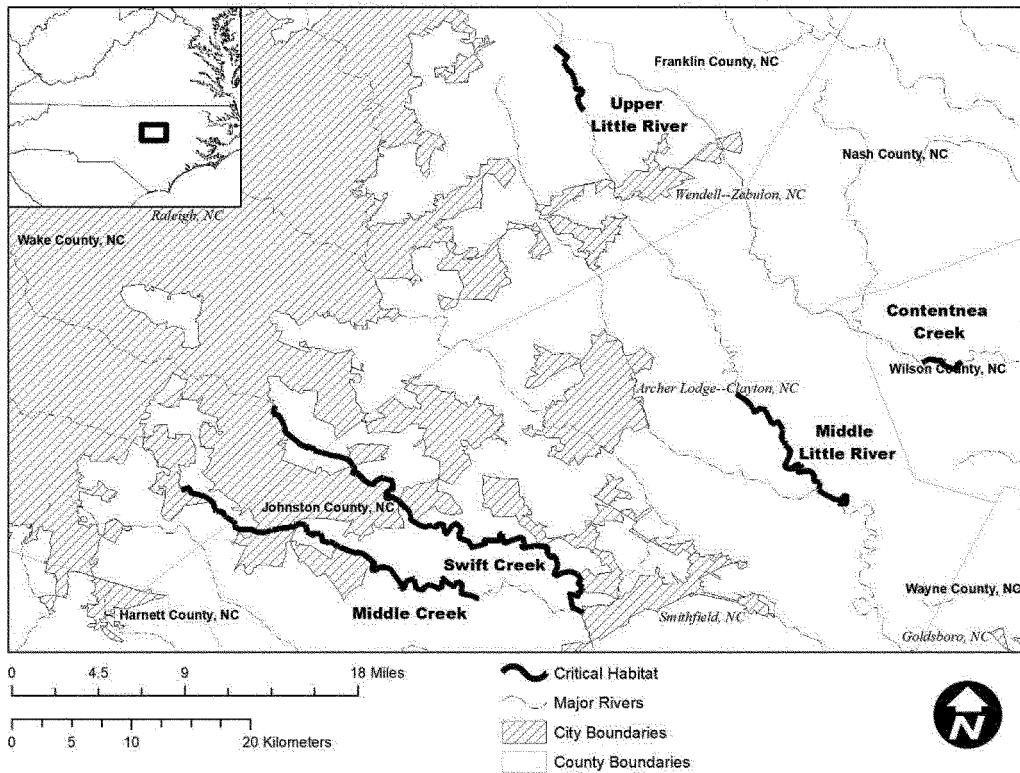
(i) This unit consists of 61 river miles (98.2 river kilometers) in five reaches including Swift Creek, Middle Creek, Upper Little River, Middle Little River, and Contentnea Creek, all in North Carolina. The Middle Creek reach is 19 river miles (30.6 river kilometers) below Old Stage Road downstream to below

Crantock Road, and the Swift Creek reach is 25 river miles (40.2 river kilometers) from Lake Benson downstream to confluence with the Neuse, both in Wake and Johnston Counties. The Upper Little River reach includes 4 miles (6.4 kilometers) of the Upper Little River from the confluence with Perry Creek to Fowler Road in Wake County, North Carolina. The Middle Little River reach includes 11

river miles (17.7 river kilometers) from Atkinsons Mill downstream to NC 301 in Johnston County, North Carolina. The Contentnea Creek reach consists of 2 river miles (3.2 river kilometers) below Buckhorn Reservoir to just below Sadie Road near NC 581 in Wilson County, North Carolina.

(ii) Map of Unit 15 (Middle Neuse River Subbasin) follows:

Map of Unit 15 - NR2 - Middle Neuse River Subbasin Critical Habitat Unit for Atlantic Pigtoe

