

# 2020 ADDENDUM 1

2015 NORTH CAROLINA

# WILDLIFE ACTION PLAN

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Appalachian Elktoe (*Alasmidonta raveneliana*), TR Russ, NCWRC

Eastern Painted Bunting (*Passerina ciris ciris*), Kenneth Cole Schneider

Prescribed burning (an important land management tool), Melissa McGaw, NCWRC

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## 1.3.4 Addendum 1

As part of the State and Tribal Wildlife Action Plan matching grant program, the U.S. Fish and Wildlife Service (USFWS, Service) requires states to conduct a comprehensive review/revision of their Wildlife Action Plan (WAP, Plan). This mandatory review is due at 10-year intervals and includes a review of the entire Plan's content and supporting materials. Comprehensive review entails extensive coordination with partners, a public review process, and final review and approval by a USFWS Regional Review Team. North Carolina's most recent revision was completed in 2015. The Plan and supporting materials are available on the internet at [www.ncwildlife.org/plan](http://www.ncwildlife.org/plan).

In addition to the 10-year comprehensive review and revision, the Service has provided guidance for making a major or minor revision to a Plan as defined below.

- A **Major Revision** is a significant change to the methods, criteria, or processes used to address any of the Eight Required Elements in an approved Plan, which would require partner and public comment. Major Revisions are voluntary and can occur anytime at the discretion of the State.
- A **Minor Revision** is a change to a Plan that adheres to the methods, criteria, or processes used to address any of the Eight Required Elements in the approved Plan. Note that clarifying edits, corrections to typographical errors, and/or similar revisions to improve readability do not require Service notification or approval. Minor Revisions are voluntary and can occur anytime at the discretion of the State.

## 1.3.5 Minor Revision Roadmap

The 2015 Plan outlines the requirements and process used for developing the WAP and noted the need for future review and revision (see Chapters 1 and 8). Chapter 8 outlined the Commission's intent to conduct an interim revision to incorporate new web-based assessment tools, project results, species name changes, listing status changes, and other information that benefits an update to the conservation status of species.

The North Carolina Wildlife Resources Commission (WRC, Commission) notified USFWS in 2018 of the intent to complete minor revisions to the WAP and the Service provided plan revision guidance that was updated in 2017. Copies of correspondence are provided in Appendix A1-1.

The following Table A1-1 provides a roadmap to the minor revisions provided in this Addendum 1.

**Table A1-1 Minor Revision Road Map**

Errata		
2015 NCWAP		Revision
Document Page	2015 NCWAP Chapter/Section	
3	1.3.1	Second paragraph, added dynamic link to reference to Appendix B.
16	2.3.2	Second paragraph under Table 2.1, updated URL link to <a href="http://ecos.fws.gov/tess_public/">http://ecos.fws.gov/tess_public/</a> .
52	3.3.1	Second paragraph, last sentence revised as follows “Community descriptions are provided in Chapter 4. Information on pelagic bird species is provided in Section 3.11.”
102	3.5.8	Management Practices, deleted last bulleted item because it is duplicate text of the previous bulleted item.
116-117		Table 3.20 Mammals: comparison of changes from 2005 WAP. Under “Comment” column replaced all instances where text states “No longer a conservation priority” to “No longer a SGCN.”
214	4.1.1	Table 4.3, Upland Communities, Dry Coniferous Woodlands. <ul style="list-style-type: none"> <li>• Changed community name to “Piedmont and Mountain Dry Coniferous Woodlands” to match description provided in Section 4.4.10.</li> <li>• Deleted check marks in columns for Sandhills and Coastal Plain ecoregions.</li> </ul>
512	4.5.4.5	<ul style="list-style-type: none"> <li>• Figure 4.8 Location of priority watersheds in the Broad River Basin, revised to add a missing HUC12 priority.</li> </ul>
1282	Appendix P	SGCN species list. <ul style="list-style-type: none"> <li>• Amphibians: Updated genus name <i>Rana</i> to <i>Lithobates</i> to reflect current scientific nomenclature and update common name to Gopher Frog to match accepted usage in literature.</li> <li>• Birds: Updated genus name for Red-cockaded Woodpecker to include reference to nomenclature change <i>Picoides</i> [= <i>Dryobates</i>]</li> </ul>

**Table A1-1 Minor Revision Road Map**

<b>Minor Revisions</b>			
<b>Document Pages</b>	<b>2015 NCWAP Chapter/ Section</b>	<b>Revision</b>	<b>2020 Update Documents</b>
4 - 7	1.3.3.	Added Section 1.3.4 Addendum 1 Introduction	Chapter 1 Introduction Addendum 1
23	2.5	Added 2.5-A1 Case Study: How Conservation Actions Help Protect Species: The Conservation Aquaculture Center (CAC) and Aquatic Species Propagation and Restocking.	Chapter 2 Conservation Need Addendum 1
38 - 39	3.2.3	Changes to Table 3.4 Amphibian SGCN <ul style="list-style-type: none"> <li>• Incorporated Taxa Team evaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.4-A1
45	3.2.4	Changes to Table 3.6 Amphibian knowledge-gap priority species <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.6-A1
53 - 56	3.3.3	Changes to Table 3.7 Bird SGCN <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.7-A1
66 - 67	3.3.4	Changes to Table 3.9 Bird knowledge-gap priority species <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updatde Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.9-A1

**Table A1-1 Minor Revision Road Map**

<b>Minor Revisions</b>			
<b>Document Pages</b>	<b>2015 NCWAP Chapter/Section</b>	<b>Revision</b>	<b>2020 Update Documents</b>
83	3.4.3	Changes to Table 3.10 Crayfish SGCN <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1 Table 3.10-A1
93 - 94	3.5.3	Changes to Table 3.13 Freshwater Fish SGCN <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.13-A1
98	3.5.4	Changes to Table 3.15 Freshwater Fish knowledge-gap priority species <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1 Table 3.15-A1
104	3.6.3	Changes to Table 3.16 Freshwater mussel SGCN <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.16-A1
107	3.6.4	Changes to Table 3.18 Freshwater mussel knowledge-gap priority species <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.18-A1
115	3.7.3	Changes to Table 3.19 Mammal SGCN <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> </ul>	Chapter 3 Species Addendum 1

