Appendix P. High Priority Conservation Actions

The SWAP technical teams and other stakeholders initially identified over 200 high priority conservation actions. These were sorted into the following twelve categories, which represent generally stated conservation goals or themes:

- Assess status of high priority habitats
- Assess status of high priority species
- Conserve high priority habitats
- Conserve high priority species
- Improve environmental education
- Improve private land management
- Improve public land management
- Improve SWAP communications
- Increase capacity for wildlife conservation
- Reduce impacts from development and other activities
- Implement climate change adaptation
- Engage in regional partnerships

The identified conservation actions included research and survey, habitat/species management, education, outreach, regulation, database, administrative, and funding efforts. For each conservation action, focal species/habitats, ecoregions, watersheds, funding sources, lead organizations, and partner organizations were identified. In addition, a brief description and comments/justification were outlined for each project. Finally, relevant data to be collected and performance indicators were identified for each project as a first step toward developing monitoring programs to facilitate adaptive management.

Each conservation action on the list was evaluated and assigned an importance score using the following seven criteria:

1) <u>Providing Multiple Benefits for High Priority Species/Habitats</u>
   The conservation action provides direct, measurable benefits for several high priority species and/or globally rare natural communities.
   (Rating =1 to 3; Weight: = 2)

2) <u>Addressing Un(der)funded Needs:</u>
   The conservation action represents a significant improvement or advance in wildlife conservation in that it provides support for a conservation effort that is not addressed by other funding sources, programs, or organizations.
   (Rating =1 to 3; Weight = 1)

3) Overall Importance of Georgia Efforts
   The conservation action addresses wildlife conservation needs that are unique to Georgia (e.g., endemic species) or for which Georgia serves a key role geographically or strategically.
   (Rating =1 to 3; Weight = 3)

4) Timeliness or Urgency
   The conservation action addresses a problem that is particularly urgent. If this specific action is not implemented or continued in the next ten years, Georgia will experience a significant loss of biological diversity or habitat quality.
   (Rating =1 to 3; Weight = 3)

5) Connections with Other Conservation Actions
   The conservation action serves as a critical component that enables or facilitates one to several other important conservation measures. Without this component, other efforts will be crippled or made ineffectual.
   (Rating =1 to 3; Weight = 2)

6) Building Public Support for Wildlife Conservation
   The conservation action is likely to increase overall public support for wildlife conservation. The benefits of the action will be readily apparent to the public, or the project itself will focus on increasing public support for conservation.
   (Rating =1 to 3; Weight = 2)

7) Probability of Success
   The conservation action is likely to succeed because it employs tested methodologies, has strong support from stakeholders, and has clearly identified and readily achievable objectives.
   (Rating =1 to 3; Weight = 2)

[NOTE: Rating reflects relative contribution or significance of a conservation action for a particular factor (1 = Low; 2 = Medium; 3 = High). Weight is a multiplier of the rating and indicates relative contribution of that criterion to the total score. Maximum total score = 45 points.]

The technical teams assessed the contribution of each conservation action for each of these criteria and assigned scores based on those assessments. The resulting point totals were used to sort the conservation actions into three categories: very high priority (41-45 points), high priority (36-40 points), and medium priority (27-35 points). Conservation actions scoring less than 27 points were deleted from the list.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
1	Assess Status of High Priority Habitats	Implement statewide habitat mapping effort and conduct assessments of rare natural communities and habitats that support species of conservation need.	Survey	Proposed	Numerous	All	All	Nongame Wildlife Fund, State Wildlife Grants other federal sources, private foundations	DNR, contractors	NatureServe, TNC, public and private landowners
2	Assess Status of High Priority Species	Conduct surveys for rare plants known historically from Georgia	Survey	Proposed	Numerous	All	All	Nongame Wildlife Fund, USFWS	DNR	Contractors and taxonomic specialists
3	Assess Status of High Priority Species	Conduct surveys for undersampled high priority mammals (e.g. spotted skunk, humpback whale) and assess conservation needs.	Survey	Proposed	Spotted skunk - essentially statewide in a variety of habitats; Humpback whale - marine habitats	All	All	State Wildlife Grants, USFS, UGA, NMFS	DNR	USFS, UGA, NMFS, Provincetown Center for Coastal Studies

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
1	Implement a statewide habitat mapping initiative to inform conservation efforts at multiple scales. Assess the status and distribution of natural communities using revised natural community classification system. Survey known existing, historic, and probable locations of rare natural communities, assessing conservation status and conducting botanical and zoological surveys	VH	Although there are coarse landcover analyses for Georgia, none have thoroughly assessed fine-scale natural community types at a state level. Few of the rarest natural communities in Georgia have been adequately described using the ecological framework developed by NatureServe. In particular, very little is known about the current distribution and abundance of rare wetland habitats in NW Georgia. These wetland communities are currently under increased threat due to residential and commerical development. Systematic surveys and assessments of these and other high priority habitats are needed to better determine the distribution and condition as well as protection and management priorities. A statewide habitat data layer is needed to inform local, state and regional land conservation efforts.	GIS coverages and descriptions of natural communities, assessments of abundance and condition, addition of natural community records into Biotics.	Statewide GIS coverage and descriptions of natural communities; assessments of threats and status, addition of community records into Biotics, recommendations for protection and management of high proirity natural communities
2	Conduct field surveys for rare plants known to occur in Georgia but not observed in recent years.	H	Many of these species have not been observed in the state for more than 25 years and are in need of current status surveys to determine whether they have indeed been extirpated.	Distribution, habitat, and abundance data; documentation of sites visited and species observed; reports of status and condition of observed rare plant species populations and associated habitats; management recommendations	Number of updated records on the distribution and condition of globally rare plants in Georgia. Specific recommendations for protection and management of these populations.
3	Spotted skunk -- document occurrence using camera traps (citizen science effort). Humpback whales - document spatial and temporal extent of occurrence in Georgia waters	M	Spotted skunk -- there are growing recent concerns about this species throughout its range; very few records from Georgia, rarely encountered. Humpback whale - small numbers of humpback whales are observed in Georgia waters annually; need to assess whether numbers are increasing and if there are potential impacts that need to be managed; most of this work can be done opportunistically during existing right whale surveys	Spotted skunk -- occurrence locations, habitat and landscape data. Humpback whales - photo-identification data, genetics and effort-corrected aerial sighting data.	Spotted skunk -- occurrence records and survey effort coverage. Humpback whales - identification of whales utilizing Georgia waters seasonally, threats, identification of stock these whales belong to through photo-ID and genetics by cooperating with NMFS and Provincetown Center for Coastal Studies.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
4	Assess Status of High Priority Species	Assess Middle Georgia black bear population and habitat conservation needs; develop conservation plan for Ocmulgee River corridor	Survey, Conservation planning	Ongoing	*Ursus americanus/* Ocmulgee River floodplain	SP	Ocmulgee	DNR	DNR	UGA, NPCA, USFS, USFWS, Georgia Wildlife Federation, Georgia Land Conservation Center, local governments, land trusts
5	Assess Status of High Priority Species	Assess populations of high priority terrestrial birds in the Coastal Plain (e.g. swallow-tailed kite, southeastern American kestrel, painted bunting, Henslow's sparrow).	Survey	Ongoing	*Elanoides forficatus,* bottomland hardwood forests *Falco sparverius paulus; Passerina ciris/scrub-shrub,* maritime forest, interdune scrub; *Ammodramus henslowii* , *Aimophila aestivalis* , other grassland birds; various early successional habitats	SP, SCP	Numerous	Nongame Wildlife Fund, USFWS, State Wildlife Grants, Altamaha River Cooperative for Stewardship & Research (ARCSR), USGS, UGA	DNR, USGS	Avian Research & Conserv. Institute; ARCSR; UGA; University of Georgia, Georgia Southern University, Georgia Power; University of Georgia, USFWS, Georgia Southern University, USGS-Patuxent, private barrier islands, SC DNR, NC Museum, NCWildComm , FL WCC
6	Assess Status of High Priority Species	Assess status of high priority bryophytes, lichens, and graminoids in Georgia.	Survey	Proposed	Numerous (all high priority bryophytes and graminoids)	All	All	Nongame Wildlife Fund, USFWS	DNR	University System of Georgia, contractors, taxonomic specialists

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
4	Periodically assess black bear population size and habitat utilization. Utilize model of habitat suitability and use to develop a conservation plan for this and associated species in the Ocmulgee River corridor.	H	This small, isolated black bear population is being pressured by surrounding development, resulting in loss of habitat. Opportunities to protect habitat for this species should be assessed in the context of providing protection to a broader complex of habitats in this portion of the Ocmulgee River corridor.	Numbers of bears, locations of home ranges and utilized habitats. Locations of other high priority species and habitats that could benefit from conservation efforts in this area.	Bear numbers, acreage used; estimates of amount of habitat needed to maintain population. Conservation objectives for Ocmulgee River corridor.
5	Use aerial/ground surveys and sightings to determine distribution and abundance of STKIs in GA., and identify critical nesting, roosting, and foraging areas. Monitor nests and radio-tag birds to evaluate nesting success, habitat use, site fidelity, threats, etc. Assess population of southeastern American kestrels nesting along powerline corridors and evaluate replacement nest structure. Conduct a status assessment of the Atlantic Coastal population of the painted bunting exploring factors affecting its survival and how to best manage habitat for it on public lands. Assess importance of Georgia as a wintering area for Henslow's Sparrow. Evaluate factors critical to sustaining populations of Bachman's Sparrow during the breeding season and winter.	H	Swallow-tailed kite surveys were initiated in 1997, and the data collected are instrumental in working toward the conservation and management of Georgia's STKI population, and the long-term protection of this imperiled species. The southeastern American Kestrel is a species of high conservation concern, having lost much of its original nest habitat. This project explores various population parameters and use of various artificial nest cavities in a population nesting in power poles along a powerline in south Georgia. The Coastal Plain of Georgia may be a critical wintering area for Henslow's Sparrow and represents the center of the Bachman's Sparrow range. Evidence suggests that the Atlantic Coast population of Painted Bunting is very likely a separate species or subspecies from the interior breeding population. Both populations have undergone tremendous declines over the last few decades, particularly the Atlantic Coast population. This population likely numbers in the low 100,000s making it highly vulnerable to extirpation.	Swallow-tailed kites - sightings, nests and site fidelity, estimates of productivity, nesting and foraging habitats, movement patterns, diet. Kestrel - nesting success and fecundity, preferences in nesting structures. Painted bunting - abundance, levels of predation, parasitism; habitat parameters; Henslow's Sparrow - presence, abundance, habitat preferences; Bachman's Sparrow - relative abundance, density, population size, and habitat quality.	Swallow-tailed kites - distribution, abundance, productivity, and survival, identification of nesting and foraging habitats, land-use or habitat associations. Southeastern American kestrel - number of nest sites surveyed, nesting success with replacement structures. Painted bunting - estimated number of breeding pairs or population size, population trends, effects of habitat management efforts. Henslow's Sparrow - Number of sites surveyed and relative abundance/density. Bachman's Sparrow - breeding population size estimate, micro-habitat feature determination.
6	Survey known existing and historic sites, as well as likely habitat for high priority mosses, liverworts,lichens, and graminoids. Conduct field surveys for recognized rare species and herbarium work to determine historic locations. Consult with taxonomic experts and knowledgeable field botanists on range, habitat needs, and conservation status of these species.	H	Little is known about the current distribution and abundance of mosses, liverworts, lichens, and graminoids in the state. Based on the SWAP evaluation of rare plants, it is clear that there are numerous globally rare species in need of current status surveys.	Distribution, habitat, and abundance data. Documentation of sites visited and species observed; reports of status and condition of observed rare plant species populations and associated habitats; management recommendations	Updated data on the distribution and condition of globally rare plants in Georgia. More specific recommendations for protection and management of these populations.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
7	Assess Status of High Priority Species	Conduct aerial surveys for federally listed birds (bald eagle nesting surveys; wood stork nesting and roosting surveys).	Survey	Ongoing	*Haliaeetus leucocephalus, Mycteria americana*	All	All	Nongame Wildlife Fund, ESA Section 6	DNR	USFWS, University of Georgia, Others
8	Assess Status of High Priority Species	Conduct Armuchee Creek aquatic species surveys	Survey, Monitoring	Proposed	Numerous	SA-RV	Oostanaula	State Wildlife Grants, other Federal Funds	DNR or USFWS	TNC
9	Assess Status of High Priority Species	Conduct assessments of federal petitioned and candidate species, as well as undersampled high priority species not currently under federal review. Work with other state agencies in the region to implement the Southeast At-Risk Species Plan	Survey, Database	Ongoing	Numerous	All	All	Section 6, State Wildlife Grants, other federal grants, Nongame Wildlife Fund.	DNR, USFWS, other Southeastern states	UGA, Joseph Jones Ecological Research Center, private contractors
10	Assess Status of High Priority Species	Conduct disease testing of vulnerable amphibians and reptiles	Research, Survey	Ongoing, Proposed	Numerous	All	All	State Wildlife Grants, Section 6	DNR	SCWDS, University of Tennessee
11	Assess Status of High Priority Species	Conduct Gulf Slope mussel surveys	Survey, Monitoring	Proposed	Suwannee Moccasinshell, Ochlockonee Mocassinshell, Suwannee Pigtoe, Oval Pigtoe, and Shinyrayed Pocketbook.	SP	Numerous	State Wildlife Grants	DNR, USFWS	

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
7	Conduct statewide monitoring of nesting bald eagles, relyiing primarily on helicopters surveys. Conduct aerial surveys for wood storks each spring to identify and monitor nesting colonies; develop techniques for aerial estimates of colony productivity using low altitude digital photography. Work with landowners to manage nest sites.	H	These survey projects are needed for monitoring recovery efforts for federally listed species nesting in Georgia. The bald eagle survey efforts have been deemphasized in recent years, but wood stork survey efforts continue to be an important component of WRD's recovery efforts.	Bald eagles - nest occupancy, specific nest site locations, fledglings per nest. Wood storks - number of nests, nest and chick survival to fledging, productivity estimates, number of colonies.	Number of active colonies (wood storks); number of nests constructed; number of birds hatched and fledged per year. Productivity estimates for wood storks developed regionally to give U.S. Wood Stork productivity for Recovery Plan goals.
8	Survey for fishes, mussels and crayfish in the Armuchee Creek system. The goal would be to document full diversity and establish a baseline for long-term monitoring	M	Armuchee Creek is a high quality tributary in the Coosa drainage, with the potential to support several high priority aquatic species. It has only been surveyed at a few sites. The system is threatened by nutrient pollution, development, and the development of springs for water supply.	Species presence at survey sites	Number of high priority species persisting in the watershed; number of new high priority species discovered during survey.
9	Georgia is home to over 100 species that are under federal review by USFWS as candidate species or species that have been formally petitioned for listing. We will be assisting the Service by conducting status surveys, providing status reports, and providing input into range-wide conservation plans for these at-risk species.	VH	The current status of many of these species is unknown or poorly known. To properly inform any listing decisions, status surveys on these species are necessary.	Various, including population estimates, catch per unit effort, relative abundance, threats to viability.	Information on distribution, overall abundance, and viability of populations in state; number of species listings precluded and conservation plans implemented.
10	Potentially or known-to-be vulnerable high priority amphibians and reptiles will be sampled for emerging infectious diseases mostly as a component of on-going population surveys and monitoring efforts.	H	Newly emerging diseases are a growing conservation concern for many of our priority species, some of which are known to be highly susceptible while others have been unchallenged thus far but are potentially vulnerable. Diseases and disease-causing pathogens include Snake Fungal Disease (potentially harmful to all snake species), Upper Respiratory Tract Disease (affects gopher tortoises and box turtles), ranavirus (affects many amphibians and some turtles; gopher frogs are highly vulnerable based on laboratory trials), and amphibian chytrid fungi (Batrachochytrium dendrobatidis and B. salamandrivorans).	Positive and negative detections, health status	Number of positive detections per species sampled, population effects
11	Survey mussels in poorly sampled stream reaches in the Ochlockonee, Withlacoochee and Suwannee basins. Species of interest include Suwannee Moccasinshell, Ochlockonee Mocassinshell, Suwannee Pigtoe, Oval Pigtoe, and Shinyrayed Pocketbook.	H	There are many streams in Gulf Slope drainages of Georgia with the potential to harbor unknown populations of high priority mollusks. Documenting new or updated occurrences of these species is needed for status assessment and to plan conservation efforts. This area has been much less surveyed than the	Species presence, species relative abundance, habitat quality	Number of species with completed surveys and status assessments

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
12	Assess Status of High Priority Species	Conduct midwinter waterbird survey and piping plover winter survey; conduct research and surveys on southeastern red knot and whimbrels; investigate American oystercatcher ecology and demographics	Survey	Ongoing	33 species of outer barrier beach affiliated wintering waterbirds, emphasis on *Charadrius melodus, Calidris canutus, Limosa fedoa, and Haematopus palliatus*	SCP	Atlantic Coastal Plain	Nongame Wildlife Fund	DNR, Audubon, NC State University	USFWS, ACOE, St. Catherines Island Foundation, Sapelo Estuartine Research Reserve, Ogeechee Audubon, Coastal Audubon, TNC, Sea Island Company, Cumberland Island Homeowners Association., NPS
13	Assess Status of High Priority Species	Conduct surveys for Black Rails in high marsh areas of saltmarsh and possibly other shallowly flooded freshwater habitats	Survey	Ongoing, Proposed	Black Rail	SP, SCP, PD	All SP, SCP, and PD drainages	State Wildlife Grants, Nongame Wildlife Fund	DNR	Black Rail working group, Little St. Simons Island, U.S. Fish and Wildlife Service, Center for Conservation Biology
14	Assess Status of High Priority Species	Conduct surveys for high priority bats	Research, Survey	Ongoing	*Corynorhinus rafinesquii,* All *Myotis* spp., *Lasiurus intermedius, Perimyotis subflavus*	All	All	State Wildlife Grants, GDOT, UGA	DNR	USFS, USFWS, GDOT, UGA, GA Museum of Natural History, Eco-Tech, Ecological Solutions

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
12	Complete winter beach survey conducted in late January, over a period 1.5 hrs. before and after high tide. Also, continue red knot surveys by researchers from Manomet, USFWS, volunteers and DNR, as well as surveys of whimbrels conducted by DNR staff. For American oystercatcher - promote, support, coordinate local and regional studies examining migration patterns, life history parameters, recruitment, longevity, age and sex ratios and identify important range-wide population centers.	VH	Annual midwinter survey incorporates International Winter Piping Plover Survey conducted by the USFWS every 5 years. Georgia is the only state to conduct this type of survey targeting shorebirds. The Altamaha River Delta is the only major fall staging area for Red Knots on the Atlantic coast. Although the Eastern Arctic population of red knots has declined by more than 50% in the last ten years, the entire SE population (12,000) stages on the Altamaha prior to dispersal to other SE states. This group is showing insular qualities and appears to be more stable. Continued studies are needed to determine the ecological and biological parameters that support this unique group of knots. American oystercatcher is a high profile estuarine inhabitant and beach nester. Management protocols for this species will have implications for large assemblage of beach nesting obligate species.	Distribution of wintering shorebirds and seabirds; location data for shorebird roosts. Red knot - numbers, habitat use, age ratios, band resight data, sex ratios, body weights, physical condition, temporal use and turnover, contaminant exposure, forage species, feeding rates. Whimbrel - flock counts at Gould's Inlet. American oystercatcher - life history, population demographics, disturbance and depredation, migration, wintering, nesting ranges, health parameters.	Reports from each island are generated with regional priority species highlighted. Peer review of manuscripts and publication expected. Data made available to the public through the GOS website and used toward species trend assesment in Program for Regional and International Shorebird Monitoring Program (PRISM)
13	Continuation and possible expansion of survey work started recently under Imperiled Species funding from USFWS. This would include vocalization playback surveys in appropriate high marsh habitats and possible expansion of these surveys to shallowly flooded freshwater habitats inland in the Coastal Plain and Piedmont.	VH	This species has been decline for over a century. More recent surveys in the mid-Atlantic indicate that it may have declined by as much as 75-90% over the last two decades. This bird is considered one of the highest priority bird species in need of conservation action in the U.S. Sea level rise and other factors are the most significant threats.	Presence and abundance data over several years.	Number of sites where Black Rails are present as well as number of individual birds present.
14	Survey within suitable habitat for presence of species of concern, track individuals to roost sites, formulate conservation strategy	H	More information is needed to better determine the range and abundance of these high priority species. Better distribution information will allow for more targeted sampling and a focus for potential mitigation efforts in high priority bat habitats.	New locations of occurrence, identification of important foraging and roosting sites, threats, movements, document declines from WNS	Number of new occurrence records, number of roost sites, number of threats addressed

