REGIONAL SPECIES OF GREATEST CONSERVATION NEED IN THE SOUTHEASTERN UNITED STATES

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Wildlife Diversity Committee

Southeast Association of Fish and Wildlife Agencies

Prepared by

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The contributions of the SEAFWA Wildlife Diversity Committee were invaluable as they made well-reasoned choices to craft the RSGCN selection method, applying their years of experience to ensure the final list could be used by a wide range of partners for conservation prioritization. And, we thank the 107 southeast taxa experts (Appendix C) for contributing their knowledge, expertise and willingness to collaborate to identify regional priorities for each taxonomic group. Many individuals also supported this effort, particularly John Kanter and Bruce Stein of the National Wildlife Federation. John Kanter has been integral in the development of RSGCN lists since their beginning in 1999 in the Northeast, and Bruce Stein contributed several important ideas during the method development phase of the project.

SUMMARY

In 2018-2019, the Southeast Association of Fish and Wildlife Agencies' (SEAFWA) Wildlife Diversity Committee (WDC or Committee) developed a list of Regional Species of Greatest Conservation Needs (RSGCN) to enhance their ability to work collaboratively and proactively to sustain populations of both endemic and shared Species of Greatest Conservation Need (SGCN) across the southeast U.S. 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. The list can guide and facilitate collaboration with conservation partners in the region and leverage support from diverse funding sources by presenting information on many of the unique, rare, and declining biodiversity shared across states of the southeastern U.S.

The SEAFWA RSGCN list captures the remarkable endemism and biodiversity of the region, particularly in aquatic habitats, and highlights species that would benefit from regional collaborative conservation. The shared RSGCN account for 25 percent of the nearly 2,100 SGCN from seven taxonomic groups reviewed. The list can be sorted to deliver customized priorities:

- conservation concern (how imperiled is the species);
- importance of SEAFWA conservation actions (regional responsibility category);
- collaborative opportunities (number of SEAFWA states sharing a species);
- state stewardship (state occurrence of RSGCN); and,
- taxa groups.

Taxonomic breakdown of southeast RSGCN. All vertebrate SGCN from 15 states' State Wildlife Action Plans (SWAPs) and a few invertebrate taxa were considered. Of the approximately 6,700 Species of Greatest Conservation Need, nearly 2,100 SGCN were evaluated. Of that, 960 species met the RSGCN criteria.

67 mammals	**90 reptiles**	**136 mussels,**
74 birds	**311 fishes**	and
105 amphibians	**172 crayfishes**	**5 bumble bees**.

Notably, nearly one-third of the RSGCN are fish and another third are mussels and crayfish, reflecting the high aquatic biodiversity within the SEAFWA region.

Regional Responsibility and Conservation Concern. Nearly one-third of the RSGCN were considered Very High Concern, 44% High Concern, and the remaining 25% were Moderate Concern. Seventy-seven percent of the Very High Concern RSGCN are aquatic species (fish, mussels and crayfish). **Seventy three percent of the Very High Concern RSGCN are SEAFWA**

endemic species. Of the 19 RSGCN that are Very High Concern but less than 50% regional responsibility, 10 are federally listed species.

Each of the species classifications – shared, narrow-range, regional geographic responsibility, conservation concern – can be used to set collaboration priorities in the southeast region.

Conclusions and Recommendations. Updating the RSGCN list at regular intervals will maintain valuable current information for actions at the regional scale. Repeating the process between SWAP revisions can inform SWAPs as well as be informed by SWAPs' SGCN lists for the next RSGCN revision. Improvements and refinements to the process and methods are encouraged to capture additional criteria and emerging issues that are important to the region. The WDC recommended these actions:

- review/revise RSGCN list every 10 years with interim minor revisions as needed;
- maintain the RSGCN list online for reference and access; and,
- create a standing item on the WDC agenda each year for discussion.

There was an overwhelming consensus that there is a need for additional resources to allow state agencies to effectively address the needs of fish and wildlife diversity conservation in the southeast. Specifically, most RSGCN taxa – especially invertebrates – have critical data gaps that, if filled, would inform more effective on-the-ground conservation and monitoring for success. Coordination with marine conservation practitioners was also recommended. Additional detailed suggestions by taxa teams are included in this report.

Information about the RSGCN and their key habitats and threats, gathered at the regional scale, can directly inform the next SWAP revision and generate more effective conservation actions taken at the regional scale. Best management practices, standardized data collection, and policy, regulation, or law enforcement can be developed at a regional scale and collaboratively implemented.

The list can be used to communicate state fish and wildlife diversity conservation priorities to their many conservation partners. USFWS can use the RSGCN list in their workplan development and schedule or identifying at-risk species. The Natural Resource Conservation Service and U.S. Forest Service can use the list to identify focal or sensitive species. NatureServe and their state partners can prioritize rank updates for the highest concern species, particularly if emerging threats have been identified. This list can also be used to foster increased communication and collaboration between state agencies, universities, natural heritage programs, land trusts, and other conservation partners.

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ACRONYMS

AFS	American Fisheries Society
AFWA	Association of Fish and Wildlife Agencies
NEAFWA	Northeast Association of Fish and Wildlife Agencies
PIF	Partners in Flight
RSGCN	Regional Species of Greatest Conservation Need
SEAFWA	Southeast Association of Fish and Wildlife Agencies
SECAS	Southeast Conservation Adaptation Strategy
SGCN	Species of Greatest Conservation Need
SWAP	State Wildlife Action Plan
TCI	Terwilliger Consulting, Inc.
TNC	The Nature Conservancy
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDC or Committee	Wildlife Diversity Committee
WDPM	Wildlife Diversity Program Managers

INTRODUCTION

The Southeast Association of Fish and Wildlife Agencies' (SEAFWA) Wildlife Diversity Committee (WDC or Committee) developed this list of Regional Species of Greatest Conservation Need (RSGCN) to enhance their ability to work collaboratively and proactively to sustain populations of iconic and imperiled species. 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. The list will facilitate collaboration across conservation partners in the region and leverage support from diverse funding sources for shared objectives. The list effectively describes the unique, rare, and declining biodiversity of the Southeastern U.S. where conservation focus is needed.

All vertebrate Species of Greatest Conservation Need (SGCN) from 15 states' State Wildlife Action Plans (SWAPs) were considered for inclusion on the RSGCN list. In addition to the vertebrate taxa groups, the committee also convened freshwater mussels and crayfish taxa groups as the southeastern U.S. represents a biodiversity hotspot for both. The committee considered 12 species of bumble bees identified in regional State Wildlife Action Plans as a start at including additional invertebrate species in decline.

METHOD

The RSGCN selection process from the nearly 6,700 SGCN in the southeast proceeded in four phases. The selection of RSGCN is based primarily on the conservation concern of the species and the SEAFWA regional responsibility for stewardship of the species. Method documentation is detailed in Appendix A.

PHASE 1: PLANNING AND RSGCN SELECTION METHODOLOGY

Terwilliger Consulting, Inc. (TCI) was contracted by the National Wildlife Federation (through a Southeast Conservation Adaptation Strategy [SECAS]-sponsored Vital Futures Project) for the planning phase of the project from March through September 2018. The first phase of the project focused on coordination with SEAFWA and the WDC to request state contacts and data from the 15 SEAFWA states and begin method development.

State representatives/experts engaged at key times and in strategic ways to fit state timing and resource needs. The process and list were designed to represent the most up-to-date ground-truthed assessment of SGCN while minimizing the work time of staff experts and Wildlife Diversity Program Managers (WDPM). Consistent, regular coordination engaged 107 experts and state representatives in the most time-efficient way possible. TCI managed outreach and

communication with the 15 states across the region through webinar and conference calls, participation in regularly scheduled meetings, and e-mail correspondences as each taxa team reviewed lists and provided input in a series of 3 iterative webinars/calls.

Selection criteria and method guidelines were developed and approved by the SEAFWA Wildlife Diversity Committee through an RSGCN Working Group to ensure that the final RSGCN list comprised species that represented the shared focus of the SEAFWA states (see Appendix A for details). The Northeast Association of Fish and Wildlife Agencies (NEAFWA) criteria for RSGCN selection served to inform and provide a starting point for development of a SEAFWA-specific set of criteria.

TCI and the WDC explored three major categories for criteria development:

- regional stewardship responsibility (including endemism),
- conservation concern and status, and
- biological/ecological significance.

To facilitate the development of these guidelines and criteria, TCI led the Committee through several steps:

- established RSGCN Working Group to develop methodology (7 SEAFWA states represented);
- requested methodology inputs, refinements, and other experts to include;
- conducted questionnaire to identify concerns, potential issues, and potential volunteers;
- reviewed 15 states' SGCN criteria stated in SWAPs and compared/contrasted definitions for discussion;
- reviewed questionnaire results with the Working Group and facilitated discussion to:
    - review the NEAFWA RSGCN selection method and assess how all or portion of that could meet SEAFWA needs, and
    - discuss factors not incorporated in the NEAFWA method and pros/cons of adapting the method;
- defined provisional RSGCN categories and criteria;
- drafted SEAFWA method based on Working Group feedback;
- revised the method documentation through iterative review with the Working Group;
- prepared the instructions for the taxonomic teams based on the method documentation; and
- presented method documentation (Appendix A) to the full Committee for final approval in September 2018 at the SEAFWA conference, and the WDC Chair presented progress briefings to SEAFWA Directors.

PHASE 2: DATA COMPILATION AND REVIEW

Phase 2 of the RSGCN selection process focused on research, compilation and review of SGCN data from the 15 SEAFWA states, funded by the SEAFWA states (through a USFWS CFDA Science Applications Grant F18AC00719) and TCI. From October to December 2018, TCI obtained the SGCN lists and associated data from each state. Multiple requests were necessary to obtain and quality-assure the data and taxonomy.

Existing conservation assessment data was compiled and organized for each taxonomic group to facilitate taxonomic expert review to select RSGCN according to Committee-approved criteria. This project was able to update SGCN lists and take advantage of a national database of taxonomically reconciled SGCNs from the U.S. Geological Survey (USGS, 2018) as well as several other key data sources (Appendix A, Appendix I).

All SGCN were merged into a database created by TCI and then subjected to a lengthy quality assurance and control process to merge identical SGCN records from multiple states, identify duplicate records, correct misspellings, and update taxonomy. Altogether, the database contained approximately 6,700 SGCN vertebrates, invertebrates and plants. The committee decided to move forward with RSGCN animals only, and to potentially address additional invertebrate and plant groups in the future as data and support became available. Additional data fields were determined to assist experts and added by TCI from various external sources: Partners in Flight (PIF, 2016), American Fisheries Society (Taylor et al., 2007), U.S. Fish and Wildlife Service National Listing Workplan (USFWS, 2019), The Nature Conservancy climate change resiliency (Anderson et al., 2016), and NatureServe (NatureServe, 2019).

SGCN records were extracted from the database and separated into Microsoft Excel spreadsheets by TCI for seven taxonomic groups – mammals, birds, reptiles and amphibians, fish, mussels, crayfish and bumble bees – totaling approximately 2,100 of the nearly 6,700 SGCN. Based on agreed-upon criteria (Appendix A), TCI analyzed the available data and prepared draft taxa lists for taxonomic team review.

The WDC provided TCI with taxonomic experts' contacts for six of these groups from each of the SEAFWA states; bumble bees were addressed by coordinating with regional bee experts as invertebrate data were lacking from many states. TCI invited each of the recommended taxonomic experts from all taxa groups to participate in the RSGCN selection process using the compiled and analyzed data.

PHASE 3: TAXA TEAM REVIEW

From January through April 2019, TCI facilitated the seven taxa teams' reviews for RSGCN selection using the methodology (Appendix A) developed by the Working Group. This phase of the project was funded through a contract to TCI from Tennessee Wildlife Resources Agency

(though the USFWS Southeast Conservation Adaptation Strategy project) with additional donations from TCI. For all taxonomic groups, a representative from every state was selected by their WDPM to serve on the review team. Every effort was made to include biologists with field experience covering the entire region, especially for bumble bees where data were lacking. TCI reached out to individual states for additional information as needed or requested.

TCI facilitated three rounds of review for the selection of RSGCN by each taxa team. A total of 107 taxonomic experts (Appendix C) participated in the taxa team review process. Each of the taxa teams, except for bumble bees, had two sequential webinars for each of the 15 state membership representatives to meet, review and discuss the selection of RSGCN. TCI provided data, spreadsheets and underlying research needed for taxa team review and consideration.

For many species, the decision to select them as RSGCN was clear based on application of criteria to the available distribution and conservation assessment data. However, in some instances (e.g., species with new information, emerging threats, or less certain population estimates), it was necessary for taxonomic experts to discuss the available information including any unpublished survey data.

TCI delivered updates on monthly Wildlife Diversity Committee calls documenting the results and consensus after each round of review for WDC approval on progress and completion (Appendix D). Due to taxonomic and other important issues identified by the teams, Phase 3 required more time and effort to complete than anticipated.

About 150 species that were not SGCN were recommended by taxa teams during this process, so each state was contacted to confirm species' status. The Working Group decided to consider only SGCN for inclusion in this RSGCN process. Based on taxa team input and expertise, additional species were added to a "Watch List" for future consideration.

PHASE 4: RSGCN FINALIZATION, ANALYSIS, AND REPORT DEVELOPMENT

The final phase of the project spanned April through June 2019. TCI finalized the RSGCN list following the third round of taxa team review, coordinating with the taxa teams and the WDC for final approval. This phase was partially supported by TCI and additional funding through NWF Grant No. G15AP00162USGS from the USGS Southeast Climate Adaptation Science Center. Analysis of the RSGCN and the various metrics allowed TCI to prepare this report with summary results and discussions for each taxa group, plus implementation recommendations from the taxa teams for SEAFWA and the WDC to facilitate RSGCN conservation in the southeast. TCI also evaluated options for products and platforms to maximize utility and accessibility of the RSGCN list and its associated data, presenting them for consideration by the WDC in May 2019.

RESULTS AND DISCUSSION

Of the approximately 6,700 Species of Greatest Conservation Need found in SEAFWA's 15 SWAPs, nearly 2,100 SGCN from seven taxonomic groups – mammals, birds, herpetofauna, fish, mussels, crayfish and bumble bees – were evaluated by Working Group-approved RSGCN criteria. Approximately 2,600 invertebrates from other taxonomic groups and nearly 2,000 plants were beyond the scope of this assessment.

THE BIG PICTURE – 960 RSGCN

960 SGCN met the criteria for RSGCN (Table 1; Appendix E). Nearly one-third of the RSGCN are fish and another third are mussels and crayfish, indicative of the southeast's incredible aquatic biodiversity and conservation needs in these habitats.

Table 1. Number and proportion of RSGCN endemic to SEAFWA region by taxonomic group

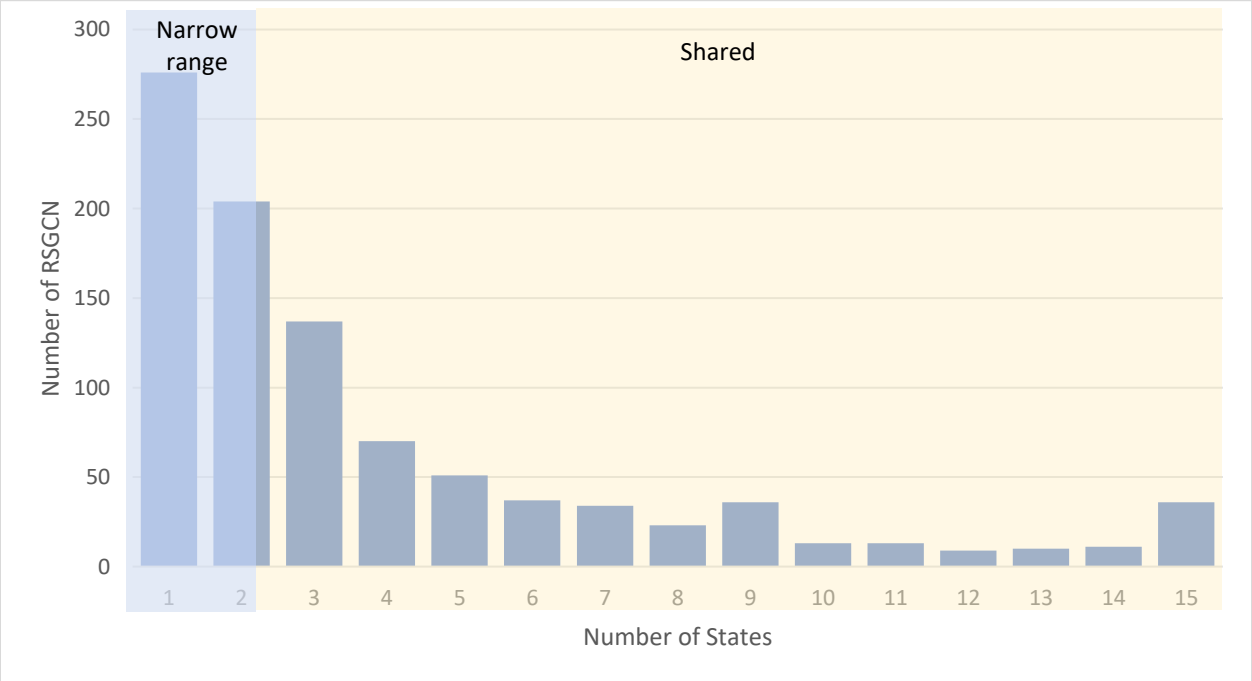
Taxa Group	RSGCN Number	RSGCN %	% SEAFWA Endemic
Mammals	67	7%	52%
Birds	74	8%	14%
Amphibians	105	11%	86%
Reptiles	90	9%	55%
Fish	311	32%	67%
Crayfish	172	18%	96%
Mussels	136	14%	79%
Bumble Bees	5	1%	40%
Total RSGCN	**960**	**100%**	**69%**

More than half of the 960 RSGCN are shared by multiple states. Nearly half are narrow-range, generally limited to one or two states (Table 2, Figure 1). **Most (85%) of the narrow range species are SEAFWA endemics**.

Table 2. Number and proportion of narrow-range and multiple-states RSGCN by taxonomic group

Taxa Group	RSGCN Narrow Range Number	RSGCN Narrow Range %	RSGCN Shared Number	RSGCN Shared %
Mammals	35	51%	32	49%
Birds	13	18%	61	81%
Amphibians	46	44%	59	59%
Reptiles	41	44%	49	56%
Fish	143	46%	168	54%
Crayfish	106	62%	66	38%
Mussels	44	32%	92	68%
Bumble Bees	2	40%	3	60%
Total RSGCN	**430**	**45%**	**530**	**55%**

Figure 1. Number of RSGCN by number of SEAFWA states sharing the species. 430 species are narrow range, occurring in one or two states (with crayfish limited to one), while 530 are shared by three or more states (except for crayfish which are shared by two).



Across all taxonomic groups, 664 (69%) RSGCN are SEAFWA endemics (Table 3). While the list is intended to highlight species with more than half their geographic range in the southeast, 85 species with lower than 50% regional responsibility (mostly migratory or seriously imperiled) are recognized as priorities in the region because taxon experts agreed **regional conservation is critical for sustaining populations**.

Of the 85 species with lower regional responsibility levels, 31 are fish, 23 are birds, and four are marine mammals or reptiles with large ranges. The Rufa Red Knot (*Calidris canutus rufa*), for example, is a highly migratory bird that ranges from Canadian Arctic breeding grounds to southern South America wintering grounds. The SEAFWA region contains two of the four known wintering areas of the Rufa Red Knot (USFWS 2019), with the RSGCN species known to occur in at least 11 SEAFWA states. Due to its extraordinary range, however, the SEAFWA regional responsibility for the federally threatened Rufa Red Knot was identified by the taxa team as less than 25%.

Table 3. Number and proportion of RSGCN in each Regional Responsibility category

Regional Responsibility	RSGCN Number	RSGCN %	RSGCN Narrow Range Number	RSGCN Narrow Range %	RSGCN Shared Number	RSGCN Shared %
100% SEAFWA Endemic	664	69%	368	55%	296	45%
75 - 99%	116	12%	31	27%	85	73%
50 - 74%	95	10%	20	21%	75	79%
< 50%	85	9%	11	13%	74	87%
Total RSGCN	**960**	**100%**	**430**	**45%**	**530**	**55%**

CONCERN LEVEL KEY NOTES

Nearly **one-third of the RSGCN were considered Very High Concern** (Table 4, Table 5). **Seventy-seven percent of the Very High Concern RSGCN are aquatic species** (fish, mussels and crayfish), not including aquatic herpetofauna or marine mammals. **Of the 293 RSGCN that are Very High Concern, 216 (73%) are SEAFWA endemics**. Of the 19 RSGCN that are Very High Concern but less than 50% regional responsibility, 10 are federally listed species, such as the Northern long-eared bat (*Myotis septentrionalis*) that occurs in 13 SEAFWA states and is federally threatened throughout its range.

Table 4. Number and proportion of RSGCN in each Concern Level category

Concern Level	RSGCN Number	RSGCN %	RSGCN Narrow Range Number	RSGCN Narrow Range %	RSGCN Shared Number	RSGCN Shared %
Very High Concern	293	31%	186	63%	107	37%
High Concern	420	44%	165	39%	255	61%
Moderate Concern	247	25%	79	31%	168	69%
Total RSGCN	**960**	**100%**	**430**	**45%**	**530**	**55%**

Table 5. Number and percent of RSGCN in each Concern Level category by taxonomic group

	RSGCN Number and %						
Taxa Group	**Very High Concern**		**High Concern**		**Moderate Concern**		**Total RSGCN**
Mammals	11	16%	28	42%	28	42%	67
Birds	10	14%	47	64%	17	23%	74
Reptiles	18	20%	45	51%	27	28%	90
Amphibians	26	25%	46	44%	33	31%	105
Freshwater & Diadromous Fish	84	30%	104	37%	93	33%	281
Marine Fish	18	60%	11	37%	1	3%	30
Crayfish	54	31%	84	49%	34	20%	172
Mussels	70	51%	54	40%	12	9%	136
Bumble Bees	2	40%	1	20%	2	40%	5

STATE AND REGIONAL OPPORTUNITY

Each of the species classifications – shared, narrow-range, regional geographic responsibility, degree of conservation concern – can be used to set priorities for collaboration in the southeast region. For example, states and their partners, particularly the USFWS, may consider focusing on the 303 species that are shared by multiple states, with greater than 50% of their range in SEAFWA, and High or Very High Concern, which could prioritize 14% of the nearly 2,100 SGCN reviewed in the southeast. Priorities can be further refined to focus on the 71 species with Very High Concern and greater than 75% Regional Responsibility (Table 6) which could result in concentrated action for three percent of the SGCN reviewed. **Shared RSGCN account for 25% of the nearly 2,100 SGCN reviewed**. The classifications included in this RSGCN list allow for sorting and prioritization of the species in multiple ways, for customized use by SEAFWA and its partners.

Table 6. Regional Responsibility and Conservation Concern for species shared by multiple states

	Number of Shared RSGCN			
Regional Responsibility Category	**Very High Concern**	**High Concern**	**Moderate Concern**	**Total RSGCN**
SEAFWA Endemics (100%)	58	138	100	**296**
75 - 100 %	13	49	23	**85**
50 - 75 %	19	26	30	**75**
< 50%	17	42	15	**74**
Total RSGCN	**107**	**255**	**169**	**530**

TAXA-SPECIFIC DETERMINATIONS

Within each taxanomic focus area – mammals, birds, reptiles, amphibians, freshwater and diadromous fishes, marine fishes, crayfish, mussels and bumble bees – some generally interesting findings are presented below, as well as subsets of those findings for Very High Concern, SEAFWA endemics, shared species, and evolutionary distinctiveness. A discussion for each taxa follows those findings. RSGCN Watch List species are discussed in the Additional Taxa and Species Considered section. Taxa team recommendations are detailed in Appendix H.

MAMMALS

The mammal taxa team addressed both terrestrial and marine mammals and additional taxonomic experts were consulted for marine mammals. Because marine mammals are protected by the federal Marine Mammal Protection Act, state fish and wildlife agencies do not usually address them unless the species are federally listed and occur in state-managed coastal waters (e.g. manatees in Florida). Marine mammal strandings, including those following catastrophic events like the Deepwater Horizon oil spill in the Gulf of Mexico, have prioritized marine mammals for some state wildlife agencies in coastal states in recent years.

Aside from threats of White Nose Syndrome to bats, threats to mammals in the southeast identified by the taxa team include impacts from wind energy, climate change, development and habitat loss.

RESULTS

The mammal RSGCN list includes 67 species, of which 32 are shared by multiple states (Table 1, Table 2). The list includes 30 Rodents (*Rodentia*), 17 Bats (*Chiroptera*), 7 Carnivores (*Carnivora*), 5 Cetaceans (*Cetacea*), along with 5 other taxonomic orders (Appendix E). Five marine mammals are included, and all but one is federally listed.

The taxa team identified one additional marine mammal for the RSGCN Watch List (Appendix F); the Gulf of Mexico population of Bryde's whale (*Balaenoptera edeni*) was listed as federally endangered in 2019 with an estimated population of 33 individuals.

Two RSGCN mammals have been identified as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G): Indiana bat (*Myotis sodalis*) and Alabama beach mouse (*Peromyscus polionotus ammobates*), both in Alabama.

VERY HIGH CONCERN

The mammal taxa team identified 11 Very High Concern mammals: five bats, one marine mammal, three rodents, and two carnivores (Appendix E, Table E-1). Most of these have a federal listed status except Buxton Woods white-footed deermouse (*Peromyscus leucopus buxtoni*) and little brown bat (*Myotis lucifugus*). Seven of these Very High Concern species are shared by multiple states.

Bats

Of the 17 bat RSGCN, five are Very High Concern. Little brown bat is found throughout the region. It has low regional responsibility because its range extends well outside the region but is included as SEAFWA RSGCN because it is imperiled throughout its range due to White Nose Syndrome. Northern long-eared bat also has a low regional responsibility due to its large

geographic range and is found throughout the region except in Florida and Texas. Indiana bat is found throughout the region except Florida and has a higher regional responsibility than little brown bat and Northern long-eared bat. Virginia big-eared bat (*Corynorhinus townsendii virginianus*) is a SEAFWA endemic found in just five states. The Florida bonneted bat (*Eumops floridanus*) is endemic to Florida.

Rodents

The three Very High Concern rodents are all SEAFWA endemic with restricted ranges. The federally endangered Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*) is endemic to Tennessee, Virginia and North Carolina. The Buxton Woods white-footed deermouse, endemic to southern Hatteras Island, North Carolina, was newly described as a subspecies in 2005 (Shipp-Pennock et al., 2005).

The old-field Deermouse (*Peromyscus polionotus*) and seven beach mice subspecies were merged into one RSGCN record. The beach mice subspecies include the Choctawhatchee beach mouse (*P. polionotus allophrys*) endemic to three counties in the Florida Panhandle, the Alabama beach mouse (*P. polionotus ammobates*) endemic to coastal Alabama, the Santa Rosa beach mouse (*P. polionotus leucocephalus*) endemic to Florida, the Southeastern beach mouse (*P. polionotus niveiventris*) endemic to eastern Florida, the St. Andrew beach mouse (*P. polionotus peninsularis*) endemic to two counties in the Florida Panhandle, the Anastasia Island beach mouse (*P. polionotus phasma*) endemic to St. John's County in northeast Florida, and the Perdido Key beach mouse (*P. polionotus trissyllepsis*) endemic to the Perdido Key area in Alabama and Florida.

Only the Santa Rosa beach mouse is not federally listed.

Carnivores

Red wolf (*Canis rufus*) and Florida panther (*Puma concolor coryi*) were both identified as Very High Concern. The SEAFWA endemic red wolf is federally endangered with non-essential experimental populations in North and South Carolina. The Florida panther is also endemic and federally endangered, occurring only in Florida.

Marine Mammals

Only one marine mammal RSGCN is Very High Concern. The North Atlantic right whale (*Eubalaena glacialis*) is found in waters along the Atlantic Coast and is highly endangered. The Gulf of Mexico subspecies of Bryde's whale is also highly endangered but is on the RSGCN Watch List (Appendix F) since it currently lacks SGCN status within the SEAFWA region.

SEAFWA ENDEMICS

There are 35 RSGCN mammals that are endemic to the SEAFWA region (Table 1). Most of the SEAFWA endemic RSGCN mammals are found in just one or two states (25 species), but **10 SEAFWA endemics are shared by multiple states** (Table 7).

Table 7. Ten SEAFWA endemic mammals shared by multiple states

Species	Concern Level	Number of States Sharing Responsibility
Short-finned pilot whale	Moderate Concern	9
Florida manatee (*Trichechus manatus latirostris*)	High Concern	9
Northern yellow bat (*Lasiurus intermedius*, including the *floridanus* subspecies)	High Concern	9
Old-field deermouse and beach mice	Very High Concern	5
Virginia big-eared bat	Very High Concern	7
Southern fox squirrel (*Sciurus niger niger*)	Moderate Concern	4
Pocket gopher and two of its subspecies (*Geomys breviceps*)	Moderate Concern	4
Louisiana black bear (*Ursus americanus luteolus*)	Moderate Concern	3
Carolina northern flying squirrel	Very High Concern	3
Ozark big-eared bat (*Corynorhinus townsendii ingens*)	High Concern	3

SHARED SPECIES

Of the 67 RSGCN mammals, 49% are shared by at least three SEAFWA states (Table 2). **Ten states or more share responsibility for 18% of RSGCN mammals**; none of these are endemic. SEAFWA is more than 75% responsible for four of those: Rafinesque's big-eared bat (*Corynorhinus rafinesquii* [including the *macrotis* and *rafinesquii* subspecies]), cotton deermouse (*Peromyscus gossypinus* [including the *allapaticola* subspecies]), Southeastern myotis (*Myotis austroriparius*), and gray bat (*Myotis grisescens*).