**Table A1-1 Minor Revision Road Map**

Minor Revisions			
Document Pages	2015 NCWAP Chapter/ Section	Revision	2020 Update Documents
		<ul style="list-style-type: none"> <li>Added SEAFWA Regional SGCN status</li> <li>Updated Scientific Name if changed</li> </ul>	Table 3.19-A1
126	3.8.3	Changes to Table 3.22 Reptile SGCN <ul style="list-style-type: none"> <li>Updated listing status</li> <li>Added SEAFWA Regional SGCN status</li> <li>Updated Scientific Name if changed</li> </ul>	Chapter 3 Species Addendum 1  Table 3.22-A1
798	6.5.1	Addition to Section 6.5.1 <ul style="list-style-type: none"> <li>Added introduction and description for the Conservation Opportunity Area (COA) and Threat Risk Assessment (TRA) web-based decision support tools</li> </ul>	Chapter 6 Conservation Strategies Addendum 1
1247	Appendix M	Addition to Appendix M-1 NCWRC Programs and Information Resources <ul style="list-style-type: none"> <li>Added COA and TRA tool description and URL address at end of list under M-1</li> </ul>	Appendix MA1-1
950 - 973	Appendix G	Update Appendix G – Amphibians <ul style="list-style-type: none"> <li>Incorporated Taxa Team reevaluation results</li> <li>Updated listing status</li> <li>Added SEAFWA Regional SGCN status</li> <li>Updated Scientific Name if changed</li> </ul>	Appendix GA1-1
974 - 1017	Appendix G	Update Appendix G – Birds <ul style="list-style-type: none"> <li>Incorporated Taxa Team reevaluation results</li> <li>Updated listing status</li> <li>Added SEAFWA Regional SGCN status</li> <li>Updated Scientific Name if changed</li> </ul>	Appendix GA1-2
1018 - 1029	Appendix G	Update Appendix G – Crayfishes <ul style="list-style-type: none"> <li>Incorporated Taxa Team reevaluation results</li> <li>Updated listing status</li> </ul>	Appendix GA1-3

**Table A1-1 Minor Revision Road Map**

<b>Minor Revisions</b>			
<b>Document Pages</b>	<b>2015 NCWAP Chapter/ Section</b>	<b>Revision</b>	<b>2020 Update Documents</b>
		<ul style="list-style-type: none"> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	
1030 - 1069	Appendix G	Update Appendix G – Freshwater Fishes <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Appendix GA1-4
1086 - 1097	Appendix G	Update Appendix G – Freshwater Mussels <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Appendix GA1-5
1070 - 1085	Appendix G	Update Appendix G – Mammals <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Appendix GA1-6
1098 - 1113	Appendix G	Update Appendix G – Reptiles <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Appendix GA1-7
1180 – 1199	Appendix H1	Update Appendix H1 – Aquatic Species <ul style="list-style-type: none"> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Appendix HA1-1
1200 - 1234	Appendix H2	Update Appendix H2 – Terrestrial Species <ul style="list-style-type: none"> <li>• Updated listing status</li> </ul>	Appendix HA1-2



**Table A1-1 Minor Revision Road Map**

Minor Revisions			
Document Pages	2015 NCWAP Chapter/ Section	Revision	2020 Update Documents
		<ul style="list-style-type: none"> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	
1279 - 1298	Appendix P	Update Appendix P <ul style="list-style-type: none"> <li>• Incorporated Taxa Team reevaluation results</li> <li>• Updated listing status</li> <li>• Added SEAFWA Regional SGCN status</li> <li>• Updated Scientific Name if changed</li> </ul>	Appendix PA1
1299	New	Added new user guide for Conservation Opportunity Area (COA) and Threat Risk Assessment (TRA) decision support tools	Appendix Q

# Chapter 2 Conservation Need Addendum 1

## **2.7 Case Study – How Conservation Actions Help Protect Species: The Conservation Aquaculture Center (CAC) and Aquatic Species Propagation and Restocking**

The N.C. Wildlife Resources Commission's (NCWRC) aquatic nongame species program propagates rare and declining freshwater fish, mussels, and aquatic snails for restocking to appropriate habitats where they have historically been found. Aquatic nongame species restoration efforts around the state are supported by captive culture of rare species at the Conservation Aquaculture Center (CAC) located at NCWRC's Marion Fish Hatchery. The CAC also has capacity to house propagated mussel species until habitat is available for their reintroduction.

Staff at the CAC has collaborated with researchers at N.C. State University's College of Veterinary Medicine to test the biological fitness of propagated mussels prior to their release into appropriate habitats. CAC staff also has implemented studies to improve culturing techniques and mussel growth and survival. The fish species Spotfin Chub and the mussel species Rainbow and Wavy-rayed Lampmussel were the focus of captive breeding programs at the CAC to support their reintroduction to the Cheoah River. Both the Spotfin Chub and the Rainbow mussels are federal and state listed as Threatened species. The Wavy-rayed Lampmussel is a state Special Concern species.

Following improvements to water quality in the Cheoah River and increased discharge flows downstream from Santeetlah Dam, staff reintroduced into the river captive-bred federal and state-listed threatened fish and mussel species. The Cheoah River restoration project was also supported by collection of gravid female Wavy-rayed Lampmussels, Rainbow mussels, and Slippershell mussels from the Little Tennessee River and subsequent infestation of host fishes, collection of metamorphosed juveniles, and adequate life support for early development provided at the CAC.

The CAC facility has provided larvae from brood stock to the U.S. Fish and Wildlife Service Orangeburg Hatchery in South Carolina for research and propagation. Likewise, Wavy-rayed Lampmussels from the upper Pigeon River were collected and juveniles produced to support restoration in the recovering lower Pigeon River in Haywood County, N.C. In addition to CAC conservation work, the Marion Hatchery continues to hold seven Hellbenders with the ultimate goal of breeding them in captivity to meet the increasing demand as educational and display animals for qualified state agencies, universities, and other facilities.