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
15	Assess Status of High Priority Species	Conduct surveys for Yellow Rail in pine flatwoods and similar sites as well as other shallowly flooded habitats	Survey	Proposed	Yellow Rail	SP, SCP	All SP and SCP drainages	State Wildlife Grants, Nongame Wildlife Fund	DNR	
16	Assess Status of High Priority Species	Conduct Upper Coosa mollusk surveys	Survey, Monitoring	Proposed	Numerous	RV, BR	Numerous	State Wildlife Grants	DNR, USFWS	TNC, Kennesaw State University
17	Assess Status of High Priority Species	Conduct Upper Nottely River aquatic species surveys	Survey, Monitoring	Ongoing	Sicklefin Redhorse	BR	Hiwassee	State Wildlife Grants	DNR	Young Harris College, USFWS-Asheville
18	Assess Status of High Priority Species	Continue calling frog survey routes as part of the North American Amphibian Monitoring Program	Survey, Monitoring	Ongoing	Numerous	All	All	Nongame Wildlife Fund, State Wildlife Grants	USGS-Patuxent, DNR	USGS-Patuxent, DNR, volunteers
19	Assess Status of High Priority Species	Continue Conasauga River fishes monitoring	Survey, Monitoring	Ongoing	Numerous	RV, BR	Conasauga	USFWS, Nongame Wildlife Fund	DNR	GMNH
20	Assess Status of High Priority Species	Continue Etowah River aquatic species and water quality monitoring	Survey and Monitoring	Ongoing	Numerous	PD, BR	Etowah	Section 6	DNR, USFWS	GMNH

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
15	This would be a preliminary effort to assess where Yellow rails occur in the state and in what numbers. Most effort would be concentrated in shallowly flooded to mesic pine flatwoods and similar habitats at night. Researchers in Alabama and Mississippi have developed a technique similar to the one we use for Henslow's Sparrow surveys (flush netting) that is effective at night for Yellow Rails. They have captured many birds in areas similar to those where we catch Henslow's Sparrows during the daytime.	H	This would be the first attempt in the state to quantify Georgia's importance to wintering habitat of this rare and declining species. At several sites survey logistics could be piggy-backed on those for Henslow's Sparrows, basically running Henslow's surveys at a site during the day and then a Yellow Rail survey at the same site at night.	Presence and abundance data over several years.	Number of sites where Yellow Rails are present as well as number of individual birds present.
16	Implement occupancy sampling for freshwater mussels and snails in the under sampled reaches of the upper Coosa, including Coosawattee, Oostanaula, and Chattooga rivers. We will use our Conservation Status Assessment Maps, and other data sets, to identify under-sampled reaches in the Coosa system.	H	There are many stream reaches in the upper Coosa system in Georgia with the potential to harbor unknown populations of high priority mollusks. Documenting new or updated occurrences of these species is needed for status assessment and to plan conservation efforts.	Species presence/absence at sites throughout the Coosa. Estimate of species occupany, corrected for incomplete detection.	Number of new or updated occurrences documented.
17	Survey for rare fishes, mussels, and crayfishes in Nottely River mainstem, upstream of Lake Chatuge. This reach has not been thoroughly surveyed for rare aquatic species. Assess potential for stream to support Sicklefin Redhorse.	M	The Upper Nottely River still maintains moderate to high quality moutain river habitat. It has not been extensively surveyed anc could support undocumented populations of rare aquatic species. It is within the historic range of the Sicklefin Redhorse, and the upper Nottely could be a potential reintroduction site.	Lists of species at multiple sites on the mainstem Nottely River, habitat data	Number of new populations documented, report documenting habitat quality for Sicklefin Redhorse
18	Continue coordinating NAAMP in GA and recruit new surveys in an effort to increase the number of routes.	H	NAAMP is the primary source for information on population trends of frog species on state, regional, and national scales. Increasing the number of routes run each year will improve the statistical power to detect significant changes in frog populations, allowing quicker and more accurate detection of changes thereby speeding up subsequent conservation actions.	5-minute point counts at 10 stops per route.	Number of volunteers and routes added.
19	Continue Conasauga River mainstem monitoring of fishes and water quality. Expand project to include mussels and other rare aquatic species as appropriate. Integrate results with ongoing water quality and contaminant studies in this watershed.	H	The upper Conasauga River supports more high priority aquatic species than any other watershed in Georgia. Long-term monitoring of high priority aquatic species is needed to ensure that species persist and are responding positively to management actions. The GMNH has been monitoring fishes in this watershed since the late 1990s and we plan to continue this monitoring with Section 6 funds	Species occupancy, habitat and water quality data, estimates of abundance, etc.	Proportion of native species with stable or increasing occupancy rates across sites
20	Continue Etowah River mainstem monitoring of fishes and water quality. Consider expansion of project to include other rare aquatic species (such as the Etowah Crayfish) as appropriate.	M	The Etowah River System is one of the richest drainages in Georgia (and the US) and provides habitat for several globally imperiled species. Long-term monitoring of high priority aquatic species is needed to ensure that species persist and are responding positively to management actions. The GMNH has been monitoring fishes in this watershed since the late 1990s and we plan to continue this monitoring with Section 6 funds	Species occupancy, habitat and water quality data, estimates of abundance, etc.	Proportion of native species with stable or increasing occupancy rates across sites

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
21	Assess Status of High Priority Species	Continue Flint River and Sawhatchee Creek mussel monitoring	Survey, Monitoring	Ongoing	Numerous	SP	Lower Flint, Lower Chattahoochee	State Wildlife Grants	DNR, USFWS	Flint Riverkeeper
22	Assess Status of High Priority Species	Continue Line Transect Distance Sampling (LTDS) of gopher tortoise populations	Survey, Monitoring	Ongoing	*Gopherus polyphemus*	SP, SCP	Numerous	State Wildlife Grants, Section 6	DNR	Joseph Jones Ecological Research Center
23	Assess Status of High Priority Species	Continue long-term monitoring of Pigeon Mountain salamander and other cave-inhabiting salamander populations; conduct surveys for other high priority cave and outcrop species.	Survey, Monitoring	Ongoing	*Plethodon petraeus* ; other cave and outcrop inhabiting salamander species, including *Aneides aeneus*	SA-RV	Tennessee	Nongame Wildlife Fund, State Wildlife Grants, ESA Section 6	DNR	Piedmont College
24	Assess Status of High Priority Species	Continue monitoring hellbender and eastern indigo snake occupancy	Survey, Monitorng	Ongoing	*Cryptobranchus alleganiensis, Drymarchon couperi*	SA-RV, BR, SP, SCP	All Coastal Plain watersheds, Tennessee drainage	State Wildlife Grants, Section 6	DNR	The Orianne Society
25	Assess Status of High Priority Species	Continue to explore use of eDNA sampling to survey for cryptic amphibian and fish species	Research, Survey	Ongoing, Proposed	*Eurycea aquatica, Urspelerpes brucei, Gyrinophilus palleucus, Ambystoma cingulatum, Ambystoma bishopi, Enneacanthus chaetodon,* others	All	All	State Wildlife Grants, Section 6	DNR	DOD, USFS, USGS, The Orianne Society, Warm Springs Fish Technology Center, Charles H. Wharton Conservation Center

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
21	Continue monitoring freshwater mussel populations in key sites in the lower Flint River Basin and Sawhatchee Creek (lower Chattahoochee). This work has been ongoing by WRD and partners since the mid 2000s.	H	Mussel populations in this part of the state are impacted by low stream flows associated with drought and human water use. Monitoring is necessary to ensure that species persist and also to identify the flows needed for mussel survival and recruitment	Mussel survival, growth, recruitment and occupancy rates	Number of mussels with stable or increasing populations
22	LTDS is the standard rangewide method for estimating gopher tortoise population sizes and age distribution. The Candidate Conservation Agreement (CCA) in which WRD is a part requires periodic (every 7-10) population monitoring of tortoises on state lands using this methodology.	VH	This is required by the CCA and will allow us to evaluate the reponse of our habitat management and conservation efforts for the tortoise on state lands and select private lands over time.	Number of tortoises detected per site, burrow occupancy rates, burrow widths as a refernce for age class distribution, population estimates, high priority burrow commensal presence	Stable or increasing population sizes, representation of all size classes indicating good recruitment
23	Seasonal counts of salamanders at Pigeon and Lookout mountains will provide information on species stability over time.	H	The Pigeon Mountain Salamander is a very restricted species and thus is especially vulnerable to endangerment or extinction in the event of significant, localized disturbance. Monitoring known populations will allow for detection of status changes and permit timely conservation actions to be implemented if necessary.	Time or area constrained counts of individual salamanders, habitat quality evaluation	Relative abundance of Pigeon Mountain and other cave-inhabiting salamanders between sites and over time; changes in habitat quality
24	Eastern indigo snake occupancy monitoring has been employed at selected sites in the sandhills of the lower Altamaha River basin and will be periodically (every 2-3 years) continued here and expanded to other areas (likely Alapaha and Satilla river sandhills). Similarly, occupancy modeling has been used to monitor eastern hellbender populations in select mountain streams and will be continued every three years.	H	A critical component of successful conservation efforts involves monitoring to evaluate the population stability of the target organisms. Eastern indigo snakes and hellbenders are relatively easy to sample for and lend themselves well to this approach	Observations/captures per site, per year	Stable or increasing occupancy trends
25	Many amphibians and fishes are difficult or unreliable to detect with standard techniques. DNA from sloughed skin cells can be filtered from water, run through PCR, and identified to species.	M	eDNA analyses allow easy detection of species presence for species that are difficult to catch, occur in inhospitable habitats, or only spend a limited time in a site of interest. This technology has the potential to discover new populations of rare species that are otherwise difficult to document. We are currently attempting this with Blackbanded Sunfish in southwest Georga	Number of positive eDNA detections in known (control) and new locations; number of eDNA samples required for a high probability of detecting the species when present	Number of new populations discovered

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
26	Assess Status of High Priority Species	Determine population demographics (size, nesting success, productivity, etc.) for MacGillivray's Seaside Sparrows	Research, Survey	Ongoing, Proposed	Seaside Sparrow	SCP	All Atlantic drainage watersheds	State Wildlife Grants, Nongame Wildlife Fund	DNR	UGA, other universities, U.S. Fish and Wildlife Service, SE saltmarsh bird working group, possibly National Audubon
27	Assess Status of High Priority Species	Evaluate status and distribution of high priority snails	Survey, Monitoring	Proposed	Numerous	All	Numerous	State Wildlife Grants	DNR	USFWS, Kennesaw State University
28	Assess Status of High Priority Species	Expand Breeding Bird Survey routes	Survey	Ongoing	Numerous	All	All	Nongame Wildlife Fund	USGS-Patuxent, DNR	USGS-Patuxent, DNR, GOS and Audubon volunteers
29	Assess Status of High Priority Species	Explore use of detection dogs to survey for cryptic reptile species	Research, Survey	Proposed	*Heterodon simus, Ophisaurus mimicus*, others	SP, SCP	Numerous	State Wildlife Grants, Section 6	DNR	DOD, The Orianne Society, private contractors
30	Assess Status of High Priority Species	Implement Altamaha mussel monitoring	Survey, Monitoring	Proposed	Altamaha Spinymussel	SP, SCP	Numerous	State Wildlife Grants or other federal funds, Nongame Wildlife Fund	DNR	USFWS, Academia, Altamaha Riverkeeper
31	Assess Status of High Priority Species	Implement Tallapoosa aquatic species monitoring	Survey, Monitoring	Proposed	Numerous	PD	Tallapoosa	State Wildlife Grants	DNR, USFWS	TNC, Kennesaw State University, GMNH, Auburn

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
26	This would be a study to look at key demographics for nesting MacGillivray's Seaside Sparrow in the Georgia saltmarsh. Preliminary work is being done by a UGA graduate student using a special Imperiled Species allocation. This work should be expand to include additional sites and look at additional demographics that affect the long-term productivity and survivorship of this saltmarsh obligate bird.	VH	This work would allow us to better understand the factors that limit Seaside Sparrow reproduction along the coast and would be a key piece of information aiding long-term efforts to mitigate the affects of sea level rise on this species as well as other species that use the saltmarsh for all or a portion of their life cycle.	Annual population estimates. Nesting success and productivity at several index sites.	Breeding population numbers.
27	This project would examine historic and potential new sites for high priority snail species, documenting information on species presence, relative abundance and potential threats.	VH	Survey needs for 16 globally imperiled (G1-G2) snails were identified during the SWAP revision. Many of these species occupy unique habitats and may not necessarily be conserved due to co-location with other imperiled species.	Species presence, species relative abundance, habitat quality	Number of species with completed surveys and status assessments
28	Expand number of BBS routes and maintain at roughly 85-90 implemented per year. Utilize network of citizen scientists to provide data that will inform conservation efforts for birds.	M	The BBS is the major source for information on population trends of bird species. By increasing the number of routes to about 100, we could reasonably expect to have 85-90 run each year. With this many routes run each year the statistical power to detect significant changes in bird populations would be increased to a level that would allow quicker and more accurate detection of changes thereby speeding up subsequent conservation actions.	3-minute point counts at 50 stops per route. Adding about 40 routes would give us 2000 more sampling points per year with very little effort invested.	Number of routes added and maintained.
29	Some reptile species are very difficult to detect because they spend much of their time under cover or below the ground. Specially trained dection dogs have been useful for determining presence of rare animals and plants.	M	Detection dogs can be trained to smell the presence of species that are difficult to find by standard techniques. Positive detections will inform biologists of areas where to concentrate more standard survey efforts.	Positive and negative detections; habitat at detection sites	Presence of high priority species documented
30	Continue Altamaha mussel occupancy surveys that were carried out in mid 2000s, focusing on the Altamaha Spinymussel.	M	The Altamaha Spinymussel has an extremely restricted range and is Federally Endangered. In addition to monitoring, this study could also find specimens needed for host-fish trials.	Proportion of sites occupied, corrected for incomplete species detection	Proportion of sites occuppied by Altamaha Spinymussel and other co-occurring mussel species.
31	Continue Tallapoosa aquatic community surveys that were carried out in the 1990s and early 2000s by UGA and Auburn. Continuing this decadal monitoring data set will help WRD track the status of a large number of imperiled aquatic species	M	Continuing this decadal monitoring data set will help us track the status of a large number of imperiled aquatic species	Proportion of sites occupied by each target species	Number of species with stable or increasing proportion of sites occupied

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
32	Assess Status of High Priority Species	Implement the 2013 Georgia White Nose Syndrome Response Plan.	Monitoring, Research, Management	Ongoing	Bat species	SA-RV, SP, BR	Numerous	State Wildlife Grants, USFWS, USFS, Nongame Wildlife Fund	DNR, USFWS, USFS	USFWS, USFS, other federal agencies, GFC, other state agencies, GA Museum of Natural History, BCI, Eco-Tech, Ecological Solutions, SCWDS, universities
33	Assess Status of High Priority Species	Monitor populations of gray bats and southeastern bats in caves	Monitoring	Ongoing	*Myotis grisescens, Myotis austroriparius;*	SA-RV, SP	Numerous	State Wildlife Grants, Southern Wildlife Consultants, UGA	DNR	Southeastern Cave Conservancy, Joseph Jones Ecological Research Center, UGA, Clemson, Southern Wildlife Consultants
34	Assess Status of High Priority Species	Monitor reproductive activity at known,recently extant ponds used by pond-breeding amphibians	Survey, Monitoring	Ongoing, Proposed	*Rana capito, Notophthalmus perstriatus, Ambystoma cingulatum, A. bishopi, A. tigrinum*	SP, SCP, SA-RV	All Coastal Plain watersheds, Tennessee, Coosa	State Wildlife Grants, Section 6	DNR	DoD, Joseph Jones Ecological Research Center
35	Conserve High Priority Habitats	Conduct Aquatic Conservation Planning Meetings for Coosa, Tennessee, Atlantic Slope and Gulf drainages	Conservation Planning	Proposed	Numerous	All	Numerous	State Wildlife Grants	DNR	USFWS, TNC, River Basin Center, stakeholder groups in each region
36	Conserve High Priority Habitats	Conduct aquatic species outreach in high priority watersheds	Outreach, Education	Proposed	Numerous	All	Numerous	State Wildlife Grants, private foundations	DNR, USFWS, Georgia River Network	Local governments and watershed groups

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
32	Conduct white nose syndrome monitoring and research. Annual monitoring of caves with populations of bats currently affected or likely to be affected by WNS. Count bats and coordinate with researchers studying the disease and potential treatment options. Other actions may include increase awareness, prevent spread of disease, early detection, increase baseline information on bat populations, management and regulatory actions, and communication.	H	WNS is causing significant declines in cave dwelling bats in N. GA. The disease is continuing to spread south and may eventually move into caves in S. GA. It is critical to document the spread, declines and help with research to study and potentially treat this disease. The 2013 WNS Response Plan outlines a coordinated multi-agency response to WNS in the state.	Numbers of and species of bats at cave sites, samples of fungus, documentation of condition of survivors, temperature and humidity data, estimates of mortality from WNS	Documentation of numbers of surviving bats, successful treatment of WNS, population trends over time, recommendations from the plan relevant to the next 10 years implemented
33	Annual summertime monitoring of known caves that serve as regular summer roosts	H	Small disturbances at cave sites could result in large changes in populations of bats.	Numbers of bats of these two species in each cave, potential threats	Estimated population sizes and trends of these bats
34	These species have been reduced to few sites within the state that provide adequate habitat. All or a subset of the breeding sites for each species will be annually sampled to assess persistence.	H	Because the number of sites where these species persist are few, it is important that they be monitored regularly to evaluate their status and continued suitability and to identify any conservation actions that may be needed to better ensure persistence	Number/presence of egg masses, number/presence of calling frogs, number/presence of larvae or aquatic adults	Number of sites sampled that continue to harbor target species
35	Host regular aquatic conservation planning meetings for major basins in the state, similar to the Coosa Summit. Workshops would include presentations on major research and conservation projects as well as a meeting to discuss future conservation priorities. Meetings would be held at least once every 5 years in each basin. The initial meeting could review results of SWAP and help identify specific actions for high priority watersheds. Participants would include agencies, watershed groups, and other stakeholders. Smaller meetings with key partners could take place annually to stay coordinated on active projects.	VH	If you include all of the partners in the state, there is substantial capacity for aquatic conservation. However, there is no framework for deciding which group will take the lead on a particular issue. In addition to increased coordination, these meetings will provide an opportunity to share SWAP priorities and projects with a broader group of stakeholders and gather input for future projects	None	One major meeting every five years in each basin.
36	Hold at least one aquatic species and habitat outreach event in the top 10 high priority watersheds in the state before the next SWAP revision. Events would target government officials, watershed groups, and children. Present live animals to the public.	H	Most people have no idea what is swimming in their backyard. If we can get people excited about native aquatic species, then they are more likely to become stewards of aquatic resources and support efforts to protect rivers	Number of outreach events, number of attendees	Level of understanding of native species conservation needs in local watersheds.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
37	Conserve High Priority Habitats	Conduct aquatic species stressor study	Research	Proposed	Numerous	All	Numerous	State Wildlife Grants	USFWS or DNR	USGS, UGA, River Basin Center
38	Conserve High Priority Habitats	Conduct field inventory and landowner outreach to conserve coastal plain seepage bogs	Research, Survey, Management, Habitat Protection	Proposed	*Sarracenia spp., Balduina atropurpurea, Hypericum erythreae, Macranthera flammea, Rhynchospora solitaria, Sporobolus teretifolius*, others	SCP	Numerous	Nongame Wildlife Fund, State Wildlife Grants, ESA Section-6, other USFWS funds	DNR	GPCA and its member institutions
39	Conserve High Priority Habitats	Conserve key Swallow-tailed Kite nesting habitat along the Satilla River.	Habitat Protection	Proposed	Swallow-tailed Kite and suite of bottomland forest species that would benefit from habitat conservation	SCP	Satilla	State Wildlife Grants, Nongame Wildlife Fund	DNR	Satilla RiverKeeper, Plum Creek Timber, Ivanhoe Hunt Club
40	Conserve High Priority Habitats	Construct artificial isolated wetlands or improve existing ones by increasing hydroperiod	Management	Ongoing, Proposed	Pond-breeding amphibians/ isolated wetlands	SP, SCP	All Coastal Plain watersheds	State Wildlife Grants, Nongame Wildlife Fund	DNR	Private contractors, private landowners
41	Conserve High Priority Habitats	Continue Conasauga River water quality and contaminants study	Research	Ongoing	Numerous	RV	Conasauga	USFWS, State Wildlife Grants	USFWS	UGA, USGS