Eight RSGCN mammals are shared by 14 or more states. **Five of these are bats**: little brown, Rafinesque's big-eared, hoary (*Lasiurus cinereus*), Indiana, and tri-colored bats (*Perimyotis*

subflavus). Spotted skunks (*Spilogale putorius* (including the *interrupta* subspecies]) are found throughout the region, and cotton deermouse and the long-tailed weasel (*Mustela frenata*) are found in all but West Virginia and Oklahoma respectively.

EVOLUTIONARY DISTINCTIVENESS

All three of the southeastern mammal species with a higher than median evolutionary distinctiveness on the global list (Appendix B) are included on the RSGCN list. According to NatureServe, four RSGCN mammal species represent a monotypic genus and 21 represent a very small genus (two to five species). Seventeen mammal species representing monotypic genera were reviewed but not included as RSGCN - most had low regional responsibility.

DISCUSSION

In general, many team members were concerned about combining species with subspecies for RSGCN listing purposes. In most cases, subspecies had higher concern and responsibility levels than the species level, which made it difficult and potentially confusing to combine.

Several team members identified small mammals, especially rodents (mice, shrews, and voles) and small mustelids as the greatest study need within the mammal category. In recent years, more work has been done on bats due to emerging threats of White Nose Syndrome and wind energy. Population trend and threat assessments are also needed for many mammals.

In addition to increased funding, taxa team members recommended expanding regional genetic assessments for rare or low detection species. They also noted that improved opportunities for communication and collaboration between universities, state agencies, and heritage programs could expand understanding of understudied faunal groups.

As with other taxa groups there is a need for more long-term funding for monitoring to detect population trends. Several commenters recommended focusing enhanced monitoring efforts on Very High or High Concern species, particularly non-bat small mammals. For bats, survey efforts are strong but protocols for acoustic data collection and analysis could be made more consistent.

Engaging marine mammal experts from additional coastal states earlier in the process will improve and facilitate the review in future revisions.

BIRDS

Compared to other taxonomic groups, there is more comprehensive and robust taxonomic and conservation information available for bird species. This enabled the team to review bird species with more confidence and reach consensus on species relatively quickly. Two SGCN birds were identified as presumed extinct and were not considered for RSGCN status. The broad

geographic ranges of birds and large number of migratory species presented a challenge in determining regional responsibility estimates for some species.

RESULTS

The bird RSGCN list includes 74 species of which 61 (82%) are shared by multiple states (Table 1, Table 2). The list includes 33 passerines (*Passeriformes*); 13 shorebirds (*Charadriiformes*); nine coots, cranes and rails (*Gruiformes*); six waterbirds (*Pelecaniformes*); and smaller numbers from 10 other taxonomic orders (Appendix E). No additional birds are on the RSGCN Watch List (Appendix F). No RSGCN birds have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

VERY HIGH CONCERN

Taxa team representatives identified ten Very High Concern Birds (Table 5). Half of these already have a federal listing status and another – the eastern subspecies of Black Rail, *Laterallus jamaicensis* – was proposed as federally threatened in 2018. Five (50%) of these Very High Concern species are shared by multiple states. The ten Very High Concern Birds include five passerines, two prairie chickens, one raptor, one woodpecker, and one rail.

Four of the ten Very High Concern RSGCN birds are SEAFWA endemic (Appendix E, Table E-1). The Attwater's Prairie-Chicken (*Tympanuchus cupido attwateri*) is federally endangered and restricted to Louisiana and Texas. The Golden-cheeked Warbler (*Setophaga chrysoparia*) also is federally endangered and occurs in Texas. The Florida Scrub-Jay (*Apehlocoma coerulescens*) is federally threatened and limited to Florida. Bachman's Sparrow (*Peucaea aestivalis*), on the other hand, occurs in every SEAFWA state except West Virginia.

The Red-cockaded Woodpecker (*Picoides borealis*) is federally endangered and occurs in 13 SEAFWA states, with a regional responsibility of over 75%. The Swallow-tailed Kite (*Elanoides forficatus*), Lesser Prairie-Chicken (*Tympanuchus pallidicnctus*), Black Rail and Saltmarsh Sparrow (*Ammospiza caudacuta*) each have a SEAFWA regional responsibility of 50 to 75%. The Lesser Prairie-Chicken is a federal Candidate species, and the Eastern subspecies of the Black Rail has been proposed as federally threatened. The Colima Warbler (*Oreothylpis crissalis*) has a low regional responsibility of less than 25% because it occurs almost entirely in Mexico, barely extending into southwestern TX for breeding.

SEAFWA ENDEMICS

There are ten RSGCN birds (14%) that are endemic to the SEAFWA region (Table 1). Slightly more than half of the SEAFWA endemic RSGCN birds are found in just one or two states (6 species), with the remaining four SEAFWA endemics shared by multiple states. The Very High Concern Bachman's Sparrow is shared by 14 SEAFWA states, with the lone exception being

West Virginia. Swainson's Warbler (*Limnothlypis swainsonii*) occurs in all 15 SEAFWA states and is of High Concern. The Brown-headed Nuthatch (*Sitta pusilla*) is of Moderate Concern and occurs in all the SEAFWA states except West Virginia. The Southeastern American Kestrel (*Falco sparverius paulus*) occurs in six SEAFWA states and is of High Concern.

In addition to the aforementioned Very High Concern Florida Scrub-Jay, Attwater's Prairie Chicken and Golden-cheeked Warbler, the Florida and Mississippi subspecies of Sandhill Crane (*Antigone canadensis pratensis* and *pulla*), Florida Burrowing Owl (*Athene cunicularia floridana*) and Marsh Wren and its Worthington's and Marian's subspecies (*Cistothorus palustris griseus* and *marianae*) are all narrow range SEAFWA endemics of High Concern.

SHARED SPECIES

Of the 74 RSGCN birds, 82% are shared by at least three SEAFWA states (Table 2). RSGCN birds are more widely distributed within the SEAFWA region than the RSGCN mammals. RSGCN birds in 10 states or more account for 62% of the RSGCN bird species. Three of these are endemic: Bachman's Sparrow, Swainson's Warbler and Brown-headed Nuthatch.

SEAFWA is more than 75% responsible for 11 shared RSGCN birds:

- Very High Concern – Red-cockaded Woodpecker;
- High Concern – Wilson's Plover (*Charadrius wilsonia*), Yellow Rail (*Coturnicops noveboracensis*), Wood Stork (*Mycteria americana*), Painted Bunting and its Eastern subspecies (*Passerina ciris*), Roseate Spoonbill (*Platalea ajaja*), Yellow-throated Warbler (*Setophaga dominica*) and Scissor-tailed Flycatcher (*Tyrannus forficatus*); and,
- Moderate Concern – Chuck-will's-widow (*Antrostomus carolinensis*), Worm-eating Warbler (*Helmitheros vermivorum*) and Prairie Warbler with the Florida subspecies (*Setophaga discolor*).

Thirty RSGCN birds are shared by 14 or more states:

- Very High Concern – Swallow-tailed Kite and Bachman's Sparrow;
- High Concern – the Coastal and Interior populations of Least Tern (*Sternula antillarum*), Grasshopper Sparrow and its Florida subspecies (*Ammodramus savannarum*), Eastern Whip-poor-will (*Antrostomus vociferus*), Henslow's Sparrow (*Centronyx henslowii*), Yellow-billed Cuckoo (*Coccyzus americanus*), Northern Bobwhite (*Colinus virginianus*), Rusty Blackbird (*Euphagus carolinus*), Loggerhead Shrike (*Lanius ludovicianus*), Swainson's Warbler, King Rail (*Rallus elegans*), Cerulean Warbler (*Setophaga cerulea*), Yellow-throated Warbler, Eastern Meadowlark (*Sturnella magna*), and Golden-winged Warbler (*Vermivora chrysoptera*); and,
- Moderate Concern – Brown-headed Nuthatch (*Sitta pusilla*), Chuck-will's-widow, Chimney Swift (*Chaetura pelagica*), Little Blue Heron (*Egretta caerulea*), Snowy Egret

(*Egretta thula*), Kentucky Warbler (*Geothlypis formosa*), Worm-eating Warbler (*Helmitheros vermivorum*), Wood Thrush (*Hylocichla mustelina*), Least Bittern (*Ixobrychus exilis*), Yellow-crowned Night Heron (*Nyctanassa violacea*), Prothonotary Warbler (*Protonotaria citrea*), American Woodcock (*Scolopax minor*) and Prairie Warbler with its Florida subspecies (*Setophaga discolor*).

Thirteen (13) shared RSGCN birds are federally listed. Red-cockaded Woodpecker, Least Tern, Whooping Crane (*Grus Americana*), Kirtland's Warbler (*Setophaga kirtlandii*), Cape Sable Seaside Sparrow (*Ammospiza maritima mirabilis*), and the Florida subspecies of Grasshopper Sparrow (*Ammodramus savannarum floridanus*) are federally listed as endangered. Snowy Plover (*Charadrius nivosus*), Gull-billed Tern (*Gelochelidon nilotica*), Rufa Red Knot, Piping Plover (*Charadrius melodus*), and Wood Stork (*Mycteria americana*) and federally threatened. The Eastern Black Rail has been proposed as federally threatened, and the Sprague's Pipit (*Anthus spragueii*) is a federal Candidate species.

EVOLUTIONARY DISTINCTIVENESS

The Florida Scrub Jay was the only southeastern bird species with a higher than median evolutionary distinctiveness on the global list (Appendix B) and it is included on the RSGCN list. According to NatureServe, nine RSGCN bird species represent a monotypic genus and 22 represent a very small genus (two to five species). Sixteen (16) bird species representing monotypic genera were reviewed but not included as RSGCN - most had low regional responsibility.

DISCUSSION

During the three rounds of review by the bird taxa team, a few issues emerged. One concern by taxa team members was how to rank Concern Levels for RSGCN shorebirds, waterbirds or seabirds that are heavily dependent on management. Several taxa team experts included in their evaluation of the Concern Level for these subgroups the question "what is the conservation concern level for this species in the absence of on-going management activities?" Some of the taxa team members were concerned that for heavily management-dependent species, their Concern Levels may be artificially lowered by the current level of management activities, and they preferred to elevate the conservation Concern Levels to reflect their dependence on management activities. They cited concerns that if management declines, these species are highly vulnerable to sudden population declines, especially given the presence of other threats like disease and invasive species.

The avian taxa team identified several limiting data gaps and what would be needed to address them in the southeast. Population size and trend data are lacking for a number of species, including marsh birds and nocturnal landbirds. Methods for monitoring population trends and

productivity of beach-nesting and roof-top nesting colonial seabirds need to be refined. Large-scale survey methods need to be designed and implemented to assess the distribution and population trends of burrowing owls. More needs to be known about the use of utility corridors by southeastern American Kestrels, including their movements, home range sizes and sensitivity to disturbance. The location and management needs of inland wading bird colonies is another data gap. More effective survey methods are needed for dark-plumaged wading birds. The differences in survival and productivity between sandhill cranes in rural and suburban habitats is another. Collaboration and the pooling of data among states and partners were identified as a way to address some of the data gaps, including the identification of movement and important wintering areas for federally listed Piping Plovers and Red Knots.

Specific stressors affecting populations of many species are unknown, or the mechanisms these stressors use are unknown or poorly understood, such as the causes of decline for grassland birds or the impacts of second-generation anticoagulant rodenticides on raptors. Data are limited to quantify bird densities and area sensitivity. Uncertainties remain in identifying the magnitude of impacts of natural and anthropogenic disturbances, including altered hydrology and human disturbance, on many species or guilds. There are also uncertainties regarding the effectiveness of habitat management and restoration actions for nesting landbirds and seabirds, as well as saltmarsh birds threatened by sea level rise and the effects of fire management on rails and saltmarsh passerines. The uncertain future of rice agriculture, which provides habitat for shorebirds, was also identified as a limiting data gap.

The development or improvement of Best Management Practices (BMPs) was identified as a need for many species, including forest and grassland songbirds, and for predation management of beach-nesting shorebirds and seabirds. The impacts of climate change on coastal wading bird colonies needs to be modeled, and adaptation strategies then developed.

The most important regional efforts or actions recommended by the bird taxa team to support the conservation of RSGCN birds include the sharing of information, adequate funding and staffing, collaboration and coordination on monitoring and demonstration projects, and protection and management of larger blocks of habitat (i.e., 100,000 acres or higher). More coordinated survey and monitoring efforts among state and federal agencies is needed. The taxa team also recommended support of regional working groups from single species groups to all-bird groups, such as the Gulf of Mexico Avian Monitoring Network. Regional partners should continue to collaborate on regional monitoring of shorebirds and colonial-nesting waterbirds, including the collaboration of testing predation management BMPs for the Atlantic Flyway Shorebird Initiative. The South Region Translocation Cooperative for Red-cockaded Woodpeckers should be continued. Cross-state collaboration could help set objectives and implementing actions to overcome cavity limitation for southeastern American Kestrels. Collaboration on monitoring of Loggerhead Shrikes through the Loggerhead Shrike Working

Group should be supported. Bird RSGCN would benefit from better dissemination of management information among state and federal agencies as well.

Implementation of priority actions from the Atlantic Coast Joint Venture's Saltmarsh Business Plan, such as coordination of demonstration projects to evaluate the effectiveness of management actions for saltmarsh birds that are threatened by sea level rise (e.g., Saltmarsh Sparrow, Black Rail, Seaside Sparrow) to evaluate their response to prescribed fire, are recommended. Taxa team members recommended continued implementation of actions from the American Oystercatcher Conservation Plan. Regional support for more prescribed fire and protection of larger habitat blocks would increase the long-term benefits for avian RSGCN because smaller, fragmented lands do not have the same level of benefit as larger blocks (i.e., over 100,000 acres).

The taxa team identified a need to improve the consistency of surveying and monitoring in the southeast region. Communication among agencies to set similar monitoring protocols is warranted so data are able to be compiled and analyzed regionally. Collecting time-of-detection data so surveys can consider detection probability was one recommended method. The Gulf of Mexico Avian Monitoring Network was highlighted by several members of the taxa team as a regional model. Some of the bird working groups (e.g., wading birds, Black Rail) provide a model for collaborative networking in the southeast. Beach-nesting birds and Black Rails were two groups or species identified as in need of improved collaborative monitoring methods. Participation by the SEAFWA region in the Seabirds in Coastal and Associated Waterways Working Group effort to conduct coordinated waterbird surveys along the Atlantic Coast in 2023 was recommended.

REPTILES

The herpetofauna taxa team was challenged by taxonomy issues in both reptiles and amphibians, and many species and/or subspecies had updated taxonomy since they were identified as SGCN. At least 16 SGCN reptiles have been elevated from subspecies to full species status. Some subspecies are no longer valid according to the Society for the Study of Amphibians and Reptiles (SSAR). The scientific and common names of several SGCN reptiles were updated with new taxonomy as well. The herpetofauna taxa team approved the merger of 12 reptile groups of subspecies with their full species as single RSGCN records for efficiency and chose not to merge three groups of subspecies and nominal species due to differing concern levels.

For sea turtles, the taxa team used distinct populations of SGCN in their selection of RSGCN. Some taxa team members expressed concerns about the inclusion of sea turtles since they can be managed by different agencies or because their federal-listing status might prioritize their management over other reptile RSGCN.

RESULTS

The **reptile RSGCN list includes 90 species**, of which more than half (50) are shared by multiple states (Table 1, Table 2). The list includes 51 snakes and lizards (*Squamata*), 38 turtles (*Testudines* and *Cryptodeira*), and one crocodilian (*Crocodilia*) (Appendix E). Four sea turtles are included, all of which are federally listed. No additional reptiles are on the RSGCN Watch List (Appendix F). Ten RSGCN reptiles have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

VERY HIGH CONCERN

The herpetofauna taxa team identified **18 Very High Concern reptiles** (Table 5). **Eleven out of the 18 have a federal listing status**: four federally endangered and seven federally threatened. Three sea turtles are federally endangered: Atlantic hawksbill sea turtle (*Eretmochelys imbricata imbricata*), Kemp's Atlantic Ridley sea turtle (*Lepidochelys kempii*) and Atlantic leatherback sea turtle (*Dermochelys coriacea*). The Alabama red-bellied turtle (*Pseudemys alabamensis*) is also federally endangered. Eastern indigo snake (*Drymarchon couperi*), Louisiana pinesnake (*Pituophis ruthveni*), the southern population of the bog turtle (*Glyptemys muhlenbergii*), yellow-blotched map turtle (*Graptemys flavimaculata*), flattened musk turtle (*Sternotherus depressus*), blue-tailed mole skink (*Plestiodon egregious lividus*) and Florida sand skink (*Plestiodon reynoldsi*) are all federally threatened RSGCN of Very High Concern.

Six (6) of these Very High Concern species are shared by multiple states (Appendix E, Table E-1). The three sea turtles each are found in eight or nine coastal states. The southern population of the bog turtle is found in five states and the Eastern Indigo snake in four; both are endemic to the SEAFWA region. Barbour's map turtle (*Graptemys barbouri*) is endemic to the southeast and occurs in three SEAFWA states – Alabama, Georgia and Florida.

The remaining 12 RSGCN Very High Concern reptiles are narrow range, occurring in one or two SEAFWA states. Of these, nine are 100% endemic to the SEAFWA region. The Louisiana pinesnake is endemic to Louisiana and Texas. The Pascagoula map turtle (*Graptemys gibbonsi*) is endemic to Alabama and Mississippi. The Florida scrub lizard (*Sceloporus woodi*) and four skinks – Florida Keys mole skink (*Plestiodon egregius egregious*), Cedar Key mole skink (*Plestiodon egregius insularis*), blue-tailed mole skink and Florida sand skink – are endemic to Florida. The flattened musk turtle is endemic to Alabama and the Cagle's map turtle (*Graptemys caglei*) to Texas.

The regional responsibility for the yellow-blotched map turtle and Alabama red-bellied turtle is more than 75%. Only one Very High Concern RSGCN reptile has less than 75% regional responsibility. The Southern earless lizard (*Holbrookia lacerata subcaudalis*), found in Texas, has

a regional responsibility of 50 to 75%; the subspecies may soon be elevated to full species status.

SEAFWA ENDEMICS

There are 49 RSGCN reptiles (55%) that are endemic to the SEAFWA region (Table 1). Twelve (12) of the endemic RSGCN reptiles are of Very High Concern, described above. Twenty-three (23) are of High Concern and 14 are Moderate Concern. Most of the SEAFWA endemic RSGCN reptiles (29 of 49, or 59%) are found in just one or two states, but 41% of the SEAFWA endemics are shared by multiple states.

There are 19 SEAFWA endemic RSGCN reptiles that are shared by at least three states. The Eastern indigo snake, southern population of bog turtle, and Barbour's map turtle are all Very High Concern. Of the High Concern endemic RSGCN, the Eastern glass lizard (*Ophisaurus ventralis*) is shared by eight states and the Eastern diamond-backed rattlesnake (*Crotalus adamanteus*) and pine woods littersnake (*Rhadinaea flavilata*) by seven. Six (6) states share the gopher tortoise (*Gopherus polyphemus*), Southern hognose snake (*Heterodon simus*) and mimic glass lizard (*Ophisaurus mimicus*). The razor-backed musk turtle (*Sternotherus carinatus*) is endemic to five SEAFWA states. The Florida pine snake and stripe-necked musk turtle (*Sternotherus minor peltifer*) each are endemic to four states. Three (3) SEAFWA states share the endemic island glass lizard (*Ophisaurus compressus*) and black pinesnake.

There are five SEAFWA shared, endemic RSGCN reptiles of Moderate Concern. The glossy wwampsnake and its Delta and Gulf crayfish subspecies (*Liodytes rigida deltae* and *sinicola*) collectively occur in 11 SEAFWA states. The striped mud turtle (*Kinosternon baurii*); black wwampsnake and its Southern Florida and Carolina subspecies (Liodytes *pygaea cyclas* and *paludis*); and saltmarsh snake and its Gulf, Mangrove and Atlantic subspecies (*Nerodia clarkii clarkii*, *compressicauda* and *taeniata*) are each endemic to five SEAFWA states. The Cumberland slider (*Trachemys scripta troostii*) is endemic to four states.

SHARED SPECIES

Of the 90 RSGCN reptiles, 55% (49) are shared by at least three SEAFWA states (Table 2). The distribution of individual RSGCN reptiles within the SEAFWA region is about the same as for mammals, both of which are considerably smaller than for birds. **Six of the shared species are of Very High Concern**, 28 are High Concern, and 15 are Moderate Concern.

RSGCN reptiles in ten states or more account for 13% (12 of 90) of the RSGCN reptile species. Only one, the glossy wwampsnake and its Delta and Gulf Crayfish subspecies are of Moderate Concern, are endemic to the SEAFWA region and collectively are shared by 11 states. SEAFWA is more than 75% responsible for seven widespread RSGCN reptiles and 50 to 75% responsible for four others.

Three RSGCN reptiles are shared by all 15 SEAFWA states:

- High Concern – coal skink and its northern and southern subspecies (*Plestiodon anthracinus anthracinus* and *P. a. pluvialis*); and,
- Moderate Concern – timber rattlesnake (*Crotalus horridus*) and Eastern box turtle including the eastern, Gulf Coast and three-toed subspecies (*Terrapene carolina carolina, T. c. major* and *T. c. triunguis*).

Several other highlights are noted in Table 8.

Table 8. Reptile species, concern level and number of states sharing responsibility

Species	Concern Level	Number of States Sharing Responsibility
Mudsnake, and western subspecies (*Farancia abacura reinwardtii*)	Moderate Concern	14 (all but WV)
Slender glass lizard, and Eastern subspecies (*Ophisaurus attenuatus longicaudus*)	High Concern	13 (all but MO and WV)
Northern pine snake (*Pituophis melanoleucus*)	High Concern	12
Alligator snapping turtle (*Macrochelys temminckii*)	High Concern	12
Chicken turtle, and Eastern and Western subspecies (*Deirochelys reticularia miaria* and *D. r. reticularia*)	High Concern	12
Smooth softshell turtle (*Apalone mutica*)	Moderate Concern	11
Ouachita map turtle (*Graptemys ouachitensis*)	Moderate Concern	10

EVOLUTIONARY DISTINCTIVENESS

Alligator snapping turtle, flattened musk turtle, gopher tortoise, Florida sand skink and dunes sagebrush lizard (*Sceloporus arenicolus*) are the Southeastern U.S. reptile species with a higher than median evolutionary distinctiveness on the global list (Appendix B) and all are included on the RSGCN list. According to NatureServe, 18 RSGCN reptile RSGCN species represent a monotypic genus and 27 represent a very small genus (two to five species). Sixteen reptile

species representing monotypic genera were reviewed but not included as RSGCN. All but one of these 16 have global ranks of G5; the Kirtlands snake (G2) has less than 25% SEAFWA regional responsibility.

DISCUSSION

The herpetofauna taxa team identified several data gaps limiting the conservation of reptiles and amphibians in the southeast. Basic distribution and abundance information is lacking for a number of reptiles, as well as population trend data. Taxonomic splits of some "new" species from wider ranging species lack specific status data to gauge concern. The secretive and/or cryptic nature of some herpetofauna result in some of the data gaps, which then makes it challenging to understand population demographics and distributions. Life history information and habitat status information are also lacking for some species.

Protection of ephemeral bodies of water for winter and early spring breeding herpetofauna is needed, as is increased staff levels and funding. Climate change was identified as a threat to many herpetofauna, with coastal species particularly at risk of dying off or moving into other less suitable habitat. Species that rely on ephemeral pools will face reproduction challenges with predicted increases in drought under evolving climate conditions. In some states there is only one herpetologist, limiting effective management of herpetofauna SGCN and RSGCN.

Other ways that the taxa team identified to address data gap limitations are to conduct baseline surveys and long-term monitoring, assess reproduction and recruitment success, survey historical records, conduct threats assessments to investigate causes of decline, and assess the status of currently occupied habitat. Compiling the existing data for each species, prioritizing each species' research, survey and monitoring needs, was identified as a regional need. Locating additional suitable habitat, restoring habitat, and engaging land managers and private landowners in the use of BMPs during all life cycle stages are also recommended. Research and/or management is needed for turtle poaching for the food and pet trade, disease surveillance and transmission (e.g., snake fungal disease), and habitat connectivity.

The taxa team was less certain on the need for improved consistency in surveying and monitoring protocols in the southeast. While some recommended designing basic survey and monitoring protocols, others thought this would be unlikely to be feasible except for certain species where multi-state collaboration has been coordinated through recovery plans, Candidate Conservation Agreements (CCA), or Safe Harbor Agreements (SHA). There is a need for long-term survey and monitoring data to determine the status and population trends of species, as well as of threats such as disease.

AMPHIBIANS

The herpetofauna taxa team was challenged by taxonomy issues in both reptiles and amphibians, with several species and/or subspecies having updated taxonomy since they were listed as SGCN. At least four amphibian SGCN were elevated from subspecies to full species status, and at least two SGCN were modified to be subspecies instead of full species. A few subspecies are no longer valid according to the SSAR and were merged with their full species records for presentation efficiency (not taxonomic determinations). The scientific and common names of several SGCN amphibians were updated with new taxonomy as well. The herpetofauna taxa team approved the merger of eight amphibian groups of subspecies with their full species and chose not to merge only one group of subspecies and nominal species.

RESULTS

The amphibian RSGCN list includes 105 species, of which 59 (57%) are shared by multiple states (Table 1, Table 2). The list includes 15 frogs and toads (*Anura*) and 90 salamanders and newts (*Caudata*) (Appendix E, Table E-1). Fifteen of the amphibian RSGCN are federally listed species, with eight endangered and seven threatened species. An additional two amphibians are on the RSGCN Watch List (Appendix F). Seven (7) RSGCN amphibians have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

All but three of the 105 RSGCN amphibians have more than 50% SEAFWA regional responsibility. The black-spotted newt (*Notrophalmus meridionalis*) occurs only in Texas within the SEAFWA region, has a regional responsibility of 25 to 50%, and is High Concern; this RSGCN has a Global Conservation Status Rank of G1, Critically Imperiled. The Wehrle's salamander (*Plethodon wehrlei*) is also 25 to 50% regional responsibility and High Concern but is shared by five SEAFWA states; this species is ranked S1 in three states – Kentucky, Tennessee and North Carolina – and is listed as SGCN in four SEAFWA states. The Western narrowmouth toad (*Gastrophryne olivacea*) is shared by five SEAFWA states, has a calculated regional responsibility of 48% and is High Concern.

VERY HIGH CONCERN

Taxa team representatives identified 26 Very High Concern Amphibians (Table 5), including 13 of the 15 federally listed RSGCN amphibians. The 26 Very High Concern amphibians include 18 salamanders, four frogs, two waterdogs, one toad and one hellbender. All but three of the Very High Concern RSGCN amphibians are endemic to the SEAFWA region. The SEAFWA region has over 75% regional responsibility for the Pine Barrens treefrog (*Hyla andersonni*) and gopher frog (*Lithobates capito*), and between 50 and 75% regional responsibility for the hellbender and its Eastern and Ozark subspecies (*Cryptobranchus alleganiensis alleganiensis* and *bishopi*)

Six (6) of these Very High Concern species are shared by multiple states. The hellbender and its Eastern and Ozark subspecies collectively occur in 11 SEAFWA states. The gopher frog occurs in seven states. The remaining four shared Very High Concern amphibians are each in three states. The Shenandoah Mountain salamander (*Plethodon virginia*) is endemic to Alabama, Virginia and West Virginia. The Pine Barrens treefrog occurs in North Carolina, South Carolina and Florida. The federally endangered reticulated flatwoods salamander (*Ambystoma bishopi*) is endemic to Alabama, Georgia and Florida. The federally threatened frosted flatwoods salamander (*Ambystoma cingulatum*) is endemic to Florida, Georgia and South Carolina.

SEAFWA ENDEMICS

There are 89 RSGCN amphibians that are endemic to the SEAFWA region, 85% of the amphibian RSGCN (Table 1). Half of the SEAFWA endemic RSGCN amphibians are found in just one or two states (44 species), and half are shared by multiple states. Of the 45 shared endemic amphibians, three are of Very High Concern: reticulated flatwoods salamander, frosted flatwoods salamander and Shenandoah Mountain salamander. Eighteen (18) endemic, shared RSGCN amphibians are of High Concern and 24 are Moderate Concern.

Eight of the shared endemic amphibians occur in more than five SEAFWA states. The three-toed amphiuma (*Amphiuma tridactylum*) is endemic to nine states and is Moderate Concern. The Southern dusky salamander (*Desmongnathus auriculatus*) and Southern red-backed salamander (*Plethodon serratus*) are High Concern and endemic to eight SEAFWA states. The oak toad (*Anaxyrus quercicus*) and Gulf Coast waterdog (*Necturus beyeri*) are endemic to eight states and are Moderate Concern. The Southern zigzag salamander (*Plethodon ventralis*) occurs in seven states and is Moderate Concern. The river frog (*Lithobates heckscheri*) and ornate chorus frog (*Pseudacris ornata*) are High Concern and are endemic to six states.

SHARED SPECIES

Of the 105 RSGCN amphibians, 57% are shared by at least three SEAFWA states (Table 2). Over three-quarters of the shared RSGCN amphibians (44 of 59; 76%) are endemic to the SEAFWA region. RSGCN amphibians typically have smaller distributions within the SEAFWA region and are not widespread species. Nearly all of the species are found in three, four or five states.

Six of the shared RSGCN amphibians are Very High Concern: hellbender, gopher frog, reticulated flatwoods salamander, frosted flatwoods salamander, Pine Barrens treefrog and Shenandoah Mountain salamander. Most of the shared amphibians are High Concern (24) or Moderate Concern (29).

Only two RSGCN amphibians occur in 10 states or more, illustrating the highly endemic nature of the taxonomic group within SEAFWA. The hellbender and its Eastern and Ozark subspecies

collectively occur in 11 states and are Very High Concern. The mud salamander and its Gulf Coast and Eastern subspecies (*Pseudotriton montanus flavissimus* and *montanus*) collectively occur in 10 SEAFWA states and are Moderate Concern.