Staff conducts other aquatic conservation work at the NCWRC's Watha State Fish Hatchery located in Pender County. Watha continues to hold and maintain an "ark population" of a

freshwater snail species found only in North Carolina — the Magnificent Ramshorn. An ark population is one that is being held in case the population is extirpated from native habitats. Previously found only in a few freshwater ponds in coastal North Carolina, the Magnificent Ramshorn can no longer be found in places it once inhabited due to loss of habitat from saltwater inundation. Given its current status, the Magnificent Ramshorn is a candidate species for listing under the Endangered Species Act for federal protection as either an endangered or threatened species.



Melissa McGaw/NCWRC

## 3.13.1 Mid-term Species Evaluation and Ranking

The Species of Greatest Conservation Need (SGCN) list has been updated and related tables in the 2015 North Carolina Wildlife Action Plan (NCWAP, Plan) appendixes have been revised to incorporate the changes. Addendum updates have been made to Appendixes G for revised taxa evaluation data; Appendix H for revised terrestrial SGCN taxa habitat associations; and Appendix P for a revised comprehensive list of all SGCN.

The tables included in this Addendum provide updates to corresponding tables in the 2015 NCWAP.

### 3.13.1.2 Taxonomy Updates

Taxonomic classification and agreement on naming conventions for species is subject to change based on knowledge, genetic evaluation, and new discoveries supporting changes that become widely accepted by species experts. Classification standards for each taxon considered in the WAP are provided in the references section for this Addendum.

### 3.13.1.3 Regional Updates

The North Carolina Wildlife Resources Commission (WRC) is a member of the Southeast Association of Fish and Wildlife Agencies (SEAFWA). In 2019 the SEAFWA Wildlife Diversity Committee published a list of Regional Species of Greatest Conservation Need (RSGCN) to enhance states' ability to work collaboratively and proactively to sustain populations of iconic and imperiled species. As noted in the final RSGCN report (Rice et al. 2019), "regional work can enhance efficiency and conservation effectiveness to promote recovery and prevent the need to list where possible through shared expertise, data collection and analysis, regional information availability, and coordinated actions." Appendix P-A1 provides an updated list of all SGCN and identifies those included on the RSGCN list. A complete list of all RSGCN is available on the internet (<https://airtable.com/shrDBqYvc0WlUifh7/tblKXZLX5mmbHrcDn>).

### 3.13.2 Amphibians

The Herp Taxa Team evaluated two recently described amphibian species, Hickory Nut Gorge Green Salamander (*Aneides caryaensis*) and Atlantic Coast Leopard Frog (*Rana kauffeldi*), for consideration of conservation need, knowledge gap, and management need/concern priorities. The evaluation resulted in the addition of both species to the SGCN priority list. The evaluation also resulted in the addition of Hickory Nut Gorge Green Salamander to the Knowledge Gap and Management Needs/Concerns priority lists.

Minor revisions have also been made to incorporate state or federal listing status changes. Scientific naming convention updates include the use of *Lithobates* [= *Rana*] in accordance with Crother (2017) and common usage accepted by species experts. All Taxa Team reevaluation results and changes to the priority species lists are provided in a table in Appendix GA1-1.

Genetic research on Green Salamander (*A. aneides*) resulted in the Hickory Nut Gorge Green Salamander being split from the Genus into a newly described endemic species (Patton et al. 2019). The new species is proposed for listing as a state endangered species and considered a federal species of concern. Hickory Nut Gorge Green Salamander has a highly restricted range within the Hickory Nut Gorge geographic region in four western North Carolina counties (Buncombe, Henderson, Polk, and Rutherford) in North Carolina.

A genetic study of leopard frogs was conducted for species found in New York, New Jersey, and Connecticut (Newman et al. 2012). The study resulted in identification of a previously undescribed cryptic leopard frog species, *Rana* sp. nov, which was believed to have a small and restricted geographic range. Further work by Feinberg et al. (2014) was completed to name, diagnose, and describe the species as Atlantic Coast Leopard Frog. The known range was defined and expanded to include North Carolina (Schlesinger et al. 2018).

In May 2019, the USFWS announced that federal listing is warranted for the Neuse River Waterdog and has proposed listing it as Threatened with a rule issued under section 4(d) of the Endangered Species Act (USFWS 2019a). The proposed listing includes designation of Critical Habitat that covers approximately 738 river miles in 16 USFWS management units in North Carolina. In addition to this federal listing change, the North Carolina legislature approved state listing recommendations for six amphibian species in October 2017 (NCAC 2017).

Table 3A1-1 lists changes to SGCN status based on the Herp Taxa Team reevaluation. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-1 Changes to Amphibian SGCN.**

<b>AMPHIBIANS</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Ambystoma mabeei</i>	Mabee's Salamander	X	- / <b>T</b>	<b>X</b>
<i>Aneides aeneus</i>	Green Salamander	X	C / <b>T</b>	<b>X</b>
<i>Aneides caryaensis</i>	Hickory Nut Gorge Green Salamander	<b>X (new)</b>	-- / --	--
<i>Desmognathus folkertsi</i>	Dwarf Black-bellied Salamander	X	- / <b>SC</b>	<b>X</b>
<i>Lithobates [= Rana] capito</i>	Gopher Frog	X	- / <b>E</b>	<b>X</b>
<i>Lithobates [= Rana] heckscheri</i>	River Frog	X	- / <b>E</b>	<b>X</b>
<i>Lithobates [= Rana] kauffeldi</i>	Atlantic Coast Leopard Frog	<b>X (new)</b>	- / -	--
<i>Necturus lewisi</i>	Neuse River Waterdog	X	<b>PT</b> / SC	<b>X</b>
<i>Pseudacris ornata</i>	Ornate Chorus Frog	X	- / <b>E</b>	<b>X</b>
<p><b>Federal/State Status Abbreviations</b></p> <p><u>Federal Listings</u>                      E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate                      PE = Proposed Endangered    PT = Proposed Threatened</p> <p><u>State Listings</u>                      E = Endangered    T = Threatened    SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b>                      (new) indicates new Taxa Team re-evaluation results meet the SGCN qualifying threshold criteria                      (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11</p>				

### 3.13.3 Birds

The Bird Taxa Team reevaluated 50 bird species for consideration of conservation need, knowledge gap, and management need/concern priorities. In some cases, minor revisions have been made to incorporate state or federal listing status changes. State listing status changes included in this update were effective in October 2017 (NCAC 2017). The reevaluation also resulted in changes to the Knowledge Gap and Management Needs/Concerns priority lists. All Taxa Team reevaluation results and changes to the priority species lists are provided in a table in Appendix GA1-2.

