

APPENDIX L. High Priority Conservation Actions

The CWCS technical teams, Steering Committee, and other stakeholders initially identified over 100 high priority conservation actions. These were sorted into the following nine 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 and outreach
- Improve private land management
- Improve public land management
- Increase capacity for wildlife conservation
- Reduce impacts from development and other activities

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.

The table of high priority conservation actions was presented to the CWCS Steering Committee for prioritization. Each conservation action on the list was evaluated and assigned an importance score using the following seven criteria:

- 1) Providing Multiple Benefits for High Priority Species/Habitats
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) Addressing Un(der)funded Needs:
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 Steering Committee assessed the contribution of each conservation action for each of these criteria and assigned scores through a consensus-based ranking process. 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. The resulting list included 23 actions rated “very high priority”, 32 actions rated “high priority”, and 23 actions rated “medium priority”.

The following table includes these 78 prioritized conservation actions grouped by generalized conservation goals. Each conservation action is represented by a row in the table that extends across two consecutive pages (e.g., pages 3 and 4). While other important wildlife conservation programs may be identified for emphasis in the coming years, these represent the highest priority items identified and ranked during the current planning effort.

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
Assess Status of High Priority Habitats	Conduct statewide assessments of fish communities to determine biotic integrity of streams. Expand survey efforts in high priority streams (e.g., Tennessee, Satilla drainages). Conduct status survey for hellbender.	Survey	Ongoing	Wadeable stream fish communities; high priority aquatic species (e.g., <i>Cryptobranchus alleganiensis</i> ; indirectly <i>Necturus maculosus</i>)	All	All	State appropriations, WB, State Wildlife Grants, Nongame Wildlife Fund.	DNR	UGA, USFS; private contractor for hellbender survey
Assess Status of High Priority Habitats	Conduct statewide assessments of rare natural communities and habitats that support species of conservation need.	Survey	Proposed	Numerous	All	All	Nongame Wildlife Fund, USFWS	DNR, contractors	NatureServe, TNC, landowners
Assess Status of High Priority Habitats	Conduct surveys of potential habitat for bog turtle and associated species and evaluate methodology for use in other habitats in North Georgia.	Survey	Ongoing	<i>Glyptemys muhlenbergii</i> ; <i>Helonias bullata</i> , <i>Sarracenia purpurea</i> ssp. <i>venosa</i> var. <i>montana</i> ; <i>Sarracenia oreophila</i> /mountain bogs	BR	Ocoee (6020003), Hiwassee (6020002), Tugaloo (360102), Upper Little Tennessee (6010202)	State Wildlife Grants, Nongame Wildlife Fund	DNR	UGA - NARSAL; USFS
Assess Status of High Priority Habitats	Conduct statewide wetlands mapping and assessment	Survey, Research	Proposed	Numerous wetland habitats and species	All	All	EPA Wetland Program Development Grant	DNR (EPD)	UGA River Basin Center, UGA-NARSAL, WRD

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
<p>Fish community assessments are used to measure biotic integrity of streams. In addition, these surveys provide an opportunity to update distribution data for numerous high priority species, including fishes, mussels, and amphibians (e.g., hellbenders). The hellbender has experienced significant declines throughout much of its range, presumably due to deteriorating quality of aquatic habitats. Though this salamander may be locally abundance in some areas, historic records of the species from most sites in the state are as recent as only 1962. The status of the hellbender and the relative stream quality at these sites are unknown today.</p>	VH	<p>This program is designed to support EPD in assessment of biotic integrity of streams. Index of Biotic Integrity is primary measure. Information is used in assessing designated use attainment of streams. While focused on stream habitat quality, these surveys also provide important data on the distribution of several high priority aquatic species. The Tennessee River drainage is known to harbor a number of high priority aquatic animals; updated surveys are needed to assess the current status of these species, and to identify conservation opportunities.</p>	<p>All fish species collected within a stream reach. Reach length sampled is 35 times average stream width. Stream survey data from this effort . For hellbender survey, three 200-m long stream stretches will be surveyed at each historic locality. Each hellbender captured will be measured, weighed, sexed, and any abnormalities will be documented. Stream width, depth, water clarity, dissolved oxygen, water temperature, siltation, and habitat suitability will be recorded.</p>	<p>Stream reaches scoring poor, very poor on no fish are designated as partially supporting designated uses by EPD and placed on 303(d) list. TMDLs developed to address cause of impairment. Size and condition of hellbender populations; habitat suitability for hellbenders</p>
<p>Assess the status and distribution of significantly rare natural communities using revised natural community classification system. Survey known existing, historic, and probable locations for target habitats, assessing conservation status and conducting cursory botanical and zoological surveys</p>	VH	<p>Although there are coarse landcover analyses for Georgia, none have thoroughly assessed many of the rarer (fine-scale) natural community types. Few of these communities 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 commercial 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.</p>	<p>GIS coverages, descriptions of natural communities, assessments of abundance and condition, addition of natural community records into Biotics.</p>	<p>GIS coverages, descriptions of natural communities, assessments of threats and status, addition of community records into Biotics, recommendations for protection and management of high priority natural communities.</p>
<p>The delineation of potentially suitable bog turtle habitat is the primary objective. This will be accomplished by developing predictive models using GAP analysis, GIS, and other resources, such as soil surveys. This will be followed by ground-truthing. This effort will hopefully help DNR locate potential bog turtle sites and/or suitable public land sites for releasing captively-reared turtles. This project will also benefit WRD by identifying potentially suitable habitat for several rare plants, such as mountain (Sarracenia oreophila) and purple (Sarracenia purpurea) pitcher plants, and swamp pink (Helonias bullata).</p>	H	<p>Currently, there are eight or less known extant bog turtle sites in the state, and all but one are on private lands that are difficult to employ necessary conservation and management actions. Because appropriate habitats are often so small and the mountains so rugged, it is quite likely that other bog turtle sites occur in Georgia but have gone undetected thus far.</p>	<p>Number of potential bog turtle habitats identified; number of sites surveyed for bog turtles and other rare bog species.</p>	<p>Number of habitats surveyed and found to contain bog turtles and/or other rare bog species.</p>
<p>Conduct wetland trends analysis to determine the condition and vulnerability of wetlands in the state. Develop a GIS-based tracking system for wetland permit activities for Georgia. This will help coordinate and prioritize wetland protection and/or wetlands for acquisition and mitigation.</p>	VH	<p>Georgia's wetlands support a wide variety of high priority species. There is currently no state program for protection of freshwater wetlands. Recent assessments have indicated that these habitats (especially isolated and ephemeral wetlands) are being impacted by a wide variety of land uses. There is an urgent need to expand efforts to identify high quality wetlands for permanent protection as well as suitable sites for restoration or enhancement.</p>	<p>Land cover data sets and maps from UGA-NARSAL's Georgia Land Use Trends Program and other information relating to the distribution and condition of wetland communities.</p>	<p>Development of a system for identifying and prioritizing wetlands for protection and restoration.</p>

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Assess Status of High Priority Habitats	Identify potential habitat for flatwoods salamander and other high priority Coastal Plain species; survey habitats for populations of high priority species.	Survey	Ongoing	<i>Ambystoma cingulatum</i> ; <i>Notophthalmus perstriatus</i> and <i>Rana capito</i> /Isolated depressional wetlands, pine flatwoods, longleaf pine-wiregrass savannas	SP, SCP	All Coastal Plain watersheds	State Wildlife Grants, Nongame Wildlife Fund	DNR	USFWS
Assess Status of High Priority Habitats	Monitor health of coastal ecosystems using indicator species, water quality, and other indices. Evaluate methods for use in other regions.	Survey	Proposed	Numerous	SCP	Numerous		DNR (CRD)	SINERR, Skidaway, TNC-Altamaha Bioserve, UGA Marine Extension Service, WRD
Assess Status of High Priority Habitats	Monitor land use changes in Georgia to assess potential impacts on high priority species and habitats	Survey	Ongoing	Numerous	All	All	Turner Foundation, State Wildlife Grants, Nongame Wildlife Fund	UGA-NARSAL	DNR, Turner Foundation
Assess Status of High Priority Species	Assess status of diamondback terrapin populations and determine impact of vehicle-induced mortality and incidental captures on populations.	Research, Management	Ongoing, Proposed	<i>Malaclemys terrapin</i>	SCP	All Coastal Plain estuaries and offshore waters	State Wildlife Grants, Nongame Wildlife Fund, TERN, GDOT	DNR, UGA MAREX	Diamondback Terrapin Working Group, GDOT, county road departments, crabbers, landowners
Assess Status of High Priority Species	Assess Middle Georgia black bear population and habitat conservation needs; develop conservation plan for Ocmulgee River corridor	Survey	Ongoing	<i>Ursus americanus</i> / Ocmulgee River floodplain	SP	Ocmulgee	DNR	DNR	UGA