EVOLUTIONARY DISTINCTIVENESS

Six (6) southeastern U.S. amphibian species have a higher than median evolutionary distinctiveness on the global list (Appendix B) and all are included on the RSGCN list: Red Hills salamander (*Phaeognathus hubrichti*), black warrior (Alabama) waterdog (*Necturus alabamensis*), frosted flatwoods salamander, reticulated flatwoods salamander, West Virginia spring salamander (*Gyrinophilus subterraneus*) and Berry Cave salamander (*Gyrinophilus gulolineatus*).

According to NatureServe, five RSGCN amphibian species represent a monotypic genus and 19 represent a very small genus (two to five species). Three amphibian species representing monotypic genera were reviewed but not included as RSGCN:

- Hellbender (*Cryptobranchus alleganiensis* was not included at the species level, but two subspecies *C. a. alleganiensis* and *C. a. bishopi* are listed separately as RSGCN);
- Four-toed salamander (G5, 25-50% regional responsibility); and,
- Mexican burrowing toad (G5, <25% regional responsibility).

DISCUSSION

The herpetofauna taxa team identified various data gaps limiting the conservation of reptiles and amphibians in the southeast. Basic distribution and abundance information is lacking for several amphibians, as well as population trend data. Taxonomic splits of some “new” species from wider ranging species lack specific status data to gauge concern. The secretive and/or cryptic nature of some herpetofauna result in some of the data gaps, which then makes it challenging to understand population demographics and distributions. Life history information and habitat status information are also lacking for some species.

Protection of ephemeral bodies of water for winter and early spring breeding herpetofauna (e.g., streamside salamander, *Ambystoma barbouri*) is needed, as is increased staff levels and funding. Climate change was identified as a threat to many herpetofauna, with coastal species particularly at risk of dying off or moving into other less suitable habitat. Species that rely on ephemeral pools will face reproduction challenges with predicted increases in drought under evolving climate conditions. In some states there is only one herpetologist, limiting effective management of herpetofauna SGCN and RSGCN.

Other ways that the taxa team identified to address data gap limitations are to conduct baseline surveys and long-term monitoring, assess reproduction and recruitment success,

survey historical records, conduct threats assessments to investigate causes of decline, and assess the status of currently occupied habitat. Compiling the existing data for each species, prioritizing each species' research, survey and monitoring needs, was identified as a regional need. Locating additional suitable habitat, restoring habitat, and engaging land managers and private landowners in the use of BMPs during all life cycle stages are also recommended.

The taxa team was less certain on the need for improved consistency in surveying and monitoring protocols in the southeast. While some recommended designing basic survey and monitoring protocols, others thought this would be infeasible except for certain species where multi-state collaboration has been coordinated through recovery plans, Candidate Conservation Agreements, etc. There is a need for long-term survey and monitoring data to determine the status and population trends of species, as well as of threats such as disease. Determining the differences in behavior of Streamside Salamander in KY and TN was also identified as a need.

FRESHWATER AND DIADROMOUS FISHES

Nearly one-third (32%) of the SEAFWA RSGCN are fish, with 281 freshwater and diadromous fishes and 30 marine fishes. Freshwater and diadromous fish were reviewed by a separate taxa team (Appendix C), primarily because freshwater and marine fish are managed by separate resource agencies at the federal and state levels. Diadromous fish were grouped with freshwater fish due to their reliance on freshwater river systems for spawning, a critical life cycle stage. Estuarine species were placed on the freshwater and diadromous fish list with their general habitat type noted as estuarine to facilitate sorting of the RSGCN list in the future.

As with the herpetofauna, many taxonomic changes have occurred for freshwater fish SGCN, including the division of some species into different geographic forms, updates to genus or species names, or revisions to common names. A number of SGCN were identified as synonyms of other SGCN, with different states using different synonyms of the same species. At least two species were identified by the freshwater and diadromous fish taxa team as currently being considered extinct and were not considered for RSGCN status. Several freshwater and diadromous fish SGCN were identified as threatened by land use practices such as coal mining, logging or extensive agriculture, which can degrade water quality and habitat. Concerns were also raised for some species with small ranges that are vulnerable to single catastrophic events. Extirpations of some species were noted in some SEAFWA states, indicating a concern of population declines and/or contraction of ranges.

RESULTS

The freshwater and diadromous fishes RSGCN list includes 281 species, of which 145 (52%) are shared by multiple states. The list includes 120 perciforms (*Perciformes*), 94 *Cypriniformes*, 20 catfish (*Siluriformes*), 12 *Cyprinodontiformes*, seven sturgeons and paddlefish

(*Acipenseriformes*), seven sculpin (*Scorpaeniformes*), along with 10 other taxonomic orders of smaller numbers (Appendix E).

Sixty (60) of the 281 RSGCN freshwater and diadromous fishes are federally listed species, 33 of which are endangered.

An additional six freshwater and diadromous fishes are on the RSGCN Watch List (Appendix F). Thirteen (13) RSGCN freshwater and diadromous fishes have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

VERY HIGH CONCERN

Taxa team representatives identified 84 Very High Concern freshwater and diadromous fishes (Table 9). Thirty-nine (39) have a federal listing status. Most of the Very High Concern species are narrow range, occurring in only one or two SEAFWA states. Twenty (20) of the Very High Concern species are shared by multiple states. Two diadromous fishes, the American eel (*Anguilla rostrata*) and Alabama shad (*Alosa alabamae*), occur in 10 or more SEAFWA states.

Table 9. Concern levels of RSGCN freshwater and diadromous fishes within the SEAFWA region

Concern Level	RSGCN Fish Number	RSGCN Fish %
Very High Concern	84	30%
High Concern	104	37%
Moderate Concern	93	33%
Total RSGCN Fish	**281**	**100%**

Fifty-eight (58) of the Very High Concern freshwater and diadromous fishes are endemic to the SEAFWA region. SEAFWA has more than 75% regional responsibility for another 19 RSGCN freshwater and diadromous fishes. Four (4) species have a regional responsibility of 50 to 75%, and three have less than 50% regional responsibility:

- Peppered chub (*Macrhybopsis tetranema*) – calculated regional responsibility of 49% and a Global Conservation Status Rank of G1, Critically Imperiled;
- American eel – 25 to 50% regional responsibility due to its large range, occurs in all 15 SEAFWA states, has declining populations, has slow maturity, is harvested at all sizes, faces migratory impacts from dams, and has an emerging threat from a parasite;

- Pallid sturgeon (*Scaphirhynchus albus*) – 25 to 50% regional responsibility, shared by six SEAFWA states, federally endangered, and is threatened by hybridization and illegal caviar exploitation.

SEAFWA ENDEMICS

There are 197 (70%) RSGCN freshwater and diadromous fishes that are endemic to the SEAFWA region. This high proportion of RSGCN freshwater and diadromous fish that are endemic to the southeast reflects the aquatic biodiversity of the SEAFWA region.

Most of the SEAFWA endemic RSGCN freshwater and diadromous fishes are found in just one or two states (112 species; 57%), but **85 SEAFWA endemics are shared by multiple states**. Of the 85 shared endemic freshwater and diadromous fishes, only 11 are Very High Concern. The opossum pipefish (*Microphis brachyurus*) and federally endangered palezone shiner (*Notropis albizonatus*) occur in six states each. Bartram's redeye bass (*Micropterus coosae*) is endemic to five states. The federally threatened slender chub (*Erimystax cahni*) and robust redhorse (*Moxostoma robustum*) are endemic to four SEAFWA states. The remaining six shared endemic species are endemic to three states. The Cumberland darter (*Etheostoma susanae*), pygmy madtom (*Noturus stanauli*), amber darter (*Percina antesella*) and Conasauga logperch (*Percina jenkinsi*) are all federaly-endangered. The chucky madtom (*Noturus crypticus*) is endemic to Alabama, Tennessee and North Carolina. The Christmas darter (*Etheostoma hopkinsi*) is endemic to Georgia, North Carolina and South Carolina. An additional 35 of the shared endemic species are High Concern and the remaining 39 are Moderate Concern.

Goldstripe darter (*Etheostoma parvipinne*) which occurs in 11 states and is Moderate Concern is the only SEAFWA endemic freshwater and diadromous fish to occur in more than 10 states. The scaly sand darter (*Ammocrypta vivax*) occurs in nine states and is also Moderate Concern. The other 195 endemic RSGCN freshwater and diadromous fishes occur in seven or fewer states.

SHARED SPECIES

Of the 281 RSGCN freshwater and diadromous fishes, 52% (142) are shared by at least three SEAFWA states. Two-thirds (66%) of the shared freshwater and diadromous fish (94) occur in just three to five SEAFWA states, reflecting the smaller distributions of most of the species.

RSGCN freshwater and diadromous fishes in 10 states or more account for only 6% of the RSGCN freshwater and diadromous fish species (16). Only one of these is endemic, the goldstripe darter. Two RSGCN occur in all 15 SEAFWA states. The highfin carpsucker and its Atlantic subspecies (*Carpiodes velifer*) occur in all 15 SEAFWA states, as does the American eel.

SEAFWA is more than 75% responsible for another six shared species. The Alabama shad is Very High Concern and occus in 10 states. The Western sand darter (*Ammocrypta clara*), cypress

minnow (*Hybognathus hayi*) and ironcolor shiner (*Notropis chalybaeus*) are all High Concern and occur in 10, 10 and 14 states respectively. The alligator gar (*Atractosteus spatula*) and ghost shiner (*Notropis buchanani*) occur in 10 and 12 states, respectively, and are Moderate Concern. Another four shared species have a regional responsibility of 50 to 75%, and another four less than 50%.

EVOLUTIONARY DISTINCTIVENESS

The global Evolutionary Distinctiveness data (Appendix B) did not include fish species. According to NatureServe, 10 RSGCN freshwater fish species represent a monotypic genus and 30 represent a very small genus (two to five species). Six freshwater fish species representing monotypic genera were reviewed but not included as RSGCN. All six have G-ranks of G4 or G5.

DISCUSSION

The freshwater and diadromous fish taxa team identified several data gaps limiting conservation of RSGCN in the southeast. Inadequate life history information is a concern for many, if not most, species. Data gaps for abundance, species status and population trends exist, with Carpoides species in Atlantic Slope rivers mentioned in particular. More information is needed on habitat requirements and threats. Additional non-game funding was cited as a conservation need to address data gaps.

BMPs and their enforcement are needed, especially for species that live in marginal waters. Many fish species would benefit from better management of beaver populations, such as allowing more beavers to create more open still waterways.

Improved data sharing and communication among state and federal government agencies, academic instructions and non-governmental organizations was identified by the taxa team as a need. Interstate collaboration can be impeded by the different policies under which natural resource agencies operate in different states, which can restrict data sharing among states and partners. The opportunity exists for improved data management and sharing by multiple regional-scale initiatives such as the USFWS Landscape Conservation Cooperatives, the Southeastern Freshwater Biodiversity Conservation Strategy, Southeast Aquatic Resources Partnership (SARP), and the National Fish Habitat Partnership with similar overarching goals.

RSGCN fish would benefit from several habitat management actions identified by the taxa team. Aquatic connectivity between major rivers and their accompanying floodplains is needed, as is reduction in population fragmentation from road crossings and bridges. Dredging and straightening of waterways should be limited. Water withdrawal requests should not result in loss of waterbodies. The purchase of more land to protect habitat is needed. Dam removal, improved flow regimes and improvements of water quality, including reductions in fine sediment deposition from adjacent land use practices, are needed. Some species warrant

reintroduction projects. Control of non-native and invasive species, which can out-compete or hybridize with RSGCN species, was also identified as a need.

Research needs include studies to address the potential drivers of changes in species distribution and abundances resulting from fishing, human disturbance of habitats, environmental conditions and extreme episodic events.

Standardized monitoring was identified by the taxa team as needed for distribution, populations, habitat and life history, especially for shared fish that range across multiple states. Implementation of updated survey and monitoring efforts would benefit RSGCN fish. Survey and monitoring protocols should be consistent and comparable to allow for data sharing among states managing the same species. Walsh and Meador (1998) was recommended as a basic reference for guidelines and protocols for the identification, processing and archiving of fish specimens to ensure the collection of accurate and reliable data.

A probabilistic survey design was suggested as a way to determine shared species status. Monitoring should be statistically robust to identify the level of effort required to detect a pre-determined change in population over a set period of time. Monitoring requires knowledge of life history, habitat requirements, detection rates, etc. Concerns were raised that because not all habitats are surveyed, some fish are considered rare because they are not found in the habitats that are surveyed or are not vulnerable to common survey techniques. Increased regional funding is needed to develop the best sampling methods for different life stages and habitats for the same species across a large range.

MARINE FISHES

Nearly one-third (32%) of the SEAFWA RSGCN are fish, with 281 freshwater and diadromous fishes and 30 marine fishes. Marine fish were reviewed by additional taxa experts (Appendix C), as marine fish are managed by different state and federal resource agencies with separate marine expertise. The SEAFWA region includes nine coastal states on both the Gulf of Mexico and Atlantic Ocean, all of which have marine resources that are not shared with the inland states unless species are diadromous. The occurrence of marine species was not evaluated for Puerto Rico or the U.S. Virgin Islands in this assessment, but several of the marine fish, mammals and reptiles identified as RSGCN may occur in those areas.

A number of these marine fish species, including sharks, are highly migratory and widely distributed; some are deep water or pelagic, and may exist offshore of a SEAFWA coastal state but may remain predominantly or entirely within federal waters, not state waters. Nearshore waters may provide neonatal habitat for some RSGCN and have been designated as Essential Fish Habitat (EFH) by NOAA, the Atlantic States Marine Fisheries Commission or Gulf States Marine Fisheries Commission.

Members of the marine fish taxa team discussed concerns about including commercially or recreationally exploited species as RSGCN, and these species were generally found not to meet the RSGCN selection criteria.

RESULTS

The marine fish RSGCN list includes 30 species, of which 23 (77%) are shared by multiple states. The list includes 11 sharks (*Carcharhiniformes*, *Lamniformes* and *Squaliformes*), 10 *Perciformes*, two sawfish (*Pristiformes*), two rays (*Myliobatiformes* and *Rajiformes*), and two *Gasterosteiformes*, along with three other taxonomic orders (Appendix E). Five (5) marine fish are federally listed: Nassau grouper (*Epinphelus striatus*), smalltooth sawfish (*Pristis pectinata*), largetooth sawfish (*Pristis pristis*), oceanic whitetip shark (*Carcharhinus longimanus*) and giant manta ray (*Manta birostris*). No marine fish are on the RSGCN Watch List (Appendix F). No RSGCN marine fish have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

VERY HIGH CONCERN

Taxa team representatives identified 18 species as Very High Concern, 60% of the RSGCN marine fish (Table 10). Eleven species are High Concern and only cobia (*Rachycentron canadum*) is of Moderate Concern.

Two-thirds (12 species, 67%) of the Very High Concern species are shared by multiple states. SEAFWA regional responsibility is at least 50% for 11 of the 18 Very High Concern RSGCN marine fish; seven of the species are endemic to the southeast region.

Six of these seven endemic Very High Concern marine fish are narrow-range:

- Four parrotfish endemic to Florida – midnight parrotfish (*Scarus coelestinus*), rainbow parrotfish (*Scarus guacamaia*), princess parrotfish (*Scarus taeniopterus*) and queen parrotfish (*Scarus vetula*)
- Largetooth sawfish, federally endangered and endemic to Florida and Texas; and,
- Carolina hammerhead (*Sphyrna gilberti*), endemic to South Carolina and Georgia.

The 12 Very High Concern marine fishes shared by at least three states include one species – the federally endangered smalltooth sawfish – endemic to seven SEAFWA states. The regional responsibility for speckled hind (*Epinphelus drummondhayi*) and Atlantic goliath grouper (*Ephinephelus itajara*) exceeds 75%. The other two RSGCN marine fish with greater than 50% SEAFWA regional responsibility are dusky shark (*Carcharhinus obscurus*) and Warsaw grouper (*Ephinphelus nigritus*).

Seven of the shared Very High Concern marine fish have less than 50% regional responsibility due to their large oceanic ranges. The federally threatened oceanic whitetip shark occurs in all

nine SEAFWA coastal states, as does the basking shark (*Cetorhinus maximus*) and scalloped hammerhead (*Sphyrna lewini*). Caribbean electric ray (*Narcine bancrofti*) occurs in eight SEAFWA coastal states, all but Virginia. Marbled grouper (*Dermatolepis inermis*) occurs in seven states, with Mississippi and Virginia the exceptions. Spiny dogfish (*Squalus acanthias*) is shared by five SEAFWA coastal states, and the federally endangered Nassau grouper shared by three.

Table 10. Concern levels of RSGCN marine fish within the SEAFWA region

Concern Level	RSGCN Marine Fishes Number	RSGCN Marine Fishes %
Very High Concern	18	60%
High Concern	11	37%
Moderate Concern	1	3%
Total RSGCN Marine Fishes	**30**	**100%**

SEAFWA ENDEMICS

There are 10 RSGCN marine fish that are endemic to the SEAFWA region. Most of the SEAFWA endemic RSGCN marine fishes are found in just one or two states (7 of 10 species), and all seven are Very High Concern, as described above. The other three SEAFWA endemics are shared by multiple states. The federally endangered smalltooth sawfish is Very High Concern. Southern flounder (*Paralichthys lethostigma*) is shared by all nine SEAFWA coastal states and is High Concern. Hardhead catfish (*Arius felis*) is also High Concern and is shared by eight coastal states, all but Virginia.

SHARED SPECIES

Of the 30 RSGCN marine fishes, 77% are shared by at least three SEAFWA states. The 23 shared RSGCN marine fish are 11 Very High Concern, eight High Concern and one Moderate Concern.

RSGCN marine fish occurring in all nine coastal states account for 50% of the RSGCN marine fish species. One of these is endemic, the Southern flounder. SEAFWA is more than 50% responsible for another six: dusky shark, Warsaw grouper, cobia, sandbar shark (*Carcharhinus plumbeus*), lined seahorse (*Hippocampus erectus*), and tarpon (*Megalops atlanticus*).

Another six RSGCN marine fish are shared by at least seven of the nine coastal states. Hardhead catfish and smalltooth sawfish are SEAFWA endemic. Speckled hind and Atlantic goliath grouper have more than 75% regional responsibility and are present in eight and seven coastal SEAFWA

states respectively. Marbled grouper (seven states) and Caribbean electric ray (eight states) have less than 50% regional responsibility due to their large ranges. All of these shared species are Very High Concern except for hardhead catfish, which is High Concern.

EVOLUTIONARY DISTINCTIVENESS

The global Evolutionary Distinctiveness data (Appendix B) did not include fish species, and few marine fish have reported genus size class information on NatureServe.

DISCUSSION

The marine fish taxa team also identified data gaps limiting conservation of RSGCN in the southeast. One data gap is the habitat requirements for juveniles that use bays and estuaries. Information on additional stressors beyond fishing and harvest was also identified as lacking. The complex life history of anadromous species poses an additional management challenge, requiring a larger management group that often involves multiple agencies within the same state. Conservation project longevity is a limiting factor for marine fish, precluding sufficient time and information to detect natural variability and changes in condition and threat for management decisions. Coordination in surveying techniques across space and time could be improved, such as monitoring of offshore coastal species that rely on inshore coastal waters or are affected by state fishing regulations.

Better understanding of the influence of habitat, environment and human disturbance stressors within and across species at various spatial scales was identified as a regional need. Habitat protection of coastlines and estuaries, including preventing or limiting shoreline hardening and reduced freshwater inputs, is needed to conserve these areas that act as nursery, spawning grounds and feeding opportunities for many RSGCN. Development that impacts healthy aquatic habitats and populations should be discouraged, and more natural options are encouraged in development opportunities.

CRAYFISH

The southeastern U.S. is a national and global biodiversity hotspot for crayfishes and 86% of state-listed crayfishes are in the SEAFWA states (Taylor et al. 2007, Hossain et al. 2018).

The 15 SEAFWA states average nearly 53 species of crayfish each, while the non-SEAFWA states average fewer than 8 crayfish species each. The list of RSGCN crayfish reflects this biodiversity, with the second highest total number of species after freshwater and diadromous fishes.

The RSGCN crayfish are extraordinarily endemic to the region, which posed some unique challenges for the crayfish taxa team. Most crayfishes are endemic to a particular river basin or

cave system. The taxa team modified the definition of narrow range species to consist of one state instead of up to two states as the other taxa teams used. Alternative definitions, such as using HUC [hydrologic unit code] basins, were explored but found to be impractical with the current state of knowledge of this taxonomic group as a whole.

Crayfish as a taxa group were identified as data deficient when compared to other taxa, with a continuous series of taxonomic revisions and uncertainties. A large number of crayfish SGCN, for example, received taxonomic updates since they were designated as SGCN. Several *Fallicambarus* spp. had their genus updated to *Creaserinus*. Approximately 40 *Orconectes* spp. were updated to the genus name *Faxonius*. Crandall and DeGrave (2017) provided an updated classification for freshwater crayfishes, which was utilized to update the taxonomy of these species.

Some SGCN are believed to be extirpated from some SEAFWA states, suggesting that some ranges may be contracting. Several other species are anticipated to soon be split into two species. A few species have not been officially described, posing a challenge for the taxa team on how to address them.

RESULTS

The crayfish RSGCN list includes 172 species, of which 66 (38%) are shared by multiple states (Table 1, Table 2). All RSGCN crayfish are in the family *Cambaridae*. Only six RSGCN crayfish are federally listed, with another two petitioned for listing. An additional 65 crayfish species that are not currently SGCN were recommended for consideration by the taxa team, primarily due to new taxonomic information or emerging threats. Twenty crayfishes of the 65 additional species were identified for the RSGCN Watch List (Appendix F). Thirteen (13) RSGCN crayfish have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

VERY HIGH CONCERN

Taxa team representatives identified 54 Very High Concern crayfishes, or 31% of the RSGCN crayfishes (Table 5). All but two of the Very High Concern RSGCN crayfish are endemic to the SEAFWA region (Appendix E, Table E-1). The Louisville crayfish (*Faxonius jeffersoni*) and Livingston crayfish (*Faxonius margorectus*) are both found in Kentucky within the SEAFWA region. Both are 50 to 75% SEAFWA regional responsibility because they occur in the Ohio River basin on the northern border of the SEAFWA region. The taxa team reported that the Louisville crayfish may soon be split into two species.

Only seven of the Very High Concern crayfishes occur in more than one state. Big Sandy crayfish (*Cambarus callainus*) is federally threatened and shared by Kentucky, Virginia and West Virignia. The Benton County Cave crayfish (*Cambarus aculabrum*) is federally endangered and

shared by Arkansas and Missouri. Cypress crayfish (*Cambarellus blacki*) is shared by Alabama and Florida. Alabama and Georgia share the Piedmont blue burrower (*Cambarus harti*). Hiwassee headwater crayfish (*Cambarus parrishi*) occurs in Georgia and North Carolina. Arkansas and Missouri share the Bristly Cave crayfish (*Cambarus setosus*) and coldwater crayfish (*Faxonius eupunctus*).

SEAFWA ENDEMICS

Ninety-six percent of RSGCN crayfish are endemic to the SEAFWA region (Table 1) and all of them have more than 50% regional responsibility. Sixty-three (63) of the endemic RSGCN crayfish are shared by two or more states and 102 are narrow range and endemic to only one state.

Nearly half of the endemic crayfishes are High Concern, 80 out of 165 (48%). Approximately a third (32%, 53 of 165) are Very High Concern. The remaining 33 (20%) of the endemic crayfishes are Moderate Concern.

There are six endemic RSGCN crayfish that are federally listed and two that have been petitioned for listing:

- Hell Creek Cave crayfish (*Cambarus zophonastes*) – federally endangered, Very High Concern;
- Guyandotte River crayfish (*Cambarus veteranus*) – federally endangered, Very High Concern;
- Benton County crayfish – federally endangered, Very High Concern;
- Nashville crayfish (*Faxonius shoupi*) – federally endangered, High Concern
- Slenderclaw crayfish (*Cambarus cracens*) – federally threatened, High Concern
- Big Sandy crayfish – federally threatened, High Concern
- Kisatchie painted crayfish (*Faxonius maletae*) – petitioned for federal listing, High Concern; and,
- Calcasieu painted crayfish (*Faxonius hathawayi blacki*) – petitioned for federal listing, High Concern.

SHARED SPECIES

Of the 172 RSGCN crayfish, 38% (66 of 172) are shared by at least two SEAFWA states (Table 2). The ranges of RSGCN crayfish are the smallest of all the taxa groups, reflecting the small ranges and endemic nature of this taxa group. Only 11 RSGCN crayfish are shared by more than two states, with the highest number of states sharing a species being six. The vernal crayfish (*Procambarus viaeviridis*) is shared by six states and is High Concern with 75 to 100% regional responsibility. The Chattahoochee crayfish (*Cambarus howardi*) and Southwestern Creek

crayfish with its Arkansas-Oklahoma subspecies (*Procambarus dupratzi*) are both shared by four states and endemic to the SEAFWA region; four states share each of these species.

The other eight RSGCN species shared by at least three states are each found in three states. The federally threatened Big Sandy crayfish is of Very High Concern and shared by Kentucky, Virginia and West Virginia. The Chauga crayfish (*Cambarus chaugaensis*), Conasauga blue burrower (*Cambarus cymatilis*), Greensaddle crayfish (*Cambarus manningi*) and Blair's fencing crayfish (*Faxonella blairi*) are all endemic and of High Concern. Three species shared by three states are of Moderate Concern: lavender burrowing crayfish (*Creaserinus byersi*), flatwoods digger (*Creaserinus oryktes*) and flatnose crayfish (*Procambarus planirostris*).

EVOLUTIONARY DISTINCTIVENESS

The global Evolutionary Distinctiveness data (Appendix B) did not include crayfish species. According to NatureServe, five RSGCN crayfish fish species represent a monotypic genus and eight represent a very small genus (two to five species). No monotypic crayfish are left off the RSGCN list.

DISCUSSION

Key issues for RSGCN crayfish were data deficiencies in taxonomy, abundance, distribution, life history and population trends. Unresolved taxonomic issues, species complexes and new species (e.g. frequent description revisions, lumping, splitting) are limiting data gaps. Habitat requirements, population estimates, thermal tolerances, stressors and vulnerabilities to climate change are also data gaps. Development of BMPs was cited as another need by the taxa group. More staffing and research funding would address the taxonomy data deficiencies.

The taxa team identified taxonomic, genetics and systematics research as a predominant regional need. Raising awareness about the southeast's crayfish diversity, endemism and under-representation in federal protection was also recommended. Identifying the most serious threats to individual species and taking steps to minimize those threats is another need, as is the propagation or reintroduction of listed species.

Standardized surveying and monitoring protocols are not uniformly recommended by the crayfish taxa team due to differences in best collection techniques for different species. The Crayfish of West Virginia (Loughman and Welsh, 2013) and state identification and distribution guides produced by Kentucky (Taylor and Schuster, 2004) and underway in Alabama were recommended as potential models for the region. Annual cooperative routine monitoring of all RSGCN crayfish was identified as a need, as was increased communication among researchers. Standardized survey techniques and methods do not work for all crayfish species, and team members suggested that survey and monitoring methods should be consistent within any

particular species. Current surveying and monitoring are limited by a lack of staff and funding, inhibiting the ability to bridge the significant data deficiencies in the taxa.

The highly endemic nature of southeastern crayfishes limits multi-state collaboration opportunities for single RSGCN. With 96% of the crayfish RSGCN endemic to the SEAFWA region, the taxa team modified the definition of narrow range RSGCN to be those species occurring in only one state, instead of two or less. As a result, 62% of the RSGCN are considered narrow range. Rather, the crayfish taxa team identified collaboration opportunities for addressing threats such as the introduction of species not native to a particular river system via the sale of non-native crayfish as bait and the movement of collected crayfish between watersheds and states. Increased public outreach, education and regulatory programs were recommended to prevent bait bucket releases, and Missouri's efforts were identified as a potential regional model. Another potential threat that occurs across multiple states and species is invasive crayfish species, with the Red Swamp crayfish (*Procambarus clarkii*) cited as a prevalent example that is threatening RSGCN crayfish.

Prioritization of the RSGCN crayfish was discussed at length by the taxa team. The team endorsed prioritizing the RSGCN in some way and suggested that additional effort would be required to develop an effective approach. One option to prioritize or refine the RSGCN crayfish list further included focusing on Very High Concern species only, which account for 31% of the RSGCN crayfish (54 species). Focusing on crayfish RSGCN that are federally listed was not recommended by the team. Another option was to refine the RSGCN by their G-Rank and/or S-Rank, but there were concerns that the ranks are not always up-to-date. The final option to refine or prioritize the RSGCN crayfish list was to use HUC basins instead of states to define the distribution of the species. While this option offers the potential to more accurately describe the distribution of crayfishes within the SEAFWA region, there were concerns that data deficiencies on species' distributions persist, management occurs at the state level not the watershed level, and there are different HUC levels (i.e., HUC8, HUC10, or HUC12) to consider. Ultimately the taxa team agreed that while further refinement of the RSGCN crayfish list would have benefits, the highly endemic and small range nature of the taxa pose challenges given the current state of knowledge.

MUSSELS

The mussel taxa team was challenged by taxonomic issues similar to those of the crayfish, but to a lesser extent. There were many taxonomic updates, from updated genus and species names to updated common names to SGCN that were synonyms for one another. At least nine SGCN of the genus *Quadrula* were updated to be the genus *Cyclonaias*. Another six *Quadrula* genus mussels were revised to be the genus *Theliderma*, *Fusconaia* or *Tritogonia*. At least three SGCN of the genus *Anodonta* were modified to be the genus *Utterbackiana*. Seven SGCN

subspecies were elevated to full species status. Eight mussel SGCN were identified as likely extinct and were not considered for RSGCN status.