The Taxa Team also reevaluated responsibility species that are based on global and state importance. Global responsibility species are those that occur in North Carolina in the periphery of their range, and are therefore rare in the state. N.C. global responsibility species are those species for which 8% or more of the global breeding or wintering population occurs in North Carolina and the ranking evaluation score is within the 50% percentile. After considering updated knowledge about these populations, nine species were determined to no longer be considered a conservation priority based on responsibility status and were removed from the SGCN priority list. These species are Snow Goose, Evening Grosbeak, Common Raven, Brewer's Blackbird, Merlin, Herring Gull, Lincoln's Sparrow, Nashville Warbler, and Clay-colored Sparrow.

Current naming conventions are established by the American Ornithological Society (AOS) and published in a check-list of North American birds (Auk 2019). Several changes to scientific names for North Carolina species have been incorporated as determined by the Bird Taxa Team. The most notable naming convention change made by AOS is for Red-cockaded Woodpecker (*Picoides borealis*), with the current genus being listed by AOS (Chesser et al. 2018) as *Dryobates borealis*. Because Red-cockaded Woodpecker is a federally listed species, the Bird Taxa Team recommends retaining the genus name *Picoides* until the USFWS publishes a revision to the scientific name.

In October 2019, the USFWS announced that federal listing is warranted for the Eastern Black Rail (*Laterallus jamaicensis jamaicensis*) and has proposed listing it as Threatened with a rule issued under section 4(d) of the Endangered Species Act (USFWS 2019b). The proposed listing also includes designation of Critical Habitat that covers approximately 738 river miles in 16 management units in North Carolina.

The USFWS completed a species status assessment for the Black-capped Petrel (*Pterodroma hasitata*) in 2018 that resulted in the species being proposed for protection under the ESA as a threatened species. Black-capped Petrel is a coastal pelagic bird associated with warm Gulf Stream waters of the Atlantic Ocean. It is one of the pelagic birds included in the 2015 NCWAP (see Chapter 3.11) as knowledge gap species based on conservation concerns identified by the

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the International Union for Conservation of Nature (IUCN) and the Northwestern Atlantic Marine Bird Conservation Cooperative. The species is not listed as a SGCN for North Carolina.

Table 3A1-2 lists changes to SGCN status based on the Bird Taxa Team reevaluation. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-2 Changes to Bird SGCN.**

<b>BIRDS</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Accipiter striatus</i>	Sharp-shinned Hawk	X (new)	-/-	-
<i>Centronyx henslowii</i> [= <i>Ammodramus henslowii</i> ]	Henslow's Sparrow	X	-/ E	-
<i>Calidris canutus</i>	Red Knot	X	T / T	-
<i>Chen caerulescens</i>	Snow Goose	(Remove)	-/-	-
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	(Remove)	-/-	-
<i>Contopus cooperi</i>	Olive-sided Flycatcher	X, G	-/--	-
<i>Corvus corax</i>	Common Raven	(Remove)	-/-	-
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird	(Remove)	-/-	-
<i>Falco columbarius</i>	Merlin	(Remove)	-/-	-
<i>Himantopus mexicanus</i>	Black-necked Stilt	X (new)	-/-	-
<i>Larus argentatus</i>	Herring Gull	(Remove)	-/-	-
<i>Laterallus jamaicensis</i>	Black Rail	X	PT / SC	X
<i>Melospiza lincolni</i>	Lincoln's Sparrow	(Remove)	-/-	-
<i>Mycteria americana</i>	Wood Stork	X	T / T	-
<i>Oreothlypis ruficapilla</i>	Nashville Warbler	(Remove)	-/-	-
<i>Poecile atricapillus</i>	Black-capped Chickadee	X (new)	-/ SC	-
<i>Setophaga fusca</i>	Blackburnian Warbler	(Remove)	-/-	-
<i>Setophaga virens waynei</i>	Wayne's Black-throated Green Warbler	X	-/ E	-
<i>Spizella pallida</i>	Clay-colored Sparrow	(Remove)	-/-	-
<i>Sturnella magna</i>	Eastern Meadowlark	X (new)	-/-	-
<i>Tyto alba</i>	Barn Owl	X, G	-/ SC	-
<b>Federal/State Status Abbreviations</b>				
<u>Federal Listings</u>				
E = Endangered      T = Threatened      T (S/A) = Threatened due to Similar Appearance      C = Candidate				



**Table 3A1-2 Changes to Bird SGCN.**

BIRDS				
<i>Scientific Name</i>	<i>Common Name</i>	SGCN Status* (2020 update)	Federal/State Status*	SEAFWA Regional SGCN
PE = Proposed Endangered		PT = Proposed Threatened		
<u>State Listings</u>				
E = Endangered		T = Threatened		SC = Special Concern
Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.				
<b>*SGCN Status (2020 Update)</b>				
(new) indicates new Taxa Team re-evaluation results meet the SGCN qualifying threshold criteria				
(add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11				

## 3.13.4 Crayfish

The Crayfish Taxa Team reevaluated two species for consideration of conservation need and knowledge gap priorities, including one newly described species. Genetic work has identified a new stream-dwelling crayfish species, the South Mountain Crayfish (*Cambarus franklini*). As noted in Perkins *et al.* (2019) this species has a limited geographic range and is currently known only from the Henry and Jacob Fork watersheds in the upper South Fork Catawba River basin in western North Carolina. The South Mountain Crayfish was previously included in the *Cambarus* species C complex, a diverse group of crayfish broadly distributed in the eastern United States that are morphologically variable (Perkins *et al.* 2019).

There were calculation errors from the 2015 NCWAP comprehensive revision for scores associated with the conservation threat assessment metrics 9.1 through 9.11 that were not caught during the review process. The errors are corrected with this minor revision which has resulted in the addition of three crayfish to the SGCN priority list: Carolina Foothills Crayfish, an undescribed crayfish (*Cambarus* sp. A), and Croatan Crayfish.