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
37	Examine relationships between stressors identified by SWAP aquatic habitat committee and conservation targets. For example, could examine relationship between landuse variables and occurrence probability of high priority species or groups of sensitive species such as fluvial specialists. The purpose of this project would be to identify key drivers of changes in aquatic diversity. It may also help identify the best groups of indicator species for monitoring of biotic integrity.	H	Understanding the landscape scale factors that affect aquatic communities is necessary for both preservation and restoration of aquatic communities. For example, if a goal is to improve biotic integrity of an impaired stream, this project could help identify which aquatic stressor should be addressed.	Extensive fish community data for this project has already been collected by the Georgia DNR Stream Survey Team. USFWS-Athens has already compiled data on landscape scale stressors.	A complete report documenting key stressors in different ecoregions. An interactive tool that can show how aquatic communities will change as stressors increase or decrease within a watershed
38	Develop a protocol for inventory of coastal plain herbaceous seepage bogs. Work in collaboration with biologists of other taxonomic groups, especially herpetofauna, birds, and terrestrial invertebrates to procure funding for an inventory of this high priority habitat and associated landowners within the longleaf pine sandhill ecosytem. Follow up with management of select high quality examples found during the survey.	VH	Coastal plain herbaceous seepage bogs are a high priority habitat for conservation. High or even medium quality examples of these bogs are few in the Atlantic and Gulf Coastal Plains of Georgia. Most are privately owned. Systematic inventory of known sites, strategic survey for new sites, and associated landowner contacts are essential components of this project. Collaborative surveys to meet needs of other taxonomic groups with priority species from the longleaf sandhill ecosystem would increase survey efficiency, funding opportunities, and learning among biologists. A standardized biological sampling protocol would be developed in collaboration with other biologists.	Location, plant community characteristics, species lists, habitat condition, threats, landowner contact, rare species data for Biotics	Number of bogs surveyed, number of landowners contacted
39	Work to conserve important stretches of the Satilla River based upon known long term nesting clusters for Kites, as well as important roosting areas through easements, WRP, purchase, working forest easements.	H	The Satilla River is one of the most important rivers in the state for nesting STKI. Because of their social structures (semi-colonial) and long term site fidelity, protecting known nesting areas is the most important step in the conservation of STKI in Georgia	Currently have years of nest location data on the river, as well as 3 years of roost data	Maintenance of breeding clusters. Stable to increasing state-wide population.
40	Excavate short-hydroperiod depressional wetlands and/or install flexible plastic liners to increase hydroperiod	M	Prolonged drought has been implicated in local extirpations of several high priority pond-breeding amphibians and declines in other pond-breeders. Climate models suggested increased duration and frequency of droughts. Increasing the hydroperiods of breeding wetlands, or creating new ones with long hydroperiods, will help mitigate against the loss of available natural breeding sites.	Hydroperiod of created and improved wetlands; species use and recruitment rates	Successful annual breeding and increased recruitment
41	Continue assessment of water quality and contaminants in the Conasauga River system. Identify major toxicological stressors and the tributaries or mainstem reaches that provide the greatest concentrations of stressors. Continue evaluation of ditches as a source for nutrients and herbicides (e.g., Round-Up)	VH	The upper Conasauga River supports more high priority aquatic species than any other watershed in Georgia. Species are declining in reaches impacted by agricultural activities, but precise mechanisms are unknown. Identification of stressors will help identify the best management practices to reduce water quality impacts associated with agricultural activities.	Concentrations of contaminants in water and sediment at sites along the length of the river, rates of intersex condition, growth and survival of species exposed to contaminants	Report documenting key stressors and suggested bmps

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
42	Conserve High Priority Habitats	Continue cooperative management for golden-winged warbler and other species requiring mid- to high-elevation early successional habitats in the Blue Ridge	Management	Ongoing, Proposed	*Vermivora chrysoptera*	BR	Tennessee, Savannah, Conasauga, Chattahoochee	Nongame Wildlife Fund, NCWC, USFS	USFS	DNR, NCWC, Cherokee National Forest
43	Conserve High Priority Habitats	Continue oyster reef restoration and enhancement	Research, Management	Ongoing	Eastern Oyster	SCP	All Coastal	State and Federal Funds, Private donations	CRD	EPA, NOAA, SFR, CCA, SARP, Oatland Island Wildlife Center, Americorps, UGA, CCGA, Isaak Walton League
44	Conserve High Priority Habitats	Continue Raccoon Creek Watershed Project	Habitat Protection	Ongoing	Etowah Darter, Cherokee Darter	PD	Etowah	Recovery Land Acquisition Grants, Local Governments, Partners for Fish and Wildlife	TNC	USFWS, WRD (NCS, GM), Paulding County, Georgia Power
45	Conserve High Priority Habitats	Control populations of feral hogs to conserve high priority habitats and species.	Management	Ongoing	Numerous	All	All	Nongame Wildlife Fund, State Funds	DNR	NPS, USFS, USFWS, DoD, Georgia Wildlife Federation, private landowners, hunting public

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
42	Implement habitat management including burning regime to create and maintain breeding habitat (open oak woodlands as well as young forest stands interspersed with open, grassy patches) for golden-winged warblers. Conduct surveys to determine metapopulation status and response to management activities.	M	The golden-winged warbler is quickly losing its breeding habitat in the Southern Appalachians due to lack of a natural fire regime. Creation of suitable habitat through prescribed fire and timber harvest is necessary to conserve this unique metapopulation assemblage which occurs at very localized sites in Georgia and North Carolina.	Data on fire intensity, periodicity, and response of vegetation to prescribed fire. Response of golden-winged warblers to habitat manipulations through point counts and surveys that determine productivity and fecundity.	Number of acres of suitable breeding habitat restored and maintained. Estimates of population sizes for golden-winged warbler and other habitat associates.
43	Continue restoring and enhancing oyster reef communities along the coast through targeted restoration efforts outside of shellfish harvest areas, enhancements within shellfish harvest areas, and living shoreline implementation to restore oyster communities as well as salt marsh plant species.	VH	Oysters are a keystone species in tidal systems on the Georgia coast. It is believed that reefs have been negatively impacted over time for various reasons. CRD's Habitat Workgroup is focused on oyster restoration through various efforts such as living shorelines, restoration in public harvest areas and restoration for fish habitat.	Areal extent of oyster reef, areal extent and composition of vegetation, fixed benthic faunal composition, oyster recruitment availability, water quality metrics	Acreage of successful restoration efforts.
44	Continue land acquisition, restoration, and conservation actions in the Etowah River's Raccoon Creek basin. Continue to monitor target species populations as needed.	H	Raccoon Creek occurs within a high priority watershed in the current SWAP (high global significance score) and contains important populations of Etowah and Cherokee Darters. This project has been very successful at watershed-level conservation in an urbanizing landscape.	TNC has compiled information on fish passage problems, stream bank and channel stability, and other threats. We have been monitoring populations of Etowah and Cherokee Darter since 2009.	Number of stream miles restored, number of acres protected through easement and acquisition, persistence of target species throughout system
45	Increase hunting pressure on public and private lands and implement trapping and shooting programs in especially sensitive sites (e.g., barrier island beaches).	H	Feral hog depredation is a significant threat to sea turtle hatchling production. In addition, feral hogs can significantly impact herbaceous species composition in many natural communities and cause substantial declines in rare plant populations.	Number of hogs removed, effort data (hogs/trap night, hogs/hunting hrs.), sex, location of capture, age. Herbaceous species composition of selected natural communities.	Number of hogs removed. Amount of sea turtle nest depredation, Amount of hog sign in sensitive wildlife habitats. Herbaceous species composition and rare plant population size.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
46	Conserve High Priority Habitats	Develop a comprehensive action plan to control invasive exotic species on public and private lands. Increase public awareness of problems caused by invasive exotic plants; reduce use of exotic species and increase use of native plants in erosion control and landscaping	Conservation Planning, Education, Outreach	Proposed	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund, USGS, NPS, NFWF, NRCS	DNR, GFC, UGA, USFS, USFWS, NPS, NRCS	DoD, Georgia Exotic Pest Plant Council, TNC, APHIS, USGS, GDA, GDOT, Georgia WaterWise Council, Georgia Power, GSWCC, NatureServe, local volunteers
47	Conserve High Priority Habitats	Develop and implement water conservation measures to reduce need for new water supply reservoirs	Regulation, Education	Ongoing	Numerous	All	All	State and Federal Funds, Private donations	USFWS	EPA, EPD, WRD, USACE, Georgia Wildlife Federation, private conservation organizations
48	Conserve High Priority Habitats	Develop environmental flow recommendations	Regulation, Policy	Proposed	Numerous	All	Numerous	Unknown	Unknown	USGS, USFWS, DNR, Georgia Wildlife Federation, SIFN, UGA
49	Conserve High Priority Habitats	Develop Little Tennessee River System Watershed Plan	Conservation Planning	Ongoing	Greenfin Darter, Fatlips Minnow, Eastern Hellbender, Sicklefin Redhorse, Silver Shiner	BR	Tennessee	319 Grant Program, administered by EPD	EPD, City of Dillard	DNR, USFWS, Rabun Gap Nacoochee School, Orianne Society, Broadfork Environmental, Land Trust for the Little Tennessee, private landowners

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
46	Assess threats from invasive exotic species on public lands and prioritize specific sites and habitats for control efforts. Conduct field assessments on public lands. Coordinate control efforts with other land managing agencies and adjacent landowners where feasible. Work with partners to develop protocols for assessing, documenting, and addressing invasive exotic species on conservation lands. Provide training to public land managers and seek funding for specific exotic species control efforts. Work with local volunteer groups to implement control and monitoring programs for exotic species on conservation lands. Develop educational messages focusing on regional examples of problems caused by invasive exotic species. Work with nurseries to reduce trade in invasive exotic plants and develop recommendations for use of native plants in erosion control and landscaping. Review and update agency guidance on E&S control to remove references to noxious exotic plants and emphasize use of native plants or noninvasive exotics.	VH	Invasive exotic species represent one of the most serious threats to habitat quality and native species viability statewide. Control efforts for these species are generally expensive and/or labor-intensive. This problem must be addressed in a strategic manner to maximize local benefits to native species and natural habitats and avoid costly delays or excessive expenditures of limited resources. Emphasis should be placed on control efforts that will benefit high priority species and natural habitats (especially globally rare species and communities). Sharing technical expertise between managing agencies is another important objective of this effort. Establishing baseline data on existing exotic species populations and assessing relative threats based on best available data is the logical first step.	Exotic species occurrence data; size and extent of populations. Information on life history characteristics, control methods, etc. Assessments of threat and likelihood of control based on experiences in other states or locales. Impacts on natural habitats and rare species populations; control measures and alternatives to exotic species in landscaping, wildlife habitat enhancement, and erosion control.	Reduction in overall range or impacts of highest priority (most noxious) exotic species. Improved species composition of habitats on public lands and reduced impacts on native species populations. Increased awareness of exotic species control techniques by conservation land managers. Number of educational messages (brochures, web site links, FAQ sheets, etc.) provided to educational facilities, land managers, nurseries, and the general public. Number of projects utilizing native plant species for erosion control and landscaping.
47	Protect aquatic connectivity by finding alternatives to new reservoir construction, emphasizing water conservation measures and protection of high quality free-flowing streams.	VH	Reservoirs destroy lotic habitat and fragment populations of aquatic species.	Water conservation measures, purpose and need evaluation, alternative sites, and models of downstream and cumulative impacts.	Per capita water consumption rates; implementation of water conservation measures; number of new water supply reservoirs
48	Support development of environmental flow recommendations for southwest Georgia and other regions throughout the state. Identify the magnitude and timing of flows required to sustain ecosystems and humans.	VH	Stream flow has an overriding influence on water quality, aquatic habitat, and the availability of water for human uses. Low stream flows in southwest Georgia threaten the persistence of several globally imperiled freshwater species.	Various hydrological indicator variables	Maintenance of stream flows through drought, other indicators need to be developed
49	The city of Dillard has contracted with Jenny Sanders (Broadfork LLC) to develop a 319 Watershed Plan for the Little Tennessee River system in GA. The goal of the plan is to identify on-the-ground conservation projects that will improve water quality for people and aquatic species. USFWS and GADNR are serving on the Technical Advisory Committee for the plan.	H	The Little Tennessee Watershed provides habitat for a large number of aquatic species in GA and NC. Intensive planning and conservation efforts are ongoing in NC, but their success depends upon protection and restoration of the headwaters, which are in Georgia. Completing the plan will make the watershed eligible for additional 319 grant funding.	GIS layers of recent landuse, conservation lands, etc. Visual observations of potential impacts to water quality, such as cattle access, ditching, and reduced riparian buffers.	Number of on the ground conservation projects identified, Number of local stakeholders actively participating in the project.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
50	Conserve High Priority Habitats	Develop stream geomorphology database for Cherokee darters	Database, Conservation Planning	Proposed	Cherokee Darter	PD	Etowah	USFWS	USFWS	Stream Geomorphologists, Consulting Firms
51	Conserve High Priority Habitats	Experiment with sand fencing to increase elevation on key offshore bars	Research, Management	Proposed	Beach nesting birds that utilize off-shore bars to nest. Least Tern, Black Skimmer, Gull-billed Tern, American Oystercatcher and Wilsons Plover	SCP	Several	State Wildlife Grants, Nongame Wildlife Fund	DNR	
52	Conserve High Priority Habitats	Implement Conasauga River habitat conservation	Habitat Protection	Ongoing	Numerous	RV, BR	Conasauga	Recovery Land Acquistion Grants	USFWS	DNR, NRCS, TNC, Land Trusts
53	Conserve High Priority Habitats	Implement Lower Altamaha River habitat and water quality study	Research	Proposed	Numerous	SCP	Numerous	State Wildlife Grants	DNR	Academia, Altamaha Riverkeeper
54	Conserve High Priority Habitats	Implement Shoal Creek Watershed Project	Habitat Protection	Ongoing	Etowah Darter, Cherokee Darter, Etowah Crayfish	PD	Etowah	USFWS	USFWS	TNC, DNR
55	Conserve High Priority Habitats	Implement Smithwick Creek Watershed Project	Habitat Protection	Ongoing	Cherokee Darter	PD	Etowah	USFWS	USFWS	TNC, DNR
56	Conserve High Priority Habitats	Implement strategic habitat conservation in high priority watersheds to maintain aquatic diversity;	Conservation Planning, Habitat Protection	Ongoing	Numerous	All	Numerous	Recovery Land Acquisition Grants, Local Governments	USFWS, DNR, TNC	Local governments, conservation organizations, land trusts, private landowners

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
50	Develop a baseline database of stream geomorphic characteristics in high quality Cherokee Darter streams. Use these data to revise stream restoration methods commonly used in the Etowah basin. Ensure that development of habitat for benthic shoal-dwelling fishes is a primary restoration project component (where applicable).	H	There are substantial opportunities and required mitigation throughout the range of the Cherokee Darter. There is a need to ensure that stream restoration projects are effective.		
51	Low off-shore bars provide important nesting habitat for many beach nesting birds die to the lack of mammalian predators. These sites are often prone to flooding however. Short biodegradable sand fencing may be effective at building the elevation enough during the non-breeding season that nesting birds have less chance of losing their nests to flooding.	H	With sea level rise and the increased frequency of high tide events, off shore bars are threatened with higher flooding rates, leading to greater nest loss among some of our highest priority birds	Compare elevations of similar off-shore bars with and without fencing over time. Evaluate use of these bars by beach-nesting birds	Nest success on treatment sites vs. control sites
52	Protect critical reaches of the Conasauga River system through targeted acquisition and easements with willing landowners. Provide targeted outreach and technical transfer to farmers to help minimize agricultural impacts to river.	H	The upper Conasauga River supports more high priority aquatic species than any other watershed in Georgia. There are historic and emerging threats (e.g., contaminants) associated with agriculture, but these can be minimized through implementation of best managment practices		Area of land protected through easements and acquisition, area of land utilizing best practices to minimize impacts to streams.
53	Evaluate fish and mussel habitat and water quality in the lower Altamaha River.	M	This reach of the river has historically supported important populations of fishes and mussels. The discovery of juvenile Robust Redhorse in the lower Savannah River raises prospects that the lower Altamaha River could also be supporting this species. This reach has been well surveyed for sport fishes.	Water quality, fish and mussel density, and physical habitat data	Report or publication
54	Continue land acquisition, restoration, and conservation actions in the Etowah River's Shoal Creek basin (Dawson County), upstream of the City of Atlanta's Dawson Forest.	VH	Shoal Creek occurs within a high priority watershed in the current SWAP (Highest Global significance score). It contains important populations Cherokee and Etowah Darters and Etowah Crayfish. It is a direct tributary to a critical reach of the Etowah River where several high priority species occur. It is threatened by urbanization	USFWS has been working in this watershed for several years. Not sure what data already exists.	Number of stream miles restored, persistence of target species throughout system.
55	Continue land prioritization, acquisition, restoration, and conservation actions in the Etowah River's Smithwick Creek basin.	H	Smithwick Creek occurs within high priority watershed in the current SWAP (High Global significance score). It contains an important population of Cherokee Darters	USFWS has been working in this watershed since 2009. Not sure what data already exists.	Number of stream miles restored,, persistence of target species throughout system.
56	Following model used in Raccoon Creek Basin, protect critical parcels of land by acquiring land or conservation easements from willing sellers in high priority watersheds	VH	Targeted land acquistion, particularly in areas threatened by development, can avoid impacts to aquatic systems that can be difficult to reverse	GIS coverages of species locations, existing landcover, and conservation lands	Proportion of watershed protected; number of local populations conserved at viable levels

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
57	Conserve High Priority Habitats	Protect high priority species and habitats through the Statewide Water Planning Process	Conservation Planning	Proposed	Numerous	All	Numerous	State and Federal Funds, Private donations	DNR (EPD and WRD), GSWCC, Local governments, ARC, Metropolitan North Georgia Water Planning District, industries, county governments	River Basin Center, USFWS, TNC, numerous stakeholders
58	Conserve High Priority Habitats	Resolve the current difficulty in protecting newly created or emerging beach nest bird habitat	Management, Regulation	Ongoing, Proposed	All beach nesting birds. Least Tern, Gull-billed Tern, Black Skimmer, Royal Tern, Sandwich Tern, Brown Pelican, American Oystercatcher, Wilsons Plover	SCP	Numerous	State Wildlife Grants, Nongame Wildlife Fund	DNR LED, Nongame, other coastal partners	St Catherines Island, Little St Simons Island, Little Cumberland Island, Cumberland Island National Seashore
59	Conserve High Priority Habitats	Restore mountain bogs; restore or enhance populations of rare bog plants; continue bog turtle headstart and population establishment efforts; monitor bog turtle populations	Management, Research, Education	Ongoing	Mountain bogs; *Glyptemys muhlenbergii; Helonias bullata*, *Sarracenia purpurea* ssp. *venosa* var. *montana*	BR	Ocoee, Hiwassee, Tugaloo, Upper Little Tennessee	ESA Section 6, Nongame Wildlife Fund, State Wildife Grants	DNR	USFWS, USFS, Chattahoochee Nature Center, Tennesee Aquarium, Atlanta Botanical Garden, State Botanical Garden of Georgia, other GPCA members, Charles H. Wharton Conservation Center, volunteers

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
57	A substantial effort was made to highlight rare aquatic species in each of the water planning regions of the state, with rare species information included in the state water plan. However, its not clear how this information will be used. We need to find additional opportunities for engagement and provide the councils with information on high priority watersheds for aquatic conservation.	VH	The development of water resources will have a large impact on high priority species and habitats as Georgia continues to grow into the future. The extent of the impact will depend on what practices are implemented by the water planning councils (e.g., reservoirs, withdrawals, conservation measures. Conservation goals for high priority species and habitats should be taken into consideration in the development of water resource plans.	Meetings and correspondence with water councils. Information and datasets provided.	Number of councils that can be briefed on SWAP goals to protect high priority watersheds and species.
58	While the Bird Island Rule protects several important nesting sites for beach nesting birds, there are newly created sites (Brunswick Dredge Island, Hupps Bar) that have become highly important to beach nesting birds, but since they are not listed in the Bird Island Rule, closures on these sites is difficult to enforce.	H	These sites are highly vulnerable to a number of threats. Natural sites tend to be very low, and prone to over wash. Since these sites are isolated however, they are free of mammalian predators, which means that productivity can be very high if human disturbance can be controlled.	Colony monitoring, posting and roping.	Increased productivity for beach nesting birds.
59	Restore mountain bog communities, augment or establish rare bog plant populations and continue restoration efforts for the bog turtle. Objectives include the headstarting of bog turtles and the restoration and maintenance of mountains by woody plant control and removal. A long-term goal of releasing approximately 20 juveniles per year is realistic and within the range necessary to successfully establish a population over a five to ten year period of releases.	H	Many of the characteristic species of mountain bogs have declined significantly due to lack of active management. The bog turtle is currently known from less than 10 sites in the state, only two of which are on public land and capable of sustaining a long-term viable population (with continued restoration and management). Few high-quality mountain bogs remain in Georgia, and most of these are in private ownership. Ensuring the continued survival of bog turtles and other bog species in Georgia may depend on protection and enhancement of the few remaining mountain bogs on public lands. If opportunities emerge to enhance bogs on private lands, these landowners will be offered regulatory relief and financial incentives.	Measures of vegetation structure and composition; population estimates for rare bog species; genetic samples of wild Georgia bog turtles; radio telemetry data on turtle movement, habitat utilization, and microhabitat preference at both recipient and donor sites; size and weight of turtles released and recaptured at recepient sites.	Restoration of mountain bog habitats including reduction of woody cover, expansion of Sphagnum, establishment / augmentation of rare species, and restoration of natural hydrology. Number of turtles released and maintained in restored habitat.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
60	Conserve High Priority Species	Conserve estuarine bottlenose dolphin stocks	Management, Research, Survey	Ongoing, Proposed	Bottlenose dolphins; estuarine and nearshore marine waters	SCP	All estuarine and nearshore marine waters	Nongame Wildlife Fund, NMFS, Additional Funding Needed	NMFS, DNR	NMFS, NOAA NOS, UGA, Savannah State University, Georgia Sea Turtle Center, etc.
61	Conserve High Priority Species	Implement manatee recovery plan	Management, Research, Survey	Ongoing	Manatees, Estuaries, Tidal Freshwater Rivers, Nearshore Marine	SCP	All tidal waters	USFWS ESA Section 6, U.S. Navy	USFWS, DNR	USFWS, DNR CRD & LED, USGS, Florida FWC, Navy, Sea to Shore Alliance, Georgia Aquarium
62	Conserve High Priority Species	Address problems with state law (O.C.G.A. 27-1-28) permitting unregulated and unrestricted commercial take of eastern diamondback rattlesnakes, and develop appropriate regulations.	Regulation	Proposed	*Crotalus adamanteus*	SP, SCP	N/A	N/A	DNR	PARC, Georgia Wildlife Federation