The 243 mussel SGCN of the southeast, combined with the high SGCN numbers of fish (651) and crayfish (265), are an indicator of the region's high aquatic biodiversity. Roughly half of the SGCN mussels (53%), fish (47%) and crayfish (57%) were selected as RSGCN by their taxa teams, illustrating the current vulnerability of the region's aquatic biodiversity.

RESULTS

The mussel RSGCN list includes 136 species, of which 92 (68%) are shared by multiple states (Table 1, Table 2). All but three of the RSGCN mussels are in the *Unionidae* family, with the other three in the *Margaritiferidae* family. **More than half of the RSGCN mussels are federally listed and another 12 have been proposed or petitioned for listing**.

An additional seven mussels are on the RSGCN Watch List (Appendix F). Seventeen (17) RSGCN mussels have been designated as Culturally Significant Species in Alabama, South Carolina or the Catawba Nation within South Carolina (Appendix G).

VERY HIGH CONCERN

The mussels taxa team identified 70 Very High Concern mussels, just over half of the RSGCN list (Table 5). Most of the Very High Concern mussels, 52 of 70 (74%), are endemic to the SEAFWA region (Appendix E, Table E-1). Only five of the Very High Concern species have less than 50% regional responsibility and all are federally listed. Catspaw (*Epioblasma obliquata*) is federally endangered and shared by four states, with a regional responsibility of 25 to 50%. Snuffbox (*Epioblasma triquetra*) and sheepnose (*Plethobasus cyphyus*) are also federally endangered and each occurs in eight SEAFWA states. The federally endangered spectaclecase (*Margaritifera monodonta*) is shared by seven SEAFWA states. Texas hornshell (*Popenais popeii*), a federal candidate species, only occurs in Texas within the SEAFWA region. All but 11 of the Very High Concern RSGCN mussels are federally listed or petitioned.

Twenty-six (26) of the Very High Concern RSGCN mussels are narrow range, occurring in only one or two states; all but four of these 26 species are endemic to the SEAFWA region. The other 44 Very High Concern RSGCN mussels are shared by at least three states. The SEAFWA region has more than 50% responsibility for all but four of these shared species, the aforementioned catspaw, snuffbox, sheepnose and spectaclecase. Thirty (30) of the 44 shared species are endemic to the southeast.

SEAFWA ENDEMICS

The RSGCN mussels are highly endemic, with 107 of the 136 species (79%) endemic to the region (Table 1). The endemic RSGCN mussels are split unevenly between those shared by at least three states (67; 63%) and those with narrow ranges limited to one or two states (40; 37%). Nearly half of the SEAFWA endemic mussels are of Very High Concern, 52 out of 107 (49%). Forty-five (45) of the RSGCN endemic mussels are of High Concern (42%). Ten (10) endemic mussels are Moderate Concern (9%).

Slightly more than one-third of the SEAFWA endemic RSGCN mussels are found in just one or two states (40 species), but 67 SEAFWA endemics are shared by multiple states. The most widespread endemic RSGCN mussels are the Southern hickorynust and its Ozark subspecies (*Obovaria arkansasensis*), which collectively occur in eight SEAFWA states. The Tennessee heelsplitter and its Barrens subspecies (*Lasmigona holstonia*) are shared by seven states, as is the Tennessee pigtoe (*Pleuronaia barnesiana*). Five RSGCN endemic mussels are shared by six states: pheasantshell (*Actinonaias pectorosa*), delicate spike (*Elliptio arctata*), Cumberlandian combshell (*Epioblasma brevidens*), Tennessee clubshell (*Pleurobema oviforme*) and rayed creekshell (*Strophitus radiatus*). The federally endangered Cumberlandian combshell is Very High Concern and the other four are High Concern. The remaining 59 shared endemic RSGCN mussels are shared by three to five states each.

SHARED SPECIES

Of the 92 RSGCN mussels, 68% are shared by at least three SEAFWA states (Table 2). **Nearly three-quarters (74%) of the shared RSGCN mussels are found in three to five states, reflecting the smaller ranges of these aquatic invertebrates**. Two RSGCN mussels are shared by 10 states or more. The pyramid pigtoe (*Pelurobema rubrum*) is in 11 states and of High Concern. The slippershell mussel (*Alasmidonta viridis*) is shared by 10 states and is also of High Concern.

Most of the shared RSGCN mussels are endemic to the southeast, with 67 of 92 species (73%) endemic to the SEAFWA region. Only eight of the 92 shared RSGCN have less than 50% regional responsibility. Four of these are Very High Concern and federally endangered – snuffbox, sheepnose, spectaclecase and catspaw – and the remaining four are High Concern. Ten SEAFWA states share the slippershell mussel. Brook floater (*Alasmidonta varicosa*) is shared by seven states. Round hickorynut (*Obovaria subrotunda*) occurs in six SEAFWA states, and the federally endangered clubshell (*Pleurobema clava*) occurs in four.

EVOLUTIONARY DISTINCTIVENESS

The global Evolutionary Distinctiveness data (Appendix B) did not include mussel species. According to NatureServe, five RSGCN mussel species represent a monotypic genus and 17

represent a very small genus (two to five species). Five mussel species representing monotypic genera were reviewed but not included as RSGCN. All five have G-ranks of G4 or G5.

DISCUSSION

Similar to the crayfish RSGCN taxa team, the mussel RSGCN taxa team identified taxonomy as the largest data gap limitation. Extensive, quality genetic research is needed to resolve many of the taxonomic uncertainties with mussels in the southeast. Consistent use of taxonomic name changes was recommended by the taxa team, such as the use of Williams et al. (2017). The team identified a comprehensive genetic study of the genus *Elliptio* as a research need. As propagation and restoration efforts have gotten underway across many SEAFWA states, the team recommended the development of a National Mussel Strain Registry to track what brood stock are being used in propagation and what juveniles eventually are released into what river.

More accurate and updated data on species status, population, distribution and stressors are also needed. Habitat requirements for mussel RSGCN was identified as another data gap, including large rivers. The taxa team cited an issue with most mussel studies and surveys to address incomplete detection as is commonly done in other taxa, confounding the ability to find a species in a particular habitat with its affinity for that habitat.

Increased funding and staff levels were recommended by the taxa team to address these major data gaps. Studies to improve knowledge on dissolved oxygen requirements, minimum flows, water quality, requirements for holding and propagating large-river species in captivity, identifying host fish, and range-wide assessments are recommended by the taxa team. Sampling efforts should be robust and thorough, particularly with growing evidence that even experienced surveyors have difficulty detecting mussels in cursory searches (i.e., 30-minute surveys). Conducting traditional trials or utilizing genetic methodologies to expand mussel programs and host fish identification were also recommended. Taxa team members stated that survey methodologies vary depending on the species and habitat, but where multiple states or partners are collaborating or coordinating on a particular species or habitat, consistent surveying and monitoring protocols would enable data collation and comparison. A recent Guidelines and Techniques Committee of the Freshwater Mollusk Conservation Society might provide an opportunity to facilitate consistent methodologies.

There was considerable discussion about the importance of considering life cycles and connecting each species to its host fish, and if both should be on the RSGCN list.

BUMBLE BEES

The team of national and regional bumble bee researchers reviewed 10 SGCN *Bombus* species (*B. affinis, variabilis, fraternus, pensylvanicus, bohemicus, borealis, fervidus, sonorus, terricola,*

vagans) and discussed four additional species (*B. citrinus, sandersoni, perplexus, and flavidus*). Team consultation was conducted by e-mail.

RESULTS

Five bumble bee RSGCN are all shared by multiple states (Appendix E). All of the bumble bee RSGCN are of the genus *Bombus*. One bumble bee is federally listed as endangered, the Appalachian population of the rusty-patched bumble bee (*Bombus affinis*). No bumble bees are on the RSGCN Watch List (Appendix F) or have been identified as Culturally Significant by Alabama, South Carolina or the Catawba Nation (Appendix G).

VERY HIGH CONCERN

Taxa team representatives identified two Very High Concern bumble bees (Table 5). The Appalachian population of the rusty-patched bumble bee is endemic to the southeast and occurs in seven SEAFWA states: West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina and Georgia. The variable cuckoo bumble bee (*Bombus variabilis*) is shared by Alabama, Kentucky, Missouri and Louisiana. Cuckoo bumble bees place their eggs in the provisioned nest of other bumble bees. The host species for the variable cuckoo bumble bee is the American bumble bee (*Bombus pensylvanicus*), which is also a RSGCN but of Moderate Concern.

SEAFWA ENDEMICS

There are two RSGCN bumble bees that are endemic to the SEAFWA region. The Appalachian population of the rusty-patched bumble bee, described above, is Very High Concern and endemic to seven states in the southeast. The other endemic RSGCN bumble bee is the Appalachian population of the yellow-banded bumble bee (*Bombus terricola*), which is High Concern. The Appalachian population of yellow-banded bumble bee is endemic to Georgia, North Carolina, Tennessee, Virginia and West Virginia.

SHARED SPECIES

Two RSGCN bumble bees are shared by 10 states or more: the American bumble bee is shared by all 15 SEAFWA states, and the Southern Plains bumble bee (*Bombus fraternus*) is shared by all SEAFWA states except West Virginia. Both the American bumble bee and Southern Plains bumble bee are Moderate Concern RSGCN.

EVOLUTIONARY DISTINCTIVENESS

The global Evolutionary Distinctiveness data (Appendix B) did not include bumble bee species. RSGCN Bumble Bees represent four subgenera of the *Bombus* genus (Table 11) out of the nine found in North America (Williams et al., 2014).

Table 11 . Bumble bee RSGCN represent four of the nine subgenera of the genus *Bombus* found in North America.

Genus	Subgenus	Species
Bombus	Bombus	Affinis
		Terricola
	Thoracobombus	Pensylvanicus
	Cullumanobombus	Fraternus
	Psithyrus	Variabilis

DISCUSSION

Insufficient survey efforts were cited as a limiting factor in determining population trends in many states. Some state fish and wildlife agencies lack expertise and authority over insects. A general need for additional distribution and abundance information was noted.

The highest concern is for the variable cuckoo bumble bee with only one verifiable record since 2000. The Southern Plains bumble bee may be experiencing range retraction with a loss of south Atlantic coastal populations, but it seems to have a stronghold in western SEAFWA states and the midwest. A similar pattern exists for the American bumble bee, with declining trends in the eastern U.S. but stronger populations in the central U.S. states.

The team also noted that the southern Appalachians have some important and potentially disjunct populations of species that may occur more widely in the northeast. Unique circumstances caused the team to identify two RSGCN as narrow range, though they may occur in five to seven states. These species are found in the higher elevations of the southern Appalachians, a small geographic range that crosses many state lines. These states (WV, VA, TN, NC, GA, KY, AL) could work together in the survey and conservation of these species, pooling resources for additional research and survey work.

ADDITIONAL TAXA AND SPECIES CONSIDERED – RSGCN WATCH LIST

In addition to the ~2,100 SGCN reviewed by the taxa teams, an additional 155 species were recommended by taxa team participants (Appendix C) for consideration as RSGCN. Of these, four species have been newly designated SGCN and were added to the RSGCN list; another 36 species were recommended as RSGCN but lacked SGCN status and have been placed on a RSGCN Watch List (Appendix F). These non-SGCN species include those that have been recently been described; have recently received taxonomic updates; or have new data regarding emerging threats. At least five of these species have already been proposed as SGCN in at least one state. Another 16 of the remaining 36 non-SGCN species recommended for RSGCN status are anticipated to be proposed as SGCN in the next series of SWAP updates.

Table 12 . RSGCN Watch List species by taxa group

Taxa Group	Additional Species Considered	RSGCN Watch List Species
Mammals	20	1
Birds	2	0
Reptiles	27	0
Amphibians	19	2
Fish	8	6
Crayfish	65	20
Mussels	10	7
Bumble Bees	4	0
TOTAL	**155**	**36**

RECOMMENDATIONS

The SEAFWA RSGCN list represents the significant endemism of biodiversity in the region, particularly in aquatic habitats, but also highlights species that would benefit from regional collaborative conservation to reverse declining populations. The list can be filtered and sorted to deliver customized priorities related to

- degree of imperilment (indicated by conservation concern level);
- importance of SEAFWA conservation actions (indicated by regional responsibility category);

- collaborative opportunities (indicated by the number of SEAFWA states sharing a species);
- state stewardship (indicated by state occurrence of RSGCN); and
- taxa groups.

FINALIZING AND MAINTAINING THE RSGCN LIST

The WDC recommended a list revision every 10 years with interim minor revisions as needed. The committee plans to review the list every year at their annual meeting to identify emerging issues, species in severe decline, and newly identified state SGCN that meet RSGCN criteria (Appendix F). Taxa team members generally appreciated the opportunity to review the taxa group as a whole and to share their field observations with their colleagues in nearby states.

In the future, several taxa groups can be better assessed as their taxonomy and data deficiencies are addressed. Additional marine expertise could be engaged to more fully assess those taxa regionally. Invertebrates, in general, can be better represented on the RSGCN list by filling data gaps with more expert engagement and greater monitoring effort over the next five years.

In the long term, additional inventory and taxonomy work is needed in several taxa groups. All taxa teams indicated the need for additional long-term funding and resources to adequately conduct the many research, survey, monitoring and management efforts to conserve fish and wildlife diversity in the southeast. Increased survey and monitoring effort for high concern species is needed, ideally with long-term funding and more consistent protocols. Special efforts focused on low detection species and genetic assessments are also needed. The 36 species considered Watch List RSGCN are recommended to be added to the RSGCN list once they are designated as SGCN in at least one SEAFWA state. Additional detailed suggestions by taxa teams can be found in Appendix H.

USING THE RSGCN LIST

Using the RSGCN list in the context of the USFWS Workplan can help states work proactively. Triaging the Very High Concern RSGCN by using a 5-factor analysis or following the format of an Species Status Assessment (SSA) would reveal important data gaps. These gaps and the taxa team recommendations (Appendix H) may lead the committee to take on regional investigations or design regional projects for groups of species. The Committee has been discussing developing regional ranks for some species and the RSGCN list could help focus that effort. The RSGCN list will also help in the justification of Competitive State Wildlife Grant Proposals and other conservation grant funds.

Identifying habitat associations for RSGCN and linking species with state or regional Conservation Opportunity Areas on the ground would help refine planned conservation. Using guilds and additional species associations can also help leverage resources through multi-species approaches. Identifying key existing and emerging threats and assessing changes in the way the threats are impacting species can also address changing climate conditions. For example, wind energy is an increasing threat affecting bats like the hoary bat, and some rare turtles are new targets of the pet trade. In contrast, it is equally important to identify gaps in the understanding of habitat associations and top threats so that these can be prioritized for research, survey, and monitoring efforts.

This information, gathered at the regional scale, can directly inform the next SWAP revision and generate more effective conservation actions taken at the regional scale. Best management practices, standardized data collection, and policy, regulation, or law enforcement can be developed at a regional scale and collaboratively implemented. For example, Missouri's outreach program aimed at preventing the introduction of invasive crayfish in bait buckets could be evaluated for its effectiveness in the state, then adapted as a regional initiative.

The list can be used to communicate state fish and wildlife diversity conservation priorities to their many conservation partners. USFWS can use the RSGCN list in their Workplan development and schedule or identifying at-risk species. The Natural Resource Conservation Service and U.S. Forest Service can use the list to identify focal or sensitive species. NatureServe and their state partners can prioritize rank updates for the highest concern species, particularly if emerging threats have been identified. This list can also be used to foster increased communication and collaboration between state agencies, universities, natural heritage programs, land trusts, and other conservation partners.

APPENDIX A. SEAFWA RSGCN SELECTION CRITERIA AND METHOD DOCUMENT

BACKGROUND

A Regional Species of Greatest Conservation Need (RSGCN) list has proven to be a powerful tool for revealing shared priorities, enhancing cross-state collaboration, and securing additional conservation funding in support of those priorities. In the Northeast, such a list has served as a foundation for multi-state collaborations for research, monitoring, planning, and conservation implementation.

States in the Southeast Association of Fish and Wildlife Agencies (SEAFWA) region collectively identified 6,682 SGCN in their 2015 wildlife action plans. Developing a smaller and more targeted list of Regional SGCNs would reflect and highlight shared conservation values and stewardship responsibilities, would encourage collaborative cross-state work on those priority species, and would substantively contribute to realization of the Southeast Conservation Adaptation Strategy (SECAS) vision for collaborative and future-oriented conservation. Criteria for developing such a list would need to reflect the specific context and needs in the Southeast, which is one of the most biologically rich regions in the country. The approach described below includes three general criteria categories: regional stewardship responsibility; conservation concern and status; and biological/ecological significance.

As part of the SECAS-related Vital Futures Project, the National Wildlife Federation (NWF), USFWS (Science Applications) and its partners worked with the SEAFWA Wildlife Diversity Committee (WDC; committee) to support a process for collaboratively developing a Regional SGCN list. Terwilliger Consulting, Inc., which provided primary support to NEAFWA in development of their regional list, and has extensive experience supporting states (including in the Southeast) in development of State Wildlife Action Plans, was contracted.

In general, the work was accomplished by TCI through a subcontract through NWF, SECAS, and/or the SEAFWA states (through TWRA) and was overseen by the SEAFWA Wildlife Diversity Committee. TCI facilitated the work of the Committee, a Working Group, and seven Taxa Teams; provided the underlying research needed for their consideration and deliberation; and delivered reports documenting consensus for committee approval on progress and completion. Appendix D details the coordination with the Committee throughout the RSGCN selection process.

USING THE LIST

The Southeast Association of Fish and Wildlife Agencies' Wildlife Diversity Committee developed this list of RSGCN to enable more efficient and effective fish and wildlife

conservation by identifying high priority species that would benefit from multi-state collaboration. This will also inform ongoing regional and partner efforts. Specifically, the RSGCN list is designed to:

- Identify and highlight shared conservation concerns
- Facilitate cross-state collaboration, particularly to prevent the need for federal listing of at-risk species
- Communicate regional conservation priorities with partners and funding programs to increase resources, including the Southeast Conservation Adaptation Strategy
- Raise the profile of the Southeast's unique biodiversity and stewardship responsibilities

The SEAFWA RSGCN may be sorted into two lists. The first answers the need to identify shared conservation concerns. The second answers the need to represent the unique biodiversity of the region by identifying imperiled single-state endemics. To identify species for both lists, three major assessment categories (described in detail below in "Selection Factors") are used to screen species:

- Regional stewardship responsibility
- Conservation concern
- Evolutionary distinctiveness
- Cultural value

SELECTION FACTORS

The following selection factors act as screening filters which establish required characteristics of RSGCN. In this section the factors and their thresholds are defined. The following section, "Selection Process", explains how the factors are used to develop the RSGCN list.

SGCN ELIGIBLE FOR REGIONAL SGCN SELECTION

All SGCN native in at least a portion of their range to the SEAFWA region are reviewed for potential RSGCN selection. At this time, the selection process is limited to certain taxonomic groups chosen based on agency authority, adequate conservation status information, and availability of biological expertise.

a. Birds (323 SGCN)
b. Mammals (including marine; 208 SGCN)
c. Reptiles (including marine; 211 SGCN)
d. Amphibians (184 SGCN)
e. Fish (including marine, 651 SGCN)
f. Crayfish (265 SGCN)
g. Freshwater mussels (243 SGCN)

h. Bumble bees (10 SGCN)

The invertebrate taxa are limited to those that have adequate conservation assessment data and expertise in the region. It is not feasible to review all invertebrate taxa at this time. Crayfishes and freshwater mussels have been the focus of substantial research, survey, and monitoring projects over the past decade and many have high regional responsibility. Pollinators are a growing focal area for conservation, but many taxa are data deficient (e.g. native solitary bees). The inclusion of bumble bees, which have better survey data, provides some indicator of the conservation concern of these pollinator species. Approximately 211 butterflies, or Lepidoptera, were sorted from the list of ~6,700 SGCN in the southeast, but time and funding constraints precluded development of a RSGCN butterflies list.

FACTOR 1: REGIONAL STEWARDSHIP RESPONSIBILITY

Regional Responsibility is defined as the portion of the species' population or range that is found in the Southeast as compared with the species' range in North America. For migratory species, all habitats where species are native and regularly occurring will be considered in the estimate of regional responsibility. Any historic (SH) or extirpated (SX) habitats will be included in the preliminary estimate of regional responsibility, but taxa teams may revise the estimate if historic or extirpated habitat is no longer viable (for example, if all habitat outside the Southeast Region is no longer viable, SEAFWA would have 100% responsibility for the species). Preliminary estimates of regional responsibility will be based on digital range maps or NatureServe range maps (BirdLife International and Handbook of the Birds of the World, 2017; IUCN, 2018; NatureServe, 2008, 2010a, 2010b, 2019). For fish, these range maps are only available for the U.S., not the entirety of North America, and consequently estimates were reported only for the U.S.

Responsibility estimates can be categorized as follows:

a. 100% of species' distribution is in SEAFWA (Regional Endemics)
b. 75-100% of species' distribution is in SEAFWA
c. 50-75% of species' distribution is in SEAFWA
d. 25-50% of species' distribution is in SEAFWA
e. <25% (SEAFWA represents an edge of range or the species is very widespread within North America) (excluded from RSGCN consideration except in rare circumstances)

Species with regional responsibility of 50% or more, and migratory species with 25% or more meet the responsibility threshold for RSGCN (see Taxa Team Review in "Selection Process" section for exceptions).

FACTOR 2: CONSERVATION CONCERN

These sources were used as indicators of conservation concern and were available to the taxa teams during their evaluations:

- Federal listing (if species is Endangered, Threatened, or Candidate) (not petitioned)
- State listing (if species appears on a state Threatened or Endangered list)
- NatureServe Global Ranks (focusing on those that are G1/G2)
- NatureServe State Ranks (focusing on those that are S1 or S2 in half of SEAFWA states which report S ranks)
- IUCN Red List Category (Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern, Data Deficient)
- USFWS National Listing Workplan status (if applicable)
- Partners in Flight Watch List (Red or Yellow)
- AFS Conservation Status for Crayfishes (Endangered, Threatened, Vulnerable, Currently Stable)

FACTOR 3: EVOLUTIONARY DISTINCTIVENESS

Species that represent a monotypic genus or monotypic family or are the sole North American representative within their taxonomic family or genus. The NatureServe flag called “Genus Size” will be used to identify monotypic or very small Genus Size. The Evolutionary Distinctiveness measure provided by the “EDGE of Existence” program (Zoological Society of London, 2019) (Appendix B) was also explored, but information was not available for all SGCN and it was difficult to sort the Southeastern U.S. species out of the global dataset specifically to understand Evolutionary Distinctiveness.

FACTOR 4: CULTURAL SIGNIFICANCE

If species have strong cultural significance (e.g., quail hunting or native peoples’ traditional relationships with species for healing subsistence or folklore) these may be considered by taxa teams in selecting RSGCN. South Carolina, Alabama and the Catawba Nation (in South Carolina) provided lists of Culturally Significant Species (Appendix G).

SELECTION PROCESS

PRE-SCREENING

Terwilliger Consulting Inc (TCI) compiled SGCN data from all SEAFWA states. TCI filled in data gaps as necessary to provide the following data fields for each species in the focal taxonomic groups:

- Taxonomy (Class, Order, Family)
- Federal listing status
- State listing status
- G ranks (and date last reviewed)
- S ranks for SEAFWA states
- Migratory status
- Genus size
- USFWS Workplan bin
- IUCN Red List of Threatened Species Category (IUCN, 2018 and 2019)
- Partners in Flight Watch List (PIF, 2016)
- American Fisheries Society (AFS) Status for Crayfishes of the U.S. and Canada (Taylor et al. 2007, as updated)
- Climate Resilience based on habitats (Anderson et al., 2016)
- SEAFWA state occurrences

TCI used available range maps to estimate regional responsibility, as a percentage of 100% of the species' range (BirdLife International and Handbook of the Birds of the World, 2017; IUCN, 2018; NatureServe, 2008, 2010a, 2010b, 2019).

TCI used thresholds explained above for responsibility and concern to "predict" RSGCN as follows: Species has one of the indicators of conservation concern (i.e., G1/G2, S1/S2, Federal or State listing) **AND** SEAFWA has regional responsibility for the species (at least 25% for migratory species, at least 50% for others).

TAXA EXPERT REVIEW

Each SEAFWA state identified taxonomic experts for each of the taxa groups, which were invited to participate as members of taxa review teams (Appendix C). All species in each taxa group were forwarded to taxa teams for review. For both single-state and shared species, taxa experts were requested to review spreadsheets that included:

- Estimated regional responsibility
- Predicted RSGCN to verify they meet RSGCN selection criteria (responsibility and concern) and warrant including. If a species' real regional responsibility or concern is too low, they may recommend species are not RSGCN.
- For species with high regional responsibility (>75%) that did not have indicators of concern: if experts have evidence of declines from authoritative sources, concern about emerging threats (including climate change), or recognize evolutionary distinctiveness or cultural significance, they may recommend species be added as RSGCN.

- For species with low regional responsibility but high conservation concern: if experts consider concern level high enough, these species may be recommended to be added as RSGCN with the rationale that extremely imperiled species become everyone's responsibility.
- For all recommended RSGCN, taxa teams should provide accurate lists of states in which the species occurs, a concern level, and reference for any current management plans.

Taxa team members were given the opportunity to identify additional species that have been added to their list of SGCN since the most recent SWAP; were newly described or taxonomically split from other SGCN; or have emerging threats which are likely to result in the species being proposed as SGCN in the next SWAP update. These new species were reviewed by the taxa teams and those meeting the criteria for RSGCN status but not yet designated as SGCN were placed on a RSGCN Watch List until such time as they are designated SGCN, when they are then eligible to become RSGCN (Appendix F).

The taxa teams reviewed the potential list of RSGCN three times. The first review period presented the list of SGCN in each taxa group with the predicted RSGCN status described above. Each taxa team member then voted on the RSGCN status of each species, provided a Concern Level for each proposed RSGCN species, gave comments on the status or threats to each species, and listed whether each species was known to occur in their state. The taxa teams also reviewed the data compiled by TCI (described above) for corrections, such as taxonomic updates, SGCN synonyms that should be merged, updates to S-Ranks, etc., and to fill data gaps.

TCI then compiled this input of the taxa teams and calculated the combined RSGCN status votes, Concern Levels, comments and occurrence data. Revisions were made by TCI as needed to merge duplicate SGCN records, update taxonomy, S-Ranks, etc. Species receiving at least 75% yes votes were classified as draft Yes RSGCN. Species receiving between 50 and 74% yes votes were classified as Maybe Yes RSGCN. Those receiving from 25 to 49% yes votes were classified as Maybe No RSGCN. Species receiving less than 24% yes votes were classified as No RSGCN. Draft Concern Levels (1 – Very High Concern, 2 – High Concern, 3 – Moderate Concern) were calculated based on the average of all Concern Level votes received.

TCI hosted a Zoom conference call of each taxa team to present the Round 1 Review results and discuss species and issues that lacked consensus or that were raised by individual taxa team members. The taxa RSGCN spreadsheets were updated based on the decisions and discussions of each team and then distributed for the second round of review.

The Round 2 Review requested that the taxa teams concur or not concur with the proposed RSGCN and Concern Levels identified in the Round 1 Review; update their votes or provide new votes for all Maybe Yes and Maybe No species that lacked consensus; and provide any additional information not provided in Round 1. TCI compiled the input of each taxa team and

updated the draft RSGCN status and Concern Level for each species. A second Zoom conference call was hosted by TCI for each taxa team to review the updated draft RSGCN list and discuss species that lacked consensus.

The taxa RSGCN spreadsheets were updated based on the decisions and discussions of each team. TCI adjusted the final vote approval range to a minimum of 66% yes votes to be proposed as RSGCN. Potential RSGCN that lacked consensus after Round 2 Review were re-assessed by TCI using the Selection Criteria described above, and any species not meeting the Selection Criteria were removed from further consideration.

Based on recommendations of the taxa teams and the committee, groups of subspecies and nominal species were identified for potential merging into single RSGCN records. TCI merged records of nominal and/or subspecies of potential RSGCN for review by the taxa teams. A Survey Monkey was prepared that included the potential species / subspecies mergers and a series of specific questions for potential RSGCN that still lacked consensus. Open-ended questions were also included asking the taxa teams the following:

1. What are the most limiting data gaps in your taxa and what would you need to do to address them in the region?
2. What are the most important regional efforts / actions you think the region should undertake to support this taxa group?
3. Is there a need to improve consistency in surveying or monitoring across the region, and if so, in what way?
4. Are there any questions you wish you could explore further with the colleagues involved in this review?

The draft RSGCN lists and a link to each team's Survey Monkey were then distributed to each taxa team for the third and final round of review. TCI compiled the results of the final round of review and the Survey Monkey questions to finalize the RSGN list and Watch List.

WILDLIFE DIVERSITY COMMITTEE REVIEW

TCI coordinated with the WDC throughout the RSGCN development process (Appendix D). A WDC Working Group was established at the beginning of the process, which collaborated with TCI to develop the RSGCN Methodology described herein. The Wildlife Diversity Committee also considered the usefulness of quantitative ranking methods. TCI updated the WDC on a near monthly basis during the committee's regularly scheduled meetings on the project's status, taking the opportunity to solicit feedback and discuss issues that were encountered by TCI and/or the taxa teams.

TCI summarized the taxa team discussions and presented the preliminary RSGCN lists (after the Round 2 Review) to the WDC at the SEAFWA Annual Meeting in March 2019. The committee

reviewed the preliminary RSGCN lists and provided guidance on issues such as lumping or splitting subspecies and nominal species. Guidance from the committee was then incorporated in the third and final round of taxa team reviews.

