

Interim Core Map Documentation for Waccamaw Silverside

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Documentation supplemented by EPA's Office of Pesticide Programs

Species Summary

Waccamaw silverside (*Menida extensa*; Entity ID #243) is a threatened aquatic fish, which was listed in 1987. This species is only found near the surface waters of Lake Waccamaw in Columbus County, North Carolina. This species spawns after its first winter (~ 1 year of age) in April and June, and most die off after spawning. There is a designated critical habitat for this species. Additional information is provided in **Appendix 1**.

Description of Core Map

The core map for the Waccamaw silverside is based on critical habitat. The Waccamaw silverside is endemic to Lake Waccamaw and majority of known occurrences of this species fall within the critical habitat. The Waccamaw silverside is commonly found in schools in the surface waters of Lake Waccamaw. There were a few occurrences that were identified in the Waccamaw River within the first 30-40 meters immediately downstream of the Lake Waccamaw Dam. However, the Waccamaw silverside is a lacustrine species, and, therefore, there is insufficient evidence to suggest that any key areas for this species exist outside of the designated critical habitat. Given this species' limited occurrence, the current recovery action is to protect and maintain a self-sustaining population in Lake Waccamaw, and to protect this designated critical habitat from threats. **Figure 1** depicts the interim core map for the Waccamaw silverside (green areas on map). The core map represents approximately 8848 acres.

Lake Waccamaw is a relatively shallow lake (average depth of 7.5 feet), with a surface area of 8,934 acres. The lake is fed by groundwater springs and four swampy streams. Despite the relatively low pH of the surrounding waters, Lake Waccamaw has a neutral pH. This is likely due to the water's interaction with subsurface limestone deposits. This critical habitat faces pressures from nutrient and pollutant runoff from land use alterations and development of the surrounding lands.

The core map developed for the Waccamaw silverside is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that includes the Waccamaw silverside. This core map incorporates information developed by FWS and made available to the public; however, the core map has not been formally reviewed by FWS. This interim core map may be revised in the future to incorporate expert feedback from FWS. This interim core map has a "none" best professional judgment classification because it consists of the species' critical habitat without additions or subtractions. Basing the core map on critical habitat is supported because the species' critical habitat is highly refined, represents areas important for this species' conservation, is consistent with the recovery goals for this species, and contains all of the known occurrences for this species that have been found within the last

¹ CBD sent EPA the core map for this species before EPA released its mapping process document and example documentation. EPA supplemented the documentation and supporting analysis for consistency with EPA's most recent documentation examples made available after CBD developed this core map

20 years. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

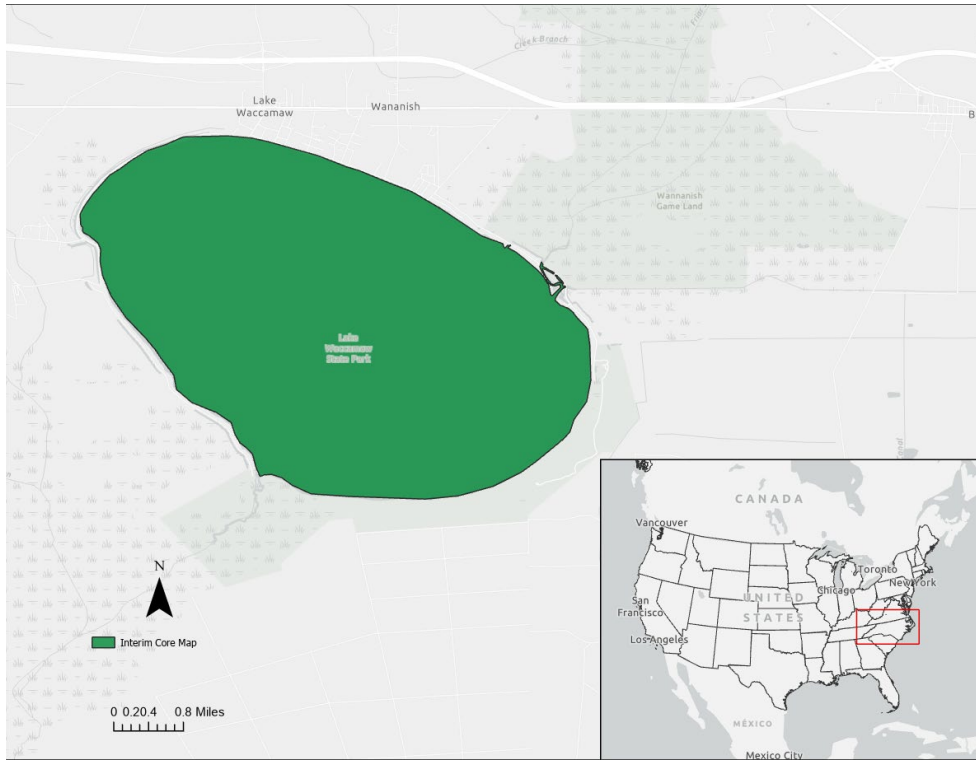


Figure 1. Interim core map for the Waccamaw silverside. Total acreage of core map is approximately 8,848 acres.