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
60	Monitor estuarine dolphin stocks (estimate abundance, distribution, stock boundaries and population vital rates; document causes of mortality and serious injury by maintaining stranding network; assess health of Brunswick stock with biopsy sampling and capture health assessments); reduce and manage anthropogenic impacts (persistent environmental contaminants; commercial and recreational fisheries, dolphin feeding and harassment; implement policies to reduce impacts); protect habitat (review federal and state permits and proposals, assess impacts of emerging activities); conduct targeted research (satellite telemetry); educate stakeholders and user groups	M	Brunswick stock is high monitoring priority due to high levels of persistent environmental contaminants and potential ecosystem-level effects; New funding, additional staff and/or cooperative partnerships will be needed to implement Brunswick and coast-wide monitoring; Maintaining the stranding network is critical for monitoring human impacts to estuarine and coastal stocks; Maintaining the stranding network will indirectly benefit other marine mammal species that strand in Georgia	Photo-identification, effort-corrected boat-based surveys, genetics from live and dead animals, stranding and necropsy data, entanglement and fishery effort data, telemetry, blubber contaminant concentrations and health parameters of free-swimming animals	Abundance of estuarine stocks estimated to support NMFS management; impacts of contaminants on Brunswick dolphins determined to support stock restoration efforts and ecosystem-level monitoring; dolphin feeding and harassment identified and reduced; human-related mortality and injury at historic and low levels; stranding data collected and submitted to NMFS databases; Stranding network maintained with cooperation from barrier island managers and other cooperators throughout coastal Georgia
61	Monitor manatee population (estimate abundance, distribution and population vital rates; document causes of mortality and serious injury); reduce and manage anthropogenic impacts (assess impacts of watercraft, fishery entanglements and artificial warm water outfalls, implement policies to reduce impacts); protect habitat (review federal and state permits and proposals, assess impacts of emerging activities); conduct targeted research (satellite telemetry); educate stakeholders and user groups	M	GPS telemetry data are needed to identify high use habitats and movement corridors to manage watercraft impacts; The Atlantic manatee subpopulations was increasing during the 2000s, but recent mass mortalities and future uncertainties regarding warm water refugia and climate change may reverse this trend; Georgia monitoring data are of limited value on their own, they are most valuable when contributed to existing USGS, USFWS and FL FWC databases	Varies according to task; Photo-identification, effort-corrected aerial surveys, individual genotyping, necropsies, entanglement and fishery effort data, outfall data, recreational and commercial watercraft data, satellite telemetry	Continued use of Georgia waters during warm season; Identify high-use areas and movement cooridors; Human-related mortality remains low and similar to historic levels; Monitoring data submitted to USFWC, FL FWC and USGS; Recovery efforts coordinated with governmental, non-governmental and private groups
62	Existing state law does not require permitting, reporting, limits, seasons, or anything useful to monitor impacts and regulate take of this declining species. However, it does allow for promulgation of regulations relating to take. The best long-term solution would be to amend the state law to exclude this species. In the short term, DNR should promulgate regulations requiring permits and harvest records for rattlesnake roundups and prohibiting the take of venomous snakes without a permit.	M	Eastern diamondback rattlesnakes are harvested for "sport", the skin trade, the venom trade, and entertainment at rattlesnake roundups. In order to assess the impact of this take and trade, and adjust regulations accordingly, permitting and harvest reporting is necessary.	Number of rattlesnake take permits issued and number of rattlesnakes taken/sold.	Estimated population changes over time.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
63	Conserve High Priority Species	Address the lack of regulation regarding the use of set-lines ("bush-hooks") and the indiscriminant shooting of basking freshwater turtles in waters of the state	Regulation	Proposed	All freshwater turtles, other wildlife	All	All	N/A	DNR	PARC
64	Conserve High Priority Species	Apply the North American Model for Wildlife Conservation to herpetofauna	Regulation, Policy	Proposed	All reptiles and amphibians	All	All	N/A	DNR	PARC
65	Conserve High Priority Species	Assess the need and feasibility of extending disease testing of vulnerable species to taxa other than amphibians and reptiles.	Research, Monitoring	Proposed	Numerous	All	All	TBD	DNR	SCWDS, UGA, APHIS, CDC, SEAFWA, GWF
66	Conserve High Priority Species	Assist USFWS with development and implementation of Candidate Conservation Agreements (CCA) CCAs with Assurances (CCAA), and other conservation strategies under the Southeast At-Risk Species Program.	Research, Survey, Regulation, Habitat Protection	Ongoing	Numerous	All	All	Nongame Wildlife Fund, State Wildlife Grants, ESA Section-6, other USFWS funds	DNR, USFWS, GPCA, other conservation organizations and agencies	Private and public landowners
67	Conserve High Priority Species	Conduct *Elliptio* taxonomic studies	Research	Proposed	Numerous	All	Numerous	Multi-State State Wildlife Grants	DNR (for GA component of project)	Agencies, Museums
68	Conserve High Priority Species	Conduct Gulf Slope mussel physiology study	Research	Proposed	Numerous	SP	Numerous	State Wildlife Grants	DNR	Academia
69	Conserve High Priority Species	Conduct Halloween Darter status assessment	Research	Proposed	Halloween Darter	PD, SP	Upper Flint, Lower Flint, Middle Chattahoochee, Upper Chattahoochee	State Wildlife Grants, other USFWS or USGS funds	DNR or USFWS	UGA, GMNH

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
63	Existing state laws or rules do not address the attendance, placement, labelling, and immediate removal following fishing efforts of set-lines. Existing state law also does not prohibit the shooting of non-listed freshwater turtles. However, it does allow for promulgation of regulations relating to take.	M	Unattended set-lines incidentially capture or snag, and often kill, untargeted turtle species, including several state-listed species. Those that shoot basking turtles in waters of the state do so indiscriminately. State-listed map turtles, especially, are unfortunate victims of this practice, which has been identified as a threat to map turtles	Information on take of turtles by set-lines and shooting.	Reduction in take of protected and other turtles by set-lines and indiscriminant shooting.
64	The North American Model of Wildlife Conservation is a set of principles that has guided wildlife management and conservation decisions in the United States. The North American Model of Wildlife Conservation rests on two basic principles – fish and wildlife are for the non-commercial use of citizens, and should be managed such that they are available at optimum population levels forever.	M	This model has guided conservation of game species for decades, but in 2014 AFWA formally approved the application of this model to all amphibians and reptiles to ensure their sustainable use.	N/A	Regulatory changes that will eliminate commercial use of herpetofauna and guide their management with the goal of maintaining optimum population levels.
65	Determine whether potentially or known-to-be vulnerable high priority species of taxa should be sampled for emerging infectious diseases mostly as a component of on-going population surveys and monitoring efforts.	M	Emerging wildlife diseases may require additional testing of species that may be vulnerable. Priority will be given to species that are currently imperiled and for which disease susceptibility has been reported.	Reports of new disease outbreaks in other states; literature on susceptibility of rare or imperiled taxa to diseases.	Determination made about the need and feasibility of extending testing to additional high priority taxa.
66	Assist the USFWS with data collection, coalition/concensus-building among potential CCA signatories , development of management and monitoring protocols for the CCA , and drafting of the CCA.	H	The USFWs will be exploring the use of CCAs and CCAAs as a conservation action, in-lieu of listing under the ESA, with regard to the species being evaluated as part of the At-Risk Species Program. The USFWS must rely heavily on the expertise of DNR staff and the wealth of information in the Biotics database to accomplish this task. DNR will assist as resources allow. Additional funding provided by the USFWS would allow for greater DNR involvement.	Collect and /or update Biotics database information on new and existing rare plant EOs, populations, sites. Gather locational and status info from other sources (experts and herbariums).	Successful development and execution of CCA/CCAAs.
67	Complete taxonomic revision of the mussel genus Elliptio. Management of this group is difficult given current taxonomic uncertainties.	M	Management of this group is difficult given current taxonomic uncertainties. Some species may actually be more widespread than currently recognized while others may be more imperiled	Standard genetic and morphological characters to diagnose species, synonyms	Publication documenting results
68	Evaluate temperature, dissolved oxygen, and desiccation tolerance of high priority mussels (and host fish) from the ACF – Ochlockonee Basin.	M	Understanding the physiological limits of species is necessary when identifying appropriate stream flows for survival and recruitment	Measures of survival and growth for each parameter in controlled lab studies	Report or publication detailing findings on survival and growth parameters
69	Assess Halloween Darter population and genetic status in all four population areas (Lower Flint, Upper Flint, Middle Chattahoochee, Upper Chattahoochee)	M	The Halloween Darter is petitioned for listing, but only limited data is available to assess the status of each population. Genetic data is needed to assess genetic health of each population and to eliminate confusion with cryptic congeners. Mary Freeman has drafted a proposal for this study	Number of sites with recent occurrences of species, comparison of recent vs. historic distribution where data is available	Completed Status Assessment Report

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
70	Conserve High Priority Species	Conduct museum mussel identification project	Research	Proposed	Numerous	All	Numerous	State Wildlife Grants	DNR (for GA component of project)	Other state wildlife agencies, natural history museums, natural heritage programs
71	Conserve High Priority Species	Conduct outreach to decision makers and the public about the impact, transmission, and prevention of diseases. Propose regulations to address wildlife diseases as needed.	Education, Outreach	Ongoing	Numerous	All	All	TBD	DNR, SCWDS	GWF, APHIS, CDC, sportsmen's groups, legislators
72	Conserve High Priority Species	Continue Georgia marine mammal stranding network	Management	Ongoing	Cetaceans/estuarine and marine habitats	SCP	All coastal estuarine and nearshore marine waters	Nongame Wildlife Fund, NOAA Prescott Grant	DNR	NOAA Fisheries, UGA, USFWS, Tybee Is. Marine Science Ctr., Cumberland Is. Museum, NPS, Skidaway, et al.
73	Conserve High Priority Species	Continue sea turtle stranding and salvage network.	Survey	Ongoing, Proposed	*Caretta caretta, Chelonia mydas, Dermochelys coriacea, Lepidochelys kempii, Lepidochelys olivacea, Eretmochelys imbricata*	SCP	All Coastal Plain estuaries and offshore waters	ESA Section 6, Nongame Wildlife Fund; Jekyll Island Authority, Caretta Research project, USFWS, Sea Island Co, the Lodge at Little St. Simons Island, Little Cumberland Homeowners Assoc., Cumberland Island National Seashore	DNR	USFWS, NMFS, NPS, UGA, Caretta Research Project, St. Catherines Foundation, Sea Island Co., Jekyll Island Authority, L. Cumberland Island Homeowners Assoc., The Lodge at Little St. Simons Island, Tybee Marine Science Center
74	Conserve High Priority Species	Continue Waterbird Conservation Initiative	Research, Management	Ongoing	67 species of waterbirds	SP,SCP	Coastal Plain	Nongame Wildlife Fund	DNR	Federal and Private land owners, NGO's

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
70	Inventory and validation of museum records for high priority mussel species. This would involve visiting museums with significant mussel collections and may be coordinated with other southeastern states. A grant proposal for this study has already been developed	M	Records of high priority mussel species may have been entered into distributional databases without proper verification. In addition, unsorted material in some collections could contain new distributional records.	Characteristics of specimens used to confirm identifications, locality data	Number of confirmed records of high priority mussel species
71	Continue to conduct outreach to the public and decision makers about activities that contribute to disease transmission. Monitor commercial animal trade and translocation of wildlife to determine potential impacts. Propose regulations as appropriate to reduce risks of importation or transmission of wildlife diseases.	M	Commercial pet trade, transport of native wildlife, and the deliberate or accidentaly introduction of invasive species may contribute to outbreaks of diseases that can result in significant mortality. Outreach is needed to minimize human activities that will cause or exacerbate disease outbreaks.	Information on messages developed and distributed and number of organizations and individuals contacted.	Number of decision-makers, organizations, and people contacted
72	Coordinate response to live and dead stranded marine mammals; collect data on stranded marine mammals, document human/cetacean interactions; assess cause of death if possible	M	DNR is only organization in Georgia with a Letter of Authorization from NOAA to perform task; level of priority may decrease over time if other organizations increase involvement	Species, life history, physical measurements, histopathology, virology, serology, parasitology, human interaction, etc.	Long-term data collection mandated by Marine Mammal Protection Act; data reported to NOAA within 30 days of each stranding event.
73	Conduct standardized surveys for sick, injured or moribund sea turtles. Conduct gross necropsies to determine cause of death.	H	Shrimp trawling is the largest known source of mortality in Georgia. The Georgia coast has consistently recorded some of the highest stranding densities in the U.S. Stranding totals have increased over the last 16 years. Strandings are the primary index of nearshore moratlity for sea turtles. Stranding totals will be used to assess the effects of human activities (commercial and recreational fishing, environmental contamination, recreational boating) on sea turtle populations and react quickly to minimize sources of mortality.	Spatial and temporal distribution of strandings, species composition, size frequency, sex ratios, cause of death, human interactions.	Stranding trend data will be used in management decisions.
74	Identify population trends, stresses, nesting areas, staging sites, and wintering habitat. Work within North American Waterbird Conservation Plan and U.S. Shorebird Conservation Plan recommendations to promote recovery and maintain waterbird populations.	H	Worldwide declines in waterbirds have prompted international and national efforts to stem population losses and maintain regional population stability.	Population bottlenecks identified. Georgia's role in long-term mainentance and recovery of waterbirds recognized. Individual studies encouraged and supported.	Partnerships with academic institutions, NGO's, other state agencies, federal agencies and programs, are established. Population goals met.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
75	Conserve High Priority Species	Determine the demographic patterns and habitat use of juvenile sea turtles in coastal waters.	Research	Ongoing, Proposed	*Caretta caretta, Chelonia mydas, Dermochelys coriacea, Lepidochelys kempii, Lepidochelys olivacea, Eretmochelys imbricata*	SCP	All Coastal Plain estuaries and offshore waters	ESA Section 6	DNR	UGA
76	Conserve High Priority Species	Develop aquatic species field guides	Outreach, Education	Proposed	Numerous	All	Numerous	Private donors?	DNR, GMNH	
77	Conserve High Priority Species	Develop guidelines for captive propagation, reintroduction, and translocation of rare aquatic species	Research, Policy	Proposed	Blue Shiner, Sicklefin Redhorse, possibly others	All	Numerous	State Wildlife Grants, Nongame Wildlife Fund	DNR, USFWS	Conservation Fisheries, Tennessee Aquarium
78	Conserve High Priority Species	Develop Sicklefin Redhorse Conservation Agreement	Conservation Planning	Ongoing	Sicklefin Redhorse	BR	Tennessee	State Wildlife Grants	DNR (for GA component of project)	USFWS-Asheville/Atlanta, Cheorkee Tribe, Young Harris College, NCWRC
79	Conserve High Priority Species	Enforce and monitor trawl fisheries for impacts to sea turtles	Regulation	Ongoing, Proposed	*Caretta caretta, Chelonia mydas, Dermochelys coriacea, Lepidochelys kempii, Lepidochelys olivacea, Eretmochelys imbricata*	SCP	All Coastal Plain estuaries and offshore waters	Section 6	DNR	NMFS
80	Conserve High Priority Species	Identify Altamaha Spinymussel host	Research	Proposed	Altamaha Spinymussel	SP, SCP	Numerous	State Wildlife Grants	DNR	UGA

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
75	Develop an in-water index of abundance to assess spatial and temporal patterns of sea turtle abundance. Assess adult survival using a mark-recapture model.	H	Understanding patterns in seasonal abundance of juvenile sea turtles is critical for assessing the impacts of coastal offshore development projects and other activities such as vessel interactions.	Number and location of turtles recaptured. Survival of adult turtles	Monitoring juvenile abundance and survival is critical for assessing population status and modeling exercises.
76	Support development of field guides and comprehensive books to document the state's aquatic fauna, such as fishes and mussels. Guides would include photographs, keys, range maps, and species accounts and would be published in collaboration with websites such as Fishes of Georgia, Crayfishes of Georgia, and Rare Species Profile pages.	H	Comprehensive distributional guides have been published for fishes and mussels in all surrounding states, but are not available for Georgia. This information is needed for accurate identification and as reference for biological information. These books would be of interest to students, anglers, consultants, professors, and natural history enthusiasts.	Information compiled and formatted for production of guides; completion dates, publication dates, sales	Number of guides produced and purchased
77	Following the steps outlined by George et al (2009), guidelines will require development of a written plan that considers habitat, genetics, source populations, conservation benefit and other factors.	H	There are some habitats that could support reintroduction of aquatic species into portions of their native range in Georgia and would help reduce the overall risk of extinction/extirpation of the species. Examples are Sicklefin Redhorse in the Nottely River and Blue Shiner into the upper Coosawattee/Talking Rock Creek	Genetic diversity and abundance of source populations, MaxEnt model of suitable habitat, monitoring of survival and recruitment of new population	Number of self-sustaining populations restored
78	Support development and actively participate in a multi-partner effort to conserve the Sicklefin Redhorse. The U.S. Fish and Wildlife Service has already drafted a memorandum of agreement for this project.	H	Georgia provides important spawning habitat for the Hiwassee population of Sicklefin Redhorse, which we have been monitoring since 2005. The species could potentially be reintroduced into the Nottley River system and the Little Tennessee River system. The rest of this project will take place in NC	DNR has funded Young Harris College to monitor this population in 2013-2014 will support additional monitoring in the future.	Linear extent of spawning habitat used each year, effective population size, survival and recruitment in any populations that are reintroduced
79	Shrimpers are required to use Turtle Excluder Devices (TEDs) in all trawl nets to reduce incidental capture and drowning of sea turtles. In addition, a limited-entry system for the shrimp trawl fishery should be developed. other trawl fisheries (whelk, jellyfish) should be monitored for sea turtle mortality and conservation measures should be put in place if mortality is observed.	H	The shrimp trawl fishery is the primary source of mortality for sea turtles in Georgia. Poor TED compliance rates have hampered sea turtle recovery efforts in Georgia. Assuring high compliance with TED regulations is necessary for population recovery. The impact of other trawl fisheries may also be significant and thus needs monitoring.	TED use compliance; number of turtles captured and killed in trawls	Reduction in the number of drowned sea turtles
80	Re-attempt host fish research for Altamaha Spinymussel. This work could be completed in conjunction with the proposed Altamaha Mussel monitoring study	M	Identification of the host fish will help us understand why the Altamaha Spinymussel has declined. This information could also be used for propagation	Glochidia transformation rates on potential host fishes	List of suitable host fishes

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
81	Conserve High Priority Species	Implement diadromous fish restoration projects	Research, Survey	Ongoing	Shortnose sturgeon, Atlantic sturgeon, American shad, Alabama shad, hickory shad, blueback herring, American eel, striped bass	PD, SP, SCP	All but Tennessee and Coosa	State Wildlife Grants, FM Section, others	DNR	USFWS, NOAA-Fisheries, ASMFC, GCMFC, SC DNR, AL DNR, FL FWCC,
82	Conserve High Priority Species	Implement red-cockaded woodpecker conservation on private lands	Management	Ongoing	*Picoides borealis*	PD, SCP, SP		Nongame Wildlife Fund, USFWS, Tall Timbers Research Station, Turner Endangered Species Fund, Georgia Power, Joseph W. Jones Ecological Research Center	DNR	USFWS, TTRS, Joseph W. Jones Ecological Research Center