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
Delineation of potentially habitat for flatwoods salamander and other habitat associates in the Coastal Plain. This will be accomplished through analysis of topographic quad maps, soil maps, aerial photos, and GIS data, and by developing predictive models using GAP analysis. This will be followed by ground-truthing. Private landowners with potentially suitable habitat will be identified and contacted to request permission to survey. If access is granted, survey data will be collected as on public lands. Each site determined to be suitable for flatwoods salamander reproduction will be sampled for the presence of flatwoods salamander larvae from January – April.	H	Populations of the flatwoods salamander have declined primarily because of agricultural, forestry, and development activities that have resulted in the fragmentation of longleaf pine forest and loss or degradation of associated isolated wetland habitats. At present, only 52 extant populations of flatwoods salamanders are known from across its historical range; currently there are 8 known populations in Georgia. The discovery of additional populations of the flatwoods salamander is essential for meeting the objectives of species recovery and eventual delisting of the flatwoods salamander under the ESA. Other rare species associated with isolated depressional wetlands and longleaf pine dominated habitats may also benefit from this effort.	Number of potential flatwoods salamander habitats identified; number of landowners contacted; number of sites surveyed for high priority species.	Number of habitats surveyed and found to contain flatwoods salamander larvae, gopher frogs, striped newts, or other rare Coastal Plain species.
Examine impacts of coastal development and growing coastal population on Georgia's estuarine habitats and adjacent uplands	M	A rapidly growing human population is impacting coastal habitats and species. Lack of protection for marsh/upland interface may be a factor in the decline of these species. This project represents an attempt to develop indices of environmental quality based on key indicator species in various habitats as well as physical and chemical measures of habitat quality.	Number of identified key indicator species in appropriate habitats; physical and chemical measures of water quality; population sizes of sport fish; commercial fishery stocks. Amount of impervious surface in areas surrounding estuaries.	Number and condition of indicator species populations detected; water quality parameters; size of sport fish populations and commercial fishery stocks; percent impervious surface in areas surrounding estuaries
Develop land cover/land use classification for 2001-2002 satellite imagery; compare with data from 1974, 1985, 1992, and 1998 to update trends information. Develop updated coverages of landcover by HUC 12 watershed.	H	Continuation of this effort is necessary to assess ongoing changes in land use and potential impacts on species and habitats	Area and percentage of each land cover/land use type, statewide and by ecoregion	Completion and ground-truthing of classification; ecoregional and statewide summaries of land use changes
The shoulders of causeways and roads through and adjacent to coastal marshes are attractive nesting sites for diamondback terrapins. The impacts of vehicle-induced mortality on overall population size need to be investigated. Drowning in crab traps is perhaps the single greatest threat to diamondback terrapins. By-catch Reduction Devices (BRDs) and ghost trap excluders have shown promise in reducing take while not impacting harvest of crabs. The feasibility and utility of these should be evaluated in light of potential impacts on diamondback terrapin populations.	M	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. Commercial crab fishermen also 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.	Before and after counts of roadkilled terrapins along selected sections of highway; cost of various physical barriers. Percentage of terrapin take and crab harvest in experimental (using various BRDs) and control traps. Blue crab and diamondback terrapin capture rates. Size and sex of terrapins and crabs. Video documentation of crabs and terrapins interacting with crab pots.	Estimated population size. Number of roadkilled terrapins; cost and effectiveness of physical barriers. Reduction in diamondback terrapin capture rates without influencing the blue crab size or abundance.
Trap, monitor, and radio track bearsto determine population size and habitat utilization. Develop model of habitat suitability and use to develop a conservation plan for this and associated species in the Ocmulgee River corridor.	VH	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 homeranges 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.

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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, grassland species).	Survey	Ongoing Proposed	<i>Elanoides forficatus</i> , bottomland hardwood forests <i>Falco sparverius paulus</i> ; <i>Passerina ciris/scrub-shrub</i> , maritime forest, interdune scrub; <i>Ammodramus henslowii</i> , <i>Aimophila aestivalis</i> , 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
Assess Status of High Priority Species	Assess status of Altamaha endemic mussels in rivers and streams that have been underrepresented in recent surveys; begin long-term monitoring program for mussels in the Altamaha Basin. Identify host fishes for Altamaha spiny mussel and Altamaha arc mussel	Survey	Ongoing, Proposed	<i>Alasmidonta arcula</i> ; <i>Elliptio spinosa</i> ; additional endemic and rare species	SP, SCP	Oconee, Ocmulgee, Altamaha, Ochoopee	State Wildlife Grants, Nongame Wildlife Fund	DNR, TNARI	Georgia College and State University, National Council for Air and Stream Improvement, USFWS, TNC, International Paper, The Nature Conservancy, Altamaha Cooperative Members
Assess Status of High Priority Species	Assess status of high priority bryophytes and graminoids in Georgia. Conduct surveys for rare plants known historically from Georgia	Survey	Proposed	Numerous (all high priority bryophytes and graminoids)	All	All	Nongame Wildlife Fund, USFWS	DNR	University System of Georgia, contractors, taxonomic specialists

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
<p>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.</p>	M	<p>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.</p>	<p>Swallow-tailed kites - records of sightings, nests and site fidelity; estimates of productivity, survival, parasite load, and sex-ratio; nesting and foraging habitats; post-fledging/pre-migration movement; migration routes/wintering location; diet. Kestrel - nesting success and fecundity; selection/preferences in types of artificial nesting structures. Painted bunting - relative abundance, levels of predation, parasitism; quantification of habitat loss, habitat quality and remaining suitable habitat. Henslow's Sparrow - grassland bird survey methods to determine whether the species is present at selected sites stratified across suitable habitat in the Coastal Plain. Bachman's Sparrow - estimates of population size at significant sites; relative abundance/density, population size, and habitat quality.</p>	<p>Swallowtailed kites - estimates of distribution, abundance, productivity, and survival for Georgia, identification of nesting and foraging habitats, and any land-use or habitat associations with nest success. Southeastern American kestrel - number of nest sites surveyed, nesting success with replacement structures. Painted bunting - estimated number of breeding pairs or population size. Precise population trend information. Quantification of 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.</p>
<p>Survey Ocmulgee River upstream of the Ben Hill Co. line; survey lower Oconee River; survey tributaries of above. Quantitatively estimate densities of target species in those sites identified as having the best populations of these mussels. Revisit those sites sampled in the past to perform trends analysis. Consultation with a biometrician will be needed to determine the appropriate design and sample size. Collect potential host fish for two rare endemic mussels. Conduct trials to determine which fish serve as hosts for these mussels. Additional field investigations may be needed to determine which of the suitable host fishes are actually utilized in the wild.</p>	VH	<p>The Altamaha drainage harbors seven endemic mussel species; additional surveys in the Oconee, Ocmulgee and tributaries are needed. Time series data will help determine if and at what rate these populations are changing. Baseline data will also be critical for monitoring the success of other conservation actions, including possible reintroductions of mussels. Collateral data, including presence/absence of recent reproduction and detection probability estimations, will provide quantitative estimations of species which still exist in sufficient numbers to be used as bioindicators. These non-target species may also be used for change in ratio population estimation studies when coupled with the data collected on the target species.</p>	<p>Location and condition of freshwater mussel populations; aquatic habitat variables. Density of mussels in those sites with the best populations of the target species. Shell measurements will be useful for documenting recent recruitment. Species lists will be collected from previously sampled sites that are revisited to be used for the trends analysis. For host fish study, number of glochidia produced; number of individual fish serving as hosts</p>	<p>Size and condition of mussel populations; quality of aquatic habitat. Quantification of mussel populations will be used as baseline data to begin a longterm monitoring program; presence of recruitment in mussel populations. Identification of suitable fish hosts and assessment of restoration potential for imperiled mussels</p>
<p>Survey known existing and historic sites, as well as likely habitat for high priority mosses, liverworts, 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. Conduct field surveys for rare plants known to occur in Georgia but not observed in recent years.</p>	H	<p>Little is known about the current distribution and abundance of mosses, liverworts, and graminoids in the state. Based on the CWCS evaluation of rare plants, it is clear that there are numerous globally rare species in need of current status surveys. In addition, 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 these species have indeed been extirpated.</p>	<p>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</p>	<p>Updated data on the distribution and condition of globally rare plants in Georgia. More specific recommendations for protection and management of these populations.</p>