Minor revisions have also been made to incorporate state or federal listing status changes. Scientific naming convention updates include the use of *Faxonius* [= *Orconectes*] in accordance with Crandall and De Grave (2017) and common usage accepted by species experts. All Taxa Team reevaluation results and changes to the priority species lists are provided in a table in Appendix GA1-3.

Table 3A1-3 is a list of the changes to SGCN status based on the Crayfish Taxa Team reevaluation. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-3 Changes to Crayfish SGCN.**

CRAYFISHES				
<i>Scientific Name</i>	Common Name	SGCN Status* (2020 update)	Federal/ State Status*	SEAFWA Regional SGCN
<i>Cambarus franklini</i>	South Mountains Crayfish	X (new)	-/-	X
<i>Cambarus johni</i>	Carolina Foothills Crayfish	X (add*)	-/-	-
<i>Cambarus</i> sp. A	An undescribed crayfish	X (add*)	-/-	-

**Table 3A1-3 Changes to Crayfish SGCN.**

<b>CRAYFISHES</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Procambarus plumimanus</i>	Croatan Crayfish	X (add*)	-/-	-
<p><b>Federal/State Status Abbreviations</b></p> <p><u>Federal Listings</u>            E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate            PE = Proposed Endangered    PT = Proposed Threatened</p> <p><u>State Listings</u>            E = Endangered    T = Threatened    SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b>            (new) indicates new Taxa Team re-evaluation results meet the SGCN qualifying threshold criteria            (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11</p>				

## 3.13.5 Freshwater Fishes

The Freshwater Fish Taxa Team reevaluated 198 species for consideration of conservation need and knowledge gap priorities. A few species of freshwater fish found in multiple river basins across the state have been grouped into population segments based on location (noted in Appendixes G, H, and P). The Freshwater Fish Taxa Team considered differences in level and severity of threats and amount of conservation activity occurring within each basin when evaluating these population segments. For example, Mimic Shiner (*Notropis volucellus*) is found in two Mountain and two Piedmont ecoregion river basins in North Carolina. Only the Piedmont populations found in the Neuse and Tar River basins are designated SGCN based on evaluation results because there are more significant threats from numerous sources in these basins. In comparison, the Mimic Shiner populations in Mountain river basins (French Broad and New River) are not currently a conservation concern because the number and level of threats are less severe and populations appear to be stable.

Research published by Bagley *et al.* (2011) and Oswald *et al.* (2015) found genetic differences between certain Black Bass species found in Atlantic Slope waters. The Freshwater Fish Taxa Team members consider the species identified in North Carolina as Redeye Bass (*Micropterus coosae*), known from the Green River in North Carolina, to likely be a hybrid Redeye x Bartram's Bass species. Bartram's Bass (*Micropterus* sp.) is an unnamed species similar to Redeye Bass that is found within the Savannah River basin. Based on the Team's evaluation results, this species is added to the SGCN list for freshwater fishes.

In May 2019, the USFWS announced that listing the Carolina Madtom for federal protection is warranted and has proposed listing it as endangered (USFWS 2019). The proposed listing also includes designation of Critical Habitat that covers approximately 257 river miles in 7 units in North Carolina. In addition to this federal listing change, the North Carolina legislature approved state listing recommendations for five freshwater fish species in October 2017 (NCAC 2017). The federal and state status for these species has been revised in Appendixes GA1-4 and PA1.

The National Marine Fisheries Service designated critical habitat for Atlantic Sturgeon effective September 2017. As published, Specific occupied areas designated as critical habitat for the Carolina distinct population segment (DPS) of Atlantic sturgeon contain approximately 1,205 miles of aquatic habitat in the Roanoke, Tar-Pamlico, Neuse, Cape Fear (including Northeast Cape Fear), Waccamaw, and Pee Dee rivers in North Carolina. Physical features essential to the conservation of the species and that may require special management considerations or protection are hard bottom substrates in low salinity waters (0.0 – 0.5 ppt range), transitional

salinity zones with a gradual downstream gradient of 0.5 up to 30 ppt and soft substrates, and water depths in main river channels of at least 4 feet (1.2 meters) and with no physical barriers to passage between river mouths and spawning sites (USFWS 2017).

Table 3A1-4 lists changes to SGCN status based on the Freshwater Fish Taxa Team reevaluation. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-4 Changes to Freshwater Fish SGCN.**

<b>FRESHWATER FISHES</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Cottus caroliniae</i>	Banded Sculpin	X	- / <b>SC</b>	<b>X</b>
<i>Cyprinella labrosa</i>	Thicklip Chub	X (new)	- / -	<b>X</b>
<i>Cyprinella zanema</i>	Santee Chub	X (new)	- / -	<b>X</b>
<i>Etheostoma gutselli</i>	Tuckasegee Darter	X (new)	- / -	<b>X</b>
<i>Fundulus rathbuni</i>	Speckled Killifish	X (new)	- / -	<b>X</b>
<i>Ictiobus niger</i>	Black Buffalo	X (new)	- / -	-
<i>Lethenteron appendix</i>	American Brook Lamprey	X	- / <b>SC</b>	<b>X</b>
<i>Luxilus cerasinus</i>	Crescent Shiner	X (new)	- / -	-
<i>Luxilus chrysocephalus</i>	Striped Shiner	X (new)	- / -	-
<i>Micropterus coosae</i> [ <i>Micropterus sp.</i> ]	Redeye Bass [= Bartram's Bass]	X (new)	- / -	<b>X</b>
<i>Moxostoma cervinum</i>	Blacktip Jumprock	X (new)	- / -	-
<i>Moxostoma sp. Carolina</i>	Carolina Redhorse	X	- / T	<b>X</b>
<i>Nocomis platyrhynchus</i>	Bigmouth Chub	X (new)	- / -	-
<i>Nocomis raneyi</i>	Bull Chub	X (new)	- / -	-
<i>Notropis alborus</i>	Whitemouth Shiner	X (new)	- / -	<b>X</b>
<i>Notropis micropteryx</i>	Highland Shiner	X (new)	- / -	-
<i>Notropis scabriceps</i>	New River Shiner	X (new)	- / -	<b>X</b>
<i>Notropis volucellus</i>	Mimic Shiner (Neuse and Tar River basins)	X	- / <b>T</b>	-
<i>Oncorhynchus nerka</i>	Kokanee/Sockeye Salmon	X (new)	- / -	-
<i>Phenacobius teretulus</i>	Kanawha Minnow	X (new)	- / SC	<b>X</b>
<i>Salvelinus fontinalis</i>	Brook Trout (Introduced)	X (new)	- / -	-
<b>* Federal/State Status Abbreviations</b>				
<u>Federal Listings</u>				
E = Endangered      T = Threatened      T (S/A) = Threatened due to Similar Appearance      C = Candidate				