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
81	Evaluate existing population status, commerical and recreational fisheries, and habitat limitations. Look for opportunities to enhance habitat through suite of alternatives.	H	Current diadromous fish populations are greatly reduced compared to historic levels.	American shad harvest statistics, American eel population measures, striped bass population estimates, Alabama shad population estimates, Atlantic and shortnose sturgeon population estimates and telemetry studies	Population stability as measured by reproduction/recruitment. Restoration of species to historic ranges.
82	Implementation of statewide HCP including safe harbor management agreements and mitigated take from small, isolated populations. Also, administration of landowner incentive program for safe harbor participants, participation in consortium for conservation of RCW in Red Hills region; establishing mitigation populations at Ichauway and Moody Forest; providing management assistance to landowners and managers.	H	Recovery plan for this species includes efforts on private lands. However, very few private tracts still suitable. Red Hills population is largest private land population in world and exists in best remaining habitat. Conservation of this RCW population and its habitat will benefit many other species as well.	Nestling RCWs are banded each spring. Some birds are translocated in the fall to help establish potential nesting pairs within this population and within other populations. Other data include number of groups and amount of habitat enrolled in safe harbor agreements, incentive funding utilized, acres impacted by incentive payment contracts.	Number of nests monitored, number of nestlings banded, number of nestlings translocated, number of recruitment clusters installed, number of groups in population, number of recruitment sites occupied, number of acres burned under contract.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
83	Conserve High Priority Species	Implement right whale recovery plan in the Southeast U.S.	Management, Research, Survey	Ongoing, Proposed	Right Whales, marine habitats	SCP	Atlantic Ocean waters	NMFS ESA Section 6	NMFS, DNR	NMFS, DNR CRD & LED, Florida FWC, Sea to Shore Alliance, New England Aquarium, Center for Coastal Studies, Southeast Implementation Team and North Atlantic Right Whale Consortium members
84	Conserve High Priority Species	Improve citizen and volunteer involvement in monitoring projects	Monitoring, Outreach	Ongoing and Proposed	All	All	All	Nongame Wildlife Fund, State Wildlife Grants, other USFWS funds	DNR	Georgia Wildlife Federation, Numerous volunteers and citizen science groups
85	Conserve High Priority Species	Incorporate Henslow's Sparrow habitat management into management plans on all WMAs that have confirmed wintering sites	Management	Proposed	Henslow's Sparrow. Habitats often used by other high priority species, so management activity (e.g. prescribed fire) will likely benefit many other species of concern	SP, SCP	All SP and SCP drainages	State Wildlife Grants, Nongame Wildlife Fund	DNR	The Nature Conservancy, Plum Creek Timber Company, U.S. Fish and Wildlife Service

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
83	Monitor right whale population (estimate abundance, distribution and population vital rates; document causes of mortality and serious injury); reduce and manage anthropogenic impacts (assess impacts of watercraft and fishery entanglements, implement policies to reduce impacts); protect habitat (review federal and state permits and proposals, assess impacts of emerging activities such as energy development); conduct targeted research (satellite telemetry, passive acoustic detection, photogrammetry, assess ambient and anthropogenic noise and impacts); educate stakeholders and user groups	VH	This conservation action includes a variety ongoing and proposed recovery activities in accordance with the right whale recovery plan; Ship strike reduction efforts appear to be working; Future activities should focus on reducing entanglements and protecting wintering habitat; Most Georgia monitoring data are of limited value on their own, they are most valuable when contributed to existing cooperative databases using data from Canada, Northeast U.S., mid-Atlantic and other Southeast U.S. states	Photo-identification, effort-corrected aerial and boat-based surveys, individual genotyping, necropsies, entanglement fishing gear analysis, fishery effort data, recreational and commercial watercraft data, telemetry, acoustic recordings (whale vocalizations, ambient ocean noise, anthropogenic noise), whale behavior data, photogrammetric images	Population trends; use of Southeast habitat for calving and overwintering; mortality, low injury and entanglement rates in Southeast U.S.; questions about right whale movement, distribution and migration addressed; Assess cumulative impacts of ocean noise, watercraft and other anthropogenic impacts on whales and Southeast wintering habitat; Habitat remains protected from existing and emerging threats; Monitoring data submitted to NMFS and North Atlantic Right Whale Consortium partners; Recovery efforts coordinated with governmental, non-governmental and private groups via the North Atlantic Right Whale Consortium and Southeast Implementation Team for Right Whale Recovery;
84	Technology should be used to increase efficiency of engaging and training citizens and volunteers to assist with monitoring projects. This includes using online tools, social media, and smart-devices to aid training, share protocols, and collect data. Monitoring needs should be shared with Master Naturalist programs and K-12 teachers. A reward program should be initiated for participants' monitoring efforts.	H	DNR has helped organize or has been a key partner in many citizen-science or volunteer-based monitoring projects in the past ten years. In particular, successful programs have involved monitoring of bats, frogs, birds, and invasive species. These projects have been useful in tracking species populations and have allowed for public involvement in DNR conservation projects.	Monitoring data collected by citizen scientists and volunteers	Increase in volunteer-based monitoring programs and participants, successful use of online tools and other technology for monitoring, successful implementation of a monitoring rewards program
85	Work with partners to include habitat management for Henslow's Sparrows in 50-year and annual management plans for WMAs where they are known to occur (Paulk's Pasture, Moody Forest, Townsend WMAs) or likely to occur. This could be extended to national wildlife refuges, other agency lands, and private lands. Much of the management could be conducted on power line right-of-ways and similar areas.	H	Habitat management for this species is relatively straight forward and mostly includes prescribed fire at the appropriate time and occasionally other management tools. Often grassy power line corridors can provide suitable habitat with appropriate management. Damp flatwoods and pitcher plant bogs also can provide habitat.	Number of WMAs and other conservation lands with prescribed burning and other land management activities that benefit Henslow's Sparrows.	Percentage of suitable WMAs and other conservation lands with Henslow's management incorporated into long-term land management plans.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
86	Conserve High Priority Species	Incorporate Swallow-tailed Kite management into management plans on all WMA's that have confirmed or probable nesting STKI	Management	Proposed	Swallow-tailed Kite and suite of bottomland forest species that would benefit from habitat conservation	CP	Numerous	State Wildlife Grants, Nongame Wildlife Fund	Nongame, Game management, Forest Resources	ARCI, Swallow-tailed Kite working group
87	Conserve High Priority Species	Maintain Robust Redhorse Conservation Committee	Conservation Planning, Management	Ongoing	Robust Redhorse	PD, SP	Numerous	State Wildlife Grants	DNR	All RRCC members
88	Conserve High Priority Species	Manage coyote populations on barrier islands to reduce impacts to beach nesting birds	Management	Ongoing, Proposed	All beach nesting birds that nest along beach fronts on Georgia islands. Least Tern, Gull-billed Tern, Black Skimmer, American Oystercatcher, Wilsons Plover	SCP	Numerous	State Wildlife Grants, Nongame Wildlife Fund	Cumberland Island, Little St. Simons Island, DNR, USFWS	Cumberland Island, Little St. Simons Island, DNR, USFWS
89	Conserve High Priority Species	Propose a list of species to supplement the list of wild animals set forth in Georgia Code for which a permit or license, or both, is required.	Regulation	Proposed	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund	DNR	GWF, GFC, UGA
90	Conserve High Priority Species	Reduce impact of crab-pot fisheries and vehicle-induced mortality on diamondback terrapins; develop a statewide index of abundance for terrapins	Research, Management, Education	Ongoing, Proposed	*Malaclemys terrapin*	SCP	All Coastal Plain estuaries and offshore waters	State Wildlife Grants, Nongame Wildlife Fund, TERN, Project-Specific GDOT Funds	DNR	Diamondback Terrapin Working Group, GDOT, county road departments, crabbers, landowners, UGA

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
86	Known nesting areas on state lands need to be protected from timber harvest and fire. Buffers need to be set up around these sites. Silvicultural prescriptions can be generated to leave some trees along hard wood edges to produce future nesting habitat for STKI. (details through Plum Creek). artificial nest platforms may be useful in some cases.	H	A tremendous amount of work has been conducted on the Altamaha river to conserve land. We know need to insure that these protected lands are managed in a way to protect one of our highest priority bird species	Years of nest site location data. 3 years of roost data,	Longevity of STKI nesting clusters on state lands.
87	Continue participation in the RRCC. Nongame Conservation has agreed to provide a representative to the RRCC. Our role includes monitoring GA populations, managing contracted studies, and workign with stakeholders to conserve the species.	H	While much has been accomplished through the RRCC, the Robust Redhorse still has significant conservation needs. Successful recruitment of stocked populations has not yet been documented. The Oconee population has declined considerably. Only the Savannah population is considered currently stable.	Visual observations at spawning sites, genetic data to document recruitment, surveys for juveniles in lower reaches of river/reservoir habitats	Number of self-sustaining populations
88	Once coyotes discover beach nesting birds they rapidly and significantly reduce nest productivity. Coyote predation on Cumberland Island National Seashore has transformed this site from one of the highest productivity American Oystercatcher beaches to a site that rarely produces a single chick. Coyotes have also decimated beach nesting birds on Little Cumberland Island, and are now significantly reducing productivity on Little St Simons Island. Recently they have been sighted on Blackbeard Island.	VH	Coyotes on Cumberland and Little St Simons Island are likely the highest threat to nesting American Oystercatcher on the coast.	Nest loss and nest productivity data for Oystercatcher, Least Tern and Wilson's Plover.	Reduction in predation and increased nest productivity for beach nesting birds
89	The list could include non-native invasive species used in the pet trade and likely to impact Georgia native species or natural habitats. Suggest recommendations for specific restrictions or guidelines for issuing permits.	M	Some nonnative invasive species, such as the Cuban treefrog, are in the pet trade and can be legally sold in Georgia. DNR can promulgate rules to add species to the list of wild animals for which permits or licenses, or both, are required.	Information on nonnative species currently sold online that represent threats to native species or natural habitats in Georgia.	Supplemental list developed and submitted for approval by DNR Board.
90	Drowning in crab traps is perhaps the single greatest threat to diamondback terrapins. Develop and implement a terrapin conservation plan for commercial and recreational crab pot fisheries. The terrapin conservation plan should include the use of Terrapin Excluder Devices (TEDs), pot soak time requirements, closure areas, removal of abandoned pots, and monitoring of effectiveness of conservation efforts. The shoulders of causeways and roads through and adjacent to coastal marshes are attractive nesting sites for diamondback terrapins. Develop management guidelines to reduce mortality of terrapins on coastal roadways including techniques for installing seasonal barrier fences (< 10”).	M	Commercial crab fishermen capture and drown large numbers of diamondback terrapins. In some areas, terrapin populations have declined precipitously due to crabbing activity. Requiring use of appropriate BRDS and excluders is necessary to reduce incidental take of terrapins. It is also necessary to determine if such devices should be required on both commercial and recreational traps. Vehicle-induced mortality of nesting female and hatchling diamondback terrapins is a seasonal problem in several areas along the coast. Population sustainability depends on high female survivorship and successful recruitment.	Number of terrapins lost to crab pots or on roadways over time; Index of abundance should be designed to assess trends over time (e.g. occupancy model using terrapin head counts from randomly selected tidal creeks).	Reduction in the number of roadkilled terrapins. Reduction in terrapin capture rates in pots without influencing the blue crab size or abundance. Established protocol for assessing terrapin abundance

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
91	Conserve High Priority Species	Review recovery plans for all federally listed species known to occur in Georgia and identify state-specific objectives	Research, Management	Ongoing	All federally listed species in Georgia	All	All	USFWS Section 6, NMFS, Nongame Wildlife Fund	USFWS, NMFS, DNR	NWF, others
92	Conserve High Priority Species	Update and complete the Fishes of Georgia website.	Outreach, Education	Proposed	Numerous	All	Numerous	State Wildlife Grants	GMNH, WRD	Other Museums and Data Contributors
93	Conserve High Priority Species	Complete taxonomic descriptions of high priority fish species	Research	Proposed	Coosa Madtom, Sicklefin Redhorse, Holiday Darters, Coosa Chub	All	Numerous	Unknown	Academia	GMNH, FLMNH, Roanoke College
94	Conserve High Priority Species	Conduct surveys of southwest Georgia isolated wetlands	Survey	Proposed	*Dichanthelium hirstii, Lindera melissifolia, Croton elliottii, Fimbristylis perpusilla, Lythrum curtissii, Scirpus hallii,* others	SP	Ochlockonee, Kinchafonee/Muckalee Flint Middle, Flint Lower, Ichawaynochaway, Spring, Chattahoochee Upper South	Nongame Wildlife Fund, State Wildlife Grants, ESA Section 6, other USFWS funds	DNR	Various academic institutions, private contractors and botanical specialists, GPCA and its member institutions
95	Conserve High Priority Species	Coordinate terrestrial invertebrate surveys and conservation efforts in Georgia	Research, Survey, Monitoring	Proposed	Terrestrial invertebrates in various high priority habitats	All	All	State Wildlife Grants, Nongame Wildlife Fund, USFWS, private foundations,	DNR	Academia (nationwide specialists),TNC, NatureServe, USFWS, other state wildlife agencies.

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
91	Review and assess adequacy of recovery plans for all federally listed species	M	Recovery plans for some listed species (e.g., loggerhead turtle) are known to be out of date. Recovery objectives and methods should be reassessed in the light of recent of research and conservation efforts.	Extensive literature review and individual research findings.	Number of recovery plans reviewed.
92	Some maps need to be completed for taxonomically problematic species. There is also a need to update maps with new distribution records since the website was completed in 2007. Finally, development of a web application could generate conservation funding and broaden use of the application	H	This website has remained about 90% done since 2007. Maps for taxonomically problematic species have never been developed. Additional resources (funding and staff time) are needed to complete this effort.	Information needed for completion of species maps; number of maps completed	Number of distribution maps updated, number of new distribution maps completed
93	Complete taxonomic description of imperiled aquatic species, such as Coosa Madtom, Sicklefin Redhorse, Holiday Darters, Coosa Chub, and other high priority species as needed.	M	Accurate recognition of species diversity is necessary for the prudent investment of conservation resources and will also determine what conservation actions are appropriate for each taxon. For example, if Coosa populations of the Frecklebelly Madtom are distinct, then there is only a single source population that could be used for re-stocking the Conasauga River population if it is declared extinct.	standard morphological and genetic data used in species descriptions	Number of species described
94	Work in collaboration with biologists of other taxonomic groups, especially herpetofauna, birds, and terrestrial invertebrates, to procure funding for an inventory of this high priority habitat and associated landowners. Use GIS resources and aerial imagery to prioritize ponds to visit. Assess sites for potential suitable habitat for high priority species of conservation concern. Obtain landowner contacts and conduct rare species survey at sites with high potential.	VH	Southwest Georgia depressional wetlands are critical habitat for numerous species. Most are privately owned and they are numerous on the landscape; therefore they are undersurveyed. Collaborative effort among biologists of various specializastions would increase survey efficiency, funding opportunities, and learning among staff.	Location, vegetation community characteristics, species lists, habitat condition, threats, landowner contact, rare species data for Biotics	Number of wetlands surveyed, number of landowners contacted
95	Coordinate and encourage terrestrial invertebrate research and conservation efforts in Georgia and in the SE. Bring together various experts across major taxonomic groups and coordinate survey efforts, monitoring, and research.	M	There is currently no coordinated research and conservation effort for terrestrial invertebrates in Georgia, and little or no contact between various experts on conservation of terrestrial invertebrates	Ranges and occurrence of rare terrestrial invertebrates of concern	New or updated occurrence records of rare terrestrial invertebrate populations and invertebrate communities associated with high priority habitats; prioritized lists of species and habitats for conservation.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
96	Conserve High Priority Species	Monitor effects of climate change on sea turtles and their nesting habitat; Monitor trends in adult female sea turtle abundance through nest monitoring programs and genetic mark-recapture sampling.	Research, Monitoring	Ongoing, Proposed	*Caretta caretta, Chelonia mydas, Dermochelys coriacea*	SCP	N/A	ESA Section 6, Nongame Wildlife Fund; Jekyll Island Authority, Caretta Research project, USFWS, Sea Island Co, the Lodge at Little St. Simons Island, Little Cumberland Homeowners Assoc., Cumberland Island National Seashore	DNR	USFWS, NMFS, NPS, UGA, Caretta Research Project, St. Catherines Foundation, Sea Island Co., Jekyll Island Authority, L. Cumberland Island Homeowners Assoc., The Lodge at Little St. Simons Island, Tybee Marine Science Center
97	Conserve High Priority Species	Support research on life history, natural history, taxonomic status, etc. of high amphibians and reptiles	Research	Ongoing, Proposed	Numerous	All	All	State Wildlife Grants, Section 6, Nongame Wildlife Funds	DNR	Private and university contractors
98	Conserve High Priority Species	Update State-protected species list and work with partners to improve management for these species.	Regulation, Management	Proposed	All state protected animals and plants	All	All	Nongame Wildllife Fund	DNR	SWAP technical teams, other experts on status and distribution; state, federal, and local government land managers.
99	Conserve High Priority Species,	Conduct floristic inventories of undersurveyed state-owned conservation lands with high potential for high priority plant species occurrences	Survey	Ongoing	All	All	All	Nongame Wildlife Fund, State Wildlife Grants	DNR	Private contractors and botanical specialists

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
96	Monitor the length of incubation for all sea turtle nests in the state. Additionally, continue periodic qualitative surveys of sea turtle nesting habitat on all barrier island beaches, categorizing each 100 m section as erosional or depositional based on beach and dune morphological characteristics. Nest counts provide an index of abundance for adult female sea turtles. Genetic sampling can provide robust estimates of female abundance as well as important reproductive parameters such as clutch frequency, remigration intervals, and site fidelity.	H	Sea turtles exhibit temperature-dependent sex determination, so increasing temperatures during nest incubation resulting from climate change may skew sex ratios. Length of incubation is significantly correlated with incubation temperature and thus sex ratios. Another consequence of climate change is sea level rise, so annual surveys will be compared to determine changes in the erosional state of sea turtle nesting habitat. The collection of trend data and estimates of reproductive parameters are critical for assessing population recovery.	Length of incubation; characterization of beach dynamics. Spatial and temporal distribution of nests, hatch success, hatchling production, nest relocation, nests washover, incubation durations, nest depredations, hatchling disorientation, sex ratios, habitat use.	Changes in length of incubation as a correlate for skewed sex ratios; amount of available nesting habitat; numbers of nesting turtles and successful hatches are prime indicators of conservation success.
97	In many cases, such research will be a component of survey and monitoring efforts, but dedicated research may be required to answer important questions that will help guide conservation efforts.	M	Research is an integral part of many amphibian and reptile conservation efforts, in-part because for many of these species we still have more questions than answers about aspects of their life history, natural history, taxonomic status, etc.	Various	Increased knowledge on priority species needs that will improve conservation efforts
98	Conduct a review of Georgia's protected species list at least once every five years. Engage key partners to improve management for state protected species.	H	The state list of protected species was last revised in 2006. Because the list influences conservation priorities for many key partners, it should be based upon the most-up-to-date and scientifically reliable information	Up to date status information on all state protected species and species that should be considered for addition to the list. Number of species added to the list; number of species removed from the list.	Number of times the list of State-protected species is reviewed and revised over the next ten years.
99	Prioritize specific state conservation lands for targeted survey for rare plant occurrences. Examples of high priority properties include Silver Lake WMA and Chickasawhatchee WMA. Determine locations for high potential habitats to target by topographical map and aerial photo. Develop a standard format for submitting results digitally so data can be entered efficiently into the rare species database. Conduct survey with DNR staff or by contracting with qualified botanists. Share data and consult with local site managers to ensure management needs of any high priority rare species and habitats are incorporated into management plans.	H	Certain state conservation lands have high potential for rare plant species occurrences, but have not yet been surveyed. Local site managers need better information about locations of high priority rare plants and habitats for management planning.	Rare species data for Biotics, plant species lists, plant community types and locations	Number of conservation lands surveyed, number of high quality habitats located, number of management plans amended with rare species management needs

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
100	Engage in Regional Conservation Partnerships	Help implement the Southeastern At-Risk Species (SEARS) program.	Conservation planning, Management, Outreach	Ongoing	At-risk species	All	All	State Wildlife Grants, other federal grants, Nongame Wildlife Fund	WMI	SEAFWA Wildlife Diversity Committee (WDC), USFWS, other regional wildlife conservation organizations
101	Engage in Regional Conservation Partnerships	Help revise and implement the South Atlantic Conservation Blueprint.	Conservation Planning, Management	Ongoing	Numerous	PD, SP, SCP	Numerous	USFWS	South Atlantic LCC	DNR, USFS, GFA, others
102	Engage in Regional Conservation Partnerships	Support secure funding for regional conservation efforts.	Funding	Ongoing	At-risk species	All	All	State Wildlife Grants, other federal grants	DNR	AFWA, SEAFWA, federal agencies (e.g., USFWS, DOD), neighboring state fish and wildlife agencies
103	Implement Climate Change Adaptation	Create an updated map to help guide land acquisition and identify future greenway projects. Acquire LiDAR and other data to enhance conservation planning and management.	Conservation Planning, Habitat Protection, Management	Ongoing, Proposed	Numerous	All	All	TBD	DNR, USFWS, DoD, USFS	TNC, GDOT, RDCs, local governments, land trusts, Georgia Land Conservation Center, Oconee Rivers Greenway Commission, land trusts
104	Implement Climate Change Adaptation	Develop a comprehensive, dynamic habitat modeling process that includes projected landscape changes and demographic patterns. Incorporate climate change into landscape and species models and use these to inform conservation plans.	Research, Conservation Planning	Proposed	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund	DNR, USFWS, DoD, USFS	UGA, other research institutions, TNC, land managers