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
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	<i>Haliaeetus leucocephalus</i> , <i>Mycteria americana</i>	All	All	Nongame Wildlife Fund, ESA Section 6	DNR	USFWS, University of Georgia, Others
Assess Status of High Priority Species	Conduct Broad River mussel survey and prioritize other streams for mussel surveys and monitoring projects (e.g., Flint, Satilla rivers)	Survey	Ongoing, Proposed	All species	PD, SP, SCP	Savannah, Flint, Satilla	State Wildlife Grants	DNR	Georgia College and State University
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 <i>Charadrius melodus</i> , <i>Calidris canutus</i> , <i>Limosa fedoa</i> , and <i>Haematopus palliatus</i>	SCP	Atlantic Coastal Plain	Nongame Wildlife Fund	DNR, Audubon, NC State University	USFWS, ACOE, St. Catherines Island Foundation, Sapelo Estuarine Research Reserve, Ogeechee Audubon, Coastal Audubon, TNC, Sea Island Company, Cumberland Island Homeowners Association., NPS
Assess Status of High Priority Species	Conduct surveys for undersampled high priority mammals (e.g., pocket gopher; forest roosting bats; bottlenose dolphins) and assess conservation needs.	Survey	Proposed	<i>Geomys pinetis</i> , sandy soil coastal plain habitats; <i>Corynorhinus rafinesquii</i> , <i>Myotis sodalis</i> , <i>Lasiurus intermedius</i> , forest habitats; Bottlenose Dolphins/estuarine and nearshore marine	All	All	State Wildlife Grants, Southern Wildlife Consultants, USFS, UGA	DNR	Southern Wildlife Consultants, USFS, UGA, NOAA National Ocean Service, Skidaway
Assess Status of High Priority Species	Continue and expand monitoring of rare species throughout the Coosa Basin and evaluate approach for use in other basins.	Survey	Ongoing and Proposed	Numerous	BR, PD, SA-RV	Etowah	TNC	TNC, UGA, DNR	U.S. Army Corps of Engineers

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
Conduct statewide monitoring of nesting bald eagles, relying 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.	Nest occupancy, specific nest site location, fledglings per nest. For wood storks, bi-weekly flights record number of nests initiated in 30+ nest sample from 4 colonies, nest and chick survival tracked through season to fledging. Productivity estimated as fledged young from all initiated nests in sample. Number of colonies; number of nests per year; number of birds hatched and fledged	Nnumber of active colonies (wood storks); number of nests constructed; number of birds hatched and fledged per year. Productivity estimates for wood storks developed regionally and included with Florida and South Carolina to give U.S. Wood Stork productivity for Recovery Plan goals.
Determine species composition of mussels in the Broad River.	H	Broad River watershed is a major tributary to the Savannah and has not been surveyed for many years. Much work needs to be done in this basin to determine the current composition of mussel communities.	Species observed at each site	Determine if any imperiled species are present in the watershed. Document the state of degradation fo the watershed.
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 and species of wintering shorebirds and seabirds. GPS location data for shorebird roost locations on the entire barrier coast are recorded. Data collected in red knot survey includes: number estimates, specific habitat use, age ratios, band resight data, sex ratios, body weights, physical condition, temporal use and turnover, contaminant exposure, forage species, feeding rates. For whimbrel survey, complete flock counts are taken at Gould's Inlet on nightly passage to roost sites. For American oystercatcher, life history, demographic models, disturbance and depredation data, migration, wintering, nesting ranges, health, parasite and disease data.	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)
Pocket gophers - document current and historical occurrence in Georgia and current population status, recommend conservation actions. Forest roosting bats - Survey within suitable habitat for presence of species of concern, track individuals to roost sites, formulate conservation strategy. Bottlenose dolphins - examine stock structure and behavior of resident dolphins; examine impacts of toxin exposure	M	Pocket gopher - This species of relatively low dispersal ability has apparently vanished from the vast majority of its suspected former range. It is restricted to certain soil types conducive to burrowing and is currently known from very few sites. Several populations are known to have been extirpated. Forest roosting batts - Little is known about the distribution and habitat utilization of these species in Georgia, but they are apparently very rare and/or declining. Bottlenose dolphin - Little is known about stock structure of Georgia dolphins; pilot study at Skidaway showed high PCB exposure in live and dead dolphins in Georgia	Pocket gopher - Historic and current occurrence records, information on present threats. Forest roosting bats - New locations of occurrence, identification of important foraging and roosting sites, threats. Bottlenose dolphin - Photo Identification, behavior, and skin/blubber biopsy of live dolphins; tissue collection from dead stranded dolphins	For pocket gophers and bats, number, size, health, and viability of populations. Number of populations and criitical habitats protected. For bottlenose dolphins, determine whether Georgia dolphins are residents, short-distance, or long-term distance migrants; determine whether PCBs are affecting stock negatively.
Participate in TNC's "Measures of Success" for the Etowah River; continue DNR Stream Team Surveys throughout the Coosa Basin; Continue UGA fish distributional surveys in the Etowah and Conasauga River systems. Evaluate the utility of this watershed-level approach for use in other basins.	VH	The Coosa Basin is one of the most biologically diverse basins in North America. Rapid urban development threatens the long term persistence of many rare aquatic and terrestrial species. The Etowah River HCP being developed will require watershed-level monitoring efforts as well as population-level monitoring. The methods used in this project may prove useful in other high priority watersheds.	GIS landcover, habitat, and species occurrence data	Index of Biological integrity scores (stream team). Number of sites occupied by high priority species (UGA). Water quality, water quantity, physical habitat, landscape, and biotic metrics (TNC Measures)

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
Assess Status of High Priority Species	Continue long-term monitoring of Pigeon Mountain salamander populations; conduct surveys for other high priority cave and outcrop species.	Survey	Ongoing	<i>Plethodon petraeus</i> ; indirectly other cave and outcrop inhabiting salamander species, including <i>Aneides aeneus</i>	SA-RV	Tennessee	Nongame Wildlife Fund	DNR	Piedmont College
Assess Status of High Priority Species	Expand Breeding Bird Survey routes	Survey	Ongoing	Many	All		Nongame Wildlife Fund	USGS-Patuxent, DNR	USGS-Patuxent, DNR, GOS and Audubon volunteers
Assess Status of High Priority Species	Conduct genetic, taxonomic, and reproductive studies of high priority species. (e.g., bog turtle reproduction; loggerhead genetics; parameters of healthy alligator snapping turtle population).	Research	Ongoing, Proposed	Examples include: <i>Glyptemys muhlenbergii</i> , <i>Caretta caretta</i> , <i>Macrochelys temminckii</i> . Others to be determined.	All	All	State Wildlife Grants, Nongame Wildlife Fund, ESA Section 6, TERN	DNR	UGA, Wildlife Conservation Society, volunteers; possibly Tennessee Aquarium, Knoxville Zoo, Zoo Atlanta, Chattahoochee Nature Center, Wildlife Conservation Society
Assess Status of High Priority Species	Investigate site fidelity and habitat use by eastern indigo snakes	Research	Ongoing	<i>Drymarchon couperi</i>	SP, SCP	All Coastal Plain watersheds	USFWS	DNR	UGA
Assess Status of High Priority Species	Monitor populations of gray bats and southeastern bats in caves, and conduct surveys of rare forest bats	Survey	Ongoing	<i>Myotis grisescens</i> , <i>Myotis austroriparius</i> , <i>Corynorhinus rafinesquei</i>	SA-RV, SP, SCP		State Wildlife Grants, Southern Wildlife Consultants, UGA	DNR	Southeastern Cave Conservancy, Joseph Jones Ecological Research Center, UGA, Clemson, Southern Wildlife Consultants