**Table 3A1-4 Changes to Freshwater Fish SGCN.**

FRESHWATER FISHES				
<i>Scientific Name</i>	Common Name	SGCN Status* (2020 update)	Federal/ State Status*	SEAFWA Regional SGCN
<p>PE = Proposed Endangered      PT = Proposed Threatened</p> <p><u>State Listings</u>                      E = Endangered      T = Threatened      SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b>                      (new) indicates new Taxa Team reevaluation results meet the SGCN qualifying threshold criteria                      (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11</p>				

### 3.13.6 Freshwater Mussels

The Freshwater Mussel Taxa Team reevaluated 12 mussel species for consideration of conservation need, knowledge gap, and management need/concern priorities. There were several species for which there were calculation errors from the 2015 NCWAP comprehensive revision that were not caught during the review process. The calculation errors were made for scores associated with the conservation threat assessment metrics 9.1 through 9.11. The reevaluation and metric score corrections resulted in the addition of 10 species to the SGCN priority list. The reevaluation also resulted in the addition of one new species to the Knowledge Gap priority list and the addition of one species and removal of two other species from the Management Needs/Concerns priority list. All Taxa Team reevaluation results and changes to the priority species lists are provided in a table in Appendix GA1-1.

Minor revisions have also been made to incorporate state or federal listing status changes. In May 2018, the USFWS listed the Yellow Lance as threatened under the Endangered Species Act with a special rule issued under section 4(d) of the Endangered Species Act (USFWS 2019c). The USFWS also proposes to designate Critical Habitat in North Carolina (USFWS 2020), which if finalized as proposed, would include approximately 319 river miles currently occupied by Yellow Lance in the Chowan, Tar and Neuse river basins.

A compendium of common and scientific names of freshwater mussels in the United States was published by the American Fisheries Society (AFS) in (Turgeon et al. 1998). Nomenclature provided in this publication has been widely accepted by species experts. Scientific naming convention updates proposed by Williams et al. (2017) includes the reassignment of genus for James Spnymussel and Tar River Spnymussel from *Elliptio* to *Parvaspina*. Both species are federally listed as endangered species. The USFWS currently recognizes James Spnymussel as *Pleurobema collina* and Tar River Spnymussel as *Elliptio steinstansana*. The Taxa Team recommends retaining the genus name *Elliptio* until the USFWS publishes a revision to the scientific name or until species experts accept the reassignment to *Parvaspina* as genus.

Table 3A1-5 is a list of the changes to SGCN status included in this minor update to the 2015 NCWAP. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-5 Changes to Freshwater Mussel SGCN.**

<b>FRESHWATER MUSSELS</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Elliptio folliculata</i>	Pod Lance	X (add*)	- / SC	<b>X</b>
<i>Elliptio lanceolata</i>	Yellow Lance	X	<b>T / E</b>	<b>X</b>
<i>Elliptio roanokensis</i>	Roanoke Slabshell	X (add*)	- / T	--
<i>Lampsilis fasciola</i>	Wavyrayed Lampmussel	X (add*)	- / <b>SC</b>	--
<i>Lampsilis radiata</i>	Eastern Lampmussel	X (add*)	- / T	--
<i>Lampsilis splendida</i>	Rayed Pink Fatmucket	X (add*)	- / -	<b>X</b>
<i>Ligumia nasuta</i>	Eastern Pondmussel	X (add*)	- / T	--
<i>Potamilus alatus</i>	Pink Heelsplitter	X (add*)	- / -	--
<i>Strophitus undulatus</i>	Creepers	X (add*)	- / -	--

**\* Federal/State Status Abbreviations**

Federal Listings  
 E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate  
 PE = Proposed Endangered    PT = Proposed Threatened

State Listings  
 E = Endangered    T = Threatened    SC = Special Concern

Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.

**\*SGCN Status (2020 Update)**  
 (new) indicates new Taxa Team reevaluation results meet the SGCN qualifying threshold criteria  
 (add\*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11



### 3.13.7 Mammals

The Mammal Taxa Team reevaluated 15 species for consideration of conservation need, knowledge gap, and management need/concern priorities. Calculation errors from the 2015 NCWAP comprehensive revision that were not caught during the review process have been revised for conservation threat assessment metrics 9.1 through 9.11. The reevaluation and metric score corrections resulted in the addition of two species to the SGCN list. All Taxa Team reevaluation results are provided in a table in Appendix GA1-1.

Minor revisions have also been made to incorporate state or federal listing status changes. In 2018, the USFWS published a 5-year status review for the Red Wolf under the Endangered Species (USFWS 2018b). The species is listed for federal protection as an endangered species wherever found except where listed as an experimental population. Through agreement with the NCWRC, red wolves found in North Carolina outside of captivity are protected as a threatened species. Captive red wolf populations known to occur at Alligator River National Wildlife Refuge, Cape Romain National Wildlife Refuge, Mattamuskeet National Wildlife Refuge, Pocosin Lakes National Wildlife Refuge, St. Vincent National Wildlife Refuge, and Swanquarter National Wildlife Refuge (Beaufort, Dare, Hyde, Tyrrell, and Washington counties) in North Carolina are considered experimental, non-essential populations by the USFWS.