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
100	Includes actions needed to addressed petitioned and candidate species to help minimize the need for federal listings under the Endangered Species Act. Develop and promote data sharing procedures between state fish and wildlife agencies and the U.S. Fish and Wildlife Service so that the best available data is used in listing decisions during the critical points in the decision making process. Identify the highest priority species, coordinate data, and identify funding mechanisms.	VH	Implement the Southeast At-Risk Species Plan by compiling and analyzing data from field surveys, conducting range-wide status assessments of petitioned species, developing proactive conservation plans to address threats, collaborating on data sharing and outreach activities, and providing technical assistance that will inform the listing process. Reach out to stakeholder groups, including private landowners, sportsmans groups, civic groups, and legislators to help them understand the goals and objectives of the SEARS program.	Data from surveys, status assessments and habitat models, etc. Information from datasets shared with other states, meetings, and reports.	Level of participation in the program; number of status assessments completed; number of conservation plans completed and implemented; number of species removed from petitioned list.
101	Help revise and implement the regional plan that describes the places and actions needed to meet conservation objectives in the face of future change. Provide data on Georgia conservation priorities, identify research and conservation needs, solicit new regional partners, and test ecological indicators and species/habitat models.	H	The SALCC Conservation Blueprint provides a regional context for implementation of the Georgia SWAP and plans of other participating states and agencies. This blueprint will be tested, revised and implemented in a series of iterative steps involving input from state and federal agencies and other conservation organizations.	Data provided to SALCC database; interactions with SALCC staff; number of projects implemented using the Conservation Blueprint	Level of participation in the revision and implementation of the blueprint; number of state and regional projects that benefit from the Conservation Blueprint.
102	Assist with applying for competitive and other grants to secure greater funding for conserving species of shared responsibility. Provide input to and support for the efforts of the Blue Ribbon Panel on Sustaining America's Diverse Fish and Wildlife Resources (BRP) to identify a dedicated source of funds for nongame fish and wildlife conservation.	H	Additional resources are needed for completion of SEARS program and other regional conservation initiatives. Competitive grant programs and funds from private foundations may be needed. In addtion, federal funding must be increased in order for the SEARS program and similar regional conservation efforts to be successful.	Funding initiatives pursued by state, federal and nongovernmental organizations in support of regional conservation programs such as SEARS.	Number of appropriate funding initiatives pursued; funding received and applied to SEARS program and related regional conservation efforts.
103	Refine the existing draft greenways map and state wildlife habitat map by incorporating information from sources such as the Southeast Resilience Landscapes Project and DNR species distribution models. Create new conservation opportunities map to guide land protection. Use LiDAR data to help create the statewide map of habitats, show topography, delineate wetlands, and develop strategies for protection and management of coastal plain wetlands. Prioritize management practices on those lands projected to be most resilient to change to minimize risk.	VH	An updated conservation opportunities map that reflects current distribution information on high priority species, habitats, and landscape features as well as outputs from species distribution models and models of landscape diversity and permeability is needed to inform future conservation efforts in Georgia. This will be an iterative process informed by new data from field surveys and modeling approaches that take into account projected climate change, developement, and demographic changes in Georgia and the Southeast.	Updated information on all priority species; data from species distribution models and landscape resiliency models; projected trends in climate change, development patterns, demographic changes, and land use.	Statewide LiDAR coverage acquired. Updated conservation priorities map developed. Management priorities developed with potential climate-related changes incorporated.
104	Changes can be incorporated into the model as modeling assumptions shift, land cover and climate changes, and conservation lands are added. This would create a future habitat component to habitat models that will be beneficial for long term planning. Final prioritization inputs will include sea level rise and other climate change impacts. Review data from Southeast Resilient Landscapes model and other models to identify resilient landscapes. Emphasize management actions that maintain and enhance connectivity in priority areas and avoid fragmenting habitats.	H	Dynamic habitat and landscape models that take into account projected trends in urbanization, demographic changes, and direct and indirect impacts of climate shifts are needed for prioritization of conservation and habitat management efforts.	Data from Southeast Resilient Landscapes Project, SLEUTH, SLAMM, and other models of landscape change; updated coverage of high priority species and habitats	Dynamic models for species distribution that incorporate landscape changes, including projected climate change, development, demographic changes, and land use changes

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
105	Improve Environmental Education	Assess the current level of wildlife conservation literacy among Georgia citizens.	Education	Proposed	All	All	All	Could be minimal - possibly utilize graduate students for the analysis and reporting. DNR has Survey Monkey account.	DNR with a university	EE groups, Georgia Wildlife Federation, colleges, PTAs, nature oriented groups, GPB, SWAP Communications Team
106	Improve Environmental Education	Create educational core concepts with key messages that support the main SWAP themes.	Education	Proposed	All	All	All	In-kind or part of current organization budgets.	DNR	For Content: SWAP technical teams, EPA, EPD, GFC, NRCS, USFWS, USFS. For Readibilty: SWAP Communications Team, EEA of Georgia, Georgia Dept. of Education, Georgia Science Teachers Association,and higher education professionals.

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
105	Assess the current level of Georgia citizens' awareness about native wildlife and wildlife conservation needs. Data collection to be done online possibly using Survey Monkey or like software. Includes a baseline survey of various ages and audience types (possibly separated as 15 & older vs. 15 & under) as well as subsequent measuring of efforts by DNR & partners to promote SWAP themes/messages (Measure = Collect, Analyze, & Report).	VH	A survey of wildlife conservation literacy is needed to establish baseline data for future assessments of progress in current environmental education programs and the creation of new programs. To get the number of responses needed to accurately reflect GA citizen's knowledge, attitude and behavior we will need to work with the SWAP Communications team to conduct a massive email campaign through numerous organizations. We also recommend there is an incentive for participants completing the survey (ie., entered into a random drawing for gift certificates).	Various measures of current public knowledge, attitudes and behaviors regarding wildlife conservation issues and challenges in Georgia.	Ideally 250,000 responses received; analysis and summary of evaluation results.
106	Develop a SWAP logo with 'slogan' and five educational core concepts with key messages that support the main SWAP themes and are geared toward all Georgia citizens (messages can be tailored for specific audiences through educational materials). The messages will focus on conserving all of Georgia's natural resources including plants, wildlife and their habitats, prompting awareness, appreciation and responsible action -- not only for the resources' benefit but for human needs.	VH	Common, consistent messaging shared by all conservation agencies and other stakeholders more effectively reaches and resonates with all Georgians. Messages will stress that everyone can be involved in improving and protecting the quality of their environment, realizing that human actions impact all natural resources.	No new data will be collected. The messages will be created using existing information from partners.	Messages are agreed upon and approved by partners. Stakeholders have incorporated these messages into their communications, materials, and conservation work. A future environmental literacy survey, when compared to a baseline survey, could reveal if these messages have had an impacted the behavior of Georgia citizens.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
107	Improve Environmental Education	Improve communication of SWAP messages to regional education networks and community groups.	Education	Proposed	Numerous	All	All	Mostly in-kind or part of current organization budgets, but may need assistance from TERN or other grants.	DNR Wildlife Resources (Public Affairs and Education Staff)	Nature centers, regional education centers, partner agencies and organizations. Utilize partners who have public affairs staff and can include SWAP messages in their own communications when consistent with their mission (EEA in Georgia, EMCs, Georgia Power, GWF, sportsman organizations, etc.)
108	Improve Environmental Education	Through the SWAP Advisory Board, implement the resolution to develop an Environmental Literacy Plan in Georgia.	Education	Proposed	All	All	All	Private and local sources must be sought. Possible hunter education funding.	Office of the Governor, GA Dept. of Education, DNR	Georgia Wildlife Federation, Relevant Governmental and Non-Governmental Environmental Education Organizations

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
107	SWAP educational messages are best disseminated through leaders/moderators in each ecoregion and via existing networks. Virtually or in-person, ecoregion representatives spread the word by incorporating SWAP messages and materials into their programming and current communications. Use the DNR Nongame e-newsletter and/or develop a GovDelivery bulletin to better dissiminate SWAP messages. For two-way communication, a Facebook page should be developed. Also consider creating a SWAP clearinghouse website, separate from or part of the GA DNR Wildlife Resources Division website. In addition to the general public, target audiences include school children, teachers (including pre-service), and community groups that affect land use (private property owners, business leaders, government officials, etc.). To encourage buy-in by these groups, community programming could integrate SWAP strategies with local issues, thereby creating a common educational strategy.	VH	Conservation issues vary between ecoregions. Having groups and contact lists from each ecoregion can make dissemination of information more productive. This delivery would be done in the sense of long-tail marketing by getting the most relevant, popular, newsworthy and interesting topics to leaders/moderators for them to relay to community members. Partners will be asked to endorse the SWAP as evidence of outreach to a broad group of stakeholders.	Contact lists will be compiled through the SWAP working group and EEinGA.org. Leaders/moderators will be a representative of the GA DNR or from a partner agency/organization.	Downloads of educational materials and other website analytics; additional open online environmental education resources and technical information available through eeingeorgia.org or DNR webpages; requests for information resulting from personal interaction at festivals, meetings, trainings; results of short instant surveys at targeted websites and outdoor places where people visit, to measure awareness of SWAP-related educational materials such as GA DNRs e-newsletter, Dragonfly Gazette (Project Wet), Junior Rangers (state parks) and eeingeorgia.org; development of new materials to fill gaps as needed.
108	The SWAP Advisory Committee should support the Georgia Department of Education in creating an Environmental Literacy Plan (ELP). Through a partnership, the Department of Natural Resources, Wildlife Resources Division can advise the Georgia Department of Education on how to best address wildlife conservation concepts in the ELP. Since no federal funds currently are available in regards to the No Child Left Inside Act, the SWAP Advisory Board could become involved in the development of the Next Generation Science Standards as a near-term goal.	M	Georgia's citizens must have a basis for understanding the environmental issues we face if we are to make informed decisions about our state's environmental health. Creating an environmental literacy plan will provide the framework for school systems and other organizations to expand and improve their environmental education programs in order to improve environmental literacy for Georgia's citizens.	Devise a method of measuring baseline data and increased time spent in nature by children. Devise a method of measuring baseline children's health data and explore correlations between time spent in nature by children and children's health. Survey to assess literacy upon graduation.	Resolution signed by the Governor, a functioning Georgia Partnership for Children in Nature (GPCN), a completed ELP, and annual assessment of progress towards becoming an environmentally literate adult.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
109	Improve Environmental Education	Educate beachgoers and boaters about the plight of beach nesting birds and passage migrants that use Georgia beaches and offshore bars	Education	Ongoing/Proposed	Beach nesting Birds, as well as migrants and overwintering species that build up critical energy reserves foraging on our coast during spring and fall. Include Red Knot, and Piping Plover	SCP	Several	State Wildlife Grants, Nongame Wildlife Fund	DNR	USFWS, Little St. Simons Island, Cumberland Island, St. Catherins Island, Audubon chapters, American Bird Conservancy
110	Improve Environmental Education	Identify and develop targeted educational materials to facilitate the delivery of SWAP conservation messages to the public.	Education	Ongoing, Proposed	All. To be specified by users.	All	All	Possible TERN grant as well as exisitng resources	DNR	Captain Planet Foundation, EEA of Georgia, Flint Riverquarium, Georgia Aquarium, Georgia 4-H, Georgia Dept. of Education, GDOT, GFC, GDA, Georgia Forestry Foundation, GWF, NPS, Project WET, Project WILD, Project Learning Tree, State Botanical Garden of Georgia, Turner Foundation, USFWS, UGA, Zoo Atlanta
111	Improve Private Land Management	Assist DNR Private Lands Program biologists with technical support and outreach to private landowners owning significant botanical sites	Education, Outreach	Ongoing	Numerous	All	All	Nongame Wildlife Fund, State Wildlife Grants, NRCS and USFWS funds	DNR (PLP) will lead; DNR (NCS) will assist	GPCA and its member institutions

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
109	Develop a strategic outreach and education plan to reach beach users and boaters about the challenges faced by beach nesting/foraging/roosting birds. Combination of signage, outreach programs, PSAs, press releases, and other methods.	H	Human disturbance is a major threat to beach nesting birds. Human and canine presence can keep adults off nests where they become vulnerable to exposure and depredation.	Levels of human and canine use in beach nesting habitats.	Increased nest success due to less human disturbance, dog closures on certain beaches
110	Enhance environmental education through development or increased awareness of innovative resources, tools, materials and models incorporating the knowledge, expertise, and resources contained in the SWAP. Correlate SWAP's main themes to core concepts (to be developed), and then tailor educational materials to specific ecoregions and audiences. Disseminate SWAP info via DNR websites, EEinGeorgia website, and other partner websites.	VH	The health and well-being of Georgia's plants, wildlife, and people depends on the quality and integrity of the environment. Loss, degradation, and fragmentation of habitat are the greatest problems facing fish and wildlife. To effectively protect Georgia's natural heritage, the public must be aware of and engaged in conservation.	Collect data on use of EEinGeorgia and other partners' websites.	Click rates, downloads of education materials and other website analytics; number of print-outs of files containing lesson materials; results of short instant surveys at targeted websites and outdoor places.
111	NCS botanists will continue to support the Private Lands Program (PLP) and PLP biologists with technical botanical assistance focusing on general vegetation and rare plant communities, as well as rare plant species information. NCS botanists will continue to promote the various aspects of the PLP, numerous Farm Bill programs (e.g., EQUIP, WHIP, CRP, and PFW), and other options (e.g., conservation easements, GA Conservation Tax Credit Program, and CUVA) to private landowners throughout the state. In addition to the "standard" duties listed above, NCS botanists and PLP biologists will work for the protection of special botanical "small sites".	H	The PLP has a need for technical botanical assistance and NCS botanists will continue to provide it. However, rare plant conservation frequently requires a focus on small isolated populations, sites, and EOs. The PLP typically focuses on larger acreages that have a broader, mixed-use focus that includes agriculture, silviculture, recreation, and historic/cultural preservation. Efforts need to be made to identify special small botanical sites and to work with the private landowners to ensure their protection. This may require special collaborations between NCS botanists and PLP biologists, new training for PLP staff, and/or the hire of a designated PLP botanical professional.	Lists and descriptions of properties and landowners, and rare plant species/communities inhabiting these properties. PLP biologists will be collecting additional data.	Number of at-risk, threatened botanical sites protected, acquired, or put under easement.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
112	Improve Private Land Management	Coordinate utilization of and training for implementation of Georgia's Best Management Practices for Agriculture and improve wildlife conservation guidelines	Management, Education	Proposed	All High Priority Species and Habitats	All	All	State Wildlife Grants, Nongame Wildlife Fund	GSWCC, DNR	UGA Cooperative Extension Service, Georgia Cattlemen's Association, Georgia Dept. of Agriculture, Georgia Farm Bureau, GWF
113	Improve Private Land Management	Coordinate utilization of and training for implementation of Georgia's Best Management Practices for Forestry and improve wildlife conservation guidelines	Management, Education	Proposed	All High Priority Species and Habitats	All	All	State Wildlife Grants, Nongame Wildlife Fund	GFC, DNR	GFC, PARC, PIF, GFA, Forestry for Wildlife Partners, UGA, Southeastern Wood Producer's Association, SFI Implementation Committee, Master Timber Harvester Program
114	Improve Private Land Management	Develop guidelines for wildlife habitat management for high priority species	Management, Education	Proposed	All High Priority Species and Habitats	All	All	State Wildlife Grants, Nongame Wildlife Fund	DNR	USFWS, GFC, PARC, PIF, Forestry for Wildlife Partners, UGA, GDA, NRCS, SFI Implementation Committee, Georgia Power, other corporate landowners

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
112	Provide information and technical assistance to develop a wildlife conservation component for agricultural BMPs that addresses needs and opportunities for wildlife habitat protection. Provide assistance with development of educational outreach and training programs relating to existing BMPs as well as more specific guidance on conservation or enhancement of wildlife habitat and protection of sensitive sites.	H	Georgia's Best Management Practices (BMPs) for Agriculture address specific water quality issues. However, specific impacts of certain land management practices on wildlife and sensitive habitats are not adequately addressed, nor are opportunities to avoid or minimize these impacts. A multidisciplinary review team should assess current BMPs and develop additional guidance for wildlife conservation that can be incorporated in the next version of Georgia's BMPs for agriculture, or included in a separate document for a wide variety of landowners and managers.	Comparison of other state BMP's for agriculture; development of a wildllife conservation component that addresses needs and opportunities for conservation or enhancement of wildlife habitat and protection of sensitive sites.	Number of high priority habitats and species protected through enhanced BMPs
113	Review wildlife management, protected species, and sensitive sites components of existing BMPs (Section 7 of forestry BMPs) and recommend improvements for the next revision of Georgia's BMP's. Recommend monitoring protocol for existing BMPs. Develop educational outreach programs and training programs relating to existing BMPs as well as more specific guidance on conservation or enhancement of wildlife habitat and protection of sensitive sites.	M	Georgia's Best Management Practices (BMPs) for Forestry address specific water quality issues and generally address wildlife habitat conservation. However, specific impacts of certain land management practices on wildlife and sensitive habitats are not adequately addressed, nor are opportunities to avoid or minimize these impacts. A multidisciplinary review team should assess current BMPs and develop additional guidance for wildlife conservation that can be incorporated in the next version of Georgia's BMPs for forestry, or included in a separate document for a wide variety of landowners and managers.	Comparison of other state BMP's for forestry; recommendations from Master Timber Harvester Program, SFI, and similar programs. Development of an "Elements of Wildlife Conservation" component that addresses needs and opportunities for conservation or enhancement of wildlife habitat and sensitive sites.	Number of high priority habitats and species protected through enhanced BMPs.
114	Develop habitat-specific management guidelines to address conservation needs of high priority species in each ecoregion of the state and provide these to landowners and managers. Develop educational programs and materials emphasizing opportunities for receiving technical support and/or financial incentives to maintain or enhance rare species populations and significant natural communities.	VH	There are few land management guidelines for the various landowners/managers in the state (county departments of transportation, mining, agricultural, and forestry interests) that satisfactorily address wildlife habitat conservation objectives. Commonly used land use practices that affect high priority species are not adequately addressed in existing Forestry or Agricultural BMPs or other management guidelines. Improved guidelines that address general wildlife conservation objectives as well as recovery objectives for listed species and other high priority species would be a significant improvement.	Comparison of other state wildlife management guidelines and recovery objectives for listed and other high priority species. Development of management guidelines that address conservation of significant natural communities and high priority wildlife species, techniques for habitat restoration or enhancement, and opportunities to receive technical or financial support to undertake these activities.	Number of high priority habitats and species protected through management guidelines. Number of landowners provided technical guidance for conservation of high priority habitats and species.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
115	Improve Private Land Management	Encourage use of prescribed fire as a habitat management tool on private lands. Provide information and technical assistance to landowners to encourage appropriate use of prescribed fire as a management tool to enhance and maintain wildlife habitats.	Management, Education, Outreach	Ongoing	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund, National Fish & Wildlife Foundation, USFWS, NRCS	DNR, GFC, NRCS, TNC, USFWS	Joseph W. Jones Ecological Research Center, GWF, PARC, PIF, UGA-WSFR, GFA, Prescribed Fire Council, Longleaf Pine Alliance, private landowners and managers.
116	Improve Private Land Management	Collaborate on the revision and implementation of the Georgia Forest Action Plan.	Conservation planning	Ongoing	Numerous	All	All	GFC, DNR	GFC	DNR, USFS, GFA, others
117	Improve Public Land Management	Continue to implement rare plant restoration, enhancement, and safeguarding program. Identify needs, develop horticultural guidelines, and initiate rare plant propagation efforts; continue to develop/improve and implement Safeguarding protocols; continue monitoring populations.	Research, Management, Monitoring	Proposed	Numerous	All	All	Nongame Wildlife Fund, ESA Section-6, GPCA and its member institutions	GPCA, DNR, USFWS, USFS, SBG, ABG	GPCA member institutions