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
Seasonal counts of salamanders at six caves on Pigeon Mountain will provide information on best times of the year to sample. Long-term monitoring protocols will be established and implemented at known Pigeon Mountain Salamander sites.	M	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 Salamanders between sites and over time; changes in habitat quality
Increase number of BBS routes from 58 to about 100. Increase number of actively run routes by 20 in 2005, 20 in 2006, 10-15 in 2007 for a total of 90+ routes run per year.	M	The BBS is the major source for information on population trends of bird species. By increasing the number of routes from less than 60 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.
Determine the influence of temperature on sex of bog turtle hatchlings. Develop microsatellite markers to examine loggerhead stock structure. Examine the characteristics of the best known alligator snapping turtle population to determine a benchmark for evaluating recovering populations. These studies are needed for achievement of management objectives for these particular species, but the approaches described may be applied to other high priority species.	M	While genetic sex determination (GSD) has not yet been confirmed in bog turtles, it is suspected to occur in this species. This research will determine if there is a need to change incubation techniques for population recovery. mtDNA assays have been used to delineate loggerhead stock structure in the western Atlantic. It is important to see if the same level of structure is present in nDNA assays. If male-mediated gene flow is high, there is less concern over loss of genetic diversity in the population. Documentation of parameters of healthy alligator snapping turtle populations is needed to determine benchmarks for determining whether or not recovery has been achieved.	Sex of bog turtle hatchlings at various incubation temperatures. Microsatellite genetic markers for loggerheads. Catch per unit effort, sex ratios, size structure, movements, growth, microhabitat use, health assessments of alligator snapping turtle population.	Determination of primary factor influencing bog turtle hatchling sex ratios; stock structure of Georgia's loggerheads defined; estimates of population size, sex and age structure, and other population parameters of recovering alligator snapping turtle populations.
Indigo snakes seek xeric sandhill habitats during the winter breeding season, but warm season microhabitat use is virtually unknown, especially in Georgia. With ever increasing upland habitat loss and alteration, it is important to know whether or not indigo snakes annually return to the same winter sandhill habitats and what degree of dependency they have on the same burrow complexes. Further, no reliable method of locating this species other than winter burrow searches is known. The need to determine the most reliable survey technique(s), especially outside of the winter season, is critical to the conservation of this species range-wide by providing biologists, land managers, and consultants with the proper tools for effectively surveying and monitoring this species.	H	The benefit of this study will be improved knowledge of habitat requirements of this species in Georgia, which will certainly aid management, monitoring, and survey efforts.	Snakes will be captured at burrows during late fall and winter, fitted with transmitters, and followed until the next winter or beyond. Microhabitat analyses will be conducted at the various sites in which the snakes are periodically located, and compared and contrasted between years and between various populations occupying different quality habitats	Data on re-use of sites from one year to the next; data on habitats utilized at various times of the year
Conduct annual summertime monitoring of six caves.	H	Small disturbances at these 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

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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	<i>Vermivora chrysoptera</i>	BR	Tennessee, Savannah, Conasauga, Chattahoochee	Nongame Wildlife Fund, NCWC, USFS	USFS	DNR, NCWC, Cherokee National Forest
Conserve High Priority Habitats	Develop statewide strategy for conservation of wetlands	Management	Proposed	Numerous	All	All	EPA Wetland Program Development Grant	DNR (EPD)	UGA River Basin Center, CRD, WRD, USDA, NRCS, NatureServe, EPA, GDOT, Georgia Land Conservation Partnership
Conserve High Priority Habitats	Develop tools to evaluate stream flows on aquatic communities	Research	Ongoing	Numerous - current project focused in lower Flint River Basin	SP	Flint	WCPR	DNR, UGA	EPD, USGS, Joseph W. Jones Center
Conserve High Priority Habitats	Implement long-term management and monitoring plan for Coosa Valley Prairies	Management	Ongoing	<i>Marshallia mohrii</i> , <i>Echinacea simulata</i> , <i>Helianthus verticillatus</i> , <i>Prenanthes barbata</i> ,	SA-RV	Coosa	TNC, Temple-Inland Forest, Georgia Wetland Trust Fund, USFWS, Nongame Wildlife Fund	TNC, Temple-Inland Forest, DNR	Georgia Botanical Society; Georgia Plant Conservation Alliance
Conserve High Priority Habitats	Restore mountain bogs; restore or enhance populations of rare bog plants; continue bog turtle headstart and population establishment efforts and use non-releasable turtles for education/outreach efforts	Management, Education	Ongoing	Mountain bogs; <i>Glyptemys muhlenbergii</i> ; <i>Helonias bullata</i> , <i>Sarracenia purpurea</i> ssp. <i>venosa</i> var. <i>montana</i>	BR	Ocoee (6020003), Hiwassee (6020002), Tugaloo (360102), Upper Little Tennessee (6010202)	ESA Section 6, Nongame Wildlife Fund, State Wildlife Grants	DNR	USFWS, USFS, Chattahoochee Nature Center, Tennessee Aquarium, Atlanta Botanical Garden, State Botanical Garden of Georgia, Lanier Museum of Natural History; volunteers

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
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 the fire will be recorded to allow determination of the effects of management activities on habitat. The response of golden-winged warblers to these habitat manipulations will be quantified 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.
Draft a comprehensive wetland protection strategy for Georgia. Identify conservation needs for various types of wetlands and highest priority sites or examples. Determine priorities for protection based on condition, species composition, and ecological and economic benefits. Work with other agencies to apply available funds for protection and management of highest quality sites and restoration of degraded isolated wetlands where feasible.	VH	Georgia's wetlands support a wide variety of high priority species. There is currently no state program for protection of freshwater wetlands. Recent assessments have indicated that these habitats (especially isolated and ephemeral wetlands) are being impacted by a wide variety of land uses. There is an urgent need to expand efforts to identify high quality wetlands for permanent protection as well as suitable sites for restoration or enhancement.	Location and condition of geographically isolated wetlands in each ecoregion. Number of isolated wetland habitats supporting species of conservation concern. Protection and management needs. Opportunities and available resources for implementing restoration programs or securing long term protection.	Development of a draft wetland protection strategy. Acreage and types of wetland habitats protected through fee-simple acquisition, conservation easements, or long-term management agreements. Acreage and types of degraded wetlands restored or enhanced through management efforts (e.g., closing ditches, reintroducing fire, restoring upland buffers).
Research project to develop tools to evaluate effects of stream flows on fish communities. These tools will assist in managing water resources in a way that protects and maintains fish communities.	VH	The lower Flint basin is currently under a moratorium on the issuance of additional permits for agricultural irrigation from surface sources or the Floridan aquifer. A water management plan is under development to address whether the moratorium can be lifted. Tools developed through this project will assist in developing the water management plan.	Data are collected on fish communities, stream flows, and water characteristics (temperature and dissolved oxygen). Models are developed to predict fish communities over time (50 years) under various water management scenarios.	Fish community composition in specified stream reaches under various water management regimes.
Monitor the extent and composition of prairie and woodland habitats each year; implement prescribed burn and timber harvest plan and monitor effects.	M	This site is one of the most important areas for rare plant diversity in Georgia; implementation of the management/monitoring plan is critical for restoration and maintenance of these prairie habitats and shortleaf pine-post oak woodland matrix.	Plant community composition along transects in prairie and woodland habitats; canopy cover; basal area.	Extent of open prairie habitats; prevalence of prairie indicator plants; basal area and groundcover diversity in shortleaf pine-post oak woodlands.
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. Nonreleasable turtles will be provided to educational facilities and used to educate the public about the importance and status of mountain bogs in Georgia.	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 one of which is 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. Public facilities will develop interpretive displays with rare bog plants and nonreleasable bog turtles.	Various measures of vegetation structure and composition, as well as population estimates for rare bog species. Captured wild bog turtles captured are marked and PIT tagged. Genetic samples of all wild Georgia bog turtles will be collected for intra- inter-drainage comparison and for law enforcement (pet trade) purposes. Radio telemetry is being used to analyze individual movement, habitat utilization, and microhabitat preference for bog turtles at both recipient and donor bog sites. Other data: Measurements and weight of turtles released and recaptured at recipient sites; number of interpretive displays developed and used.	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. Number of educational facilities using interpretive mountain bog displays.