The Wildlife Diversity Committee then considered the results from each taxa team to confirm that the recommended RSGCN represent consistent or appropriate levels of concern across taxa groups. Along with the list of RSGCN and their Concern Levels, TCI included several metrics for each RSGCN that will facilitate the WDC, SEAFWA and its partners in sorting the RSGCN list for multiple uses:

- Taxa group
- Scientific Name
- Common Name
- Concern Level
- Regional Responsibility Category
- Shared or Narrow Range
- Number of SEAFWA States in which the RSGCN occurs
- Federal Listing Status
- Occurs in [state name]: for each of the 15 SEAFWA states
- Global EL Code
- EL Code
- Taxon ID (unique to each SGCN, created for this project)
- Class
- Order
- Family
- Culturally Significant Species

These RSGCN metrics allow for the WDC and its partners to sort the RSGCN list to focus on multi-state, shared species that allow opportunities for collaboration as well as narrow-range and/or endemic species that represent the region's biodiversity. Sorting the RSGCN based on any of these metrics enables users to prioritize the RSGCN in multiple ways.

APPENDIX B. INFORMAL EXPLORATION OF EVOLUTIONARY DISTINCTIVENESS IN THE SOUTHEASTERN U.S. USING THE EDGE OF EXISTENCE DATASET

Elizabeth Crisfield, Terwilliger Consulting, Inc. November 2018

BACKGROUND

A criterion of the SEAFWA method for selecting RSGCN is evolutionary distinctiveness. To explore some species that might be highlighted by this criteria we explored some available data sources.

One available data source is provided by the "EDGE of Existence" program – a global conservation initiative focusing specifically on threatened species that represent a significant amount of unique evolutionary history (Zoological Society of London, 2019, adapted from the website: https://www.edgeofexistence.org/what-is-edge/). An EDGE Rank considers two separate indicators ED and GE explained as follows (please see website for more information):

- ED stands for Evolutionarily Distinct. *From the website*: "When calculating ED scores, each species on the phylogeny receives a 'fair proportion' of the branches that connect them to all other species. If the branches connecting a species to the rest of the tree are shared with fewer species, it receives a larger the proportion of the millions of years represented by each branch and therefore a higher ED score."
- GE stands for Globally Endangered. The EDGE program is using IUCN Red List Categories to measure this.

METHOD

The ED scores are available for birds, mammals, amphibians and reptiles, but not fish or the other invertebrates SEAFWA is reviewing. The complete species list with ED scores does not provide information about global geographic ranges. However, after limiting the list of species to those that meet the "EDGE" criteria, meaning they have high evolutionary distinctiveness AND are globally endangered, coarse geographic ranges are provided. In this analysis we used the geographic range provided for EDGE species to restrict to the U.S. and then examined just the ED score.

RESULTS

Species profiled below have ED scores above the median for their taxa group and have met the EDGE criteria for global endangerment. Results for the entire U.S. are provided, but discussion focuses on SEAFWA species.

BIRDS

Only five U.S. birds meet the EDGE criteria. The highest ED for birds is 55.4; 5.76 was the median ED for birds. Four of the birds that met the EDGE criteria are likely only found in Hawaii (Olomao, Puaiohi, Hawaiian Coot, and Omao) and are not present within the SEAFWA region. The fifth is the Florida Scrub-jay with an ED of 5.84. Florida Scrub Jay is a single state endemic (Florida), is federally listed as threatened and was selected as RSGCN.

MAMMALS

Only eight U.S. mammals meet the EDGE criteria (Table B-1). The maximum ED for mammals was 61.5, and the median was about 7.5. Considering the three with the top ED scores: Florida bonneted bat is a single state endemic with a very small geographic range, and it is federally listed as Endangered. Florida mouse is a state endemic, not federally listed. Other mammal species with high ED scores are not SEAFWA species, but robust cottontail includes habitat in Texas. All three Southeast U.S. species are included on the RSGCN list.

Table B-1. U.S. Mammals which meet the EDGE criteria

Scientific Name	Common Name	ED Score
Eumops floridanus	Florida Bonneted Bat	10.37609
Sylvilagus transitionalis	New England Cottontail	9.496639
Perognathus alticola	White-eared Pocket Mouse	9.0598
Reithrodontomys raviventris	Salt-marsh Harvest Mouse	7.787368
Podomys floridanus	Florida Mouse	7.735259
Sorex pribilofensis	Pribilof Island Shrew	7.619954
Sylvilagus cognatus	Manzano Mountain Cottontail	7.579119
Sylvilagus robustus	Robust Cottontail	7.555737

AMPHIBIANS

Twelve (12) U.S. amphibians meet the EDGE criteria, six of which are within the SEAFWA region (Table B-2). The maximum ED for amphibians was 107, the median was about 16.2. Nearly all six SEAFWA species would qualify as RSGCN based on federal listing status, but most are single state endemics. Flatwoods salamanders are narrow range, but bridge FL and SC. All six amphibians that meet the EDGE criteria and are found in the SEAFWA region were selected as RSGCN.

Table B-2. U.S. Amphibians which meet the EDGE criteria

Scientific Name	Common Name	ED Score	Federal ESA Listing status	Responsibility
Rhyacotriton olympicus	Olympic Torrent Salamander	38.24301		Not SEAFWA
Phaeognathus hubrichti	Red Hills Salamander	30.02467	Threatened	Alabama (single state endemic)
Necturus alabamensis	Alabama Waterdog	28.93346	Endangered	Alabama (single state endemic)
Batrachoseps wrighti	Oregon Slender Salamander	27.77068		Not SEAFWA
Batrachoseps campi	Inyo Mountains Salamander	27.48924		Not SEAFWA
Ambystoma cingulatum	Frosted Flatwoods Salamander	19.21982	Threatened	SEAFWA
Batrachoseps regius	Kings River Slender Salamander	17.94188		Not SEAFWA
Batrachoseps stebbinsi	Tehachapi Slender Salamander	17.82669		Not SEAFWA
Ambystoma bishopi	Reticulated Flatwoods Salamander	17.52179	Endangered	SEAFWA
Gyrinophilus subterraneus	West Virginia Spring Salamander	17.2188	Under Review	West Virginia (single state endemic)
Plethodon asupak	Scottbar Salamander	16.76971		Not SEAFWA
Gyrinophilus gulolineatus	Berry Cave Salamander	16.22393	Candidate	Tenessee (single state endmic)

REPTILES

Seven (7) U.S. reptiles meet the EDGE criteria, five of which are found within the SEAFWA region (Table B-3). The maximum ED for reptiles was 150, the median was about 11.1. There are three reptiles significantly above the median ED. SEAFWA is already doing a lot of work on alligator snapping turtle and gopher tortoise, both of which have high SEAFWA regional responsibility. Flattened musk turtle is federally listed as threatened and it is a single state endemic (Alabama). Florida sand skink has a lower ED, it's federally listed as threatened and it is endemic to FL. (Sandstone night lizard and blunt-nosed leopard lizard are in California.) The dunes sagebrush lizard is narrow range bridging New Mexico and Texas. The species was proposed for endangered status but the proposal was withdrawn in 2012. All five reptiles that meet the EDGE criteria that are found in the SEAFWA region were selected as RSGCN.

Table B-3. U.S. Reptiles which meet the EDGE criteria

Scientific Name	Common Name	ED Score
Macrochelys temminckii	Alligator Snapping turtle	50.96878
Sternotherus depressus	Flattened Musk turtle	44.53100
Gopherus polyphemus	Gopher Tortoise	31.25360
Xantusia gracilis	Sandstone Night Lizard	27.13280
Gambelia sila	Blunt-nosed Leopard Lizard, San Joaquin Leopard Lizard	17.43839
Sceloporus arenicolus	Dunes Sagebrush Lizard, Sand Dune Lizard	12.97030
Plestiodon reynoldsi	Florida Sand Skink, Sand Skink	12.12506

SUMMARY

Some of the most evolutionarily distinct species in the Southeastern U.S. included in this dataset are amphibians and reptiles. Many species in the southeastern U.S. that have high evolutionary distinctiveness are single state (or narrow range) endemics. Most have been reviewed for federal listing and many are listed as threatened or endangered. Based on this dataset, it appears that most evolutionarily distinct species will satisfy criteria for RSGCN based on responsibility and concern.

APPENDIX C. LIST OF TAXA TEAM PARTICIPANTS

Taxonomic experts from each state were invited to participate in the taxa review teams for each taxonomic group of RSGCN. Each taxa team met at least twice using a Zoom web-based conference call and utilized email discussions for consideration of follow-up issues. The draft final RSGCN list and any remaining unresolved issues were distributed for review via email and an accompanying Survey Monkey. Participants in each of the taxa teams and the dates of their conference calls / review dates are listed below.

MAMMALS

PARTICIPANT	AFFILIATION
Carrie Threadgill	Alabama Wildlife and Freshwater Fisheries
Blake Sasse	Arkansas Game and Fish Commission
Terry Doonan	Florida Fish and Wildlife Conservation Commission
Trina Morris	Georgia Department of Natural Resources
Clay George	Georgia Department of Natural Resources
Sunni Carr	Kentucky Department of Fish and Wildlife Resources
Zach Couch	Kentucky Department of Fish and Wildlife Resources
Keri LeJeune	Louisiana Department of Wildlife and Fisheries
Mandy Tumlin	Louisiana Department of Wildlife and Fisheries
Janet Sternberg	Missouri Department of Conservation
Scott Peyton	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Allison Medford	North Carolina Wildlife Resources Commission
Andrea Shipley	North Carolina Wildlife Resources Commission
Katherine Caldwell	North Carolina Wildlife Resources Commission
Matt Fullerton	Oklahoma Department of Wildlife Conservation
Jennifer Kindel	South Carolina Department of Natural Resources
Wayne McFee	National Oceanic and Atmospheric Administration, National Centers for Coastal Ocean Science
Brian Flock	Tennessee Wildlife Resources Agency

PARTICIPANT	AFFILIATION
Jonah Evans	Texas Parks and Wildlife Department
Rick Reynolds	Virginia Department of Game and Inland Fisheries
Mack Frantz	West Virginia Department of Natural Resources
Sarah Mallette	Virginia Aquarium, Marine Mammal Research Program; PhD Candidate
Robert Brownell	National Oceanic and Atmospheric Administration, National Marine Fisheries Service

Mammal Team Coordination

- Presentation of potential RSGCN species spreadsheet (Round 1 Review): 01/23/29
- Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 02/25/19
- Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/02/19

BIRDS

PARTICIPANT	AFFILIATION
Carrie Threadgill	Alabama Wildlife and Freshwater Fisheries
Karen Rowe	Arkansas Game and Fish Commission, Wildlife Management Division
Allison Fowler	Arkansas Game and Fish Commission
Craig Faulhaber	Florida Fish and Wildlife Conservation Commission
Natalie Montero	Florida Fish and Wildlife Conservation Commission
Adrienne Doyle	Florida Fish and Wildlife Conservation Commission
Todd Schneider	Georgia Department of Natural Resources, Wildlife Resources Division
Jon Ambrose	Georgia Department of Natural Resources, Wildlife Resources Division
Kate Slankard	Kentucky Department of Fish and Wildlife Resources
Loren Taylor	Kentucky Department of Fish and Wildlife Resources
Michael Seymour	Louisiana Department of Wildlife and Fisheries
Sarah Kendrick	Missouri Department of Conservation
Kelly Rezac	Missouri Department of Conservation
Nick Winstead	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Scott Anderson	North Carolina Wildlife Resources Commission
Mark Howery	Oklahoma Department of Wildlife Conservation
Amy Tegeler	South Carolina Department of Natural Resources
David Hanni	Tennessee Wildlife Resources Agency
Cliff Shackelford	Texas Parks and Wildlife Department
Sergio Harding	Virginia Department of Game and Inland Fisheries
Ruth Boettcher	Virginia Department of Game and Inland Fisheries
Gary Costanzo	Virginia Department of Game and Inland Fisheries
Richard Bailey	West Virginia Division of Natural Resources, Wildlife Resources Section

Bird Team Coordination

- Presentation of potential RSGCN species spreadsheet (Round 1 Review): 01/22/19
- Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 02/14/19
- Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/01/19

HERPETOFAUNA

PARTICIPANT	AFFILIATION
Carrie Threadgill	Alabama Wildlife and Freshwater Fisheries
Kelly Irwin	Arkansas Game and Fish Commission
Brooke Talley	Florida Fish and Wildlife Conservation Commission
John Jensen	Georgia Department of Natural Resources, Wildlife Resources Division
John MacGregor	Kentucky Department of Fish and Wildlife Resources
Keri LeJeune	Louisiana Department of Wildlife and Fisheries
Jeff Boundy	Louisiana Department of Wildlife and Fisheries
Jeff Briggler	Missouri Department of Conservation
Tom Mann	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Bob Jones	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Jeff Hall	North Carolina Wildlife Resources Commission
Mark Howery	Oklahoma Department of Wildlife Conservation
Andrew Grosse	South Carolina Department of Natural Resources
Pandy Upchurch	Tennessee Wildlife Resources Agency
Paul Crump	Texas Parks and Wildlife Department
J.D. Kleopfer	Virginia Department of Game and Inland Fisheries
Kevin Oxenrider	West Virginia Division of Natural Resources

Herpetofauna Team Coordination

Presentation of potential RSGCN species spreadsheet (Round 1 Review): 01/28/19

Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 02/27/19

Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/04/19

FRESHWATER & DIADROMOUS FISH

PARTICIPANT	AFFILIATION
Traci Wood	Alabama Wildlife and Freshwater Fisheries
Jeffrey Quinn	Arkansas Game and Fish Commission
Brian Wagner	Arkansas Game and Fish Commission
Jeanne-Marie Havrylkoff	Florida Fish and Wildlife Conservation Commission
Brett Albanese	Georgia Department of Natural Resources
Paula Marcinek	Georgia Department of Natural Resources
Matt Thomas	Kentucky Department of Fish and Wildlife Resources
Keri LeJeune	Louisiana Department of Wildlife and Fisheries
Robby Maxwell	Louisiana Department of Wildlife and Fisheries
Jacob Westhoff	Missouri Department of Conservation
Matthew Wagner	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Mark Howery	Oklahoma Department of Wildlife Conservation
William Russ	North Carolina Wildlife Resources Commission
Mark Scott	South Carolina Department of Natural Resources
Kevin Kubach	South Carolina Department of Natural Resources
Bill Post	South Carolina Department of Natural Resources, Marine Resources Research Institute
Bart Carter	Tennessee Wildlife Resources Commission
Kevin Mayes	Texas Parks and Wildlife Department
Mike Pinder	Virginia Department of Game and Inland Fisheries

Freshwater and Diadromous Fishes Team Coordination

Presentation of potential RSGCN species spreadsheet (Round 1 Review): 01/17/19

Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 02/15/19

Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/02/19

MARINE FISH

PARTICIPANT	AFFILIATION
Jeanne-Marie Havrylkoff	Florida Fish and Wildlife Conservation Commission
Carolyn Belcher	Georgia Department of Natural Resources
Nicole Smith	Louisiana Department of Wildlife and Fisheries
Joseph Ballenger	South Carolina Department of Natural Resources, Marine Resources Research Institute
Brian Frazier	South Carolina Department of Natural Resources, Marine Resources Research Institute
Wally Bubley	South Carolina Department of Natural Resources, Marine Resources Research Institute
Tracey Smart	South Carolina Department of Natural Resources, Marine Resources Research Institute
Kelcee Smith	Texas Parks and Wildlife Department
Dakus Geeslin	Texas Parks and Wildlife Department

Marine Fishes Team Coordination

Presentation of potential RSGCN species spreadsheet (Round 1 Review): 01/17/19

Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 02/15/19

Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/02/19

CRAYFISH

PARTICIPANT	AFFILIATION
Traci Wood	Alabama Wildlife and Freshwater Fisheries
Brian Wagner	Arkansas Game and Fish Commission
David Cook	Florida Fish and Wildlife Conservation Commission
Paul Moler	Florida Fish and Wildlife Conservation Commission
Anakela Popp	Georgia Department of Natural Resources
Brett Albanese	Georgia Department of Natural Resources
Zach Couch	Kentucky Department of Fish and Wildlife Resources
Keri LeJeune	Louisiana Department of Wildlife and Fisheries
Beau Gregory	Louisiana Department of Wildlife and Fisheries
Stephen McMurray	Missouri Department of Conservation
Bob Jones	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
William Russ	North Carolina Wildlife Resources Commission
Michael Kendrick	South Carolina Department of Natural Resources
Carl Williams	Tennessee Wildlife Resources Agency
Jeff Simmons	Tennessee Valley Authority
David Withers	Tennessee Natural Heritage Program
Brian Watson	Virginia Department of Game and Inland Fisheries
Mack Frantz	West Virginia Department of Natural Resources

Crayfish Team Coordination

Presentation of potential RSGCN species spreadsheet (Round 1 Review): 02/08/19

Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 03/13/19

Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/18/19

MUSSELS

PARTICIPANT	AFFILIATION
Traci Wood	Alabama Wildlife and Freshwater Fisheries
Jeff Garner	Alabama Department of Conservation and Natural Resources
Kendall Moles	Arkansas Game and Fish Commission
Jeanne-Marie Havrylkoff	Florida Fish and Wildlife Conservation Commission
Susan Geda	Florida Fish and Wildlife Conservation Commission
Jason Wisniewski	Georgia Department of Natural Resources
Monte McGregor	Kentucky Department of Fish and Wildlife Resources
Keri LeJeune	Louisiana Department of Wildlife and Fisheries
Beau Gregory	Louisiana Department of Wildlife and Fisheries
Stephen McMurray	Missouri Department of Conservation
Bob Jones	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Brena Jones	North Carolina Wildlife Resources Commission
Morgan Kern	South Carolina Department of Natural Resources
Don Hubbs	Tennessee Wildlife Resources Agency
Clint Robertson	Texas Parks and Wildlife Department
Brian Watson	Virginia Department of Game and Inland Fisheries
Mack Frantz	West Virginia Department of Natural Resources

Mussels Team Coordination

Presentation of potential RSGCN species spreadsheet (Round 1 Review): 02/08/19

Presentation and discussion of merged spreadsheet incorporating all Round 1 reviews (Round 2 Review): 03/11/19

Email distribution of draft final RSGCN list and Survey Monkey (Round 3 Review): 04/17/19

BUMBLE BEES

PARTICIPANT	AFFILIATION
Leif Richardson	member of Bumblebee Specialist Group, North American Region, IUCN Species Survival Commission; co-author of Bumble Bees of North America
Sam Droege	lead at Native Bee Inventory and Monitoring Lab, U.S. Geological Survey, Patuxent Wildlife Research Center
Jamie Strange	U.S. Department of Agriculture, Agricultural Research Service
T'ai Roulston	University of Virginia; State Arboretum of Virginia
Jeff Lozier	University of Alabama
Katherine Parys	U.S. Department of Agriculture, Agricultural Research Service
Anne Chazal	Division of Natural Heritage, Virginia Department of Conservation and Recreation

Bumble Bee Team Coordination

Team discussed the list via email only – from March 1 through April 5, 2019

APPENDIX D. WDC COORDINATION

TCI collaborated with the WDC throughout the RSGCN development process. Members of the WDC are:

PARTICIPANT	AFFILIATION
Traci Wood, Amy Silvano	Alabama Wildlife and Freshwater Fisheries
William Posey, Allison Fowler	Arkansas Game and Fish Commission
Natalie Montero, Andrea Alden	Florida Fish and Wildlife Conservation Commission
Jon Ambrose	Georgia Department of Natural Resources
Sunni Carr	Kentucky Department of Fish and Wildlife Resources
Keri LeJeune	Louisiana Department of Wildlife and Fisheries
Norman Murray, Kelly Rezack	Missouri Department of Conservation
Matt Roberts, Nicole Hodges	Mississippi Department of Wildlife, Fisheries and Parks, Museum of Natural Science
Todd Ewing	North Carolina Wildlife Resources Commission
Mark Howery	Oklahoma Department of Wildlife Conservation
Anna Smith	South Carolina Department of Natural Resources
Pandy Upchurch	Tennessee Widllife Resources Agency
Meredith Longoria, Bob Gottfried	Texas Parks and Wildlife Department
Becky Gwynn	Virginia Department of Game and Inland Fisheries
Kieran O'Malley	West Virginia Department of Natural Resources

WDC held regular conference calls and/or met in person throughout RSGCN List development.

March 2018: Attend 2018 WDC Meeting and present the project

April 2018 (Conference call): Attend monthly call

May 2018 (Conference call): Attend monthly call

June 2018 (Conference call): Approve moving forward with developing the project; established Working Group

July 2018 (Conference call): Attended monthly call; worked with Working Group on developing methodology

August 2018 (Conference call): Attend monthly call; work with Working Group on developing methodology

September 20, 2018: Kick-off Meeting; provide update on the project status; review taxa team members; obtain final approval of RSGCN Working Group (to develop the methodology)

October 2018: Collaborate with state data coordinators to continue SGCN data retrieval

October 4, 2018 (Webex): Held working meeting of the Working Group to further develop RSGCN selection methodology

October 24, 2018 (SEAFWA Meeting): Development of RSGCN selection methodology with the Working Group

November 15, 2018 (Conference call, 2 PM EST): Presentation of the final RSGCN selection methodology

December 20, 2018 (Conference call, 2 PM EST): Review of minor changes to the RSGCN selection methodology

January 17, 2019 (Conference call, 2 PM EST): Review of compiled SGCN lists, scheduled taxa team meetings and project schedule; discussion of how to address marine mammals

February 21, 2019: conference call cancelled

March 18, 2019 (SEAFWA Annual Meeting): Presentation of draft RSGCN lists for birds, mammals, fish, herpetofauna, mussels and crayfish; discussion of narrow-range endemism of southeast crayfish species and how to prioritize their regional status; discussion of inclusion / exclusion of other invertebrate taxa

April 18, 2019: conference call cancelled

May 16, 2019 (Zoom Conference Call, 2 PM EST): Presentation of RSGCN Lists and Analysis; presentation of end product and distribution options

APPENDIX E. RSGCN LISTS

Table E-1. Very High Concern RSGCN

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Ambystoma bishopi	Reticulated Flatwoods Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Ambystoma cingulatum	Flatwoods Salamander (Frosted)	A) 100% (SEAFWA Endemic)	3
Amphibians	Anaxyrus (Bufo) houstonensis	Houston Toad	A) 100% (SEAFWA Endemic)	1
Amphibians	Cryptobranchus alleganiensis (including alleganiensis and bishopi)	Hellbender (including Eastern and Ozark)	C) 50-75%	11
Amphibians	Eurycea nana	San Marcos Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea naufragia	Georgetown Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea rathbuni	Texas blind Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea robusta	Blanco blind Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea sosorum	Barton Springs Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea waterlooensis	Austin blind salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Gyrinophilus gulolineatus	Berry Cave Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Gyrinophilus palleucus (including necturoides and palleucus)	Tennessee Cave Salamander (including Big Mouth Cave and Pale)	A) 100% (SEAFWA Endemic)	3
Amphibians	Gyrinophilus subterraneus	West Virginia Spring Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Hyla andersonii	Pine Barrens Treefrog	B) 75-100%	3
Amphibians	Lithobates capito	Gopher Frog	B) 75-100%	7
Amphibians	Lithobates okaloosae	Florida Bog Frog	A) 100% (SEAFWA Endemic)	2
Amphibians	Lithobates sevosus	MississippI Gopher Frog	A) 100% (SEAFWA Endemic)	3

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Necturus alabamensis	Black Warrior Waterdog	A) 100% (SEAFWA Endemic)	1
Amphibians	Necturus lewisi	Neuse River Waterdog	A) 100% (SEAFWA Endemic)	2
Amphibians	Notophthalmus perstriatus	Striped Newt	A) 100% (SEAFWA Endemic)	2
Amphibians	Phaeognathus hubrichti	Red Hills Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon fourchensis	Fourche Mountain Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon hubrichti	Peaks of Otter Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon shenandoah	Shenandoah Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon virginia	Shenandoah Mountain Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Urspelerpes brucei	Patch-nosed Salamander	A) 100% (SEAFWA Endemic)	2
Birds	Ammospiza caudacuta	Saltmarsh Sparrow	C) 50-75%	5
Birds	Aphelocoma coerulescens	Florida Scrub-Jay	A) 100% (SEAFWA Endemic)	1
Birds	Elanoides forficatus	Swallow-tailed Kite	C) 50-75%	14
Birds	Laterallus jamaicensis	Black Rail	C) 50-75%	11
Birds	Oreothlypis crissalis	Colima Warbler	E) <25%	1
Birds	Peucaea aestivalis	Bachman's Sparrow	A) 100% (SEAFWA Endemic)	14
Birds	Picoides borealis	Red-cockaded Woodpecker	B) 75-100%	13
Birds	Setophaga chrysoparia	Golden-cheeked Warbler	A) 100% (SEAFWA Endemic)	1
Birds	Tympanuchus cupido attwateri	Greater Prairie-Chicken (Attwater's)	A) 100% (SEAFWA Endemic)	2
Birds	Tympanuchus pallidicinctus	Lesser Prairie-Chicken	C) 50-75%	2
Bumble Bees	Bombus affinis (Appalachian pop.)	Rusty-patched Bumble Bee	A) 100% (SEAFWA Endemic)	7
Bumble Bees	Bombus variabilis	Variable Cuckoo Bumble Bee	C) 50-75%	4

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Diadromous Fish	Acipenser brevirostrum	Shortnose Sturgeon	B) 75-100%	5
Diadromous Fish	Alosa alabamae	Alabama Shad	B) 75-100%	10
Diadromous Fish	Alosa sapidissima	American Shad	C) 50-75%	6
Diadromous Fish	Anguilla rostrata	American Eel	D) 25-50%	15
Fish	Campostoma ornatum	Mexican Stoneroller	B) 75-100%	1
Fish	Chrosomus saylori (includes sp. cf. saylori)	Dace (Laural and Clinch)	A) 100% (SEAFWA Endemic)	1
Fish	Cottus paulus	Pygmy Sculpin	A) 100% (SEAFWA Endemic)	1
Fish	Cottus specus	Grotto Sculpin	A) 100% (SEAFWA Endemic)	1
Fish	Crystallaria cincotta	Diamond Darter	B) 75-100%	3
Fish	Ctenogobius claytonii	Mexican Goby	B) 75-100%	1
Fish	Cyprinella proserpina	Proserpine Shiner	B) 75-100%	1
Fish	Cyprinella sp.	Nueces River Shiner	A) 100% (SEAFWA Endemic)	1
Fish	Cyprinodon bovinus	Leon Springs Pupfish	B) 75-100%	1
Fish	Cyprinodon elegans	Comanche Springs Pupfish	B) 75-100%	1
Fish	Cyprinodon eximius	Conchos Pupfish	B) 75-100%	1
Fish	Dionda diaboli	Devils River Minnow	B) 75-100%	1
Fish	Elassoma alabamae	Spring Pygmy Sunfish	A) 100% (SEAFWA Endemic)	2
Fish	Elassoma boehlkei	Carolina Pygmy Sunfish	A) 100% (SEAFWA Endemic)	2
Fish	Elassoma okatie	Bluebarred Pygmy Sunfish	A) 100% (SEAFWA Endemic)	2
Fish	Erimystax cahni	Slender Chub	A) 100% (SEAFWA Endemic)	4
Fish	Etheostoma akatulo	Bluemask Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma boschungi	Slackwater Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma chermocki	Vermilion Darter	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Etheostoma clinton	Beaded Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma etowahae	Etowah Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma fonticola	Fountain Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma forbesi	Barrens Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma fragi	Strawberry River Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma grahami	Rio Grande Darter	B) 75-100%	1
Fish	Etheostoma hopkinsi	Christmas Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma lemniscatum	Tuxedo Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma marmorpinnum	Marbled Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma moorei	Yellowcheek Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma nebra	Buck Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma nuchale	Watercress Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma pallididorsum	Paleback Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma percnurum	Duskytail Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma phytophilum	Rush Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma sitikuense	Citico Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma susanae	Cumberland Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma wapiti	Boulder Darter	A) 100% (SEAFWA Endemic)	2
Fish	Fundulus julisia	Barrens Topminnow	A) 100% (SEAFWA Endemic)	1
Fish	Fundulus sp. cf. diaphanus	Lake Phelps Killifish	B) 75-100%	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Fundulus waccamensis	Waccamaw Killifish	B) 75-100%	2
Fish	Gambusia gaigei	Big Bend Gambusia	B) 75-100%	1
Fish	Gambusia heterochir	Clear Creek Gambusia	A) 100% (SEAFWA Endemic)	1
Fish	Gambusia krumholzi	San Felipe Gambusia	B) 75-100%	1
Fish	Hybopsis sp. 9	Etowah Chub	A) 100% (SEAFWA Endemic)	1
Fish	Ictalurus sp.	Chihuahua Catfish	C) 50-75%	1
Fish	Macrhybopsis australis	Prairie Chub	A) 100% (SEAFWA Endemic)	2
Fish	Macrhybopsis tetranema	Peppered Chub	D) 25-50%	3
Fish	Microphis brachyurus	Opossum Pipefish	A) 100% (SEAFWA Endemic)	6
Fish	Micropterus coosae	Bartram's Redeye Bass	A) 100% (SEAFWA Endemic)	5
Fish	Moxostoma robustum	Robust Redhorse	A) 100% (SEAFWA Endemic)	4
Fish	Moxostoma sp. Carolina	Carolina Redhorse	A) 100% (SEAFWA Endemic)	2
Fish	Notropis albizonatus	Palezone Shiner	A) 100% (SEAFWA Endemic)	6
Fish	Notropis buccula	Smalleye Shiner	A) 100% (SEAFWA Endemic)	1
Fish	Notropis cahabae	Cahaba Shiner	A) 100% (SEAFWA Endemic)	1
Fish	Notropis chihuahua	Chihuahua Shiner	B) 75-100%	1
Fish	Notropis edwardraneyi	Fluvial Shiner	B) 75-100%	2
Fish	Notropis girardi	Arkansas River Shiner	C) 50-75%	3
Fish	Notropis melanostomus	Blackmouth Shiner	B) 75-100%	3
Fish	Notropis oxyrhynchus	Sharpnose Shiner	A) 100% (SEAFWA Endemic)	1
Fish	Notropis perpallidus	Peppered Shiner	A) 100% (SEAFWA Endemic)	2
Fish	Notropis simus pecosensis	Pecos Bluntnose Shiner	C) 50-75%	1
Fish	Noturus baileyi	Smoky Madtom	A) 100% (SEAFWA Endemic)	2
Fish	Noturus crypticus	Chucky Madtom	A) 100% (SEAFWA Endemic)	3