Table 1. Percentage of Interim Core Map Represented by NLCD² Land Covers and Associated Example Pesticide Use Sites/Types.

Example pesticide use sites/types	NLCD Class/Value	% Area	Total area for landcover type
Forestry	Deciduous Forest (41)	0%	0%
	Evergreen Forest (42)	0%	
	Mixed Forest (43)	0%	
Agriculture	Pasture/Hay (81)	0%	0%
	Cultivated Crops (82)	0%	
Mosquito adulticide, residential	Open space, developed (21)	0%	0%
	Developed, Low intensity (22)	0%	
	Developed, Medium intensity (23)	0%	
	Developed, High intensity (24)	0%	
Invasive species control	Woody Wetlands (90)	0%	99%
	Emergent Herbaceous Wetlands (95)	0%	
	Open water (11)	99%	
	Grassland/herbaceous (71)	0%	
	Scrub/shrub (52)	0%	
	Barren land (rock/sand/clay; 31)	0%	
Total Acres	Interim Core Map Acres	8848	

Evaluation of Known Location Information

There are three datasets with known location information for this species:

- Descriptions of locations provided by FWS,
- Occurrence locations in iNaturalist;
- Occurrence locations in GBIF; and,
- Occurrence locations in NatureServe

The developer evaluated these sets of data before selecting the type of and developing the core map. FWS’ 2020 5-year review detailed known locations of this species. FWS described two documented occurrences of the Waccamaw silverside. The first occurrence is the primary extant population, which is consistent with the critical habitat. The second occurrence can be found just below Lake Waccamaw’s dam in the Waccamaw River, which is outside of the critical habitat. These secondary occurrences are likely the result of spillover from the lake during high water events and are considered ephemeral. iNaturalist had two research grade observations. GBIF contained 88 occurrences. Occurrence data appear to be consistent with the locations of the critical habitat given the resolution of the data. **Appendix 1** includes more information on the available known location information.

² Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7AO3>

Approach Used to Create Core Map

EPA compiled available information for the Waccamaw silverside from FWS as well as observational information available from various publicly available sources (discussed in previous section). The information compiled for the Waccamaw silverside is included in **Appendix 1**.

The developer used the compiled information to identify the core map type, including the species range, critical habitat, and known location information. EPA compared known location data to the range and critical habitat and found that the FWS known locations of currently existing (extant) populations are consistent with the location of the designated critical habitat. The species range follows geopolitical boundaries (*i.e.*, counties) and is not likely limited to the areas containing habitat of the species. The range is also much larger than the areas where known locations occur. Based on this information, designated critical habitat was chosen for the core map available at <https://ecos.fws.gov/ecp/>.

Discussion of Approaches and Data that were Considered but not Included in Core Map

The developer considered including a second occurrence just south of the critical habitat in the interim core map. However, the second occurrences which can be found just below Lake Waccamaw's dam in the Waccamaw River are likely the result of spillover from the lake during high water events and are considered ephemeral so they were not included in the interim core map.

Appendix 1. Information Compiled for Species

1. FWS Documents/Links

- [Waccamaw silverside \(*Menidia extensa*\) 5-Year Review](#) – (9/29/2020)
- [Waccamaw Silverside Recovery Plan](#) – (8/11/1993)
- [Determination of Threatened Status and Critical Habitat for the Waccamaw Silverside. Final Rule.](#) – (4/8/1987)

2. Background information

- Status: Federally listed as threatened in 1987.
- Resiliency, redundancy, and representation (the 3Rs)
 - There is only one self-sustaining population, which resides in the designated critical habitat (Lake Waccamaw).
- **Habitat, Life History, and Ecology (Source: 2021 Recovery Plan)**
 - **Habitat:** Given that the Waccamaw silverside was been documented in all locations sampled by FWS, the entirety of Lake Waccamaw is considered habitat.
 - **Reproduction:**
 - Spawns after its first winter, from March through July.
- **Taxonomy**
 - FWS Category: Fish
- **Relevant Pesticide Use Sites in FWS Documents**
 - Pesticide threats to the species listed in FWS documents include: herbicide runoff from encroaching lawns and gardens, and drainage ditch overflow during storm events.
- **Relevant Recovery Criteria and Actions (Source: 1993 Recovery Plan)**
 - Given the restricted distribution of the species, delisting criteria is not currently known.
 - Since 1993, the recovery plan is to protect and maintain the self-sustaining population of the Waccamaw silverside, and its designated critical habitat.