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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	<i>Crotalus adamanteus</i>	SP, SCP	All Coastal Plain watersheds	N/A	DNR	PARC
Conserve High Priority Species	Address problems with state law (O.C.G.A. 27-1-28) permitting unregulated and unrestricted commercial take of freshwater turtles, and develop appropriate regulations.	Regulation	Proposed	All freshwater turtles not listed as endangered, threatened, rare, or unusual	All	All	N/A	DNR	PARC
Conserve High Priority Species	Address venomous snake exception in state law (O.C.G.A. 27-1-30) prohibiting disturbing or destroying wildlife habitats	Regulation	Proposed	<i>Gopherus polyphemus</i> , <i>Drymarchon couperi</i> , <i>Pituophis melanoleucus</i> , <i>Crotalus adamanteus</i> , <i>Rana capito</i> , and many other animals that use gopher tortoise burrows	SP, SCP	All Coastal Plain watersheds	N/A	DNR	PARC
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.
Conserve High Priority Species	Continue manatee recovery efforts; assess manatee population size and movement patterns to minimize impacts from boats	Management	Ongoing, Proposed	Manatees/estuarine and nearshore marine habitats	SCP	All estuarine and nearshore marine waters	USFWS Section 6	DNR	USFWS, USGS, FL FWC
Conserve High Priority Species	Continue right whale recovery efforts. Conduct aerial surveys for right whales. Implement digital tagging program for right whales to assess movements and minimize ship strikes	Management, Research	Ongoing	Right Whales/marine habitats	SCP	All nearshore and offshore marine waters	NOAA Fisheries Section 6 Agreement; NFWF	NOAA Fisheries; DNR,	NOAA Fisheries, Wildlife Trust, New England Aquarium, Florida FWC, Center for Coastal Studies, U.S. Coast Guard: Mote Marine Lab, Woods Hole Oceanographic Inst., Wildlife Trust, SCDNR

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
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, and entertainment at rattlesnake roundups. Additionally, snakes are also taken to support a skin trade separate of the 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.
State law allows for promulgation of regulations related to the take of nongame wildlife groups listed in O.C.G.A. 27-1-28. The best long-term solution would be amendment of the state law to exclude all freshwater turtles. In the short term, DNR should promulgate regulations to prohibit take of freshwater turtles in all public waters and to require permits for take of turtles from other waters.	M	Turtle life history does not allow for population sustainability when individuals are harvested in significant numbers. Commercial collection for pets and food, sold both domestically and internationally, is increasing substantially. In order to assess the impact of commercial take and trade, permitting and harvest reporting is necessary. However, commercial take at any level is unlikely to allow sustainability and thus may need to be prohibited.	Number of turtle take permits issued and number of turtles taken/sold.	Estimated population changes over time.
State law prohibits deliberate destruction of wildlife habitats, but includes an exception for "poisonous" (venomous) snakes. Amending the law to remove the exception for venomous snakes is the preferred long-term solution. In the short term, DNR should promulgate regulations that define and limit the methods allowed for removing venomous snakes from burrows (e.g., prohibiting excavating or pouring gasoline in burrows).	M	The exception in this law allows rattlesnake collectors to disturb or destroy animal burrows in pursuit of rattlesnakes. However, rattlesnakes do not make their own burrows, but rather use burrows or stump holes created or inhabited by other species, including the state threatened gopher tortoise. Incidental take of tortoises and other rare or endangered animals is a frequent result. Addressing this exception to the law is necessary to avoid incidental take of state and federally listed wildlife.	Number of gopher tortoise burrows intentionally destroyed, based on field surveys, law enforcement case reports, etc.	Estimated impacts on habitat loss over time.
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.
Manatee recovery efforts, including: photo identification, public sighting database, boater education, recovery and necropsy of dead animals, permit consultation. Examine distribution, abundance, and habitat use by manatees, and boater use patterns and develop recommendations for mechanisms to minimize impacts from boat traffic.	M	Various management and policy tasks related to recovery of critically endangered species. Atlantic manatee population is stagnant or declining; little is known about use of coastal Georgia waters by manatees since closure of warm-water sites; recreational boat traffic is increasing rapidly in the region	Data vary depending on specific task, but include: Causes of mortality, health assesment, public outreach. Aerial surveys of manatees and boat traffic, photo-identification of known individuals, possibly satellite telemetry	Results reported annually to USFWS. Long-term maintenance of the species in Georgia as the goal. Identified areas of high manatee use/density; quantify risk posed by increased boat traffic. Maps of high use sites and travel routes. Recommendations for minimizing boat impacts on manatees.
Continue right whale recovery efforts, including: disentanglement response, public outreach, recovery and necropsy of dead animals, participation on Recovery Plan S.E. Implementation Team, permit consultation. Also includes ongoing research efforts, including conducting aerial surveys to determine population size and demographics, and implementation of a digital tagging program to assess whale movements relative to ship traffic.	H	This conservation action includes a variety of management and research tasks related to the recovery of a critically endangered species for which Georgia has critical habitat (calving grounds). Vessel strikes are leading cause of right whale mortality; little is currently known regarding behavior of right whales in close proximity to vessels.	Data collected vary, depending on specific task. In some cases, may be policy oriented. In other cases, may include data on location, condition, structure, and movements of right whale population.	Long-term data collection for critically endangered species; results reported to NOAA Fisheries regularly. For digital tagging program, long-term: data will be used to make policy and management decisions regarding whale/vessel interactions

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Conserve High Priority Species	Continue sea turtle stranding and salvage network. Monitor impacts of coastal fisheries on sea turtles and effectiveness of nest protection efforts. Consider construction of a Georgia Sea Turtle Center on Jekyll Island	Management, Research, Regulation, Education	Ongoing, Proposed	<i>Caretta caretta</i> , <i>Chelonia mydas</i> , <i>Dermochelys coriacea</i> , <i>Lepidochelys kempii</i> , <i>Lepidochelys olivacea</i> , <i>Eretmochelys imbricata</i>	SCP	All Coastal Plain estuaries and offshore waters	ESA Section 6, Nongame Wildlife Fund; Jekyll Island Authority, Wildlife Conservation Society	DNR, Jekyll Island Authority	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, Willdife Conservation Society
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
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	SWG, FM Section, others	DNR	USFWS, NOAA-Fisheries, ASMFC, GCMFC, SC DNR, AL DNR, FL FWCC,
Conserve High Priority Species	Implement red-cockaded woodpecker conservation on private lands	Management	Ongoing	<i>Picoides borealis</i>	PD, SCP, SP		Nongame Wildlife Fund, USFWS, Tall Timbers Research Station, Turner Endangered Species Fund, Georgia Power, Joseph W. Jones Ecological Research Center	Georgia DNR	USFWS, TTRS, Joseph W. Jones Ecological Research Center
Conserve High Priority Species	Restore lake sturgeon populations in Georgia	Research, Management	Ongoing	<i>Acipenser fulvescens</i>	SA-RV	Coosawattee, Oostanaula, Etowah, Conasauga, and Coosa river	WB	DNR	USFWS-Warm Springs, WI DNR, UGA
Conserve High Priority Species	Review recovery plans for all federally listed species known to occur in Georgia and identify state-specific objectives	Management	Ongoing	All federally listed species in Georgia (63 species)	All	All	USFWS Section 6, NMFS, Nongame Wildlife Fund	USFWS, NMFS, DNR	NWF, others