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Noturus furiosus	Carolina Madtom	B) 75-100%	2
Fish	Noturus gladiator	Piebald Madtom	A) 100% (SEAFWA Endemic)	2
Fish	Noturus lachneri	Ouachita Madtom	A) 100% (SEAFWA Endemic)	1
Fish	Noturus sp. cf. insignis (Edisto & Pee Dee forms)	Broadtail Madtom (Edisto & Pee Dee forms)	A) 100% (SEAFWA Endemic)	2
Fish	Noturus stanauli	Pygmy Madtom	A) 100% (SEAFWA Endemic)	3
Fish	Noturus taylori	Caddo Madtom	A) 100% (SEAFWA Endemic)	1
Fish	Percina antesella	Amber Darter	A) 100% (SEAFWA Endemic)	3
Fish	Percina aurora	Pearl Darter	A) 100% (SEAFWA Endemic)	2
Fish	Percina crypta	Halloween Darter	A) 100% (SEAFWA Endemic)	2
Fish	Percina jenkinsi	Conasauga Logperch	A) 100% (SEAFWA Endemic)	3
Fish	Percina pantherina	Leopard Darter	A) 100% (SEAFWA Endemic)	2
Fish	Percina sipsi	Bankhead Darter	A) 100% (SEAFWA Endemic)	1
Fish	Sander sp. cf. vitreus	Southern Walleye	A) 100% (SEAFWA Endemic)	2
Fish	Satan eurystomus	Widemouth Blindcat	A) 100% (SEAFWA Endemic)	1
Fish	Scaphirhynchus albus	Pallid Sturgeon	D) 25-50%	6
Fish	Scaphirhynchus suttkusi	Alabama Sturgeon	A) 100% (SEAFWA Endemic)	2
Fish	Trogloglanis pattersoni	Toothless Blindcat	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarellus blacki	Cypress Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus aculabrum	Benton County Cave Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus callainus	Big Sandy Crayfish	A) 100% (SEAFWA Endemic)	3

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Cambarus cracens	Slenderclaw Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus doughertyensis	Dougherty Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus harti	Piedmont Blue Burrower	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus laconensis	Lacon Exit Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus magerae	Big Stone Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus parrishi	Hiwassee Headwater Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus pauleyi	Meadow River Mudbug	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus pecki	Phantom Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus pristinus	Pristine Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus setosus	Bristly Cave Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus speciosus	Beautiful Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus speleocoopi	Sweet Home Alabama Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus subterraneus	Delaware County Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus tuckasegee	Tuckaseegee Stream Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus veitchorum	White Spring Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus veteranus	Guyandotte River Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus zophonastes	Hell Creek Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Creaserinus gilpini	Jefferson County Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Creaserinus gordoni	Camp Shelby Burrowing Crawfish	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Distocambarus devexus	Broad River Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Distocambarus youngineri	Newberry Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus petilicarpus	Slenderwrist Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus strawni	Saline Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius eupunctus	Coldwater Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius jeffersoni	Louisville Crayfish	C) 50-75%	1
Invertebrates - Crayfish	Faxonius margorectus	Livingston Crayfish	C) 50-75%	1
Invertebrates - Crayfish	Faxonius stygocaneyi	Caney Mountain Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Hobbseus orconectoides	Oktibbeha Rivulet Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Hobbseus valleculus	Choctaw Rivulet Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Orconectes sheltae	Shelta Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus acherontis	Orlando Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus apalachicolae (including "apalachicolae" sp. 2 & sp. 3)	Coastal Flatwoods Crayfish (including sp. 2 & sp. 3)	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus attiguus	Silver Glen Springs Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus brazoriensis	Brazoria Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus delicatus	Big-Cheeked Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus econfinae	Panama City Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus erythrops	Santa Fe Cave Crayfish	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Procambarus franzi	Orange Lake Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus horsti	Big Blue Spring Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus leitheuseri	Coastal Lowland Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus lucifugus lucifugus	Withlacoochee Light-fleeing Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus milleri	Miami Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus morrisi	Putnam County Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus nigrocinctus	Blackbelted Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus nueces	Nueces Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus orcinus	Woodville Karst Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus rathbunae	Combclaw Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus reimeri	Irons Fork Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus steigmani	Parkhill Prairie Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus texanus	Bastrop Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus youngi	Florida Longbeak Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Alasmidonta triangulata	Southern Elktoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Anodontoides denigrata	Cumberland Papershell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Arcidens wheeleri	Ouachita Rock Pocketbook	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Cyclonaias petrina	Texas Pimpleback	B) 75-100%	1
Invertebrates - Mussels	Cyprogenia stegaria	Fanshell	C) 50-75%	6

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Dromus dromas	Dromedary Pearlymussel	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Elliptio fraterna	Brother Spike	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Elliptio lanceolata	Yellow Lance	B) 75-100%	3
Invertebrates - Mussels	Elliptio nigella	Winged Spike	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Elliptio purpurella	Inflated Spike	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Elliptio spinosa	Altamaha Spinymussel	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Epioblasma ahlstedti	Duck River Dartersnapper	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Epioblasma aureola	Golden Riffleshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Epioblasma brevidens	Cumberlandian Combshell	A) 100% (SEAFWA Endemic)	6
Invertebrates - Mussels	Epioblasma capsaeformis	Oyster Mussel	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Epioblasma curtisii	Curtis Pearlymussel	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Epioblasma obliquata	Catspaw	D) 25-50%	4
Invertebrates - Mussels	Epioblasma penita	Southern Combshell	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Epioblasma triquetra	Snuffbox	D) 25-50%	8
Invertebrates - Mussels	Epioblasma walkeri	Tan Riffleshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Fusconaia cor	Shiny Pigtoe	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Fusconaia cuneolus	Finerayed Pigtoe	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Fusconaia masoni	Atlantic Pigtoe	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Fusconaia mitchelli	False Spike	B) 75-100%	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Hamiota subangulata	Shinyrayed Pocketbook	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Hemistena lata	Cracking Pearlymussel	B) 75-100%	5
Invertebrates - Mussels	Lampsilis bracteata	Texas Fatmucket	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Lampsilis powellii	Arkansas Fatmucket	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Lampsilis rafinesqueana	Neosho Mucket	B) 75-100%	3
Invertebrates - Mussels	Lampsilis satura	Sandbank Pocketbook	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Lampsilis streckeri	Speckled Pocketbook	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Lampsilis virescens	Alabama Lampmussel	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Lasmigona decorata	Carolina Heelsplitter	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Lemiox rimosus	Birdwing Pearlymussel	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Leptodea leptodon	Scaleshell	C) 50-75%	7
Invertebrates - Mussels	Margaritifera hembeli	Louisiana Pearlshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Margaritifera marrianae	Alabama Pearlshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Margaritifera monodonta	Spectaclecase	D) 25-50%	7
Invertebrates - Mussels	Medionidus parvulus	Coosa Moccasinshell	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Medionidus penicillatus	Gulf Moccasinshell	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Medionidus walkeri	Suwannee Moccasinshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Parvaspina steinstansana	Tar River Spinymussel	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Pegias fabula	Littlewing Pearlymussel	A) 100% (SEAFWA Endemic)	5

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Plethobasus cicatricosus	White Wartyback	C) 50-75%	5
Invertebrates - Mussels	Plethobasus cooperianus	Orangefoot Pimpleback	C) 50-75%	4
Invertebrates - Mussels	Plethobasus cyphyus	Sheepnose	D) 25-50%	8
Invertebrates - Mussels	Pleurobema athearni	Canoe Creek Clubshell	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Pleurobema hanleyianum	Georgia Pigtoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Pleurobema hartmanianum	Cherokee Pigtoe	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Pleurobema perovatum	Ovate Clubshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Pleurobema plenum	Rough Pigtoe	C) 50-75%	5
Invertebrates - Mussels	Pleurobema pyriforme	Oval Pigtoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Pleurobema riddellii	Louisiana pigtoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Pleurobema stabile	Coosa Pigtoe	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Pleurobema taitianum	Heavy Pigtoe	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Popenais popeii	Texas Hornshell	D) 25-50%	1
Invertebrates - Mussels	Potamilus amphichaenus	Texas Heelsplitter	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Potamilus capax	Fat Pocketbook	C) 50-75%	6
Invertebrates - Mussels	Potamilus metnecktayi	Salina Mucket	C) 50-75%	1
Invertebrates - Mussels	Ptychobranchus foremanianus	Rayed Kidneyshell	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Ptychobranchus greenii	Triangular Kidneyshell	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Ptychobranchus jonesi	Southern Kidneyshell	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Ptychobranchus subtentus	Fluted Kidneyshell	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Quadrula fragosa	Winged Mapleleaf	C) 50-75%	6
Invertebrates - Mussels	Reginaia rotulata	Round Ebonyshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Theliderma intermedia	Cumberland Monkeyface	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Theliderma sparsa	Appalachian Monkeyface	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Toxolasma cylindrellus	Pale Lilliput	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Truncilla cognata	Mexican Fawnsfoot	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Venustaconcha trabalis	Tennessee Bean	A) 100% (SEAFWA Endemic)	4
Mammals	Canis rufus	Red Wolf	A) 100% (SEAFWA Endemic)	2
Mammals	Corynorhinus townsendii virginianus	Virginia Big-eared Bat	A) 100% (SEAFWA Endemic)	5
Mammals	Eumops floridanus	Florida Bonneted Bat	A) 100% (SEAFWA Endemic)	1
Mammals	Glaucomys sabrinus coloratus	Carolina Northern Flying Squirrel	A) 100% (SEAFWA Endemic)	3
Mammals	Myotis lucifugus	Little Brown Bat	E) <25%	15
Mammals	Myotis septentrionalis	Northern Long-eared Bat	E) <25%	13
Mammals	Myotis sodalis	Indiana Bat	C) 50-75%	14
Mammals	Peromyscus leucopus buxtoni	Buxton Woods White-footed Deermouse	A) 100% (SEAFWA Endemic)	1
Mammals	Peromyscus polionotus (includes allophrys, ammobates, leucocephalus, niveiventris, peninsularis, phasma, trissyllepsis)	Old-field Deermouse and Beach Mice: Choctawhatchee, Alabama, Santa Rosa, Southeastern, St. Andrew, Anastasia Island, Perdido Key	A) 100% (SEAFWA Endemic)	7
Mammals	Puma concolor coryi	Florida Panther	A) 100% (SEAFWA Endemic)	1
Marine Fish	Carcharhinus longimanus	Oceanic Whitetip Shark	E) <25%	9

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Marine Fish	Carcharhinus obscurus	Dusky Shark	C) 50-75%	9
Marine Fish	Cetorhinus maximus	Basking Shark	E) <25%	9
Marine Fish	Dermatolepis inermis	Marbled Grouper	E) <25%	7
Marine Fish	Epinephelus drummondhayi	Speckled Hind	B) 75-100%	8
Marine Fish	Epinephelus itajara	Atlantic Goliath Grouper	B) 75-100%	7
Marine Fish	Epinephelus nigritus	Warsaw Grouper	C) 50-75%	9
Marine Fish	Epinephelus striatus	Nassau Grouper	E) <25%	3
Marine Fish	Narcine bancroftii	Caribbean Electric Ray	D) 25-50%	8
Marine Fish	Pristis pectinata	Smalltooth Sawfish	A) 100% (SEAFWA Endemic)	7
Marine Fish	Pristis pristis	Largetooth Sawfish	A) 100% (SEAFWA Endemic)	2
Marine Fish	Scarus coelestinus	Midnight Parrotfish	A) 100% (SEAFWA Endemic)	1
Marine Fish	Scarus guacamaia	Rainbow Parrotfish	A) 100% (SEAFWA Endemic)	1
Marine Fish	Scarus taeniopterus	Princess Parrotfish	A) 100% (SEAFWA Endemic)	1
Marine Fish	Scarus vetula	Queen Parrotfish	A) 100% (SEAFWA Endemic)	1
Marine Fish	Sphyrna gilberti	Carolina Hammerhead	A) 100% (SEAFWA Endemic)	2
Marine Fish	Sphyrna lewini	Scalloped Hammerhead	E) <25%	9
Marine Fish	Squalus acanthias	Spiny Dogfish	E) <25%	5
Marine Mammals	Eubalaena glacialis	North Atlantic Right Whale	B) 75-100%	6
Marine Reptiles	Dermochelys coriacea	Atlantic Leatherback Sea Turtle	C) 50-75%	9
Marine Reptiles	Eretmochelys imbricata imbricata	Atlantic Hawksbill Sea Turtle	D) 25-50%	8
Marine Reptiles	Lepidochelys kempii	Kemp's Atlantic Ridley Sea Turtle	C) 50-75%	9
Reptiles	Drymarchon couperi	Eastern Indigo Snake	A) 100% (SEAFWA Endemic)	4
Reptiles	Glyptemys muhlenbergii	Bog Turtle (Southern DPS)	A) 100% (SEAFWA Endemic)	5

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Reptiles	Graptemys barbouri	Barbour's Map Turtle	A) 100% (SEAFWA Endemic)	3
Reptiles	Graptemys caglei	Cagle's Map Turtle	A) 100% (SEAFWA Endemic)	1
Reptiles	Graptemys flavimaculata	Yellow-Blotched Map Turtle	B) 75-100%	1
Reptiles	Graptemys gibbonsi	Pascagoula Map Turtle	A) 100% (SEAFWA Endemic)	2
Reptiles	Holbrookia lacerata subcaudalis	Southern Earless Lizard	C) 50-75%	1
Reptiles	Pituophis ruthveni	Louisiana Pinesnake	A) 100% (SEAFWA Endemic)	2
Reptiles	Plestiodon egregius egregius	Florida Keys Mole Skink	A) 100% (SEAFWA Endemic)	1
Reptiles	Plestiodon egregius insularis	Cedar Key Mole Skink	A) 100% (SEAFWA Endemic)	1
Reptiles	Plestiodon egregius lividus	Blue-Tailed Mole Skink	A) 100% (SEAFWA Endemic)	1
Reptiles	Plestiodon reynoldsi	Florida Sand Skink	A) 100% (SEAFWA Endemic)	1
Reptiles	Pseudemys alabamensis	Alabama Red-Bellied Turtle	B) 75-100%	2
Reptiles	Sceloporus woodi	Florida Scrub Lizard	A) 100% (SEAFWA Endemic)	1
Reptiles	Sternotherus depressus	Flattened Musk Turtle	A) 100% (SEAFWA Endemic)	1

Table E-2. RSGCN that are of High Concern.

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Ambystoma barbouri	Streamside Salamander	B) 75-100%	3
Amphibians	Ambystoma mabeei	Mabee's Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Amphiuma pholeter	One-toed Amphiuma	A) 100% (SEAFWA Endemic)	4
Amphibians	Aneides aeneus	Green Salamander	B) 75-100%	9
Amphibians	Desmognathus abditus	Cumberland Dusky Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Desmognathus auriculatus	Southern Dusky Salamander	A) 100% (SEAFWA Endemic)	8
Amphibians	Desmognathus brimleyorum	Ouachita Dusky Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Desmognathus imitator (including pop. 1)	Imitator Salamander (including Waterrock Knob pop.)	A) 100% (SEAFWA Endemic)	3
Amphibians	Desmognathus marmoratus	Shovel-nosed Salamander	A) 100% (SEAFWA Endemic)	5
Amphibians	Desmognathus organi	Northern Pygmy Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Desmognathus santeetlah	Santeetlah Dusky Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Desmognathus wrighti	Pygmy Salamander	A) 100% (SEAFWA Endemic)	5
Amphibians	Eurycea chisolmensis	Salado Springs Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Eurycea hillisi	Hillis's Dwarf Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Eurycea junaluska	Junaluska Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Eurycea latitans	Cascade Caverns Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea neotenes	Texas Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea pterophila	Fern Bank (Blanco River springs) salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Eurycea sphagnicola	Bog Dwarf Salamander	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Eurycea ssp. (including braggi, nerea & spelaea)	Grotto Salamander (including Eastern, Western and Northern)	A) 100% (SEAFWA Endemic)	4
Amphibians	Eurycea subfluvicola	Ouachita Streambed Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea tonkawae	Jollyville Plateau Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Eurycea wallacei	Georgia Blind Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Lithobates areolatus (including areolatus and circulosus)	Southern Crawfish Frog (including Southern and Northern)	B) 75-100%	8
Amphibians	Lithobates heckscheri	River Frog	A) 100% (SEAFWA Endemic)	6
Amphibians	Necturus maculosus louisianensis	Red River Mudpuppy	B) 75-100%	4
Amphibians	Notophthalmus meridionalis	Black-spotted Newt	D) 25-50%	1
Amphibians	Plethodon amplus	Blue Ridge Gray-cheeked Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon aureolus	Tellico Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon caddoensis	Caddo Mountain Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon kiamichi	Kiamichi Slimy Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Plethodon nettingi	Cheat Mountain Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon ouachitae	Rich Mountain Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon petraeus	Pigeon Mountain Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon punctatus	Cow Knob Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon savannah	Savannah Slimy Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon sequoyah	Sequoyah Slimy Salamander	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Plethodon serratus	Southern Red-backed Salamander	A) 100% (SEAFWA Endemic)	8
Amphibians	Plethodon shermani	Red-legged Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Plethodon websteri	Webster's Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Plethodon wehrlei	Wehrle's Salamander	D) 25-50%	5
Amphibians	Plethodon welleri	Weller's Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Pseudacris illinoensis	Illinois Chorus Frog	C) 50-75%	2
Amphibians	Pseudacris ornata	Ornate Chorus Frog	A) 100% (SEAFWA Endemic)	6
Amphibians	Pseudacris streckeri	Strecker's Chorus Frog	B) 75-100%	4
Amphibians	Pseudobranchus striatus (striatus and lustricolus)	Dwarf Siren (Broad-striped and Gulf Hammock)	A) 100% (SEAFWA Endemic)	4
Birds	Amazona viridigenalis	Red-crowned Parrot	C) 50-75%	1
Birds	Ammodramus savannarum (includes floridanus)	Grasshopper Sparrow (and Florida)	D) 25-50%	15
Birds	Ammospiza leconteii	Le Conte's Sparrow	C) 50-75%	12
Birds	Ammospiza maritima (includes juncicolus, macgillivraii, mirabilis, and peninsulae)	Seaside Sparrow (including Wakulla, MacGillivray's, Cape Sable, and Scott's)	B) 75-100%	9
Birds	Ammospiza nelsoni	Nelson's Sparrow	D) 25-50%	10
Birds	Anas fulvigula	Mottled Duck	B) 75-100%	9
Birds	Anthus spragueii	Sprague's Pipit	D) 25-50%	11
Birds	Antigone canadensis (only subspecies pratensis and pulla)	Sandhill Crane (Florida and Mississippi subspecies)	A) 100% (SEAFWA Endemic)	4
Birds	Antrostomus vociferus	Eastern Whip-poor-will	D) 25-50%	15
Birds	Athene cunicularia floridana	Florida Burrowing Owl	A) 100% (SEAFWA Endemic)	2
Birds	Calcarius pictus	Smith's Longspur	B) 75-100%	7
Birds	Calidris canutus (includes rufa)	Red Knot	E) <25%	11
Birds	Centronyx henslowii	Henslow's Sparrow	D) 25-50%	15

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Birds	Charadrius melodus	Piping Plover	E) <25%	13
Birds	Charadrius nivosus	Snowy Plover	D) 25-50%	8
Birds	Charadrius wilsonia	Wilson's Plover	B) 75-100%	11
Birds	Cistothorus palustris (griseus and marianae)	Marsh Wren (Worthington's and Marian's)	A) 100% (SEAFWA Endemic)	2
Birds	Coccyzus americanus	Yellow-billed Cuckoo	C) 50-75%	15
Birds	Colinus virginianus	Northern Bobwhite	C) 50-75%	15
Birds	Coturnicops noveboracensis	Yellow Rail	B) 75-100%	11
Birds	Egretta rufescens	Reddish Egret	C) 50-75%	7
Birds	Euphagus carolinus	Rusty Blackbird	C) 50-75%	15
Birds	Falco sparverius paulus	Southeastern American Kestrel	A) 100% (SEAFWA Endemic)	6
Birds	Gelochelidon nilotica	Gull-billed Tern	B) 75-100%	9
Birds	Grus americana	Whooping Crane	B) 75-100%	8
Birds	Haematopus palliatus	American Oystercatcher	C) 50-75%	9
Birds	Lanius ludovicianus	Loggerhead Shrike	D) 25-50%	15
Birds	Limnothlypis swainsonii	Swainson's Warbler	A) 100% (SEAFWA Endemic)	15
Birds	Mycteria americana	Wood Stork	B) 75-100%	13
Birds	Numenius phaeopus hudsonicus	Whimbrel	D) 25-50%	12
Birds	Passerina ciris (includes ciris)	Painted Bunting (Eastern)	B) 75-100%	13
Birds	Platalea ajaja	Roseate Spoonbill	B) 75-100%	11
Birds	Rallus elegans	King Rail	C) 50-75%	15
Birds	Rostrhamus sociabilis plumbeus	Everglade Snail Kite	C) 50-75%	1
Birds	Rynchops niger	Black Skimmer	C) 50-75%	9
Birds	Setophaga cerulea	Cerulean Warbler	C) 50-75%	15
Birds	Setophaga dominica	Yellow-throated Warbler	B) 75-100%	15
Birds	Setophaga kirtlandii	Kirtland's Warbler	D) 25-50%	4
Birds	Setophaga virens waynei	Wayne's Black-Throated Green Warbler	B) 75-100%	3
Birds	Sternula antillarum (includes athalassos)	Least Tern (Coastal & Interior)	D) 25-50%	14
Birds	Sturnella magna	Eastern Meadowlark	C) 50-75%	15

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Birds	Thalasseus sandvicensis	Sandwich Tern	B) 75-100%	9
Birds	Tringa semipalmata semipalatus	Willet	D) 25-50%	12
Birds	Tyrannus forficatus	Scissor-tailed Flycatcher	B) 75-100%	13
Birds	Vermivora chrysoptera	Golden-winged Warbler	D) 25-50%	15
Birds	Vireo atricapilla	Black-capped Vireo	B) 75-100%	2
Birds	Vireo bellii	Bell's Vireo	D) 25-50%	8
Bumble Bees	Bombus terricola (Appalachian pop.)	Yellow-banded Bumble Bee	A) 100% (SEAFWA Endemic)	5
Diadromous Fish	Acipenser oxyrinchus (includes desotoi and oxyrinchus)	Atlantic Sturgeon	C) 50-75%	9
Diadromous Fish	Alosa mediocris	Hickory Shad	C) 50-75%	6
Fish	Acipenser fulvescens	Lake Sturgeon	E) <25%	10
Fish	Amblyopsis rosae	Ozark Cavefish	B) 75-100%	3
Fish	Ammocrypta clara	Western Sand Darter	B) 75-100%	10
Fish	Awaous banana	River Goby	B) 75-100%	3
Fish	Carpiodes sp. cf. cyprinus	Carolina Carpsucker	A) 100% (SEAFWA Endemic)	1
Fish	Chrosomus cumberlandensis	Blackside Dace	A) 100% (SEAFWA Endemic)	3
Fish	Chrosomus tennesseensis	Tennessee Dace	A) 100% (SEAFWA Endemic)	3
Fish	Cottus bairdii complex	Smoky Sculpin	A) 100% (SEAFWA Endemic)	3
Fish	Cottus sp. 1	Bluestone Sculpin	A) 100% (SEAFWA Endemic)	2
Fish	Crystallaria asprella	Crystal Darter	C) 50-75%	7
Fish	Cycleptus elongatus	Blue Sucker	D) 25-50%	13
Fish	Cycleptus meridionalis	Southeastern Blue Sucker	A) 100% (SEAFWA Endemic)	3
Fish	Cyprinella caerulea	Blue Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Cyprinella callitaenia	Bluestripe Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Cyprinella camura	Bluntface Shiner	B) 75-100%	7