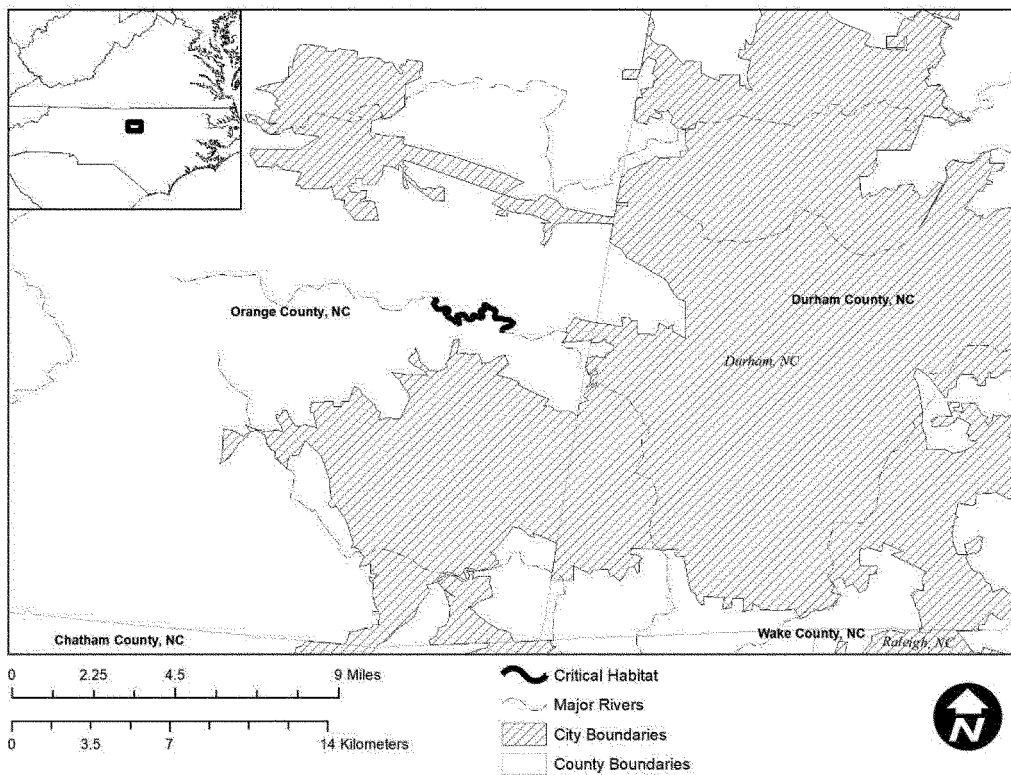


(21) Unit 16: CF1—New Hope Creek, Orange County, North Carolina.

(i) This unit consists of 4 mi (6.4 km) of habitat in the New Hope Creek from NC 86 to Mimosa Road.

(ii) Map of Unit 16 (New Hope Creek) follows:

Map of Unit 16 - CF1 - New Hope Creek Critical Habitat Unit for Atlantic Pigtoe



(22) Unit 17: CF2—Deep River Subbasin, Randolph County, North Carolina.

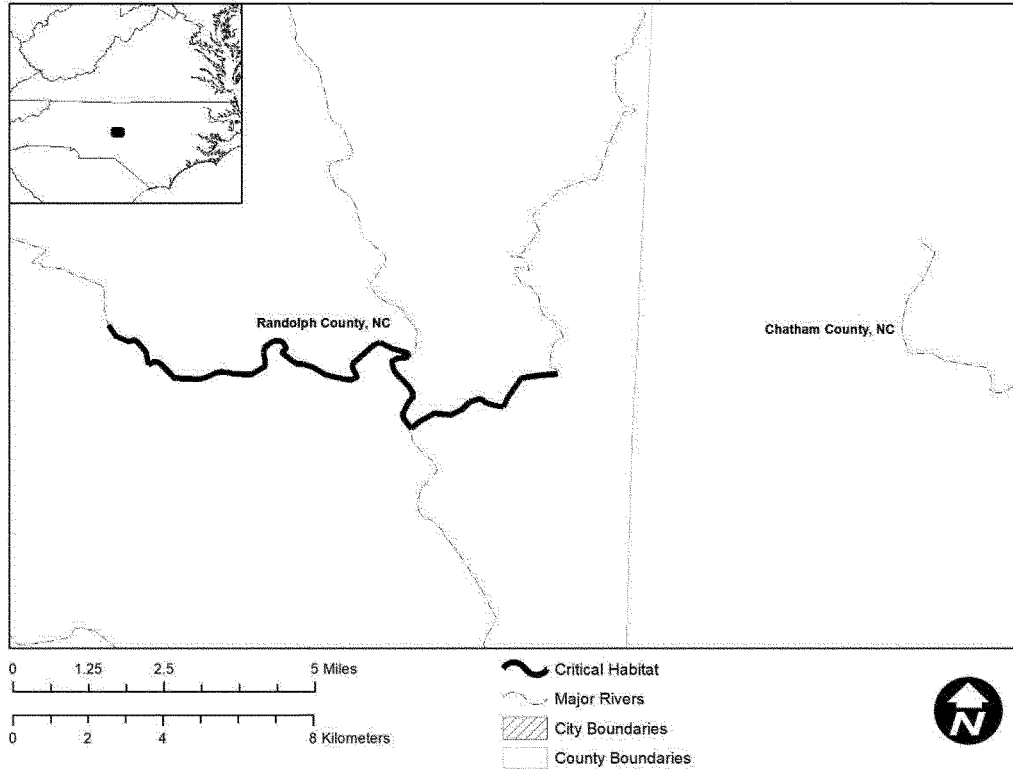
(i) The Deep River Subbasin unit consists of 10 river miles (16.1 river