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
115	Provide information and technical and/or financial assistance to landowners to encourage appropriate use of prescribed fire as a management tool to enhance and maintain wildlife habitats. Work with EPD to maintain reasonable burning windows to allow proper management of fire-dependent habitats while meeting air quality standards. Utilize Interagency Burn Team approach to share expertise and costs associated with prescribed burns on ecologically significant sites.	VH	Many of Georgia's high priority habitats and species are fire-dependent. The long-term viability of these species and habitats hinges on increased emphasis on prescribed burns conducted under conditions that mimic natural fire regimes. Significant opportunities exist to restore or enhance fire-dependent habitats on private land, but landowners and managers need information, technical support, and in many cases, financial support to initiate and maintain these management efforts.	Location and condition of high priority sites and habitats for prescribed burns. Number of landowners willing to undertake habitat restoration or enhancement projects. Presence and condition of populations of high-priority species.	Improved structural and compositional characteristics of fire-dependent habitats. Enhanced viability of populations of high-priority species in restored or enhanced habitats. Acres of wildlife habitat maintained primarily through prescribed burns. Number of landowners employing growing season burns.
116	The Georgia Forestry Commission will be assessing and revising the Forest Action Plan in the near future. DNR will contribute to the wildlife conservation component in the Plan and identify opportunities for future collaboration on conservation	H	The Forest Action Plan provides the framework for forest-related programs and activities by GFC and its conservation partners. DNR will provide input on wildlife conservation needs and opportunities, attend planning meetings, and participate in outreach and other activities to facilitate the plan revision.	Information on Forest Action Plan data requests, data provided, meetings attended, and wildlife conservation objectives incorporated.	Level of participation in the revision and implementation of the plan; timely completion of the plan revision and incorporation of SWAP conservation objectives
117	Propagate rare plants identified as being most at risk of extinction and likely to benefit most from a coordinated propagation and reintroduction effort. Make use of and modify (for Georgia) existing protocols employed by other states and countries. Safeguarding sites (incl. reintroduction, enhancement, and newly created sites) would be identified from the available mix of public, and private lands within the state. Habitat maintenance plans and long-term monitoring program would also be developed for each Safeguardingf site.	VH	Because opportunities for rare plant site acquisition are limited, greater emphasis must be placed on augmenting populations of critically threatened plants on existing protected areas. One area that offers promise is the propagation and planting of rare, endangered and special concern plants for the reintroduction of historical populations, enhancement of existing populations, and the establishment of new safeguarding populations in suitable habitat.	Prioritized list of rare plants that can be successfully propagated and reintroduced over a 10 year period. Protocols and guidelines used by other state and federal programs and agencies will be reviewed. Number and location of plants, ecotypes represented, population size, reproductive effort, areal extent, threats, etc.	List of plants prioritized based on the potenital for propagation and reintroduction; guidelines for collection, notation, and horticulture; plants produced from ex situ propagation. Identification of numerous suitable sites for reintroduction, enhancement, or safeguarding Stable/growing populations with reproductive effort and recruitment level necessary to provide for long-term viability.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
118	Improve Public Land Management	Create DNR online database of monitoring projects. Conduct periodic meetings to share data, coordinate efforts, and address problems. Hire a DNR monitoring program coordinator.	Monitoring, Database, Administration	Proposed	All	All	All	Nongame Wildlife Fund, State Wildlife Grants, other USFWS funds	DNR (WRD, PRHSD, EPD)	USFWS, U.S. Geologic Survey, USGS Cooperative Fish and Wildlife Unit, U.S. Forest Service, The Nature Conservancy, National Park Service
119	Improve Public Land Management	Develop an adaptive management approach for high priority plants and natural communities on public lands	Monitoring, Research, Habitat Protection	Ongoing, Proposed	*Ceratiola ericoides, Echinacea laevigata, Elliottia racemosa, Lindera melissifolia, Oxypolis canbyi, Rhus michauxii, Xerophyllum asphodeloides,* Oaky Woods Prairies, herbaceous seepage bogs, longleaf pine sandhill, others as need arises	All	All	Nongame Wildlife Fund, State Wildlife Grants, ESA Section 6, other USFWS funds	DNR	GPCA and its member institutions, USGS Cooperative Fish and Wildlife Research Unit, various colleges and universities

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
118	The database will be a tool to share monitoring reports, provide a standardized system to store protocols, data, qualitative information regarding land management results, and metadata about projects. Implementation would likely occur as a two-phase process, with the first phase to develop the system for posting project reports and qualitative management results, and the second to develop the system for storing and accessing protocols, data, and metadata. Monitoring meetings are a venue for staff to share ideas on monitoring in a peer-review environment for improving monitoring and conservation projects. A monitoring coordinator would review and compile monitoring plans, facilitate communication between partners to facilitate collaboration, set standards for protocol development, protocol documentation, data management, and reporting, communicate with academic institutions to develop opportunities for collaborative adaptive management projects, and provide venues for sharing of results, technologies, and ideas.	VH	Within DNR, there is lack of awareness of monitoring projects and associated challenges, even among biologists studying the same groups of species and ecological systems. Improving coordination of monitoring within DNR will serve as a model for coordination of monitoring among partners state-wide. Improving coordination and standardization is critical to improving rare species and habitat monitoring, which provides knowledge needed to determine optimal conservation and management actions. Monitoring occurs over many specializations and roles in Georgia. A person dedicated to coordinating monitoring within DNR and its partners is necessary to bridge the complex monitoring nextwork in the state, and to facilitate communication about monitoring results to decision makers and natural resource managers.	Monitoring project protocols, metadata, results. Inventory of rare species and habitat monitoring by DNR and partners. Incoroporation of monitoring protocols, results, and metadata on DNR monitoring projects into a unified database.	Implementation of a system to easily store and access information about rare species and habitat monitoring. Improved coordination of monitoring programs within DNR.
119	Design and carry out adaptive management projects for focal rare species and habitats where they are being managed on public conservation lands and the effects of management are uncertain or there is risk to the rare element. Monitoring results feedback directly to land managers so management actions can be improved in future iterations.	VH	Landscape scale management may conflict with micro-site management needs for certain rare plant species, or effects of management for certain rare plants and habitats may be uncertain. In these cases there is risk of management negatively impacting the rare plants and habitats and monitoring is a high priority. Monitoring projects will be prioritized according to the species affected and the uncertainty or risk of management to be enacted. Monitoring will be designed so only critical variables are measured and results feedback directly into determining subsequent management actions.	Critical population and habitat data to indicate status of the focal elements, related environmental variables, management events	Number of projects where monitoring results directly inform land management decisions, Documentation of improved communication among rare species biologists and public land management staff.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
120	Improve Public Land Management	Implement integrated resource management of federal lands and waters (including oceanic habitats), emphasizing restoration and maintenance of natural communities and rare species populations. Work with DNR and other conservation organizations to enhance ecosystem functions and address regional conservation needs.	Management	Ongoing, Proposed	Numerous	All	All	Federal agency operating funds; DoD Legacy Management Program; DoD Encroachment and Buffering funds; State Wildlife Grants, Nongame Wildlife Fund	DoD, USFS, USFWS, NPS, NOAA, CRD	DNR, TNC, NatureServe, USGS
121	Improve Public Land Management	Implement integrated resource management of state lands and waters (fresh, brackish, and salt), emphasizing restoration and maintenance of natural communities and rare species populations (i.e., ecosystem management). Work with other conservation organizations to address regional conservation needs.	Management	Ongoing, Proposed	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund, other WRD operating funds, NFWF,	DNR	GFC, TNC, Joseph W. Jones Ecological Research Center, UGA-WSFR, UGA-NARSAL, NESPAL, private landowners

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
120	Conduct surveys of federal lands to determine distribution and status of rare species and natural communities. Map location and extent of high priority habitats and landscape features using systems that are compatible across agency boundaries. Incorporate management recommendations for these features in long term management plans. Exchange information on rare species and natural communities with Georgia DNR and other organizations that maintain biodiversity databases. Contribute to ecoregional strategies for control of exotic species and restoration of natural communities. Share information and expertise relating to inventory, mapping, management, and monitoring of species and communities.	VH	Federal lands (national parks, wildlife refuges, and forests; military bases) contain some of the most significant habitats and populations of rare species in the state. Continued collaboration between DNR, federal land managing agencies, and private conservation organizations is critical for improvements in capacity to maintain Georgia's natural diversity. Increased collaboration and coordination of conservation efforts can result in protection of wildlife corridors and landscape features necessary for long term ecosystem maintenance. This collaboration should include oceanic habitats under federal jurisdiction	Location and condition of high priority species and habitats. Information on minimum viable population sizes, historic vegetation and land use patterns, restoration potential, management alternatives, and threats to species/habitats. Opportunities for protection of edgeholdings and inholdings through fee-simple acquisition or easements. Opportunities for collaborative research and management projects	Improved condition of wildlife populations and habitats on federal lands. Increased connectivity and protection of wildlife corridors and landscape features. Greater interagency exchange of information and expertise regarding rare species and natural community inventory, management, and monitoring.
121	Revise and update management plans for WMAs and other state lands as needed to address specific restoration objectives. Emphasize restoration of former pine plantations to stands that closely resemble natural forest and savanna communities and reintroduction of fire as a management tool wherever appropriate and feasible. Utilize information from historic aerial photos and land lot survey data from the 1800s to identify historic vegetation. Continue collaboration with partners to determine and implement appropriate methods for restoration of natural habitats, including restoration of groundcover in longleaf pine ecosystem. Monitor results of restoration efforts. Coordinate with CRD to protect coastal marshes, waterways and rare upland habitats	VH	Many state-owned WMAs (especially in the Coastal Plain) are former industrial forest lands. Restoration of these stands to uneven aged pine forests and savannas would benefit many high priority species. Integrated resource management of state properties for a wide range of nongame species will complement ongoing management for game species. Greater use of prescribed fire as a management tool for restoration and management of natural communities will provide numerous benefits for high priority species. Historic aerial photos and models of historic vegetation derived from land lot survey witness tree data can help identify restoration objectives.	Various measures of stand density, vegetation structure, and community composition. Population sizes of high priority species associated with these habitats. Information from historic aerial photos, historic vegetation models, soil surveys, and other sources. Information on condition of potential donor sites used for harvesting native groundcover species, as well as potential recipient sites.	Improved structural and compositional characteristics of former industrial timber stands within each WMA. Total number of stands/acres restored. Increased population sizes and overall viability of high priority species. Acres planted with native groundcover species harvested from donor sites; native groundcover species diversity and abundance in recipient sites

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
122	Improve Public Land Management	Strengthen and expand the fire photo monitoring program	Monitoring	Ongoing and Proposed	All	All	All	Nongame Wildlife Fund, State Wildlife Grants	DNR	Georgia State Parks Division, Interagency Burn Team
123	Improve Public Land Management	Survey state-owned lands for federal and state protected species and other species of concern and incorporate conservation objectives into management plans	Survey, Management	Ongoing, Proposed	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund	DNR	State Botanical Garden, Georgia Botanical Society, Audubon Society, local volunteers.
124	Improve Public Land Management	Establish or augment populations of gopher frog, striped newt, gopher tortoise and other high priority species on protected lands	Management	Ongoing, Proposed	*Rana capito, Notophthalmus perstriatus, Gopherus polyphemus, Ambystoma cingulatum,* others	SP, SCP	All	State Wildlife Grants, Nongame Wildlife Fund, Section 6	DNR	USFWS, UGA, Zoo Atlanta, Atlanta Botanical Garden
125	Improve SWAP Communications	Increase awareness of the SWAP among partner organizations.	Communications, Outreach	Proposed	Numerous	All	All	Nongame Wildlife Fund	DNR	Communications Team members
126	Improve SWAP Communications	Promote the conservation actions, themes and goals of the SWAP to five priority stakeholder groups to increase stakeholders' support for wildlife conservation; awareness of the SWAP, its importance, themes and successes; and, awareness of the partnership effort involved.	Communications, Outreach	Ongoing	Numerous	All	All	Nongame Wildlife Fund	DNR	SWAP Communications Team members (WRD, TGC, GDOT, GFA, GFC, Georgia Power, TNC, DoD,USFWS, USFS and NRCS). Other potential partners include CRD, UGA, Botanical Garden of Georgia and others.

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
122	Photo monitoring of prescribed fire effects has been installed at 25 sites state-wide. Tasks for improvement include: develop efficient software mechanisms to submit, catalogue, view, and quantitatively analyze photos; expand sites to monitor different management types, WMA's, and reference habitats; and incorporate quantitative data into the protocol at high priority sites.	VH	A statewide fire monitoring program was initiated in 2009 to improve documentation of the prescribed fire program, indicate whether long-term burning objectives are being met, and involve local site managers in monitoring their management activities. The photographs are the only readily available documentation of fire effects at many managed conservation lands and, with these improvement to the program, they will be better organized, more accessible, and an excellent resource for demonstrating long term change.	Systematized photographs and associated land management events; fire effects and vegetation community data	Number of sites with fire monitoring conducted at least biennually, ability to submit and easily catalouge photos, ability to query photos and generate cleanly formatted layouts.
123	Determine location and distribution of protected species and species of concern on Wildlife Management Areas, Natural Areas, Public Fishing Areas and State Parks.	H	The status of many species is unknown on state-owned lands. Protection and management of these species can not be accomplished without accurate and up to date occurrence information.	High priority species found on a WMA, NA, PFA, or State Park, specific locations of populations, colonies, or individuals, estimate of numbers of individual when feasible.	Number of WMAs, NAs, PFAs, and State Parks thoroughly surveyed for all high priority species.
124	Establish or augment populations of high priority animal species on protected lands in the Coastal Plain. Candidate species include gopher frog, striped newt, flatwoods salamander, gopher tortoise, and red-cockaded woodpeckers	H	The gopher frog and gopher tortoise have been proposed for federal listing. The need for listing these species may be minimized if proactive conservation measures can be implemented on protected lands. Other listed or candidate species should be evaluated. for establishment or augmentation on public lands	Potentially suitable habitats for establishment or augmentation of populations will be evaluated. Population levels will be monitored.	Establishment of viable populations of high priority animal species on public land.
125	This "in-reach" will mimic communications with the five stakeholder groups but with the focus on SWAP partner organizations. Work with individual partners will identify best ways to reach their staffs on specific messaging.	VH	In-reach is important, considering that partners are the face of the SWAP. Raising awareness and understanding of the plan among our staffs will better prepare them to address the topic with constituents and fellow workers, and can widen the base of support for the SWAP.	Data collected will vary according to the particular "in-reach" initiatives, but may include number of messages and surveys of recipients.	Online surveys of willing partner organizations can set benchmarks to monitor changes in knowledge of the SWAP. Partners' use of products can also be reported.
126	Create messaging, including calls to action, from the SWAP revision themes and technical team needs. Match communication options and products (social media posts, news releases, video, events, etc.) to the audience and situation or issue targeted. Share messaging through the partners network. Continue development of audience contact lists.	H	As noted, this effort will feed from overall SWAP focal points set by the Advisory Committee, as well as specific priority communication needs identified by the individual technical teams.	None, except for any data resulting from use of surveys and possibly web analytics to gauge impacts.	Use of online surveys to set baseline support and awareness will be explored, along with follow-up surveys to measure effects. Where appropriate, analytics can be used to gauge traffic at related websites.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
127	Improve SWAP Communications	Work with the SWAP Education Team as needed to achieve its recommendations. Specifically: 1) Help create an online survey supporting an assessment of Georgians' wildlife conservation literacy; 2) help with the content of core educational concepts, related messaging and educational materials; 3) help identify SWAP stories per ecoregion for use in regional education networks and community groups.	Communications, Education	Proposed	Numerous	All	All	See individual environmental education conservation action items.	DNR	See individual environmental education conservation action items.
128	Increase Capacity for Wildlife Conservation	Establish a consistent source of state funding for land protection to support wildlife conservation	Funding	Ongoing, Proposed	Numerous	All	All	TBD	TNC, TGC, TCF, TPL, GWF, State Legislature, Governor's Office	DNR, UGA, Georgia Land Conservation Center, NWF, others
129	Increase Capacity for Wildlife Conservation	Expand DNR Nongame Conservation Section Aquatic Program	Administration	Proposed	Numerous	All	Numerous	State Wildlife Grants, Nongame Fund, NOAA grants	DNR	USFWS, TNC,
130	Increase Capacity for Wildlife Conservation	Facilitate DNR Law Enforcement Division officer training to address nongame wildlife law enforcement needs.	Education, Regulation	Ongoing, Proposed	Numerous	All	All	Nongame Wildlife Fund, state appropriations	DNR	UGA-GMNH, NatureServe

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
127	Work with members of the SWAP Education Team and partner organizations to identify areas in which coordinated communication efforts are needed. Specifically: 1) Help create an online survey supporting an assessment of Georgians' wildlife conservation literacy; 2) help with the content of core educational concepts, related messaging and educational materials; 3) help identify SWAP stories per ecoregion for use in regional education networks and community groups. Utilizing key messages drafted by Education	H	See individual environmental education conservation action items.	Data collected will vary according to the particular communication initiatives, but will include metrics associated with development and distribution of key messages and surveys conducted as components of these communication campaigns.	Various metrics related to communications objectives, including messages developed and distributed, number of recipients, survey results, etc.
128	Provide guidance and support for establishment of a consistent and stable source of state funding for land protection, including fee-simple acquisition, acquisition of conservation easements, and other forms of permanent habitat protection	VH	This conservation action is a critical component for the achievement of species and habitat conservation objectives outlined in this document. Georgia must have a consistent, long-term source of funding for land protection to conserve critical habitats and populations of high priority species. No such funding source exists at the state level. Georgia has relied on a combination of federal grants, private donations, and short-lived state funded efforts to protect wildlife habitat. This approach has been only partly effective in addressing conservation needs for the wide array of imperiled species and habitats in the state.	Information on funding mechanisms used in Georgia and other states, laws and regulations needed to establish funding programs, and level of public support for wildlife habitat acquisition. Assessment of public awareness of wildlife conservation needs and current lack of consistent state funding to address these needs.	Identification, public approval, and establishment of a fundiing mechanism to provide long-term support for land protection for wildlife conservation. Development of specific criteria to ensure that the fund is used to address critical wildlife conservation needs identified through an iterative assessment process based on best available scientific data.
129	Expand DNR Nongame Conservation Section aquatic program so that each major basin in the state has an aquatic species conservation coordinator. Each coordinator would work with key partners to conserve and monitor high priority aquatic species and watersheds in each basin. Four basins are Atlantic, Gulf Slope, Coosa, and Tennessee	VH	The state only has 2 dedicated biologist positions to inventory, protect and recover 165 high priority species . Our work load is increasing due to our involvement with monitoring and conservation of candidate and petitioned species as well as coordination of DNR efforts on the Robust Redhorse Conservation Committee.	N/A	Full time biologist dedicated to Coosa, Tennessee, Mobile, and Gulf Slope drainages.
130	Provide additional training on laws and regulations established to protect nongame wildlife. Provide technical support and staff resources to address enforcement of nongame and protected species regulations.	VH	Increasing familiarity with laws and regulations pertaining to nongame and endangered wildlife and providing regionally relevant data on distribution of these species will help staff assess and address enforcement needs in each region. Providing additional staff resources will be necessary to fully address enforcement needs in many areas.	Number of programs/refresher courses given and training material provided. Number of cases involving nongame or endangered species investigated.	Number of cases investigated involving illegal nongame activities; overall awarness of nongame conservation issues and regulations.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
131	Increase Capacity for Wildlife Conservation	Improve biodiversity databases and increase data-sharing with conservation partners	Database	Ongoing	All	All	All	State Wildlife Grants, other federal grants, matching funds from landowners, Nongame Wildlife Fund	DNR	University System of Georgia; USFWS, TNC, NatureServe, biological consulting firms, conservation planners, private landowners
132	Increase Capacity for Wildlife Conservation	Improve capacity to work with corporate landowners to protect wildlife habitat; provide technical support through additional staff or contractors	Administration	Ongoing	Numerous	All	All	Nongame Wildlife Fund, State Wildlife Grants, other federal grants, matching funds from landowners	DNR, NatureServe, corporate landowners	The Conservation Fund, TNC, NWF, biological consultants
133	Increase Capacity for Wildlife Conservation	Increase availability and use of federal funds for land acquisition (fee-simple and conservation easements) and land management	Funding	Ongoing, Proposed	Numerous	All	All	LWCF, WSFR, Forest Legacy, DoD, Recovery Land Acquisition, Coastal Wetland Grants, NAWCA Grants	USFWS, DNR, DoD, GFC, NRCS, NPA	NFWF, TNC, TCF,NWF