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Cyprinella lepida	Plateau Shiner	A) 100% (SEAFWA Endemic)	1
Fish	Cyprinella zanema (includes sp. cf. zanema)	Santee Chub (include Thinlip)	A) 100% (SEAFWA Endemic)	2
Fish	Dionda argentosa	Manantial Roundnose Minnow	B) 75-100%	1
Fish	Dionda episcopa	Roundnose Minnow	C) 50-75%	1
Fish	Dionda serena	Nueces Roundnose Minnow	A) 100% (SEAFWA Endemic)	1
Fish	Enneacanthus chaetodon	Blackbanded Sunfish	B) 75-100%	5
Fish	Erimonax monachus	Spotfin Chub	A) 100% (SEAFWA Endemic)	7
Fish	Etheostoma aquali	Coppercheek Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma bellator (includes sp. cf. bellator A & B)	Warrior Darter (includes Sispey & Locust Fork)	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma brevirostrum	Holiday Darter	A) 100% (SEAFWA Endemic)	4
Fish	Etheostoma brevispinum	Carolina Fantail Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma cervus	Chickasaw Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma chienense	Relict Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma chuckwachatte	Lipstick Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma cinereum	Ashy Darter	A) 100% (SEAFWA Endemic)	7
Fish	Etheostoma collis	Carolina Darter	A) 100% (SEAFWA Endemic)	4
Fish	Etheostoma corona	Crown Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma ditrema	Coldwater Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma duryi	Blackside Snubnose Darter	A) 100% (SEAFWA Endemic)	6
Fish	Etheostoma fricksium	Savannah Darter	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Etheostoma gutselli	Tuckasegee Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma mariae	Pinewoods Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma microperca	Least Darter	E) <25%	4
Fish	Etheostoma neopterum	Lollypop Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma nianguae	Niangua Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma osburni	Candy Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma pseudovulatum	Egg-Mimic Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma raneyi	Yazoo Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma scotti	Cherokee Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma spilotum	Kentucky Arrow Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma striatulum	Striated Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma thompsoni	Gumbo Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma tippecanoe	Tippecanoe Darter	D) 25-50%	3
Fish	Etheostoma trisella	Trispot Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma tuscumbia	Tuscumbia Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma vulneratum	Wounded Darter	A) 100% (SEAFWA Endemic)	6
Fish	Etheostoma zonifer	Backwater Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma zonistium (includes sp. cf. zonistium)	Bandfin Darter (includes Blueface)	A) 100% (SEAFWA Endemic)	4
Fish	Forbesichthys agassizii	Spring Cavefish	B) 75-100%	3
Fish	Fundulus bifax	Stippled Studfish	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Fundulus jenkinsi	Saltmarsh Topminnow	A) 100% (SEAFWA Endemic)	4
Fish	Hybognathus hayi	Cypress Minnow	B) 75-100%	10
Fish	Hybognathus placitus	Plains Minnow	D) 25-50%	6
Fish	Hybopsis amnis	Pallid Shiner	B) 75-100%	8
Fish	Ichthyomyzon bdellium	Ohio Lamprey	C) 50-75%	7
Fish	Lethenteron appendix	American Brook Lamprey	D) 25-50%	10
Fish	Lythrurus snelsoni	Ouachita Shiner	A) 100% (SEAFWA Endemic)	2
Fish	Macrhybopsis etnieri	Coosa Chub	A) 100% (SEAFWA Endemic)	3
Fish	Macrhybopsis gelida	Sturgeon Chub	E) <25%	6
Fish	Macrhybopsis meeki	Sicklefin Chub	E) <25%	5
Fish	Micropterus cataractae	Shoal Bass	A) 100% (SEAFWA Endemic)	3
Fish	Micropterus chattahoochae	Chattahoochee Bass	A) 100% (SEAFWA Endemic)	1
Fish	Micropterus notius	Suwannee Bass	A) 100% (SEAFWA Endemic)	2
Fish	Micropterus sp. Altamaha	Altamaha Bass	A) 100% (SEAFWA Endemic)	1
Fish	Moxostoma sp. 2	Sicklefin Redhorse	A) 100% (SEAFWA Endemic)	2
Fish	Notropis asperifrons	Burrhead Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Notropis bifrenatus	Bridle Shiner	E) <25%	3
Fish	Notropis candidus	Silverside Shiner	B) 75-100%	2
Fish	Notropis chalybaeus	Ironcolor Shiner	B) 75-100%	14
Fish	Notropis hypsilepis	Highscale Shiner	A) 100% (SEAFWA Endemic)	4
Fish	Notropis mekistocholas	Cape Fear Shiner	A) 100% (SEAFWA Endemic)	2
Fish	Notropis ozarcanus	Ozark Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Notropis potteri	Chub Shiner	A) 100% (SEAFWA Endemic)	4
Fish	Notropis rupestris	Bedrock Shiner	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Notropis semperasper	Roughhead Shiner	A) 100% (SEAFWA Endemic)	2
Fish	Notropis suttkusi	Rocky Shiner	A) 100% (SEAFWA Endemic)	2
Fish	Noturus eleutherus	Mountain Madtom	C) 50-75%	10
Fish	Noturus flavipinnis	Yellowfin Madtom	A) 100% (SEAFWA Endemic)	6
Fish	Noturus gilberti	Orangefin Madtom	A) 100% (SEAFWA Endemic)	3
Fish	Noturus munitus	Frecklebelly Madtom	A) 100% (SEAFWA Endemic)	5
Fish	Percina aurolineata	Goldline Darter	A) 100% (SEAFWA Endemic)	2
Fish	Percina brevicauda	Coal Darter	A) 100% (SEAFWA Endemic)	1
Fish	Percina kusha	Bridled Darter	A) 100% (SEAFWA Endemic)	2
Fish	Percina lenticula	Freckled Darter	A) 100% (SEAFWA Endemic)	5
Fish	Percina rex	Roanoke Logperch	A) 100% (SEAFWA Endemic)	2
Fish	Percina tanasi	Snail Darter	A) 100% (SEAFWA Endemic)	5
Fish	Percina williamsi	Sickle Darter	A) 100% (SEAFWA Endemic)	3
Fish	Phenacobius uranops	Stargazing Minnow	A) 100% (SEAFWA Endemic)	7
Fish	Pteronotropis hubbsi	Bluehead Shiner	B) 75-100%	5
Fish	Pteronotropis welaka	Bluenose Shiner	A) 100% (SEAFWA Endemic)	5
Fish	Salvelinus fontinalis	Southern Brook Trout (Native)	A) 100% (SEAFWA Endemic)	7
Fish	Sander sp. 1	Southern Walleye	A) 100% (SEAFWA Endemic)	1
Fish	Scaphirhynchus platorynchus	Shovelnose Sturgeon	D) 25-50%	11
Fish	Semotilus lumbee	Sandhills Chub	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Speoplatyrhinus poulsoni	Alabama Cavefish	A) 100% (SEAFWA Endemic)	2
Fish	Thoburnia hamiltoni	Rustyside Sucker	A) 100% (SEAFWA Endemic)	2
Fish	Typhlichthys eeigenmanni	Southern Cavefish - Salem Plateau Cavefish	B) 75-100%	6
Invertebrates - Crayfish	Barbicambarus simmonsi	Tennessee Bottlebrush Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Bouchardina robisoni	Bayou Bodcau Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarellus diminutus	Least Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarellus lesliei	Angular Dwarf Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus bouchardi	Big South Fork Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus catagius	Greensboro Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus causeyi	Boston Mountains Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus chaugaensis	Chauga Crayfish	A) 100% (SEAFWA Endemic)	3
Invertebrates - Crayfish	Cambarus conasaugaensis	Mountain Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus coosawattae	Coosawattee Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus cryptodytes	Dougherty Plain Cave Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus cymatilis	Conasauga Blue Burrower	A) 100% (SEAFWA Endemic)	3
Invertebrates - Crayfish	Cambarus eeseeohensis	Grandfather Mountain Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus elkensis	Elk River Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus extraneus	Chickamauga Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus fasciatus	Etowah Crayfish	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Cambarus georgiae	Little Tennessee Crayfish	B) 75-100%	2
Invertebrates - Crayfish	Cambarus halli	Slackwater Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus howardi	Chattahoochee Crayfish	A) 100% (SEAFWA Endemic)	4
Invertebrates - Crayfish	Cambarus jonesi	Alabama Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus lenati	Broad River Stream Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus manningi	Greensaddle Crayfish	A) 100% (SEAFWA Endemic)	3
Invertebrates - Crayfish	Cambarus nerterius	Greenbriar Cave Crayfish	B) 75-100%	1
Invertebrates - Crayfish	Cambarus obeyensis	Obey Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus pyronotus	Fireback Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus reburrus	French Broad River Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus smilax	Greenbrier Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus sp. 1	Emory River Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus strigosus	Lean Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus truncatus	Oconee Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus unestami	Blackbarred Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus williami	Brawleys Fork Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Creaserinus danielae	Speckled Burrowing Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Creaserinus hortoni	Hatchie Burrowing Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Distocambarus hunteri	Saluda Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Fallicambarus burrisi	Burrowing Bog Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Fallicambarus dissitus	Pine Hills Digger	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Fallicambarus harpi	Ouachita Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus houstonensis	Houston Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus jeanae	Daisie Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus kountzeae	Big Thicket Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus macneesei	Macneeses Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonella beyeri	Sabine Fencing Crawfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonella blairi	Blair's Fencing Crayfish	A) 100% (SEAFWA Endemic)	3
Invertebrates - Crayfish	Faxonella creaseri	Ouachita Fencing Crawfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius burri	Blood River Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius cooperi	Flint River Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius hartfieldi	Yazoo Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius hathawayi (blacki & hathawayi)	Painted Crayfish Subspecies (Calcasieu & Teche)	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius maletae	Kisatchie Painted Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius marchandi	Mammoth Spring Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius meeki (only subspecies brevis & meeki)	Meek's Crayfish Subspecies (Short Pointed & Meek's)	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius peruncus	Big Creek Crayfish	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Faxonius quadruncus	St. Francis River Crayfish	B) 75-100%	1
Invertebrates - Crayfish	Faxonius saxatilis	Kiamichi Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius shoupi	Nashville Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius taylori	Crescent Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius wrighti	Hardin Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Hobbseus attenuatus	Pearl Rivulet Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Hobbseus cristatus	Crested Rivulet Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Hobbseus petilus	Tombigbee Rivulet Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Hobbseus yalobushensis	Yalobusha Rivulet Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Orconectes incomptus	Tennessee Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Orconectes packardi	Appalachian Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus barbiger	Jackson Prairie Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus braswelli	Waccamaw Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus capillatus	Capillaceous Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus ceruleus	Blueclaw Chimney Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus dupratzi (including P. sp. cf. dupratzi)	Southwestern Creek Crayfish (including Arkansas-Oklahoma subspecies)	A) 100% (SEAFWA Endemic)	4
Invertebrates - Crayfish	Procambarus elegans	Elegant Creek Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus escambiensis	Escambia Crayfish	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Procambarus fitzpatricki	Spiny-Tailed Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus geminus	Twin Crawfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus lagniappe	Lagniappe Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus latipleurum	Wingtail Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus lylei	Shutispear Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus machardyi	Caddo Chimney Crawfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus nechesae	Neches Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus penni	Pearl Blackwater Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus pictus	Black Creek Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus regalis	Regal Burrowing Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus viaeviridis	Vernal Crayfish	B) 75-100%	6
Invertebrates - Crayfish	Troglocambarus maclanei	Spider Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Troglocambarus sp. 1	Orlando Spider Cave Crayfish (Apopka Blue Springs Spider Crayfish)	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Actinonaias pectorosa	Pheasantshell	A) 100% (SEAFWA Endemic)	6
Invertebrates - Mussels	Alasmidonta atropurpurea	Cumberland Elktoe	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Alasmidonta raveneliana	Appalachian Elktoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Alasmidonta varicosa	Brook Floater	D) 25-50%	7
Invertebrates - Mussels	Alasmidonta viridis	Slippershell Mussel	D) 25-50%	10
Invertebrates - Mussels	Cyclonaias houstonensis	Smooth Pimpleback	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Cyclonaias infucata	Sculptured Pigtoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Cyclonaias kieneriana	Coosa Orb	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Elliptio arca	Alabama Spike	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Elliptio arctata	Delicate Spike	A) 100% (SEAFWA Endemic)	6
Invertebrates - Mussels	Elliptio chipolaensis	Chipola Slabshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Elliptio folliculata	Pod Lance	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Elliptoideus sloatianus	Purple Bankclimber	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Fusconaia burkei	Tapered Pigtoe	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Fusconaia escambia	Narrow Pigtoe	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Fusconaia subrotunda	Longsolid	C) 50-75%	7
Invertebrates - Mussels	Hamiota altilis	Finelined Pocketbook	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Hamiota australis	Southern Sandshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Lampsilis abrupta	Pink Mucket	C) 50-75%	9
Invertebrates - Mussels	Lampsilis splendida	Rayed Pink Fatmucket	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Lasmigona holstonia (including sp. 1 cf. holstonia)	Tennessee Heelsplitter (including Barrens)	A) 100% (SEAFWA Endemic)	7
Invertebrates - Mussels	Medionidus acutissimus	Alabama Moccasinshell	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Medionidus conradicus	Cumberland Moccasin	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Medionidus simpsonianus	Ochlockonee Moccasinshell	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Obovaria arkansasensis (including sp. cf. arkansasensis)	Southern Hickorynut (including Ozark)	A) 100% (SEAFWA Endemic)	8
Invertebrates - Mussels	Obovaria choctawensis	Choctaw Bean	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Obovaria retusa	Ring Pink	C) 50-75%	4
Invertebrates - Mussels	Obovaria subrotunda	Round Hickorynut	D) 25-50%	6
Invertebrates - Mussels	Obovaria unicolor	Alabama Hickorynut	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Parvaspina collina	James Spinymussel	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Pleurobema clava	Clubshell	D) 25-50%	4
Invertebrates - Mussels	Pleurobema decisum	Southern Clubshell	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Pleurobema georgianum	Southern Pigtoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Pleurobema oviforme	Tennessee Clubshell	A) 100% (SEAFWA Endemic)	6
Invertebrates - Mussels	Pleurobema rubrum	Pyramid Pigtoe	C) 50-75%	11
Invertebrates - Mussels	Pleurobema strodeanum	Fuzzy Pigtoe	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Pleuronaia barnesiana	Tennessee Pigtoe	A) 100% (SEAFWA Endemic)	7
Invertebrates - Mussels	Pleuronaia dolabelloides	Slabside Pearlymussel	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Pleuronaia gibber	Cumberland Pigtoe	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Potamilus inflatus	Inflated Heelsplitter	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Pseudodontoideus connasaugaensis	Alabama Creekmussel	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Strophitus radiatus	Rayed Creekshell	A) 100% (SEAFWA Endemic)	6
Invertebrates - Mussels	Theliderma cylindrica	Rabbitsfoot	C) 50-75%	9

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Mussels	Toxolasma pullus	Savannah Lilliput	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Truncilla macrodon	Texas Fawnsfoot	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Utterbackiana couperiana	Barrel Floater	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Utterbackiana hartfieldorum	Cypress Floater	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Utterbackiana heardi	Apalachicola Floater	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Villosa ortmanni	Kentucky Creekshell	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Villosa sima	Caney Fork Rainbow	A) 100% (SEAFWA Endemic)	1
Invertebrates - Mussels	Villosa taeniata	Painted Creekshell	A) 100% (SEAFWA Endemic)	4
Invertebrates - Mussels	Villosa umbrans	Coosa Creekshell	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Villosa vanuxemensis	Mountain Creekshell Mussel	A) 100% (SEAFWA Endemic)	5
Invertebrates - Mussels	Villosa vaughaniana	Carolina Creekshell	A) 100% (SEAFWA Endemic)	2
Mammals	Corynorhinus rafinesquii (includes macrotis and rafinesquii)	Rafinesque's Big-eared Bat (Eastern and Mountain pop)	B) 75-100%	15
Mammals	Corynorhinus townsendii ingens	Ozark Big-eared Bat	A) 100% (SEAFWA Endemic)	3
Mammals	Dipodomys elator	Texas Kangaroo Rat	A) 100% (SEAFWA Endemic)	2
Mammals	Geomys bursarius ozarkensis	Ozark Pocket Gopher	A) 100% (SEAFWA Endemic)	1
Mammals	Geomys pinetis (includes pinetis)	Southeastern Pocket Gopher	C) 50-75%	4
Mammals	Glaucomys sabrinus fuscus	West Virginia Northern Flying Squirrel	A) 100% (SEAFWA Endemic)	2
Mammals	Lasiurus cinereus	Hoary Bat	E) <25%	15
Mammals	Lasiurus intermedius (includes floridanus)	Northern Yellow Bat	A) 100% (SEAFWA Endemic)	9

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Mammals	Microtus chrotorrhinus carolinensis	Southern Rock Vole	B) 75-100%	4
Mammals	Mustela frenata	Long-tailed Weasel	E) <25%	14
Mammals	Myotis leibii	Eastern Small-footed Bat	D) 25-50%	11
Mammals	Myotis velifer	Cave Myotis	D) 25-50%	2
Mammals	Neofiber alleni	Round-tailed Muskrat	B) 75-100%	2
Mammals	Neotoma magister	Allegheny Woodrat	C) 50-75%	8
Mammals	Neovison vison (only subspecies evergladensis, halilimnetes, and lutensis)	Florida Mink Subspecies (Everglades, Gulf Salt Marsh, Atlantic Salt Marsh)	A) 100% (SEAFWA Endemic)	1
Mammals	Odocoileus virginianus clavium	Key Deer	A) 100% (SEAFWA Endemic)	1
Mammals	Oryzomys palustris (only subspecies natator and sanibeli)	FL subspecies of Rice Rat (Silver and Sanibel Island Marsh)	A) 100% (SEAFWA Endemic)	1
Mammals	Perimyotis subflavus	Tri-colored Bat	D) 25-50%	14
Mammals	Peromyscus gossypinus (includes allapaticola)	Cotton Deermouse (Key Largo)	B) 75-100%	14
Mammals	Peromyscus leucopus easti	Pungo White-footed Deermouse	A) 100% (SEAFWA Endemic)	2
Mammals	Sciurus niger avicennia	Big Cypress Fox Squirrel	A) 100% (SEAFWA Endemic)	1
Mammals	Sciurus niger cinereus	Delmarva Fox Squirrel	A) 100% (SEAFWA Endemic)	1
Mammals	Sigmodon hispidus (only subspecies exsputus and insulicola)	FL subspecies of Cotton Rat (Lower Keys and Insular)	A) 100% (SEAFWA Endemic)	1
Mammals	Sorex dispar blitchi	Long-tailed or Rock Shrew	A) 100% (SEAFWA Endemic)	1
Mammals	Sorex palustris	American Water Shrew	E) <25%	5
Mammals	Spilogale putorius (includes interrupta)	Spotted Skunk (Eastern and Plains)	C) 50-75%	15
Mammals	Sylvilagus palustris hefneri	Lower Keys Marsh Rabbit	A) 100% (SEAFWA Endemic)	1
Marine Fish	Alopias superciliosus	Bigeye Thresher Shark	E) <25%	9
Marine Fish	Arius felis	Hardhead Catfish	A) 100% (SEAFWA Endemic)	8
Marine Fish	Carcharhinus plumbeus	Sandbar Shark	C) 50-75%	9

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Marine Fish	Hippocampus erectus	Lined Seahorse	C) 50-75%	9
Marine Fish	Isurus oxyrinchus	Shortfin Mako Shark	D) 25-50%	9
Marine Fish	Isurus paucus	Longfin Mako Shark	D) 25-50%	9
Marine Fish	Manta birostris	Giant Manta Ray	E) <25%	9
Marine Fish	Megalops atlanticus	Tarpon	C) 50-75%	9
Marine Fish	Paralichthys lethostigma	Southern Flounder	A) 100% (SEAFWA Endemic)	9
Marine Fish	Sphyrna mokarran	Great Hammerhead	D) 25-50%	9
Marine Fish	Syngnathus texanus	Texas Pipefish	A) 100% (SEAFWA Endemic)	1
Marine Mammals	Trichechus manatus latirostris	Florida Manatee	A) 100% (SEAFWA Endemic)	9
Marine Reptiles	Caretta caretta	Atlantic Loggerhead Sea Turtle	B) 75-100%	9
Marine Reptiles	Chelonia mydas	Atlantic Green Sea Turtle	B) 75-100%	9
Reptiles	Cemophora lineri	Texas Scarlet Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Chrysemys dorsalis	Southern Painted Turtle	B) 75-100%	5
Reptiles	Clemmys guttata	Spotted Turtle	D) 25-50%	6
Reptiles	Crotalus adamanteus	Eastern Diamond-backed Rattlesnake	A) 100% (SEAFWA Endemic)	7
Reptiles	Crotaphytus reticulatus	Reticulate Collared Lizard	C) 50-75%	1
Reptiles	Deirochelys reticularia (including miaria and reticularia)	Chicken Turtle (including Eastern and Western)	B) 75-100%	12
Reptiles	Diadophis punctatus acricus	Key Ringneck Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Drymarchon melanurus erebennus	Texas Indigo Snake	C) 50-75%	1
Reptiles	Eumeces septentrionalis obtusirostris	Southern Prairie Skink	B) 75-100%	4
Reptiles	Farancia erytrogramma (including erytrogramma)	Rainbow Snake (including Common)	B) 75-100%	8
Reptiles	Gopherus berlandieri	Texas Tortoise	C) 50-75%	1
Reptiles	Gopherus polyphemus	Gopher Tortoise	A) 100% (SEAFWA Endemic)	6

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Reptiles	Graptemys ernsti	Escambia Map Turtle	A) 100% (SEAFWA Endemic)	2
Reptiles	Graptemys nigrinoda	Black-Knobbed Map Turtle	A) 100% (SEAFWA Endemic)	2
Reptiles	Graptemys oculifera	Ringed Map Turtle	B) 75-100%	2
Reptiles	Graptemys pearlensis	Pearl River Map Turtle	A) 100% (SEAFWA Endemic)	2
Reptiles	Graptemys versa	Texas Map Turtle	A) 100% (SEAFWA Endemic)	1
Reptiles	Heterodon gloydi	Dusty Hog-Nosed Snake	B) 75-100%	3
Reptiles	Heterodon simus	Southern Hognose Snake	A) 100% (SEAFWA Endemic)	6
Reptiles	Holbrookia lacerata lacerata	Plateau Earless Lizard	A) 100% (SEAFWA Endemic)	1
Reptiles	Lampropeltis extenuata	Short-Tailed Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Macrochelys suwanniensis	Suwannee Alligator Snapping Turtle	A) 100% (SEAFWA Endemic)	2
Reptiles	Macrochelys temminckii	Alligator Snapping Turtle	B) 75-100%	12
Reptiles	Malaclemys terrapin (including terrapin, centrata, littoralis, macrospilota, pileata, rhizophorarum, and tequesta)	Diamondback Terrapin (including Carolina, Texas, Mississippi, Ornate, Mangrove, Northern, and Eastern Florida)	B) 75-100%	9
Reptiles	Micrurus fulvius	Eastern Coral Snake	B) 75-100%	8
Reptiles	Nerodia harteri	Brazos Water Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Nerodia paucimaculata	Concho Water Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Ophisaurus attenuatus (including longicaudus)	Slender Glass Lizard (including Eastern)	B) 75-100%	13
Reptiles	Ophisaurus compressus	Island Glass Lizard	A) 100% (SEAFWA Endemic)	3
Reptiles	Ophisaurus mimicus	Mimic Glass Lizard	A) 100% (SEAFWA Endemic)	6
Reptiles	Ophisaurus ventralis	Eastern Glass Lizard	A) 100% (SEAFWA Endemic)	8
Reptiles	Phrynosoma cornutum	Texas Horned Lizard	B) 75-100%	5

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Reptiles	Pituophis melanoleucus	Pine Snake (Northern)	B) 75-100%	12
Reptiles	Pituophis melanoleucus lodingi	Black Pinesnake	A) 100% (SEAFWA Endemic)	3
Reptiles	Pituophis melanoleucus melanoleucus	Northern Pine Snake	B) 75-100%	8
Reptiles	Pituophis melanoleucus mugitus	Florida Pine Snake	A) 100% (SEAFWA Endemic)	4
Reptiles	Plestiodon anthracinus (including anthracinus and pluvialis)	Coal Skink (including Northern and Southern)	B) 75-100%	15
Reptiles	Rhadinaea flavilata	Pine Woods Littersnake	A) 100% (SEAFWA Endemic)	7
Reptiles	Sceloporus arenicolus	Dunes Sagebrush Lizard	C) 50-75%	1
Reptiles	Sternotherus carinatus	Razor-Backed Musk Turtle	A) 100% (SEAFWA Endemic)	5
Reptiles	Sternotherus minor peltifer	Stripe-Necked Musk Turtle	A) 100% (SEAFWA Endemic)	4
Reptiles	Tantilla oolitica	Rim Rock Crowned Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Terrapene ornata	Ornate Box Turtle	D) 25-50%	3

Table E-3. RSGCN that are of Moderate Concern.

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Ambystoma annulatum	Ringed Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Amphiuma tridactylum	Three-toed Amphiuma	A) 100% (SEAFWA Endemic)	9
Amphibians	Anaxyrus quercicus	Oak Toad	A) 100% (SEAFWA Endemic)	8
Amphibians	Desmognathus aeneus	Seepage Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Desmognathus apalachicolae	Apalachicola Dusky Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Desmognathus folkertsi	Dwarf Black-bellied Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Desmognathus orestes	Blue Ridge Dusky Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Desmognathus valentinei	Valentine's Southern Dusky Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Desmognathus welteri	Black Mountain Salamander	A) 100% (SEAFWA Endemic)	5
Amphibians	Eurycea aquatica	Brown-backed Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Eurycea chamberlaini	Chamberlain's Dwarf Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Eurycea paludicola	Western Dwarf Salamander	A) 100% (SEAFWA Endemic)	5
Amphibians	Eurycea tynerensis	Oklahoma Salamander	A) 100% (SEAFWA Endemic)	4
Amphibians	Eurycea wilderae	Blue Ridge Two-lined Salamander	A) 100% (SEAFWA Endemic)	5
Amphibians	Gastrophryne olivacea	Western Narrowmouth Toad	D) 25-50%	5
Amphibians	Hyla gratiosa	Barking Treefrog	B) 75-100%	6
Amphibians	Necturus beyeri	Gulf Coast Waterdog	A) 100% (SEAFWA Endemic)	8
Amphibians	Necturus punctatus	Dwarf Waterdog	A) 100% (SEAFWA Endemic)	5
Amphibians	Plethodon chattahoochee	Chattahoochee Slimy Salamander	A) 100% (SEAFWA Endemic)	3

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Amphibians	Plethodon cheoah	Cheoah Bald Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon jordani	Jordan's Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Plethodon kentucki	Cumberland Plateau Salamander	B) 75-100%	4
Amphibians	Plethodon kisatchie	Louisiana Slimy Salamander	A) 100% (SEAFWA Endemic)	2
Amphibians	Plethodon meridianus	South Mountain Gray-cheeked Salamander	A) 100% (SEAFWA Endemic)	1
Amphibians	Plethodon richmondi	Ravine Salamander	C) 50-75%	5
Amphibians	Plethodon teyahalee (= P. oconaluftee)	Southern Appalachian Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Plethodon ventralis	Southern Zigzag Salamander	A) 100% (SEAFWA Endemic)	7
Amphibians	Plethodon yonahlossee (including pop. 1)	Yonahlossee Salamander	A) 100% (SEAFWA Endemic)	3
Amphibians	Pseudacris ocularis	Little Grass Frog	A) 100% (SEAFWA Endemic)	5
Amphibians	Pseudotriton montanus (including flavissimus and montanus)	Mud Salamander (including Gulf Coast and Eastern)	B) 75-100%	10
Amphibians	Scaphiopus hurterii	Hurter's Spadefoot	A) 100% (SEAFWA Endemic)	5
Amphibians	Siren lacertina	Greater Siren	A) 100% (SEAFWA Endemic)	5
Amphibians	Stereochilus marginatus	Many-lined Salamander	A) 100% (SEAFWA Endemic)	5
Birds	Antrostomus carolinensis	Chuck-will's-widow	B) 75-100%	15
Birds	Caracara cheriway	Crested Caracara (FL population)	D) 25-50%	3
Birds	Chaetura pelagica	Chimney Swift	D) 25-50%	15
Birds	Egretta caerulea	Little Blue Heron	C) 50-75%	15
Birds	Egretta thula	Snowy Egret	D) 25-50%	15
Birds	Geothlypis formosa	Kentucky Warbler	C) 50-75%	15
Birds	Helmitheros vermivorum	Worm-eating Warbler	B) 75-100%	15
Birds	Hylocichla mustelina	Wood Thrush	D) 25-50%	15
Birds	Ixobrychus exilis	Least Bittern	D) 25-50%	15

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Birds	Nyctanassa violacea	Yellow-crowned Night Heron	C) 50-75%	15
Birds	Parkesia motacilla	Louisiana Waterthrush	C) 50-75%	15
Birds	Protonotaria citrea	Prothonotary Warbler	C) 50-75%	15
Birds	Rallus crepitans	Clapper Rail	C) 50-75%	9
Birds	Scolopax minor	American Woodcock	D) 25-50%	15
Birds	Setophaga discolor (includes paludicola)	Prairie Warbler (Florida)	B) 75-100%	15
Birds	Sitta pusilla	Brown-headed Nuthatch	A) 100% (SEAFWA Endemic)	14
Birds	Thalasseus maximus	Royal Tern	E) <25%	10
Bumble Bees	Bombus fraternus	Southern Plains Bumble Bee	C) 50-75%	14
Bumble Bees	Bombus pensylvanicus	American Bumblebee	C) 50-75%	15
Fish	Ambloplites cavifrons	Roanoke Bass	A) 100% (SEAFWA Endemic)	2
Fish	Amblyopsis spelaea	Northern Cavefish	A) 100% (SEAFWA Endemic)	2
Fish	Ameiurus serracanthus	Spotted Bullhead	B) 75-100%	3
Fish	Ammocrypta vivax	Scaly Sand Darter	A) 100% (SEAFWA Endemic)	9
Fish	Atractosteus spatula	Alligator Gar	B) 75-100%	10
Fish	Campostoma anomalum michauxi	Central Stoneroller Subspecies	A) 100% (SEAFWA Endemic)	2
Fish	Carpiodes velifer (includes sp. cf. velifer)	Highfin Carpsucker (includes Atlantic)	C) 50-75%	15
Fish	Chologaster cornuta	Swampfish	A) 100% (SEAFWA Endemic)	4
Fish	Clinostomus funduloides ssp. 1	Smoky Dace	A) 100% (SEAFWA Endemic)	3
Fish	Cottus baileyi	Black Sculpin	B) 75-100%	5
Fish	Cottus sp. 4	Clinch Sculpin	A) 100% (SEAFWA Endemic)	2
Fish	Cottus sp. 5	Holston Sculpin	A) 100% (SEAFWA Endemic)	2
Fish	Cyprinella analostana	Satinfin Shiner	C) 50-75%	4
Fish	Cyprinella labrosa	Thicklip Chub	A) 100% (SEAFWA Endemic)	3

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Cyprinella pyrrhomelas	Fieryblack Shiner	A) 100% (SEAFWA Endemic)	4
Fish	Cyprinella xaenura	Altamaha Shiner	A) 100% (SEAFWA Endemic)	1
Fish	Elassoma gilberti	Gulf Coast Pygmy Sunfish	A) 100% (SEAFWA Endemic)	1
Fish	Enneacanthus obesus	Banded Sunfish	B) 75-100%	6
Fish	Erimystax dissimilis	Streamline Chub	C) 50-75%	6
Fish	Erimystax insignis (includes eristigma)	Blotched Chub (includes Southern)	A) 100% (SEAFWA Endemic)	7
Fish	Etheostoma acuticeps	Sharphead Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma baileyi	Emerald Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma barbouri	Teardrop Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma chlorobranchium	Greenfin Darter	A) 100% (SEAFWA Endemic)	4
Fish	Etheostoma denoncourti	Golden Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma euzonum euzonum	Arkansas Saddled Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma inscriptum	Turquoise Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma jessiae	Blueside Darter	A) 100% (SEAFWA Endemic)	7
Fish	Etheostoma longimanum	Longfin Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma maculatum	Spotted Darter	D) 25-50%	4
Fish	Etheostoma maydeni	Redlips Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma microlepidum	Smallscale Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma parvipinne	Goldstripe Darter	A) 100% (SEAFWA Endemic)	11
Fish	Etheostoma perlongum	Waccamaw Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma pyrrhogaster	Firebelly Darter	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Etheostoma rubrum	Bayou Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma rupestre	Rock Darter	A) 100% (SEAFWA Endemic)	4
Fish	Etheostoma sagitta	Arrow Darter	A) 100% (SEAFWA Endemic)	3
Fish	Etheostoma swannanoa	Swannanoa Darter	A) 100% (SEAFWA Endemic)	5
Fish	Etheostoma tecumsehi	Shawnee Darter	A) 100% (SEAFWA Endemic)	1
Fish	Etheostoma thalassinum	Seagreen Darter	A) 100% (SEAFWA Endemic)	2
Fish	Etheostoma whipplei	Redfin Darter	B) 75-100%	5
Fish	Fundulus dispar	Starhead Topminnow	C) 50-75%	8
Fish	Fundulus euryzonus	Broadstripe Topminnow	A) 100% (SEAFWA Endemic)	2
Fish	Fundulus rathbuni	Speckled Killifish	A) 100% (SEAFWA Endemic)	2
Fish	Hemitremia flammea	Flame Chub	A) 100% (SEAFWA Endemic)	6
Fish	Hiodon tergisus	Mooneye	C) 50-75%	12
Fish	Hybopsis hypsinotus	Highback Chub	A) 100% (SEAFWA Endemic)	4
Fish	Hybopsis lineapunctata	Lined Chub	A) 100% (SEAFWA Endemic)	4
Fish	Hybopsis rubrifrons	Rosyface Chub	A) 100% (SEAFWA Endemic)	3
Fish	Ichthyomyzon fossor	Northern Brook Lamprey	E) <25%	4
Fish	Ichthyomyzon greeleyi	Mountain Brook Lamprey	C) 50-75%	7
Fish	Lythrurus ardens	Blueside Shiner	B) 75-100%	4
Fish	Lythrurus lirus	Mountain Shiner	A) 100% (SEAFWA Endemic)	7
Fish	Margariscus margarita	Allegheny Pearl Dace	E) <25%	2
Fish	Menidia audens	Mississippi Silverside	B) 75-100%	7
Fish	Menidia extensa	Waccamaw Silverside	A) 100% (SEAFWA Endemic)	1
Fish	Moxostoma ariommum	Bigeye Jumprock	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Moxostoma pappillosum	V-Lip Redhorse	A) 100% (SEAFWA Endemic)	3
Fish	Moxostoma pisolabrum	Pealip Redhorse	B) 75-100%	2
Fish	Moxostoma sp. 4	Brassy Jumprock	A) 100% (SEAFWA Endemic)	4
Fish	Notropis alborus	Whitemouth Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Notropis ariommus	Popeye Shiner	C) 50-75%	7
Fish	Notropis bairdi	Red River Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Notropis buchanani	Ghost Shiner	B) 75-100%	12
Fish	Notropis ortenburgeri	Kiamichi Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Notropis procne	Swallowtail Shiner	C) 50-75%	4
Fish	Notropis sabinae	Sabine Shiner	B) 75-100%	6
Fish	Notropis scabriceps	New River Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Notropis sp. 4	Sawfin Shiner	A) 100% (SEAFWA Endemic)	6
Fish	Noturus fasciatus	Saddled Madtom	A) 100% (SEAFWA Endemic)	2
Fish	Noturus hildebrandi	Least Madtom	A) 100% (SEAFWA Endemic)	3
Fish	Noturus placidus	Neosho Madtom	C) 50-75%	3
Fish	Noturus stigmosus	Northern Madtom	D) 25-50%	2
Fish	Percina aurantiaca	Tangerine Darter	A) 100% (SEAFWA Endemic)	6
Fish	Percina burtoni	Blotchside Logperch	A) 100% (SEAFWA Endemic)	7
Fish	Percina copelandi	Channel Darter	C) 50-75%	10
Fish	Percina crassa	Piedmont Darter	A) 100% (SEAFWA Endemic)	3
Fish	Percina cymatotaenia	Bluestripe Darter	A) 100% (SEAFWA Endemic)	1
Fish	Percina gymnocephala	Appalachia Darter	A) 100% (SEAFWA Endemic)	3
Fish	Percina macrocephala	Longhead Darter	C) 50-75%	4