3. Description of the species range

- The Waccamaw silverside is known only to occur in Lake Waccamaw, the lower stretch of Big Creek, and a short stretch of the Waccamaw River just below the Lake Waccamaw Dam in Columbus County, NC.
- The species range is approximately 80,836 acres.
- Figure A1-1 depicts the current FWS species range (last updated 02/15/2018).

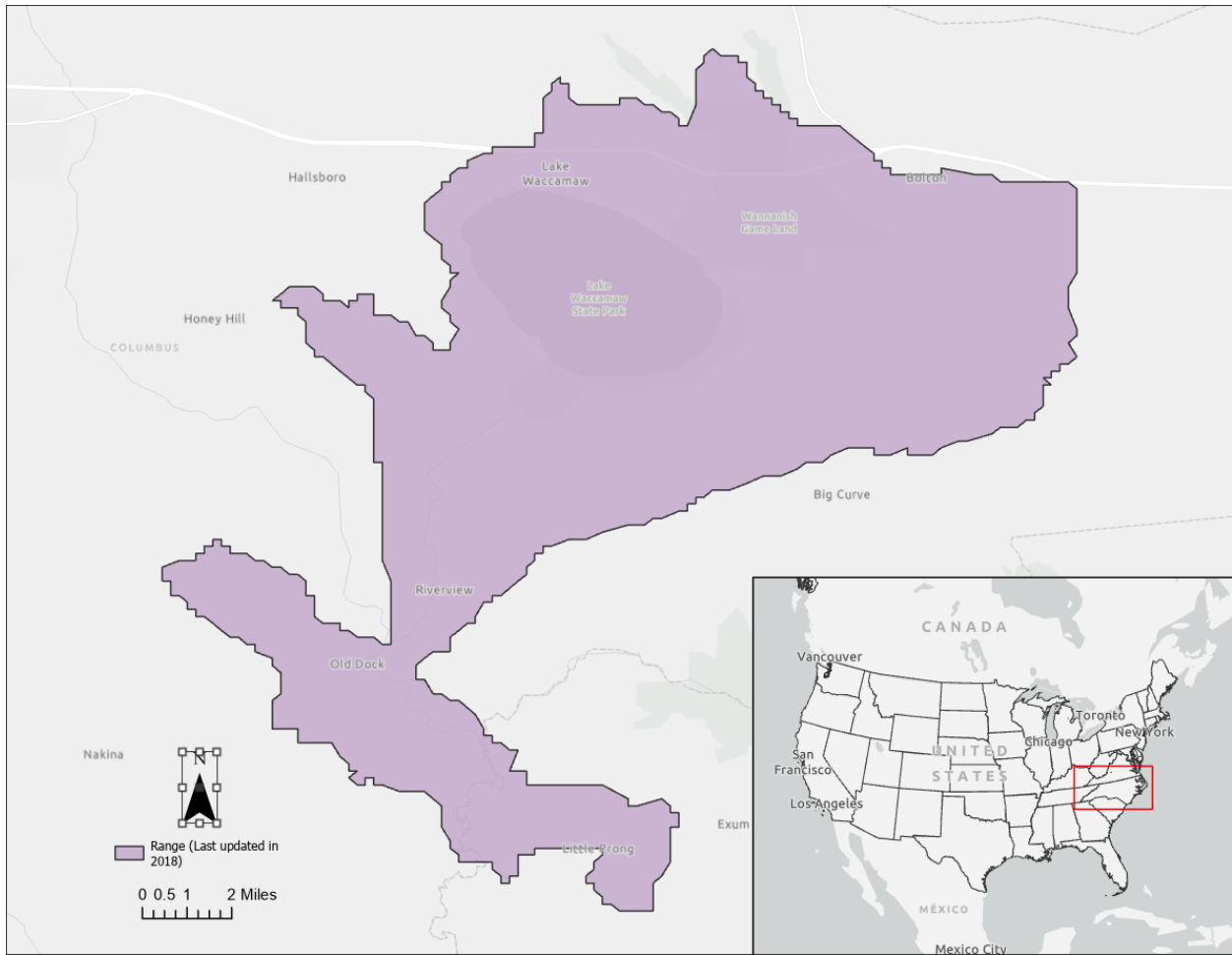


Figure A1-1. FWS range of the Waccamaw silverside.