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
<p>Conduct standardized surveys for sick, injured or moribund sea turtles. Conduct gross necropsies to determine cause of death. Conduct aerial surveys to determine seasonal shrimp trawler abundance and distribution. Conduct aerial surveys for leatherback/commercial fisheries interactions in spring. Work with law enforcement to eliminate illegal fishing activity. Conduct research to determine ways of minimizing trawler/sea turtle interactions. Assess effectiveness of DNR recommendations for sea turtle nest protection. Consider construction of a sea turtle education and rehabilitation center on Jekyll Island. This facility would provide an opportunity to educate the public on the plight of Georgia's sea turtles. In addition, the facility would be used to continue health assessment research.</p>	H	<p>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. Minimizing fishery mortality is essential for recovering sea turtle populations. Stranding totals have increased over the last 16 years. Strandings are the primary index of nearshore mortality 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. Currently, sick or injured sea turtles are transported to Florida or South Carolina because no facilities are available in Georgia.</p>	<p>For stranding network, spatial and temporal distribution of strandings, species composition, size frequency, sex ratios, cause of death, human interactions. For assessment of nest protection recommendations, spatial and temporal distribution of nests, hatch success, hatchling production, nest relocation, nests washover, incubation durations, nest depredations, hatchling disorientation, sex ratios, habitat use. Also, collect baseline data on health of captured and live-stranded sea turtles. Data collected includes: physical exam, epibiota assessment, complete blood counts, plasma biochemistry, disease serology, fecal exams, skin biopsies, contaminant sampling.</p>	<p>Increasing numbers of nesting turtles and successful hatches are prime indicators of conservation success. Stranding trend data will be used in management decisions. Health data will be used in disease identification or health trends that may indicate stresses on individual turtle and population recovery. For Sea Turtle Center, performance indicators would include number of sea turtles rehabilitated, public visitation of the educational facility, greater public understanding of sea turtle biology, and support for coastal conservation efforts.</p>
<p>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.</p>	H	<p>Worldwide declines in waterbirds have prompted international and national efforts to stem population losses and maintain regional population stability.</p>	<p>Population bottlenecks identified. Georgia's role in long-term maintenance and recovery of waterbirds recognized. Individual studies encouraged and supported.</p>	<p>Partnerships with academic institutions, NGO's, other state agencies, federal agencies and programs, are established. Population goals met.</p>
<p>Evaluate existing population status, commercial and recreational fisheries, and habitat limitations. Look for opportunities to enhance habitat through suite of alternatives.</p>	H	<p>Current diadromous fish populations are greatly reduced compared to historic levels.</p>	<p>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</p>	<p>Population stability as measured by reproduction/recruitment. Restoration of species to historic ranges.</p>
<p>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.</p>	H	<p>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.</p>	<p>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.</p>	<p>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.</p>
<p>Reestablish lake sturgeon to former range. Research into habitat uses, growth, survival, food habits, etc., needed to assure success.</p>	M	<p>Lake sturgeon have been extirpated from the Coosa river system. Wisconsin DNR has agreed to provide eggs/fry for our restoration efforts.</p>	<p>Movement, habitat affinity, food habits, mortality, and growth are all basic information needed to understand any constraints to reestablishment of this species</p>	<p>Self-sustaining population within historic range within Georgia.</p>
<p>Review and assess adequacy of recovery plans for all federally listed species</p>	M	<p>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 research and conservation efforts.</p>	<p>Extensive literature review and individual research findings.</p>	<p>Number of recovery plans reviewed.</p>

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
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 Wildlife Fund	DNR	CWCS technical teams, other experts on status and distribution; state, federal, and local government land managers.
Conserve High Priority Species	Work with Robust Redhorse Conservation Committee to assure restoration of robust redhorse populations.	Research, Management	Ongoing	Robust Redhorse	PD, SP	Savannah, Ogeechee, Altamaha, Oconee, Ocmulgee	SWG, FM Section, FWS, GPC, others	RRCC	Memorandum signatories
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, private landowners, hunting public
Conserve High Priority Habitats	Develop a comprehensive action plan to control 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	Management, Education	Proposed	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund, USGS, NPS, NFWF, NRCS	DNR, USFS, USFWS, NPS, NRCS	DoD, Georgia Exotic Pest Plant Council, TNC, APHIS, USGS, Georgia Dept. of Agriculture, UGA Cooperative Extension Service, GDOT, Georgia WaterWise Council, Georgia Power, NatureServe, local volunteers, GFC, GSWCC
Improve Environmental Education and Outreach	Assess current level of environmental literacy among the general public in Georgia	Education	Proposed	Numerous	All	All	Unknown	DNR	Environmental Education Alliance (EEA) of Georgia, UGA
Improve Environmental Education and Outreach	Create targeted educational messages related to conservation of Georgia's natural resources	Education	Proposed	Numerous	All	All	TBD	DNR Educators	EEA, GA Conservancy, GWF

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
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.	VH	The state list of protected species has not been revised since 1992. 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.
Conduct research and management options to develop six self sustaining populations of robust redhorse throughout its historic range.	H	Ongoing efforts have made great strides in assuring survival of species. Much work needs to be completed to enhance population in Oconee River basin	Extensive data on robust redhorse populations within Georgia.	Population stability as measured by reproduction/recruitment.
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.
Assess threats from invasive exotic species on public lands and prioritize specific sites and habitats for control efforts. Conduct field assessments of the most noxious species on public lands. Coordinate control efforts with other land managing agencies and adjacent landowners where feasible. Work with USFS, USGS, NPS, TNC, and others to develop protocols for assessing, documenting, and addressing invasive exotic species on conservation lands. Provide training to public land managers (e.g., state park 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 exotic species populations. Technical information on life history characteristics, control methods, etc. Assessments of relative threat and likelihood of control based on experiences in other states or locales. Information on noxious invasive species and impacts on natural habitats and rare species populations; information on 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.
Assess the current level of Georgia residents' awareness about native wildlife and wildlife conservation needs. Data collection instrument/procedure TBD. Identify target audiences for all educational messages.	VH	This is needed to establish a "baseline" for future assessments of progress in current environmental education programs and creation of new programs	Various measures of current public knowledge, attitudes and behaviors regarding wildlife conservation issues and challenges in Georgia	Completed and returned data collection; analysis and summary of evaluation results
Applying findings of literacy study of Georgia residents, develop and test targeted educational messages focused on far-reaching ecological concepts related to conserving all of Georgia's natural resources including plants, animals, water, air and land.	H	Need to clarify messages for consistency and repetition among and between all 180 EEA providers in the state. Examples of specific issues that could be covered are impact of ATV use on habitats, invasive, exotic species and impact of poorly designed road crossings on fish passage.	Clear, concise educational statements for individual audiences identified in literacy study	List of messages for each target audience

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Improve Environmental Education and Outreach	Develop a coordinated statewide outreach and public relations campaign to increase public support for wildlife conservation	Outreach	Ongoing, Proposed	All High Priority Species and Habitats	All	All	Nongame Wildlife Grants, private donations	DNR	Private corporations, media representatives, marketing experts, conservation organizations.
Improve Environmental Education and Outreach	Develop hands-on educational materials to facilitate delivery of conservation messages to the public.	Education	Proposed	Numerous	All	All	TBD	DNR Educators	EEA, GA Conservancy, GWF
Improve Environmental Education and Outreach	Develop technical educational materials (e.g., Georgia Breeding Bird Atlas, revised natural community classification system)	Education	Ongoing, Proposed	Numerous	All	All	Nongame Wildlife Fund, Atlanta Audubon, NFWF, TERN, others	DNR	Various volunteers, multiple state and federal agencies, multiple conservation organizations
Improve Environmental Education and Outreach	Establish a network of regional educators and community groups	Education	Proposed	Numerous	All	All	TBD	DNR Educators, DNR Director of Communications	EEA board, EEA members in ecoregions
Improve Environmental Education and Outreach	Publish CWCS technical team findings	Education	Proposed	Numerous	All	All	TBD	DNR	EEA, GA Conservancy, GWF
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	DNR, GSWCC	UGA Cooperative Extension Service, Georgia Cattlemen's Association, Georgia Dept. of Agriculture, Georgia Farm Bureau, GWF