kilometers), including the mainstem between Richland and Brush Creeks as well as Richland Creek from Little Beane Store Road to the confluence with the Deep River and Brush Creek from

Brush Creek Road to the confluence with the Deep River.

(ii) Map of Unit 17 (Deep River Subbasin) follows:

Map of Unit 17 - CF2 - Deep River Subbasin Critical Habitat Unit for Atlantic Pigtoe



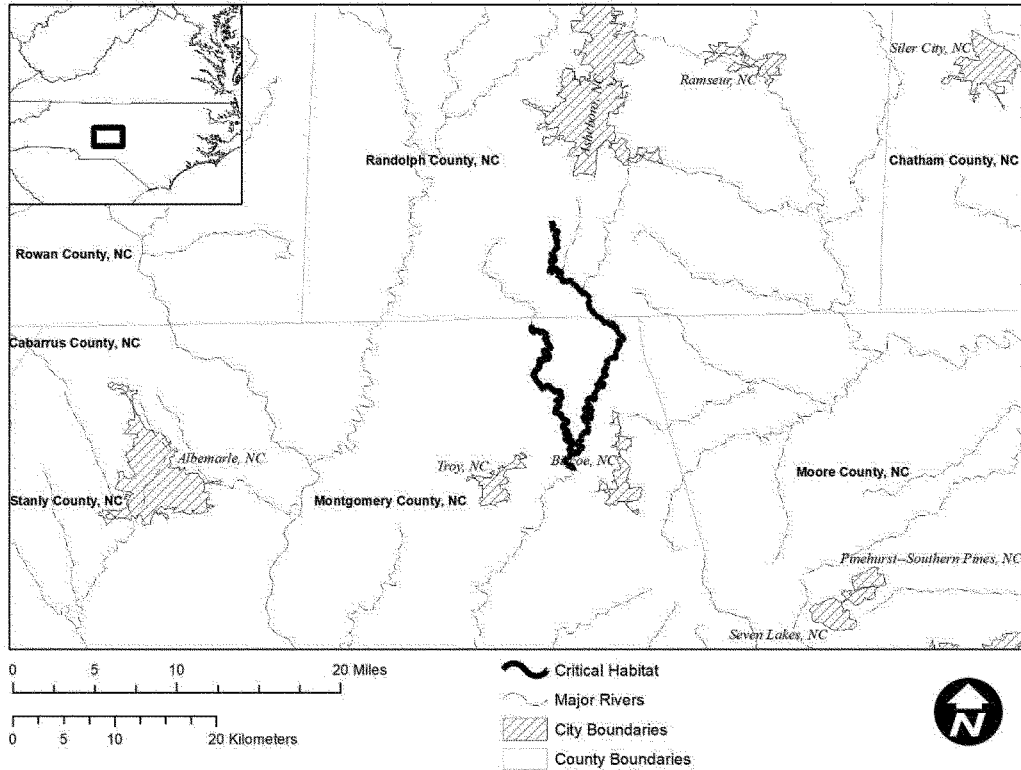
(23) Unit 18: YR1—Little River Subbasin, Randolph and Montgomery Counties, North Carolina.

(i) This unit consists of 40 miles (64.4 kilometers) of Little River from SR 1114 downstream to Okeewemee Star Road, including the West Fork Little River

from NC 134 to the confluence with the Little River.

(ii) Map of Unit 18 (Little River Subbasin) follows:

Map of Unit 18 - YR1 - Little River Subbasin Critical Habitat Unit for Atlantic Pigtoe



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Aurelia Skipwith,
 Director, U.S. Fish and Wildlife Service.
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