4. Critical Habitat (Source: 52 FR 11277 (April 8, 1987))

- Lake Waccamaw and Big Creek; between the mouth of Lake Waccamaw and 0.4 miles upstream, was designated critical habitat for the Waccamaw silverside in 1987.
- Figure A1-2 depicts the critical the current critical habitat.

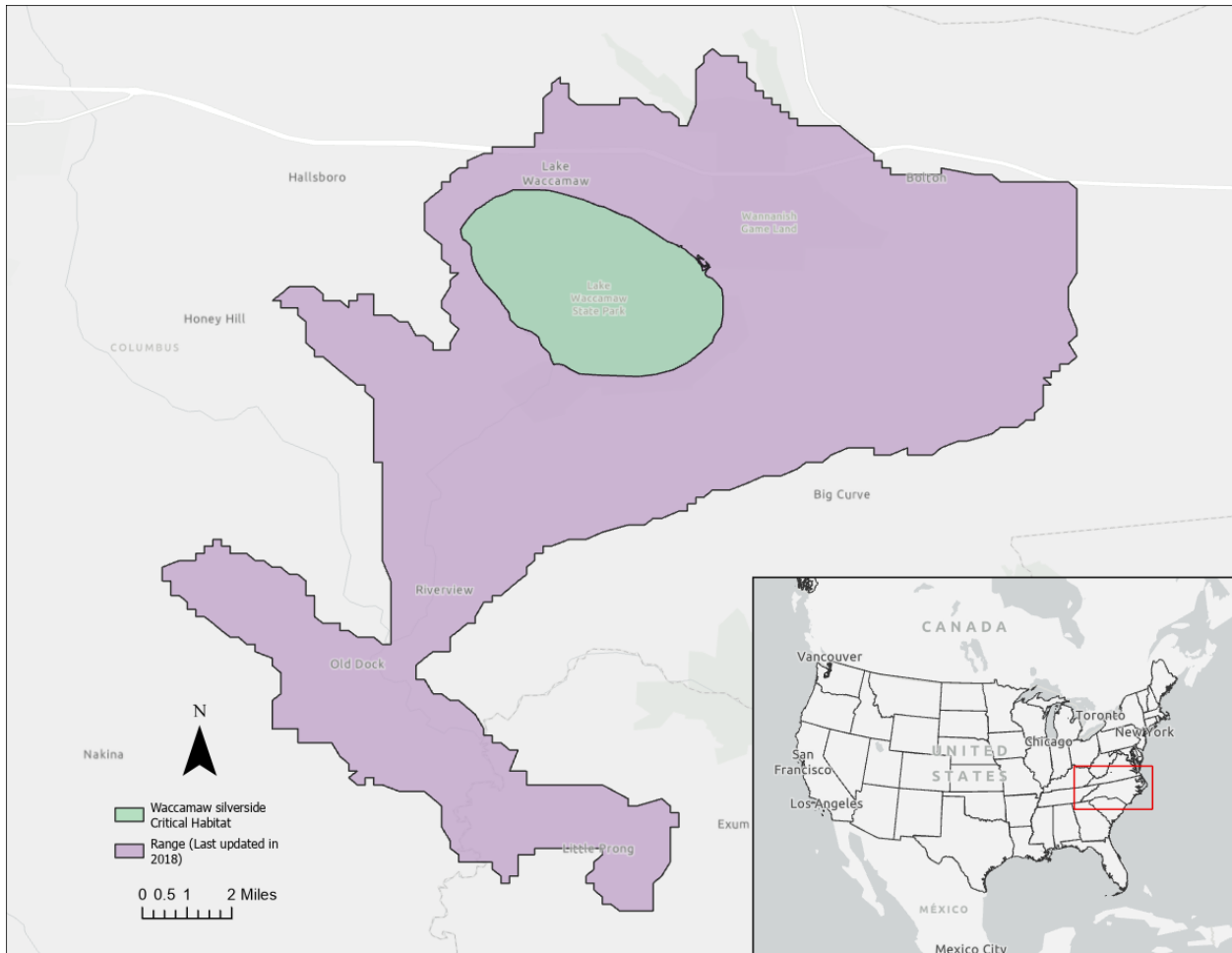


Figure A1-2. FWS critical habitat of the Waccamaw silverside. Range also included for reference.