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
Develop a public outreach and public relations campaign utilizing a variety of informational and marketing techniques. This campaign will involve statewide and regionally targeted media outreach, advertising, and public information efforts. Support from private corporations, media outlets, and advertising firms will be sought to defray costs.	VH	This effort is a critical component for increasing public awareness of and support for wildlife conservation efforts, and serves as a complement to ongoing and proposed education efforts. The need to increase public awareness of wildlife conservation needs statewide and in each ecoregion was mentioned by several participants at regional stakeholder meetings.	Information will be solicited from media and public relations experts to determine opportunities and priorities for public outreach. Information on traditional and novel marketing and informational techniques will be explored to ensure that a wide cross-section of the Georgia public will be addressed by the campaign.	Development of outreach strategy; number of corporate partners; number of media representatives contacted; number of messages effectively presented. Increasing public awareness of and support for wildlife conservation efforts in Georgia.
To help Georgia's environmental educators promote targeted educational/interpretive messages, fact sheets, posters, lesson plans, audio-visual materials and other resources are needed (e.g., Georgia Outdoors, natural community classification)	H	Need to create vehicles through which targeted messages are communicated and promoted to target audiences through hands-on experiences.	Identified cost-effective materials and means for communicating messages	Production and delivery of materials to audiences
Produce technical educational materials to facilitate greater understanding and conservation of Georgia's natural resources. Examples include the Georgia Breeding Bird Atlas, a revision of Georgia's natural community classification system, and updates or revisions of the Protected Plant Book and Protected Animal Book.	VH	These educational documents are necessary for improvements in the conservation of high priority species and habitats. They are intended for an audience that includes biologists, educators, land managers, and landowners, but provide technical details not available in other documents intended for a more general audience.	Relevant data include information on the distribution, condition and management needs of high priority species and natural communities. Specific types of data collected will depend on the type of document being produced.	Completion and distribution of documents. Positive feedback from target audience indicating utility of documents.
The educational messages are best delivered through ecoregional networks. Educators and community contacts need to be established in each ecoregion. Workshops will introduce regional contacts to high priority conservation issues in their ecoregion, provide materials that will enable them to effectively educate community members about these issues, and suggest methods for incorporating key targeted messages into their existing programs.	H	Conservation issues vary between ecoregions. Need to relate issues to people/communities to make issues more relevant. Local contacts also know local people/culture/customs more readily and can more effectively communicate with them.	Identify organizations and educators within each ecoregion and identify potential site or individual who could serve as a leader and possibly a clearinghouse for distribution of info and/or training.	Contact list of regional educators and community groups; specific number of workshops performed
The reports from the other CWCS technical teams should be compiled, condensed and summarized in a format that includes key educational messages that are relevant to the general public. The technical teams will review what the education team creates.	H	The summary will be a valuable resource for educators throughout Georgia, as it will include the most up-to-date information on the conservation status of species and communities statewide.	Highest priority species, habitats and issues by ecoregion. Conservation needs and priorities for each ecoregion.	Published and distributed reports to appropriate audiences
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 wildlife 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

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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	DNR, GFC	GFC; PARC; PIF, GFA, Forestry for Wildlife partners; UGA-WSFR; Carl Vinson Institute of Government, Southeastern Wood Producer's Association, SFI Implementation Committee, Master Timber Harvester Program
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	GFC; PARC; PIF, Forestry for Wildlife partners; UGA-WSFR; Carl Vinson Institute of Government
Improve Private Land Management	Develop private landowner incentives for conservation of flatwoods salamanders and other high-priority species.	Management	Ongoing	<i>Ambystoma cingulatum</i> ; indirectly <i>Notophthalmus perstriatus</i> and <i>Rana capito</i>	SP, SCP	All Coastal Plain watersheds	State Wildlife Grants, Nongame Wildlife Fund	DNR	USFWS, FFWCC, SCDNR
Improve Private Land Management	Encourage use of prescribed fire as a habitat management tool on private lands	Management	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.
Improve Public Land Management	Establish or augment populations of gopher frog, striped newt, gopher tortoise and other high priority species on protected lands	Management	Proposed	<i>Rana capito</i> , <i>Notophthalmus perstriatus</i> , <i>Gopherus polyphemus</i> , <i>Ambystoma cingulatum</i> , <i>Picoides borealis</i> , others	SP, SCP	Middle Savannah (3060106)	State Wildlife Grants, Nongame Wildlife Fund	DNR	USFWS

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
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; management 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.
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.	H	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 "Wildlife Conservation BMPs" or other 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.
Determination of the feasibility of implementing the Safe Harbor Policy as a conservation strategy for flatwoods salamander and/or the development of novel conservation incentive strategy(s) that possess the following fundamental components: 1) provision of conservation incentives and legal assurances sufficient to encourage private landowners to agree to survey access; 2) provisions for sampling in multiple years; and 3) incentives to conduct proactive conservation.	H	Developing relationships with private landowners of potentially suitable flatwoods salamander habitat is critical for the success of future conservation efforts. In order to gain access to private property to conduct salamander surveys for majority of private landowners, some form of legal assurances (i.e., assurances that additional management restrictions will not be imposed as a result of voluntary conservation actions to benefit the flatwoods salamander) and/or conservation incentives must be available.	Document presented to the USFWS: "Analysis of the feasibility of implementing the Safe Harbor Policy as a conservation strategy for <i>Ambystoma cingulatum</i> (flatwoods salamander) with particular reference to Georgia: Recommendations Presented by the Georgia Department of Natural Resources and Meeting Participant Discussion"	Development of workable conservation incentives for conservation of flatwoods salamanders (and other amphibians requiring active management of depressional wetlands and adjacent uplands) on private lands.
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.
Establish or augment populations of high priority animal species on public lands in the Coastal Plain. Candidate species include gopher frog, striped newt, flatwoods salamander, gopher tortoise, and red-cockaded woodpeckers	H	Although the gopher frog is not federally listed, designation as a candidate for listing under the ESA is a distinct possibility in the near future. The need for listing this species may be minimized if proactive conservation measures can be implemented on public 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.

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Improve Public Land Management	Implement integrated resource management of federal lands, 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	DNR, TNC, NatureServe, USGS
Improve Public Land Management	Implement integrated resource management of state lands (i.e., ecosystem management), emphasizing restoration and maintenance of natural communities and rare species populations. 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
Improve Public Land Management	Manage and monitor coastal bird islands to conserve populations of beach-nesting birds.	Management, Survey	Ongoing	<i>Larus atricilla</i> , <i>Sterna maxima</i> , <i>Sterna sandvicensis</i> , <i>Sterna nilotica</i> , <i>Rynchops niger</i> , <i>Haematopus palliatus</i> , <i>Charadrius wilsonia</i>	SCP	Atlantic Coastal Plain streams	Nongame Wildlife Fund	DNR	USFWS, NGO's, public
Improve Public Land Management	Implement rare plant restoration, enhancement, and safeguarding program. Identify needs, develop horticultural guidelines, and initiate rare plant propagation efforts; develop and implement reintroduction protocols and monitor populations.	Research, Management, Survey	Proposed	Numerous	All	All	Nongame Wildlife Fund, SBG, ABG, USFWS, Chattahoochee Nature Center, and others	GPCA, DNR, USFWS, USFS, SBG	SBG, ABG, Chattahoochee Nature Center, and private growing enthusiasts, USFWS, USFS, TNC, GNPS, BotSoc, university staff, students, private landowners
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.

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
<p>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.</p>	VH	<p>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.</p>	<p>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</p>	<p>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.</p>
<p>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.</p>	VH	<p>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.</p>	<p>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.</p>	<p>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</p>
<p>Follow Recommendations of Bird Island Committee under Bird Island Rule 391-4-7. Provide informational signage, monitor nesting, monitor compliance, provide public outreach through media and printed materials.</p>	M	<p>Beach-nesting birds are a very high conservation concern based on the historic and continued loss of specific sites critical to nesting and loafing to increases in recreational use.</p>	<p>Seabird nesting distribution and effort recorded annually from the air. Ground nest count surveys conducted as needed in conjunction with Atlantic States Royal Tern Working Group. Compliance checks made opportunistically, and coastal boat counts over peak use events recorded</p>	<p>Long-term trend data generated. Continued use of bird islands by beach-nesting birds. Reproducing populations of rare birds maintained and increased.</p>
<p>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. Reintroduction, enhancement, and safeguarding ("RES") 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 RES site.</p>	M	<p>Because opportunities for acquisition are few, a 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.</p>	<p>Prioritized list of 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.</p>	<p>List of plants prioritized based on the potential 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 population with reproductive effort and recruitment level necessary to provide the demographics for long-term stability/growth.</p>
<p>Determine location and distribution of protected species and species of concern on Wildlife Management Areas, Natural Areas, Public Fishing Areas and State Parks.</p>	H	<p>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.</p>	<p>Particular 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.</p>	<p>Number of WMAs, NAs, PFAs, and State Parks thoroughly surveyed for all high priority species.</p>