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Fish	Percina nasuta	Longnose Darter	A) 100% (SEAFWA Endemic)	3
Fish	Percina notogramma	Stripeback Darter	B) 75-100%	2
Fish	Percina squamata	Olive Darter	A) 100% (SEAFWA Endemic)	5
Fish	Percina stictogaster	Frecklebelly Darter	A) 100% (SEAFWA Endemic)	2
Fish	Percina uranidea	Stargazing Darter	B) 75-100%	3
Fish	Phenacobius crassilabrum	Fatlips Minnow	A) 100% (SEAFWA Endemic)	4
Fish	Phenacobius teretulus	Kanawha Minnow	A) 100% (SEAFWA Endemic)	3
Fish	Pimephales tenellus parviceps	Eastern Slim Minnow	A) 100% (SEAFWA Endemic)	2
Fish	Platygobio gracilis	Flathead Chub	E) <25%	7
Fish	Pteronotropis euryzonus	Broadstripe Shiner	A) 100% (SEAFWA Endemic)	3
Fish	Thoburnia atripinnis	Blackfin Sucker	A) 100% (SEAFWA Endemic)	2
Fish	Umbra limi	Central Mud Minnow	D) 25-50%	5
Invertebrates - Crayfish	Barbicambarus cornutus	Bottlebrush Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus (Puncticambarus) aldermanorum	Carolina Needlenose Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus brimleyorum	Valley River Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus clivosus	Short Mountain Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus englishi	Tallapoosa Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus hamulatus	Prickly Cave Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus hiwasseensis	Hiwassee Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus hubbsi	Hubbs' Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus jezerinaci	Spiny Scale Crayfish	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Cambarus scotti	Chattooga River Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus sp?	Obed Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus spicatus	Broad River Spiny Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Cambarus stockeri	Cocoa Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Cambarus tartarus	Oklahoma Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Creaserinus byersi	Lavender Burrowing Crayfish	A) 100% (SEAFWA Endemic)	3
Invertebrates - Crayfish	Creaserinus crockeri	Piedmont Prairie Burrowing Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Creaserinus oryktes	Flatwoods Digger	A) 100% (SEAFWA Endemic)	3
Invertebrates - Crayfish	Distocambarus carlsoni	Mimic Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Fallicambarus tenuis	Ouachita Mountain Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius alabamensis	Alabama Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius bisectus	Crittenden Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Faxonius jonesi	Sucarnoochee River Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius macrus	Neosho Midget Crayfish	C) 50-75%	2
Invertebrates - Crayfish	Faxonius menae	Mena Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius nana	Midget Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Faxonius williamsi	Williams Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Orconectes barri	Cumberland Plateau Cave Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Orconectes pellucidus	Mammoth Cave Crayfish	A) 100% (SEAFWA Endemic)	2

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Invertebrates - Crayfish	Procambarus lecontei	Mobile Crayfish	A) 100% (SEAFWA Endemic)	2
Invertebrates - Crayfish	Procambarus medialis	Pamlico Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus pallidus	Pallid Cave Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus pearsei	Carolina Sandhills Crayfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus pentastylus	Calcasieu Creek Crawfish	A) 100% (SEAFWA Endemic)	1
Invertebrates - Crayfish	Procambarus planirostris	Flatnose Crayfish	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Amblema neislerii	Fat Threeridge	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Cyclonaias kleiniana	Suwannee Pigtoe	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Cyprogenia aberti (including sp. cf. aberti)	Western fanshell (including Ouachita)	B) 75-100%	6
Invertebrates - Mussels	Elliptio monroensis	St. John's Elephantear	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Fusconaia chunii	Texas Pigtoe	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Hamiota perovalis	Orangenacre Mucket	A) 100% (SEAFWA Endemic)	2
Invertebrates - Mussels	Lasmigona etowaensis	Etowah Heelsplitter	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Lasmigona subviridis	Green Floater	C) 50-75%	7
Invertebrates - Mussels	Pseudodontoideus subvexus	Southern Creekmussel	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Utterbackia peggyae	Florida Floater	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Villosa nebulosa	Alabama Rainbow	A) 100% (SEAFWA Endemic)	3
Invertebrates - Mussels	Villosa villosa	Downy Rainbow	A) 100% (SEAFWA Endemic)	3
Mammals	Baiomys taylori	Northern Pygmy Mouse	C) 50-75%	2
Mammals	Blarina shermani	Sherman's Short-tailed Shrew	A) 100% (SEAFWA Endemic)	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Mammals	Chaetodipus hispidus	Hispid Pocket Mouse	D) 25-50%	3
Mammals	Geomys breviceps (includes breviceps)	Pocket Gopher (Baird's and Oak Ridge)	A) 100% (SEAFWA Endemic)	4
Mammals	Geomys streckeri	Strecker's Pocket Gopher	A) 100% (SEAFWA Endemic)	1
Mammals	Lasiurus xanthinus	Western Yellow Bat	D) 25-50%	1
Mammals	Microtus pennsylvanicus dukecampbelli	Florida Salt Marsh Vole	A) 100% (SEAFWA Endemic)	1
Mammals	Microtus pinetorumssp. 1	Pine Vole (Florida Woodland Vole)	A) 100% (SEAFWA Endemic)	1
Mammals	Mormoops megalophylla	Ghost-faced Bat	A) 100% (SEAFWA Endemic)	1
Mammals	Myotis austroriparius	Southeastern Myotis	B) 75-100%	13
Mammals	Myotis californicus	California Myotis	E) <25%	2
Mammals	Myotis grisescens	Gray Bat	B) 75-100%	13
Mammals	Neotoma floridana haematoreia	Southern Appalachian Woodrat	A) 100% (SEAFWA Endemic)	2
Mammals	Neotoma floridana smalli	Key Largo Woodrat	A) 100% (SEAFWA Endemic)	1
Mammals	Onychomys arenicola	Mearn's Grasshopper Mouse	C) 50-75%	1
Mammals	Peromyscus nasutus	Northern Rock Mouse	D) 25-50%	2
Mammals	Peromyscus truei comanche	Palo Duro Mouse	A) 100% (SEAFWA Endemic)	1
Mammals	Podomys floridanus	Florida Mouse	B) 75-100%	1
Mammals	Sciurus niger bachmani	Bachman's Fox Squirrel	A) 100% (SEAFWA Endemic)	2
Mammals	Sciurus niger niger	Southern Fox Squirrel	A) 100% (SEAFWA Endemic)	4
Mammals	Sylvilagus obscurus	Appalachian Cottontail	C) 50-75%	8
Mammals	Sylvilagus robustus	Davis Mountain Cottontail	C) 50-75%	1
Mammals	Ursus americanus luteolus	Louisiana Black Bear	A) 100% (SEAFWA Endemic)	3
Mammals	Vulpes velox	Swift Fox	E) <25%	2
Marine Fish	Rachycentron canadum	Cobia	C) 50-75%	9
Marine Mammals	Balaenoptera musculus	Blue Whale	E) <25%	3

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Marine Mammals	Balaenoptera physalus	Fin Whale	D) 25-50%	4
Marine Mammals	Feresa attenuata	Pygmy Killer Whale	D) 25-50%	7
Marine Mammals	Globicephala macrorhynchus	Short-finned Pilot Whale	A) 100% (SEAFWA Endemic)	9
Reptiles	Apalone mutica	Smooth Softshell Turtle	C) 50-75%	11
Reptiles	Crocodylus acutus	American Crocodile	A) 100% (SEAFWA Endemic)	1
Reptiles	Crotalus horridus	Timber Rattlesnake	C) 50-75%	15
Reptiles	Farancia abacura (including reinwardtii)	Mudsnake (including Western)	B) 75-100%	14
Reptiles	Graptemys ouachitensis	Ouachita Map Turtle	C) 50-75%	10
Reptiles	Graptemys pulchra	Alabama Map Turtle	B) 75-100%	3
Reptiles	Graptemys sabinensis	Sabine Map Turtle	A) 100% (SEAFWA Endemic)	2
Reptiles	Kinosternon baurii	Striped Mud Turtle	A) 100% (SEAFWA Endemic)	5
Reptiles	Lampropeltis meansi	Apalachicola Kingsnake	A) 100% (SEAFWA Endemic)	1
Reptiles	Lampropeltis occipitolineata	South Florida Mole Kingsnake	A) 100% (SEAFWA Endemic)	1
Reptiles	Liodytes pygaea (inlcuding cyclas & paludis)	Black Swampsnake (inlcuding Southern Florida & Carolina)	A) 100% (SEAFWA Endemic)	5
Reptiles	Liodytes rigida (including deltae and sinicola)	Glossy Swampsnake (including Delta & Gulf Crayfish)	A) 100% (SEAFWA Endemic)	11
Reptiles	Nerodia clarkii (clarkii, compressicauda & taeniata)	Saltmarsh Snake (Gulf, Mangrove & Atlantic)	A) 100% (SEAFWA Endemic)	5
Reptiles	Nerodia floridana	Florida Green Watersnake	B) 75-100%	4
Reptiles	Nerodia sipedon williamengelsi	Carolina Water Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Plestiodon egregius onocrepis	Peninsula Mole Skink	A) 100% (SEAFWA Endemic)	1
Reptiles	Pseudemys gorzugi	Rio Grande Cooter	C) 50-75%	1

Taxa Group	Scientific Name	Common Name	Regional Responsibility Category	Number of SEAFWA States
Reptiles	Pseudemys rubriventris	Northern Red-Bellied Cooter	C) 50-75%	3
Reptiles	Rhineura floridana	Florida Wormlizard	A) 100% (SEAFWA Endemic)	3
Reptiles	Sistrurus miliarius (including miliarius and streckeri)	Pygmy Rattlesnake (including Carolina and Western)	B) 75-100%	12
Reptiles	Sistrurus tergeminus tergeminus	Prairie Massasauga	C) 50-75%	3
Reptiles	Storeria victa	Florida Brown Snake (Lower Keys Population)	A) 100% (SEAFWA Endemic)	2
Reptiles	Tantilla cucullata	Big Bend Blackheaded Snake	B) 75-100%	1
Reptiles	Tantilla relicta pamlica	Coastal Dunes Crowned Snake	A) 100% (SEAFWA Endemic)	1
Reptiles	Terrapene carolina (including carolina, major and triunguis)	Eastern Box Turtle (including Eastern, Gulf Coast and Three-toed)	C) 50-75%	15
Reptiles	Trachemys gaigeae	Big Bend Slider	C) 50-75%	1
Reptiles	Trachemys scripta troostii	Cumberland Slider	A) 100% (SEAFWA Endemic)	4

APPENDIX F. RSGCN WATCH LIST

The taxa teams recommended 155 species for consideration as RSGCN that were not SGCN in any SWAP within the SEAFWA region. The taxa teams reviewed each of these additional species during the review process described in Appendix A. Four of these species have been designated as new SGCN and were placed on the RSGCN list. Of the remaining 151 species, 36 were identified as meeting the criteria as RSGCN but have been placed on a RSGCN Watch List due to their lack of current SGCN status. Several of these species were newly described or underwent taxonomic updates since the last round of SWAPs. Others have new information indicating their vulnerability. All but one of these Watch List species (the Gulf of Mexico population of Bryde's Whale [*Balaenoptera edeni*]) is endemic to the SEAFWA region. More than half (21 of 36) of the RSGCN Watch List species have already been proposed or are anticipated to be proposed as SGCN in the next round of SWAP updates (marked with an *). Until such time as these species are designated as SGCN, they are RSGCN Watch List species.

Taxa Group	Scientific Name	Common Name	Concern Level	Number of SEAFWA States
Marine Mammals	Balaenoptera edeni (Gulf of Mexico subspecies)	Gulf of Mexico Bryde's Whale	Very High	3
Amphibians	Plethodon dixi	Dixie Cavern Salamander*	Very High	1
Amphibians	Plethodon mississippi	Mississippi Slimy Salamander	Moderate	5
Fish	Etheostoma binotatum	Hanukkah Darter	Very High	2
Fish	Etheostoma saludae	Saluda Darter	Very High	2
Fish	Percina apina	Tennessee Logperch*	High	1
Fish	Percina austroperca	Southern Logperch*	High	2
Fish	Macrhybopsis pallida	Pallid Chub*	Moderate	2
Fish	Percina nevisense	Chainback Darter	Moderate	2
Invertebrates - Crayfish	Cambarus diupalma	Mountain Fork Crayfish*	Very High	1
Invertebrates - Crayfish	Fallicambarus schusteri	Caramel Crayfish*	Very High	2
Invertebrates - Crayfish	Faxonius roberti	Spring River Crayfish*	Very High	2
Invertebrates - Crayfish	Faxonius wagneri	Eleven Point River Crayfish*	Very High	2
Invertebrates - Crayfish	Cambarellus rotatus	Twisted Dwarf Crayfish	High	1
Invertebrates - Crayfish	Cambarus hystricosus	Sandhills Spiny Crayfish	High	1

Taxa Group	Scientific Name	Common Name	Concern Level	Number of SEAFWA States
Invertebrates - Crayfish	Cambarus lentiginosus	Speckled Crayfish*	High	1
Invertebrates - Crayfish	Procambarus plumimanus	Croatan Crayfish	High	1
Invertebrates - Crayfish	Cambarus adustus	Dusky Mudbug*	Moderate	1
Invertebrates - Crayfish	Cambarus andersoni	Florence Crayfish*	Moderate	1
Invertebrates - Crayfish	Cambarus davidi	Carolina Ladle Crayfish	Moderate	2
Invertebrates - Crayfish	Cambarus hazardi	Brawny Crayfish*	Moderate	1
Invertebrates - Crayfish	Cambarus johni	Foothills Crayfish	Moderate	1
Invertebrates - Crayfish	Cambarus taylori	Cutshin Crayfish*	Moderate	1
Invertebrates - Crayfish	Creaserinus caesius	Timberlands Burrowing Crayfish	Moderate	1
Invertebrates - Crayfish	Faxonius bellator	Screaming Eagle Crayfish*	Moderate	1
Invertebrates - Crayfish	Faxonius carolinensis	North Carolina Spiny Crayfish	Moderate	1
Invertebrates - Crayfish	Faxonius cyanodigitus	Red River Painted Crayfish*	Moderate	2
Invertebrates - Crayfish	Procambarus hinei	Marsh Crayfish	Moderate	2
Invertebrates - Crayfish	Procambarus kensleyi	Free State Chimney Crayfish	Moderate	2
Invertebrates - Mussels	Cyclonaias necki	Guadalupe Orb*	Very High	1
Invertebrates - Mussels	Venustaconcha troostensis	Cumberland Bean	Very High	2
Invertebrates - Mussels	Elliptio mcmichaeli	Fluted Elephantear*	High	2
Invertebrates - Mussels	Strophitus pascagoulaensis	Pascagoula Creekshell*	High	3
Invertebrates - Mussels	Strophitus williamsi	Flatwoods Creekshell*	High	2
Invertebrates - Mussels	Elliptio ahenea	Southern Lance*	Moderate	1
Invertebrates - Mussels	Utterbackia peninsularis	Peninsular Floater*	Moderate	1

APPENDIX G. CULTURALLY SIGNIFICANT RSGCN

Some SEAFWA states and/or tribal nations have designated Culturally Significant Species. During the development of this RSGCN list for SEAFWA, the Culturally Significant Species for Alabama, South Carolina and the Catawba Nation in South Carolina were cross-referenced for RSGCN. Seventy-five (75) RSGCN were identified as Culturally Significant Species in those three locations.

Taxa Group	Scientific Name	Common Name	Concern Level	Location where Culturally Significant
Amphibians	Aneides aeneus	Green Salamander	High	AL
Amphibians	Cryptobranchus alleganiensis (including alleganiensis and bishopi)	Hellbender (including Eastern and Ozark)	Very High	AL
Amphibians	Gyrinophilus palleucus (including necturoides and palleucus)	Tennessee Cave Salamander (including Big Mouth Cave and Pale)	Very High	AL
Amphibians	Lithobates areolatus (including areolatus and circulosus)	Southern Crawfish Frog (including Southern and Northern)	High	AL
Amphibians	Lithobates capito	Gopher Frog	Very High	AL
Amphibians	Necturus alabamensis	Black Warrior Waterdog	Very High	AL
Amphibians	Phaeognathus hubrichti	Red Hills Salamander	Very High	AL
Birds	Antrostomus carolinensis	Chuck-will's-widow	Moderate	Catawba
Birds	Antrostomus vociferus	Eastern Whip-poor-will	High	Catawba
Birds	Colinus virginianus	Northern Bobwhite	High	AL, SC
Birds	Egretta caerulea	Little Blue Heron	Moderate	Catawba
Birds	Elanoides forficatus	Swallow-tailed Kite	Very High	AL
Birds	Euphagus carolinus	Rusty Blackbird	High	Catawba
Birds	Falco sparverius paulus	Southeastern American Kestrel	High	AL
Birds	Lanius ludovicianus	Loggerhead Shrike	High	AL
Birds	Mycteria americana	Wood Stork	High	AL
Birds	Peucaea aestivalis	Bachman's Sparrow	Very High	AL
Birds	Picoides borealis	Red-cockaded Woodpecker	Very High	AL
Birds	Scolopax minor	American Woodcock	Moderate	SC
Birds	Setophaga cerulea	Cerulean Warbler	High	AL

Taxa Group	Scientific Name	Common Name	Concern Level	Location where Culturally Significant
Diadromous Fish	Alosa alabamae	Alabama Shad	Very High	AL
Fish	Elassoma alabamae	Spring Pygmy Sunfish	Very High	AL
Fish	Etheostoma bellator (includes sp. cf. bellator A & B)	Warrior Darter (includes Sispey & Locust Fork)	High	AL
Fish	Etheostoma boschungi	Slackwater Darter	Very High	AL
Fish	Etheostoma nuchale	Watercress Darter	Very High	AL
Fish	Etheostoma phytophilum	Rush Darter	Very High	AL
Fish	Micropterus cataractae	Shoal Bass	High	AL
Fish	Notropis albizonatus	Palezone Shiner	Very High	AL
Fish	Notropis cahabae	Cahaba Shiner	Very High	AL
Fish	Percina tanasi	Snail Darter	High	AL
Fish	Sander sp. cf. vitreus	Southern Walleye	Very High	AL
Fish	Scaphirhynchus suttkusi	Alabama Sturgeon	Very High	AL
Fish	Speoplatyrhinus poulsoni	Alabama Cavefish	High	AL
Invertebrates - Crayfish	Barbicambarus simmonsi	Tennessee Bottlebrush Crayfish	High	AL
Invertebrates - Crayfish	Cambarellus diminutus	Least Crayfish	High	AL
Invertebrates - Crayfish	Cambarus cracens	Slenderclaw Crayfish	Very High	AL
Invertebrates - Crayfish	Cambarus englishi	Tallapoosa Crayfish	Moderate	AL
Invertebrates - Crayfish	Cambarus halli	Slackwater Crayfish	High	AL
Invertebrates - Crayfish	Cambarus hamulatus	Prickly Cave Crayfish	Moderate	AL
Invertebrates - Crayfish	Cambarus jonesi	Alabama Cave Crayfish	High	AL
Invertebrates - Crayfish	Cambarus manningi	Greensaddle Crayfish	High	AL
Invertebrates - Crayfish	Cambarus pecki	Phantom Cave Crayfish	Very High	AL
Invertebrates - Crayfish	Cambarus speleocoopi	Sweet Home Alabama Cave Crayfish	Very High	AL
Invertebrates - Crayfish	Faxonius cooperi	Flint River Crayfish	High	AL

Taxa Group	Scientific Name	Common Name	Concern Level	Location where Culturally Significant
Invertebrates - Crayfish	Orconectes sheltae	Shelta Cave Crayfish	Very High	AL
Invertebrates - Crayfish	Procambarus escambiensis	Escambia Crayfish	High	AL
Invertebrates - Mussels	Cyclonaias kieneriana	Coosa Orb	High	AL
Invertebrates - Mussels	Fusconaia subrotunda	Longsolid	High	AL
Invertebrates - Mussels	Lampsilis abrupta	Pink Mucket	High	AL
Invertebrates - Mussels	Lampsilis virescens	Alabama Lampmussel	Very High	AL
Invertebrates - Mussels	Margaritifera marrianae	Alabama Pearlshell	Very High	AL
Invertebrates - Mussels	Medionidus acutissimus	Alabama Moccasinshell	High	AL
Invertebrates - Mussels	Medionidus parvulus	Coosa Moccasinshell	Very High	AL
Invertebrates - Mussels	Obovaria retusa	Ring Pink	High	AL
Invertebrates - Mussels	Obovaria unicolor	Alabama Hickorynut	High	AL
Invertebrates - Mussels	Plethobasus cyphyus	Sheepnose	Very High	AL
Invertebrates - Mussels	Pleurobema athearni	Canoe Creek Clubshell	Very High	AL
Invertebrates - Mussels	Pleurobema plenum	Rough Pigtoe	Very High	AL
Invertebrates - Mussels	Pleurobema rubrum	Pyramid Pigtoe	High	AL
Invertebrates - Mussels	Pleurobema stabile	Coosa Pigtoe	Very High	AL
Invertebrates - Mussels	Pseudodontoideus connasaugaensis	Alabama Creekmussel	High	AL
Invertebrates - Mussels	Villosa nebulosa	Alabama Rainbow	Moderate	AL
Invertebrates - Mussels	Villosa vaughaniana	Carolina Creekshell	High	Catawba
Mammals	Myotis sodalis	Indiana Bat	Very High	AL

Taxa Group	Scientific Name	Common Name	Concern Level	Location where Culturally Significant
Mammals	Peromyscus polionotus (includes allophrys, ammobates, leucocephalus, niveiventris, peninsularis, phasma, trissyllepsis)	Old-field Deermouse and Beach Mice: Choctawhatchee, Alabama, Santa Rosa, Southeastern, St. Andrew, Anastasia Island, Perdido Key	Very High	AL (Alabama Beach Mouse)
Marine Reptiles	Caretta caretta	Atlantic Loggerhead Sea Turtle	High	SC
Reptiles	Crotalus adamanteus	Eastern Diamond-backed Rattlesnake	High	AL
Reptiles	Drymarchon couperi	Eastern Indigo Snake	Very High	AL
Reptiles	Gopherus polyphemus	Gopher Tortoise	High	AL
Reptiles	Heterodon simus	Southern Hognose Snake	High	AL
Reptiles	Macrochelys temminckii	Alligator Snapping Turtle	High	AL
Reptiles	Pituophis melanoleucus lodingi	Black Pinesnake	High	AL
Reptiles	Pseudemys alabamensis	Alabama Red-Bellied Turtle	Very High	AL
Reptiles	Malaclemys terrapin (including terrapin, centrata, littoralis, macrospilota, pileata, rhizophorarum, and tequesta)	Diamondback Terrapin (including Carolina, Texas, Mississippi, Ornate, Mangrove, Northern, and Eastern Florida)	High	AL (Mississippi subspecies)
Reptiles	Terrapene carolina (including carolina, major and triunguis)	Eastern Box Turtle (including Eastern, Gulf Coast and Three-toed)	Moderate	Catawba

APPENDIX H. TAXA TEAM SPECIFIC RECOMMENDATIONS

Throughout this yearlong process, taxa team members provided many suggestions and recommendations. Issues relating to data gaps and research needs were discussed within the individual taxa results sections. There was consensus that there is a need for additional resources (funding and staff) to address these nongame species. Specifically, there was a need expressed in most taxa for additional inventories and genetics/taxonomy. This was especially true with invertebrate taxa. Additional coordination with marine agency /expert counterparts was also recommended. Other taxa-specific recommendations are summarized below.

MAMMALS:

- Fill data gaps described in the *Mammals Discussion* section, particularly small mammals and longer-term monitoring
- There is a need for additional funding/resources to fill data gaps and conserve habitat and species adequately long term
- Increased communication and collaboration

BIRDS:

- Address the data gaps described in the *Birds Discussion* section
- Work collaboratively across state lines to collect and share information to improve the consistency of surveying and monitoring in the southeast region
- Coordinate across state lines to identify and protect key RSGCN habitats. Encourage collaborative networking. Evaluate the need to resurrect the Southeast PIF and annual meeting, to continue discussion of rangewide issues such as those identified through the RSGCN process
- Take a guild approach for more leveraged resources and effectiveness
- Group species by habitats to identify priority habitats, conditions and geography. Habitat associations can inform and link back to SECAS. Review PIF habitats and other data for RSGCN
- Identify habitat limiting factors and other limiting factors for highest RSGCN (or guilds/suites of concern)

HERPETOFAUNA:

- Address the data gaps described in the *Reptiles* and *Amphibians Discussion* sections
- Protect key habitats regionally

- Protect species from threats discussed in the *Reptiles* and *Amphibians Discussion* sections
- Address reptile poaching and engage Law Enforcement representatives
- Continue and improve regional sharing of information and networking (i.e., SEPARC)
- Work collaboratively across state lines to collect and share information
- Coordinate across state lines to identify and protect key RSGCN habitats

FRESHWATER AND DIADROMOUS FISHES

- Fill data gaps through standardized data collection and sharing as discussed in the *Freshwater and Diadromous Fishes Discussion* section
- Collaborate regionally/across state lines to address shared threats and needs
- Increase capacity to work on multi-state or multi-party conservation efforts for groups of species with similar threats, likening the effort to CCAs for groups of SGCN (as opposed to species-by-species efforts)
- Multi-state management of highly migratory species that cross state boundaries is mandatory for their management according to the taxa team
- Collaboration among states is strongly recommended for narrow range endemic RSGCN that are found in two to four states and are highly imperiled
- Improved data sharing and communication, BMP development, implementation and enforcement
- Improved, coordinated habitat management / protection and connectivity long term
- Dr. Bernie Kuhajda of the Tennessee Aquarium should be asked to review the final RSGCN list as he is now working on updating the Jelks et al. (2008) AFS status assessment for southeastern fishes, and has worked on a NFWF prioritization of southeastern watersheds

MARINE FISHES

- Fill data gaps of habitat and threats as discussed in the *Marine Fishes Discussion* section
- Improve collaboration and engagement with marine agencies in the RSGCN update / revision process and RSGCN conservation
- Protect habitat and encourage natural shorelines and development options

CRAYFISHES

- Fill data gaps through regional taxonomic, genetics and systematics research as discussed in the *Crayfish Discussion* section

- Raise awareness about the southeast's crayfish diversity, endemism and under-representation in federal protection
- Identify the most serious threats to individual species and take steps to minimize those threats
- Implement propagation or reintroduction of listed species
- Investigate standardized surveying and monitoring protocols for appropriate species. (The West Virginia Crayfish Atlas [Loughman and Welsh, 2013] and state identification and distribution guides produced by Kentucky [Taylor and Schuster, 2004] and underway in Alabama were recommended as potential models for the region)
- Conduct annual cooperative routine monitoring of RSGCN crayfish using standardized, consistent survey techniques and methods whenever possible and appropriate; current surveying and monitoring are limited by a lack of staff and funding, inhibiting the ability to bridge the significant data deficiencies in the taxa
- Organize a regional crayfishes workshop to develop a plan to tackle the key issues identified by this team; use results to develop a report/white paper on conservation status of selected species
- Increase communication among researchers to support and update coordinated regional efforts
- Determine the most effective way to further prioritize the RSGCN crayfish (HUC, watershed, etc); consider a threshold for listing only RSGCN (High and Very High Concern?) until additional information is available
- Develop a regional bait bucket outreach program to prevent invasives (use MO outreach program as example and make it a regional effort)
- Connect/complement this RSGCN effort with the regional SEARS aquatic project / PI-Duncan Elkins (UGA) to link RSGCN list with the geospatial and habitat data for crayfish/mussels/fish (previous SEARS grant)
- Connect/complement this RSGCN effort with additional habitat/condition efforts (specifically Ryan McManamay - Oakridge work and TNC habitat conditions/resiliency)
- Contact and request that Roger Thoma review the RSGCN list
- Supplement RSGCN information: specifically investigate how best to address aquatics from a bigger picture by family or by HUC. Investigate the Southeast Aquatics project that was completed by the University of Georgia that included multiple aquatic taxa and identified habitats and threats. Incorporate those results into the RSGCN list information. Allows incorporation of life cycles, hosts, etc. and threats on more holistic level.

MUSSELS

- Address data deficiency and taxonomy issues as discussed in the *Mussels Discussion* section
- Link mussels to host fish and consider both being listed as RSGCN
- The mussel taxa team expressed appreciation for the opportunity to share information across the region as part of the RSGCN development process and would like to see it continued
- The RSGCN process facilitated collaboration between states with shared species. Augmentation and reintroduction plans have been drafted for some drainages like the Tennessee and Mobile, which team members noted has helped in decision-making for those species; they recommended such documents for other drainages or groups of drainages in the southeast would be very beneficial to mussel conservation

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