5. Known Locations

- **Known Locations Described in FWS Recovery Documents**
 - There are currently two known occurrences of the Waccamaw silverside.
 - Of these, the primary occurrence is currently known to be extant, and consistent with the designated critical habitat. The second occurrence is likely spillover from high-water events and ephemeral.

- **Occurrences in iNaturalist**
 - Searched on 3/2/2025
 - https://www.inaturalist.org/observations?taxon_id=105569
 - There are two research grade observations available from 2019-2025.
 - **Figure A1-3** depicts the locations of these observations.
 - Given the resolution of the data, these data are not inconsistent with the core map.

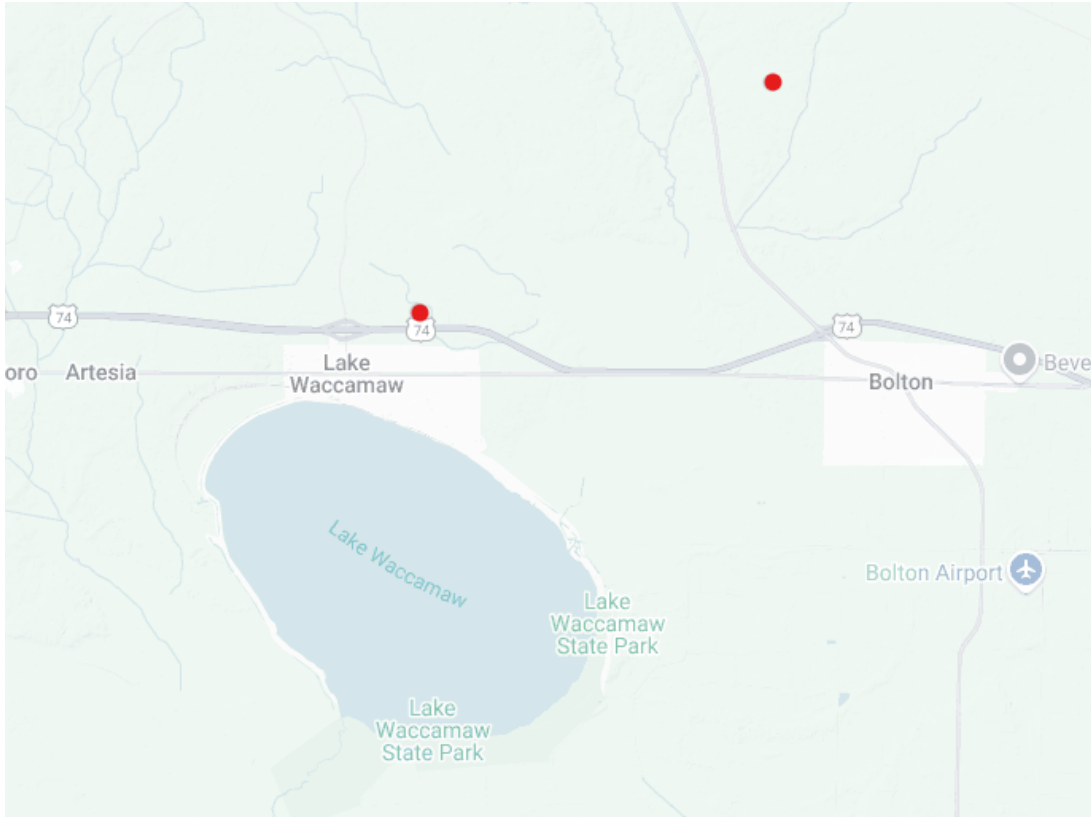


Figure A1-3. Screenshot from iNaturalist observations for the Waccamaw Silverside. Area depicted is on similar scale and location as species range depicted in Figure A1-1.

Occurrences in GBIF

- GBIF was searched on 3/2/2025
- https://www.gbif.org/occurrence/search?q=Menidia%20extensa&country=US&taxon_key=2412294
- There were seven “human observations” or “Preserved specimen[s]” available for this species from 2005-2025, where six of the occurrences had coordinates.
- **Figure A1-4** depicts the locations of these observations.
- Given the resolution of the data, these data are not inconsistent with the core map.



Figure A1-4. Screenshot from GBIF observations for the Waccamaw Silverside. Area depicted is on similar scale and location as species range depicted in Figure A1-1.

Occurrences in NatureServe

- NatureServe was searched on 3/6/2025
- https://explorer.natureserve.org/pro/Map?taxonUniqueId=ELEMENT_GLOBAL.2.103624
- Results are consistent with other occurrence data.

Collectively, the occurrence data do not support expanding the core map beyond the designated critical habitat.