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Increase Capacity for Wildlife Conservation	Coordinate terrestrial invertebrate surveys and conservation efforts in Georgia	Administration	Proposed	Terrestrial invertebrates in various high priority habitats	All	All	State Wildlife Grants, Nongame Wildlife Fund	DNR	Academia (nationwide specialists), TNC, NatureServe, USFWS, other state wildlife agencies.
Increase Capacity for Wildlife Conservation	Enhance DNR Law Enforcement officer training and staffing to address nongame wildlife law enforcement needs.	Regulation, Education	Ongoing, Proposed	Numerous	All	All	Nongame Wildlife Fund, state appropriations	DNR	UGA-GMNH, NatureServe
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, GEPI, NWF, others
Increase Capacity for Wildlife Conservation	Improve biodiversity databases and increase data-sharing with conservation partners	Database	Ongoing	Numerous	All	All	State Wildlife Grants, Nongame Wildlife Fund	DNR	University System of Georgia; USFWS, TNC, NatureServe, biological consulting firms, conservation planners
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, matching funds from landowners	DNR, NatureServe, corporate landowners	The Conservation Fund, TNC, NWF, biological consultants.
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	see attached	NRCS, DNR, USFWS, DoD, NPS, GFC	NFWF, TNC, TCF, NWF

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
Coordinate and encourage terrestrial invertebrate conservation efforts in Georgia and in the SE. Bring together various experts throughout the taxa, coordinate survey efforts, monitoring, research.	M	There is currently no 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.
Provide additional training on laws and regulations established to protect nongame wildlife. Provide additional staff resources to handle enforcement of nongame and protected species regulations.	H	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/refreshers courses given and training material provided. Number of cases involving nongame or endangered species investigated.	Number of cases investigated involving illegal nongame activities; overall awareness of nongame conservation issues and regulations.
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 funding 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.
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 accordingly. 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.
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 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.
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.

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
Increase Capacity for Wildlife Conservation	Increase regional focus for nongame wildlife conservation efforts. Increase and reallocate staff to take advantage of conservation opportunities in each ecoregion and major river basin and facilitate delivery of conservation programs	Administration	Proposed	All Nongame Species, with emphasis on state listed and special concern species	All	All	State Wildlife Grants, Nongame Wildlife Fund, LIP, Forest Stewardship, TSP	DNR	USFWS, NRCS, Gopher Tortoise Council, NFWF
Increase Capacity for Wildlife Conservation	Restore state funding to support WRD's nongame wildlife conservation efforts.	Funding	Proposed	All High Priority Species and Habitats	All	All	State appropriations	State Legislature	TNC, GWF, others
Increase Capacity for Wildlife Conservation	Strengthen network of support for wildlife conservation	Administration	Proposed	All High Priority Species and Habitats	All	All	Unknown	TGC, TNC, TPL, GWF, TCF	Georgia Land Trust Alliance, Georgia River Network, Sierra Club, Georgia Conservation Voters, Georgia Water Coalition, Georgia ForestWatch, NWF
Reduce Impacts From Development and Other Activities	Conserve populations of rare plants in transmission line corridors	Management	Ongoing	Numerous	All	All	Nongame Wildlife Fund	DNR, Georgia Power, local EMCs	State Botanical Garden, Georgia Botanical Society
Reduce Impacts From Development and Other Activities	Decrease the impact of poorly designed road crossings on fish passage	Management	Ongoing, Proposed	Aquatic species, especially freshwater fishes	All	All	FEMA, FHWA	DNR	GDOT, County Road Departments, DNR, USFWS, UGA

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
<p>Increase and reallocate existing staff to take advantage of key conservation opportunities in each ecoregion and major river basin. Increase WRD staff available to provide delivery of conservation programs for rare species and natural communities statewide. Examples include providing support for a biologist whose primary purpose is to work with private landowners to find conservation solutions for populations of high priority plant species, establishing a Gopher Tortoise Liason to work with public and private landowners on conservation programs for gopher tortoises and habitat associates, and assisting with prioritization of NRCS funded projects focusing on habitat improvements in stream corridors.</p>	H	<p>While a state-wide focus is appropriate for certain conservation objectives (e.g., conservation planning, database development and maintenance, technical support on state-wide policy), most on the ground conservation activities require persistent focus at the regional and local scale. Many other states have regionalized their nongame programs. Resources, funds, and information are available to protect target species, but existing staff do not have time to work closely with individual landowners over time to secure protection and establish conservation practices. Many populations of rare species require active management and monitoring. Additional staff are needed to provide adequate technical assistance to landowners and managers.</p>	<p>Regionalization schemes utilized in other states and corresponding benefits and costs. Assessments of most pressing regional staffing needs. Landowner information, status of known populations and condition of important sites.</p>	<p>Number of regions with aquatic, terrestrial, and stewardship staff. Number of regional conservation initiatives with ongoing WRD participation and technical support. Improved rapport with landowners, acres protected, conservation practices implemented.</p>
<p>Restore 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 Wildlife & Natural Heritage Section, but could also support nongame conservation efforts by other WRD Sections as well as DNR's conservation partners.</p>	VH	<p>More than a decade of successive budget cuts in DNR have resulted in the loss of all state funding for WRD's Nongame Wildlife & Natural Heritage Section. Staff and programs are supported entirely by private donations and federal grants. 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 expected to decrease as more competing license plates become available. 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. Restoring state funding for the Nongame Wildlife & Natural Heritage Section would free up additional funds for education-related efforts and provide more matching funds for federally funded projects.</p>	<p>Information on current levels and sources of funding for nongame wildlife conservation efforts, including staff support, equipment, project-related expenses. Information on funding needed to support future efforts to conserve high priority species and habitats, provide environmental education and outreach programs to the public, and meet matching fund requirements for federal grants.</p>	<p>Restoration of state funding for nongame wildlife conservation programs and staff in WRD.</p>
<p>Strengthen coalition of environmental organizations to communicate CWCS objectives and work for environmental improvements.</p>	VH	<p>A stronger and more coordinated coalition of conservation partners is needed to call attention to wildlife and habitat conservation needs statewide.</p>	<p>Number of wildlife conservation initiatives proposed and discussed with decision makers.</p>	<p>State policy and funding to support wildlife conservation and habitat protection.</p>
<p>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.</p>	M	<p>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 adjacent habitat will be explored.</p>	<p>Location, condition and extent of rare plant populations. GPS coordinates, management requirements, potential site viability, land ownership.</p>	<p>Number of rare plant populations delineated and protected through special management guidelines.</p>
<p>Inform FEMA about opportunities to improve fish passage when natural disasters destroy culverts. Educate counties about the impacts of poorly designed culverts on fish passage. Initiate discussion with GDOT on road crossing guidelines</p>	H	<p>The impact of poorly designed road crossings on fish passage is pervasive and thoroughly documented in the fishery literature. These structures effectively isolate aquatic species from productive feeding and breeding habitats in headwater streams.</p>	<p>Information on number of stream culverts replaced with bottomless culverts or free-span bridges</p>	<p>Number of pipe culverts upgraded to bottomless culverts or free-span bridges. Number of culverts embedded below stream bed level</p>

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
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
Reduce Impacts From Development and Other Activities	Provide fish passage around dams and other major stream barriers for diadromous fish and other species.	Management and Education	Ongoing	Diadromous fish	All	All	Private, NFWF, USFWS, COE	USFWS, NOAA-Fisheries, FERC	USFWS, NOAA-Fisheries, power companies, DNR, GA DOT, COE, TNC
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 Ohoopsee River and Altamaha River	Unknown	DNR, GON	ATV manufacturers
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, state matching construction funds	DNR, USFS	GDOT, county road departments
Reduce Impacts From Development and Other Activities	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 High Priority Species and Habitats	All	All	Federal Highway ROW funds; State Wildlife Grants, Nongame Wildlife Fund, Georgia Wetland Trust Fund	DNR, GDOT, FWHA, MBRT	USFWS, COE, EPA, TNC, GEPI, EPD, UGA, National Mitigation Banking Association, land trusts
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	Various - 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	Developers, site managers, property owners, neighborhoods, property associations, county governments

Description	Priority (VH,H,M)	Comments/Justification	Data Collected	Performance Indicators
Make data available by HUC 10 watersheds on WRD website; post high priority streams on GIS clearinghouse; incorporate final high priority streams 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	H	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
Provide passage at existing fish barriers. Primary target species are diadromous, but also include resident stream fish that are currently isolated by dams.	M	Passage is needed to provide access to additional spawning habitat and to increase gene flow in isolated fish populations	Fish movement, available habitat and population estimates for diadromous fish.	Increased populations of diadromous fish based on available spawning/rearing habitat gained through passage. Documentation of movement past barriers for isolated populations.
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.
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	H	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.
Develop an MOU between DNR and GDOT to facilitate collaborative efforts 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.
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. (see "BMPs for Development" table)	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 on erosion and sedimentation control BMPs. 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.