Table 3A1-6 lists changes to SGCN status included in this minor update to the 2015 NCWAP. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-6 Changes to Mammal SGCN.**

<b>MAMMALS</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Sorex palustris punctulatus</i>	Southern Water Shrew	X (add*)	-- / SC	--
<i>Lasiurus seminolus</i>	Seminole Bat	X (add*)	-- / --	--
<i>Lasiurus intermedius</i> (incl <i>L.i. floridanus</i> )	Northern Yellow Bat (incl Florida Yellow Bat)	X	-- / <b>SC</b>	<b>X</b>
<b>* Federal/State Status Abbreviations</b>				
<u>Federal Listings</u>				
E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate				
PE = Proposed Endangered    PT = Proposed Threatened				

**Table 3A1-6 Changes to Mammal SGCN.**

MAMMALS				
<i>Scientific Name</i>	Common Name	SGCN Status* (2020 update)	Federal/ State Status*	SEAFWA Regional SGCN
<p><u>State Listings</u>                      E = Endangered      T = Threatened      SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b>                      (new) indicates new Taxa Team reevaluation results meet the SGCN qualifying threshold criteria                      (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11</p>				

### 3.13.8 Reptiles

Minor revisions have been made to the Reptile SGCN list to incorporate state or federal listing status changes. In October 2017 the state listing status for six reptiles was updated and includes new listings for Eastern Diamondback Rattlesnake , Carolina Swamp Snake, Cumberland Slider, and Eastern Chicken Turtle (NCAC 2017). All updates are provided in a table in Appendix GA1-7.

Table 3A1-7 is a list of the changes to SGCN status included in this minor update to the 2015 NCWAP. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-7 Changes to Reptile SGCN.**

<b>REPTILES</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Crotalus adamanteus</i>	Eastern Diamondback Rattlesnake	X	-- / <b>E</b>	<b>X</b>
<i>Deirochelys reticularia reticularia</i>	Eastern Chicken Turtle	X	-- / <b>SC</b>	<b>X</b>
<i>Heterodon simus</i>	Southern Hognose Snake	X	-- / <b>T</b>	<b>X</b>
<i>Pituophis melanoleucus melanoleucus</i>	Northern Pine Snake	X	-- / <b>T</b>	<b>X</b>
<i>Seminatrix pygaea paludis</i>	Carolina Swamp Snake	X	-- / <b>SC</b>	--
<i>Trachemys scripta troostii</i>	Cumberland Slider	X	-- / <b>SC</b>	<b>X</b>
<p><b>* Federal/State Status Abbreviations</b></p> <p><u>Federal Listings</u>            E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate            PE = Proposed Endangered    PT = Proposed Threatened</p> <p><u>State Listings</u>            E = Endangered    T = Threatened    SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b>            (new) indicates new Taxa Team re-evaluation results meet the SGCN qualifying threshold criteria            (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11</p>				

## 3.13.9 Snails

Aquatic and terrestrial snails were not reevaluated during this update. Changes to the Snail SGCN list are included in this update based on state listing status changes made in October 2017 (NCAC 2017). The changes are indicated by red text in Table 3A1-8. SEAFWA did not identify Regional SGCN for the snail taxa group. Appendix GA1-8 provides the 2015 Taxa Team evaluation results with updated listing status as noted in the table below. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-9 Changes to Snail SGCN.**

<b>SNAILS</b>				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<b>AQUATIC SNAILS</b>				
<i>Elimia christyi</i>	Knotty Elimia	--	-- / <b>E</b>	--
<i>Helisoma eucosmium</i>	Greenfield Rams-horn	X	-- / <b>E</b>	--
<i>Leptoxis dilatata</i>	Seep Mudalia	--	-- / <b>SC</b>	--
<i>Lioplax subcarinata</i>	Ridged Lioplax	--	-- / <b>SC</b>	--
<b>TERRESTRIAL SNAILS</b>				
<i>Appalachina chilhoweensis</i>	Queen Crater	--	-- / <b>SC</b>	--
<i>Discus bryanti</i>	Sawtooth Disc	--	-- / <b>SC</b>	--
<i>Fumonelix jonesiana</i>	Big-tooth Covert	X	-- / <b>T</b>	--
<i>Fumonelix wheatleyi clingmanicus</i>	Clingman Covert	X	-- / <b>SC</b>	--
<i>Glyphyalinia junaluskana</i>	Dark Glyph	X	-- / <b>SC</b>	--
<i>Glyphyalinia pentadelphia</i>	Pink Glyph	X	-- / <b>SC</b>	--
<i>Haplotrema kendeighi</i>	Blue-footed Lancetooth	--	-- / <b>SC</b>	--
<i>Helicodiscus fimbriatus</i>	Fringed Coil	X	-- / <b>SC</b>	--
<i>Inflectarius ferrissi</i>	Smoky Mountain Covert	X	-- / <b>T</b>	--
<i>Inflectarius subpalliatu</i>	Velvet Covert	X	-- / <b>SC</b>	--
<i>Pallifera hemphilli</i>	Black Mantleslug	--	-- / <b>SC</b>	--
<i>Paravitrea andrewsae</i>	High Mountain Supercoil	--	-- / <b>SC</b>	--
<i>Paravitrea clappi</i>	Mirey Ridge Supercoil	X	-- / <b>SC</b>	--
<i>Paravitrea lamellidens</i>	Lamellate Supercoil	--	-- / <b>SC</b>	--
<i>Paravitrea placentula</i>	Glossy Supercoil	X	-- / <b>SC</b>	--
<i>Paravitrea umbilicaris</i>	Open Supercoil	X	-- / <b>SC</b>	--
<i>Paravitrea varidens</i>	Roan Supercoil	X	-- / <b>T</b>	--

**Table 3A1-9 Changes to Snail SGCN.**

SNAILS				
<i>Scientific Name</i>	<b>Common Name</b>	<b>SGCN Status* (2020 update)</b>	<b>Federal/ State Status*</b>	<b>SEAFWA Regional SGCN</b>
<i>Patera clarki</i>	Dwarf Proud Globe	X	-- / <b>SC</b>	--
<i>Pilsbryna vanattai</i>	Honey Glyph	X	-- / <b>SC</b>	--
<i>Stenotrema depilatum</i>	Great Smoky Slitmouth	X	-- / <b>SC</b>	--
<i>Ventridens coelaxis</i>	Bidentate Dome	--	-- / <b>SC</b>	--
<i>Zonitoides patuloides</i>	Appalachian Gloss	X	-- / <b>SC</b>	--
<p><b>* Federal/State Status Abbreviations</b></p> <p><u>Federal Listings</u>                      E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate                      PE = Proposed Endangered    PT = Proposed Threatened</p> <p><u>State Listings</u>                      E = Endangered    T = Threatened    SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b>                      (new) indicates new Taxa Team reevaluation results meet the SGCN qualifying threshold criteria                      (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11</p>				

## 3.13.10 Insects

Insects were not reevaluated during this update because they were included on the SGCN list based on species expert recommendations and federal listing status. Changes to the Insect SGCN list are included in this update based on federal listing status changes made by the USFWS.