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
131	Develop protocol for electronic submission of rare species datasets to WRD. Establish formal data-sharing agreements with UGA and other conservation partners; develop a system for providing on-line access to biodiversity data; assess and update database records for all high priority species. Develop a database to document sites where surveys were conducted but target species were not detected (This information helps identify future survey needs and also better informs status assessments). Rank occurrences of all high priority species and habitats for conservation purposes.	VH	Continued development and improvement of WRD biodiversity databases is necessary in order to more accurately assess the distribution and condition of rare species and natural communities and prioritize conservation actions acccordingly. Established data sharing agreements provide for responsible and appropriate use to achieve conservation objectives while protecting sensitive habitats, rare species populations, and private property rights. Ranking of occurrences helps ensure that the most important populations are addressed first and that resources are not wasted on populations with limited potential viability.	Records on location & condition of rare species populations and significant natural communities; biodiversity data users; information requests handled.	Number of new/updated database records; number of data use agreements; number of information requests handled; number of occurrences of high priority species in WRD databases.
132	Develop strong cooperative relationships with major corporate landowners; exchange data on rare species and significant natural communities; rank properties based on biodiversity value and provide technical assistance in land management; develop options for long-term protection, including fee-simple acquisition, conservation easements, and incentive programs.	H	Need to be be able to provide timely technical assistance to avoid loss or degradation of critically important wildlife habitats and respond to imminent large-scale divestiture of properties. This will require additional staff or contractors to provide technical assistance to implement biological inventories and conservation programs and explore options for long-term protection.	Presence/absence data for rare species on corporate lands; indices of biodiversity value based on rare species and significant natural communities.	Number of surveys conducted on lands of corporate partners. Acres of natural habitat and number of populations of high-priority species conserved through long term management plans or permanent land protection.
133	Improve coordination between conservation organizations to obtain and use federal funds for long-term protection of high-priority habitats and species. Assess funding programs and potential land protection projects and obtain necessary matching funds through innovative partnerships.	VH	Several federal programs provide significant opportunities for land protection, but the ability to obtain and use these funds depends on many factors, including providing nonfederal matching funds. Better coordination of conservation organizations and nonfederal funding sources in Georgia can result in more effective use of federal funds to protect high priority habitats and species.	Types of federal funding programs and amount of federal funds available. Criteria for application of funds. Availability of nonfederal matching funds or other forms of match. Location and availability of high priority properties.	Number of high priority species and habitats protected or enhanced through use of federal funds. Acreage of high priority sites protected through federal funding programs.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
134	Increase Capacity for Wildlife Conservation	Increase state funding to support WRD's nongame wildlife conservation programs	Funding	Proposed	All High Priority Species and Habitats	All	All	State appropriations	State Legislature	GWF, TNC, other conservation organizatons
135	Increase Capacity for Wildlife Conservation	Strengthen network of support for wildlife conservation programs and initiatives	Administration	Proposed	All High Priority Species and Habitats	All	All	In-kind or part of current organization budgets.	TNC, GWF, TGC, Georgia River Network, Georgia Conservation Voters, 100 Miles	Georgia Land Conservation Center, Georgia Water Coalition, National Wildlife Federation
136	Reduce Impacts from Development and Other Activities	Conduct studies and distribute findings on impacts to wildlife and effectiveness of mitigation efforts for solar and wind energy projects.	Research, Outreach	Ongoing, Proposed	Numerous	All	All	State Wildlife Grants, other federal funds, private foundations	DNR, Georgia Power, Georgia Southern University, UGA, USFWS	Georgia Power, EMCs, MEAG, GA Solar Energy Association, AFWA
137	Reduce Impacts From Development and Other Activities	Conserve populations of rare plants in transmission line corridors; maintain or enhance native vegetation for pollinators and migratory birds	Management	Ongoing	Numerous	All	All	Nongame Wildife Fund, federal grants, private foundations, private landowners	DNR, Georgia Power, local EMCs,	State Botanical Garden, Georgia Botanical Society, UGA,

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
134	Increase state appropriated funds for support of WRD's nongame wildlife conservation efforts, including staff, equipment, and operating expenses. This funding would provide support primarily for the Nongame Wildife & Natural Heritage Section, but could also support nongame conservation efforts by other WRD Sections as well as DNR's conservation partners.	VH	In 2015 the Georgia legislature approved a $300,000 appropriation for nongame conservation projects by WRD, the first in more than a decade. The largest source of private funding for the Section is the sale of nongame license plates. Revenue from the sale of these license plates is variable and uncertain. The ability to obtain federal funding for many conservation programs depends on availability of nonfederal matching funds. In addition, few state funds are available to support environmental education programs by WRD; many of these efforts are supported by private donations to the Nongame Wildlife Fund, TERN, and other entities. Expanding state funding for the Nongame Conservation Section of WRD would free up additional funds for education-related efforts and provide more matching funds for federally funded projects.	Information on current levels and sources of funding for nongame wildlife conservation efforts, including staff, equipment, and project-related expenses. Information on funding needed to support future efforts to conserve high priority species and habitats, provide education and outreach programs to the public, and meeting matching fund requirements for grants.	Amount of state funding for nongame wildlife conservation programs in WRD; number of conservation and education programs funded.
135	Strengthen coalition of environmental organizations to communicate SWAP objectives and work for improvements in policies, fundng, and capacity for wildlife conservation.	VH	A stronger and more coordinated coalition of conservation partners is needed to call attention to wildlife and habitat conservation needs statewide.	Number of wildlife conservation initiatives proposed and discussed with decision makers.	State policy and funding to support wildlife conservation and habitat protection.
136	Use standard protocols to improve comparability to other studies, enhance coordination among states, and provide a consistent message to managers, decision makers, and the public.	M	Two projects are currently underway that will provide useful information on small-scale solar and wind generation projects. DNR will collaborate with Georgia Power, USFWS, and Georgia Southern University on a wind energy demonstration project on Skidaway Island, and with Georgia Power, USFWS, and UGA on a solar power demonstration project on the UGA campus in Athens.	Wind power: Impacts on birds, bats, and other target taxa. Solar power: impacts on native groundcover, birds, pollinators.	Studies conducted; results distributed to solar power companies, states, managers, decision makers, and the public to inform best management practices
137	Identify, delineate, and develop management plans for populations of high priority plants occurring in transmission line corridors. Communicate with management crews to ensure that vegetation management techniques are compatible with maintenance of rare plant populations. Offer technical assistance and financial incentives to landowners to restore habitat adjacent to transmission corridors. Monitor use of sites by pollinators and migratory birds	H	Several populations of rare plants occur under powerlines maintained by Georgia Power or local EMCs. The most important of these populations need to be delineated with special management signs and management guidelines developed to avoid unintended impacts from vegetation management. Opportunities to restore or enhance adjacent habitat will be explored. These habitats are also important for many migratory birds and pollinators.	Location, condition and extent of rare plant populations. GPS coordinates, management requirements, potential site viability, land ownership. Use of native vegetation by pollinators and migratory birds.	Number of rare plant populations delineated and protected through special management guidelines. Number of natural communities protected and/or enhanced. Use by pollinators and migratory birds documented.

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
138	Reduce Impacts From Development and Other Activities	Continue to expand the knowledge base and use of native plants	Education, Outreach	Ongoing	Numerous	All	All	Nongame Wildlife Fund, NRCS and USFWS funds	DNR, GPCA and its member institutions	GAEPPC, GPCA and its member institutions
139	Reduce Impacts from Development and Other Activities	Develop procedures for engaging with developers in solar, wind, and biomass energy, and collaborate on the development of best practices. Provide technical assistance to avoid or minimize impacts to high priority species and habitats. Conduct outreach to the public and decision makers about potential impacts to wildlife and potential solutions.	Conservation planning, Outreach	Ongoing, Proposed	Numerous	All	All	Nongame Wildlife Fund, USFWS, private foundations	DNR, Georgia Power, USFWS, GA Solar Energy Association	EMCs, MEAG, U.S. Industrial Pellet Association, AFWA
140	Reduce Impacts From Development and Other Activities	Expand use of WRD biodiversity data for environmental review, public outreach, permitting, and development of site management plans to minimize impacts on rare species and sensitive habitats	Database	Ongoing	Numerous	All	All	State Wildlife Grants, Nongame Fund	DNR (WRD)	TNC, UGA, USFWS, Forestry for Wildlife Partners, NatureServe, DOD, USFS, NPS, GDOT, biological consulting firms, conservation planners

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
138	Work with DNR partners to educate the public and the green industry with regard to the dangers of using non-native plants and the benefits of using native alternatives. Work to encourage the use and sale of natives by the public and green industry. Help DNR's partners, especially the GPCA and GAEPPC, research and document the benefits of native plants	M	Use of non-native plants by the public and the green industry continues to be a primary cause of environmental degradation, as well as an on-going threat for even more disastrous future problems. Any reduction in the use of non-natives and any increase in the use of natives (which provide a myriad of positive benefits for wildlife) is very important.	Lists of non-native plant species sold by green industry in GA and lists of native plant alternatives available. Industry data on sales on native and non-native species.	Sales of native vs. non-native plants by green industry members. Responses to public surveys addressing invasive species issues and use of native plants.
139	Develop procedures for engaging developers in the siting, permitting, mitigation, and implementation stages of solar and wind energy development. Help develop and promote a voluntary best practices one-pager. Promote early consultation with the Nongame Conservation Section of Georgia Department of Natural Resources as the first step during the site selection process to avoid impacts to known species/habitats of conservation concern. Participate in meetings and workshops with energy industry and wildlife agency representatives to identify ways to engage in all stages of the solar development process. Develop a “Risk Map” to be used as an early planning tool for solar, wind, and biomass energy project siting.	VH	Solar and wind energy project developments provide benefits for energy diversification but can result in negative impacts to native wildlife species. Careful planning and technical assistance are needed to ensure that impacts to at-risk species and sensitive habitats are avoided or minimized. DNR will work with partners to develop voluntary best practices, participate in consultation on species and habitats of concern, and develop tools to help with planning.	Information on siting, mitigation, and implementation practices that are compatible with wildlife conservation. Information from other state and regional programs that interact with solar and/or wind energy developers.	Procedures developed; risk map and other resources developed; number of entities receiving technical assistance; number of meetings and workshops attended
140	Make data available by multiple mapping units on WRD website; post high priority streams on GIS clearinghouse; incorporate high priority watershed into information request procedures; post pictures and accounts for all protected species on WRD website; support development of taxonomic guides for rare species; develop EO ranks for elements on lands of Forestry for Wildlife Partners and other land managers	VH	These efforts will help ensure greater awareness of rare species concerns among planners, consultants, land managers, and the general public, and will help ensure that these concerns will be addressed in environmental review of projects and development of site management plans.	Life history data, location data; information on types of data users and needs;	Number of contacts to WRD website for rare species information; number of EO ranks for high priority species on Forestry for Wildlife Partner lands; number of taxonomic guides produced; number of pictures and species accounts for protected species on WRD website

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
141	Reduce Impacts From Development and Other Activities	Facilitate training for and compliance with Best Management Practices for erosion & sedimentation control, stormwater runoff, and stream buffer protection	Management, Education, Regulation	Ongoing	Numerous	All	All	Land disturbing activity fees, state, federal, and local government funds	DNR (EPD), GSWCC, Local governments, ARC, Metropolitan North Georgia Water Planning District, industries, county governments, River Basin Center	USFWS, TNC, Georgia River Network, developers, site managers, property owners, neighborhoods, property associations, county governments
142	Reduce Impacts From Development and Other Activities	Help minimize the impacts to high priority species and habitats from petroleum pipeline development and other state or regional projects.	Conservation Planning, Regulation	Ongoing	Numerous	All	All	State funds, Nongame Wildlife Funds, USFWS	DNR	GDOT, FERC, USFWS, pipeline companies, local governments
143	Reduce Impacts From Development and Other Activities	Implement targeted dam and culvert removal/replacement projects and mitigation projects to restore and conserve stream banks and channels	Management	Ongoing	Numerous	All	Numerous	USFWS, SARP, USACE, FEMA, FWHA	USFWS, DNR, Georgia Wildlife Federation	SARP, TNC, American Rivers, UGA, USACE, County road departments, consulting firms
144	Reduce Impacts From Development and Other Activities	Minimize impacts to high priority species and habitats from the exploration and potential development of energy resources off the coast of Georgia.	Conservation Planning, Regulation	Ongoing	Marine and coastal species	SCP	Marine waters	State funds, Nongame Wildlife Fund, USFWS, NOAA	DNR (CRD, WRD), USFWS, NOAA	Bureau of Ocean Energy Management, energy developers and contractors

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
141	Includes a wide variety of training, monitoring, and enforcement activities pertaining to erosion and sediment control, stormwater management, wastewater management, and stream buffer protection for activities relating to construction and development. Provide technical information on BMPs through websites, workshops, and publications.	H	A variety of BMPs and training programs have been developed to provide protection for water quality. These BMPs can provide protection for high priority aquatic and terrestrial species as well, depending on the local setting. Continued emphasis on training industrial site managers, utility workers, county officials, and the general public is needed to ensure that all persons involved in land development or other land-disturbing activities are aware of regulations and methods to reduce resulting impacts to aquatic habitats. Monitoring and enforcement activities are also critical to ensure compliance with state and local standards.	Number of training programs provided; level of compliance with BMPs and stream buffer ordinances; number of stormwater pollution prevention plans for industrial sites; number of municipalities with stormwater management programs, including local ordinances and public education activities. Annual progress reports submitted to EPD.	Full compliance with erosion and sedimentation control standards; control of stormwater flows to minimize impacts on aquatic habitats; maintenance of intact stream buffers; control or treatment of wastewater and stormwater within state water quality standards. Increased awareness of and compliance with regulations and BMPs for protection of water quality.
142	DNR will work with GDOT, FERC, USFWS, and pipeline companies to avoid or minimize impacts of pipeline projects on rare species, natural communities, and conservation lands. DNR will also work with local governments and regulators to avoid or minimize impacts from landfills and similar projects.	H	Major petroleum pipeline projects cross multiple habitats and have the potential to impact numerous high priority species and habitats. Involvement by DNR staff in reviews of proposed projects and interaction with pipeline developers and state and federal regulators is critical for protection of wildlife habitats and public and private conservation lands. Involvement in enviromental review is also needed for more local projects such as landfills.	Proposed pipeline routes; locations of rare species, natural communities, and public and private conservation lands.	Level of engagement with agencies and companies to minimize impact to wildlife of proposed petroleum pipelines and other projects.
143	Use barrier inventories and models to strategically target barriers for removal. Monitor aquatic communities before and after removal. Continue working with the Corps of Engineers to select mitigation properties that restore and conserve stream reaches in high priority Georgia watersheds.	VH	Barriers fragment aquatic species populations and prevent movements to spawning, feeding, refuge, and nursery habitats. Barriers also block colonization after local extinction. In order to achieve watershed level benefits, mitigation projects must be strategically located and adequately designed. Mitigation is expensive, so it is important that resources are invested to achieve maximum benefits for rare species and habitats.	Species distributions above and below barriers before and after project completion, assessment of unintended consequences associated with invasive species, sediment and contaminants.	Miles of stream re-connected; proportion of stream habitat restored or protected.
144	Provide timely reviews of proposed projects related to energy exploration and potential energy resource development in marine waters. Collaborate with federal and state agencies and local governments to address potential impacts to high priority species and other important natural resources	H	Off-shore energy exploration and development has the potential to impact species of conservation concern. DNR involvement in reviews of proposed projects and collaboration with federal regulators are critical for protection of wildlife resources in marine and coastal environments.	Information on proposed projects, areas of potential impact, high priority species and habitats, and other resources of concern.	Level of engagement with agencies and companies to minimize impact from offshore energy exploration

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
145	Reduce Impacts from Development and Other Activities	Participate in regional efforts to understand impacts to wildlife and develop strategies to minimize the impacts of biomass energy development. Identify and apply relevant lessons from other states and regions. Promote biomass energy guidelines consistent with wildlife conservation.	Conservation Planning, Education, Outreach	Ongoing	Numerous	All	All	State Wildlife Grants, other federal grants, private foundations	DNR	DOE, USDA, GFC, AFWA, SFI, US Industrial Pellet Association, landowners, public
146	Reduce Impacts From Development and Other Activities	Provide technical assistance to farmers to protect streams in high priority watersheds	Management	Ongoing	Numerous	All	Numerous	Farm Bill Programs, 319 grants, Partners for Fish and Wildlife Program	NRCS	USFWS, DNR, TNC, GSWCC
147	Reduce Impacts From Development and Other Activities	Reduce impacts of ATV use on streams and other sensitive habitats.	Management and Education	Proposed	Primary emphasis is on aquatic species and habitats, but includes other sensitive habitats	All	All, but especially Ohoopee River and Altamaha River	Unknown	DNR, GON	Georgia Water Coalition, ATV manufacturers
148	Reduce Impacts From Development and Other Activities	Reduce impacts of unpaved roads, parking lots, boat ramps, and camping areas on aquatic habitats	Management, Education	Proposed	Aquatic species	All	All	Federal highway ROW funds, local transportation funds	DNR, USFS	County road departments
149	Reduce Impacts From Development and Other Activities	Update Freshwater Mussel Survey Protocol for the Southeastern Atlantic Slope and Northeastern Gulf Drainages in Florida and Georgia.	Survey and Monitoring	Proposed	Numerous	All	Numerous	Unknown	USFWS, DNR	GDOT

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
145	Promote adherence to AFWA's Guidelines for the Integration of Fish and Wildlife Conservation with Biomass Production; the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) standards during the development of field trials of engineered high energy crops; and, any guidelines from NCS that are applicable to local conditions. Guidelines may include avoiding conversion of native habitat to establish bioenergy crops, avoiding introductions of invasive species, minimizing the use of water for bioenergy production, and following harvest guidelines that minimize impact to fish and wildlife.	M	Biomass energy production is a growing field and provides great opportunities for economic development in Georgia. Guidelines should be developed for use of materials and sites that do not contribute to loss or decline in at-risk species or natural communities. AFWA and other organizations have developed guidelines that could be adopted and modified as needed to ensure that biomass energy production is aligned with wildlife conservation goals.	Data on biomass energy production practices that are compatible with wildlife conservation, as well as those methods and materials that contribute to loss or decline in species diversity and habitat quality.	Number of available regional efforts in which GADNR participates; Relevant lessons identified and applied to outreach efforts and development of best practices;messages developed and delivered on alignment of biomass energy and wildlife conservation goals.
146	Work with partners to help target programs to high priority watersheds. Examples are riparian restoration, plugging ditches, streambank stabilization, alternative water sources for cattle, etc.	VH	Agricultural activities can contribute signficant amounts of sediment, nutrients, and pesticides to streams, with negative impacts to species and habitats.	Sediment, nutrient, and pesticide levels in streams before and after restoration practices are implemented	Miles of riparian buffers restored, miles of ditches plugged or improved, number of practices implemented
147	Educate citizens about the impact of ATV's on streambank stability and shoreline habitats through commercials, fliers, etc. Provide information about other sensitive habitats that should be recognized and avoided by ATV users.	M	ATV misuse was frequently cited by technical team and stakeholders as a threat to aquatic habitat quality. Direct impacts from physically crushing freshwater mussels is also likely in some areas. ATVs also impact other sensitive habitats such as wet prairies and granite outcrops.	Information on specific impacts in various watersheds or ecoregions; number of ATV riders and manufacturers	Number of messages produced and distributed through fliers, commercials, etc. Number of ATV companies that supply info on responsible riding to customers.
148	Acquire funds to pave frequently used dirt roads that contribute significantly to sediment loads in adjacent streams. Close infrequently used and eroding dirt or gravel roads, or re-engineer turnouts to decrease sediment losses. Improve deteriorating boat ramps as needed to reduce local sediment losses. Renovate or relocate camping areas or trails that contribute to sedimentation or streambank destabilization	M	Unpaved roads can add large volumes of sediment to streams. These impacts must be assessed in relation to the impacts of impervious surfaces from paved roads. In some cases, little-used roads can be closed by the landowner (e.g., USFS). In other cases, changes in placement of turnouts or maintenance methods may adequately address problems of sedimentation.	Information on high priority roads for paving or closure, high-traffic areas near campgrounds, deteriorating boat ramps, and other problem areas adjacent to high-priority streams.	Reduced local erosion/sedimentation rates and improved streambank stability.
149	Update the mussel sampling protocol. This protocol was developed in the mid-2000's and needs to better address the probability of detecting mussels during surveys. Protocols for gastropod surveys should be also be addressed.	H	A major issue with rare species surveys is the problem of incomplete species detection. If the species is not found during a survey, it may still be present. Models can be developed that estimate the probability of detecting a mussel or snail species for different sampling methods	Detection history for target species for different sampling methods	Updated protocol shared with partners

High Priority Conservation Actions

	Goal	Conservation Action	Type	Ongoing or Proposed	Focal Species/Habitats	Ecoregion(s) (SA-RV, BR, PD, SP, SCP, All)	Watershed (HUC8)	Funding Source(s)	Lead Organization(s)	Partners
150	Reduce Impacts From Development and Other Activities	Continue to work with Georgia Department of Transportation and federal agencies to minimize impacts from highway construction and facilitate protection and mitigation of high priority habitats.	Database, Management, Habitat Protection	Ongoing, Proposed	All	All	All	Federal Highway funds; State Wildlife Grants, Nongame Wildlife Fund, Georgia Wetland Trust Fund	DNR, GDOT, FWHA	USFWS, COE, EPA, TNC, Georgia Land Conservation Center, EPD, UGA, land trusts

High Priority Conservation Actions

	Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
150	Continue collaborative efforts between DNR and GDOT to minimize impacts from road construction projects to high priority species and habitats. Share information on locations of rare species and significant natural communities and sites that are suitable for mitigation activities. Emphasize protection of sites that will conserve high priority species and habitats and expand public recreational opportunities.	VH	Ongoing and future road construction projects have potential to impact high priority species and habitats in many areas of the state. Efforts to continue and expand collaboration between DNR and GDOT will be critical for protection of high priority species and habitats and expansion of state properties that provide diverse opportunities for public recreation.	Locations of high priority highway construction projects and associated wetland and stream mitigation needs. Locations of rare species and natural communities in need of protection, and properties that could provide appropriate and meaningful mitigation opportunities.	Number of mitigation sites protected through fee-simple acquisition or other means and managed to preserve, restore, or enhance wetland and/or stream habitats. Minimized impacts to high priority species and habitats through coordination of planning and assessment efforts.