The USFWS completed a species status assessment for the Rusty Patched Bumble Bee (RPBB) in 2016 that resulted in listing the species for protection under the ESA as an endangered species. The RPBB is a highly social ground-nesting species that forms large colonies consisting of a single queen, female workers, and males (USFWS 2016). The species is known to have populations in North Carolina but has declined since the mid- to late 1990s and the decline is expected to continue. According to the USFWS assessment, the primary causes of decline include habitat loss and degradation, pathogens, pesticides, and small population dynamics.

Table 3A1-9 is a list of the changes to SGCN status included in this minor update to the 2015 NCWAP. The list provides federal/state listing status as well as Regional SGCN status designated by SEAFWA. Red text is used to indicate the changes made in this update. A complete updated list of all SGCN is provided in Appendix PA1.

**Table 3A1-9 Changes to Insect SGCN.**

INSECTS				
<i>Scientific Name</i>	Common Name	SGCN Status* (2020 update)	Federal/ State Status*	SEAFWA Regional SGCN
<i>Bombus affinis</i>	Rusty Patched Bumble Bee	X	<b>E / E</b>	--
<p><b>* Federal/State Status Abbreviations</b></p> <p><u>Federal Listings</u>                      E = Endangered    T = Threatened    T (S/A) = Threatened due to Similar Appearance    C = Candidate                      PE = Proposed Endangered    PT = Proposed Threatened</p> <p><u>State Listings</u>                      E = Endangered    T = Threatened    SC = Special Concern</p> <p>Where appropriate, the NC species listing status will match any Federal listing status designation except when there is a written agreement between NCWRC and the USFWS that allows another designation.</p> <p><b>*SGCN Status (2020 Update)</b></p>				

**Table 3A1-9 Changes to Insect SGCN.**

INSECTS				
<i>Scientific Name</i>	Common Name	SGCN Status* (2020 update)	Federal/ State Status*	SEAFWA Regional SGCN
(new) indicates new Taxa Team reevaluation results meet the SGCN qualifying threshold criteria (add*) indicates 2015 evaluation results score calculation error correction for Threat metrics 9.01 to 9.11				

### 3.14 References

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# Chapter 6 Conservation Strategies and Programs

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## Addendum 1

### 6.5.1.1 Conservation Programs - N.C. Wildlife Resources Commission (NCWRC)

Two new web-based decision support tools (DSTs) were launched in Spring 2017 to support priority conservation recommendations outlined in the 2015 N.C. Wildlife Action Plan (NCWAP). They are the Conservation Opportunity Area (COA) tool and the Threat Risk Assessment (TRA) tool. As noted in the 2015 NCWAP, the WRC partnered with the Biodiversity and Spatial Information Center (BaSIC) at the N.C. Cooperative Fisheries and Wildlife Research Unit (N.C. State University) to develop a GIS model to evaluate climate change and other threats to species and habitats. These DSTs are available online through the N.C. Wildlife Habitat Threat Data Viewer and Analysis Tool. The online tool is accessed through a digital map viewer at <http://tecumseh.zo.ncsu.edu/coa/>.

Users can assess risks in terms of the number of threats, the proximity of threats, and the severity of threats, or how well represented a given threat is within, or in proximity to, a parcel of land of interest. The tool allows users to explore individual or multiple threats in a spatial, and for some threats, in a temporal environment in user-defined scenarios. It is intended to give managers, decision makers and other users an accessible and flexible tool to help assess risks to wildlife populations, and ultimately, inform decisions.

### 6.5.1.2 Conservation Opportunity Area DST

The Conservation Opportunity Area (COA) tool identifies areas predicted to contain the least amount of protected habitat for an ecoregion and natural community selected by the user. Results of a COA analysis will show the top five HUC12s predicted to have the most unprotected habitat. The datasets that form the foundation for the COA analysis are range maps for terrestrial species and the national land cover data developed by the USGS' [Southeast Gap Analysis Program](#) (GAP). The predicted species distribution datasets used in the COA tool include amphibians, mammals, reptiles, breeding birds, and wintering waterfowl. The GAP range and land cover data have been correlated with a list of terrestrial SGCN and habitats in NCWAP Appendix H, a cross-walk table linking species with their habitats. The habitat and species information provided in the table is described in the NCWAP, Chapters 3 and 4. The four ecoregions used to group habitats used in the COA tool are described in NCWAP Chapter 4.

## 6.5.1.3 Threat Risk Assessment DST

A risk assessment is the process by which users identify threats, and analyze and evaluate risk associated with threats. The N.C. Wildlife Habitat Threat Risk Assessment (TRA) tool is a spatially explicit DST that uses modeling to predict future probability that specific threats will occur relative to terrestrial and aquatic habitats — specifically climate change and urbanization. This DST includes other types of threats that are not projected in time but whose occurrence on the landscape can create impacts or exacerbate other types of impacts. The DST identifies threats, enumerates them (threat count), estimates occurrence and provides a qualitative measure of severity within a user-defined area of interest (AOI).

## 6.5.1.4 Use and Results

The DSTs allow users to explore individual threat/risk components in a spatial environment as well as combine and weigh components in user-defined configurations to highlight specific threats and develop specific scenarios of future trends. The Tool supports statewide habitat acquisition and management decisions by projecting future probability of occurrence of specific threats relative to terrestrial and aquatic habitats — specifically climate change and urbanization.

Results from DST analyses are presented on a digital map using a 12-digit Hydrologic Unit Code (HUC) classification system for sub-watershed drainage areas. Information about the HUC classification system is available from the USGS website <https://water.usgs.gov/GIS/huc.html>. A user guide for the tool is provided in Appendix Q.