United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/DH NRDAR

Memorandum March 23, 2017

To: Field Supervisor, Jackson Ecological Services Field Office, Mississippi

From: Deputy *Deepwater Horizon* Natural Resource Damage Assessment and Restoration (NRDAR), Department of the Interior Case Manager

Subject: Informal Consultation Request for the Proposed Upper Pascagoula Water Quality Improvement Project, Mississippi

Overview

The Upper Pascagoula River Water Quality Enhancement Project is currently being evaluated as a potential restoration project to restore natural resources in Mississippi that were injured as a result of the *Deepwater Horizon* (*DWH*) oil spill. We have reviewed this project in accordance with Section 7 of the ESA and request your concurrence.

Background

After the *DWH* oil spill, federal and state natural resource trustee agencies (Trustees) came together to assess the effects of the spill and plan for the restoration of injured natural resources. As part of the legal settlement reached with BP in 2016, the Trustees prepared a Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement (Final PDARP/PEIS), to provide the framework for *DWH* oil spill restoration across the Gulf.

The Final PDARP/PEIS established Trustee Implementation Groups (TIGs) that develop plans for, choose, and implement specific restoration actions under the Final PDARP/PEIS. The Mississippi Trustee Implementation Group (MS TIG) is made up of the following agencies: Mississippi Department of Environmental Quality; U.S. Department of the Interior, as represented by the National Park Service, U.S. Fish and Wildlife Service (FWS), and Bureau of Land Management; National Oceanic and Atmospheric Administration, on behalf of the U.S. Department of Commerce; U.S. Department of Agriculture (USDA); and U.S. Environmental Protection Agency.

The MS TIG is currently evaluating the subject project as a potential restoration project under the MS TIG Draft 2016-2017 Restoration Plan/Environmental Assessment (Draft RP/EA), which was released for public review and comment on December 27, 2016. If the MS TIG selects the subject project, the USDA's Natural Resources Conservation Service (NRCS) would implement the project. This project would reduce nutrients and improve water quality within a 20,000-acre area of Clarke, Kemper, Lauderdale, Neshoba, and Newton Counties in the Chunky-Okatibbee

Watershed. As part of the project, the NRCS would develop conservation plans and provide financial assistance to private landowners who are willing to implement NRCS conservation practices to improve water quality.

Consultation History

On September 13, 2016, the NRCS completed ESA Section 7 informal programmatic consultation with the FWS for federally listed and candidate species that could be affected by 117 NRCS conservation practices in MS. (See attached.) The programmatic consultation includes a decision matrix listing the 117 conservation practices and the potential effects (if any) to federally listed and candidate species as well as conservation measures required to avoid adverse effects.

After this programmatic consultation was completed, on November 22, 2016 the FWS issued NRCS an amended multi-state programmatic biological opinion and conference opinion on the NRCS Working Lands for Wildlife (WLFW) partnership for the gopher tortoise. (See attached.) The measures identified in the November WLFW biological opinion for the gopher tortoise supersede the minimization measures for the gopher tortoise identified in the September 2016 programmatic consultation. The matrix attached to the Biological Evaluation (BE) form for *Deepwater Horizon* Oil Spill Restoration summarizes the conservation measures for threatened, endangered, and candidate species found in the counties in which NRCS will implement the Upper Pascagoula Water Quality Enhancement Project, if selected.

In addition to the 117 conservation practices addressed in the September 2016 programmatic consultation, there are 2 other conservation practices that may be implemented as part of the subject project on which consultation has not been completed:

- Conservation Activity Code 201, Edge of Field Water Quality Monitoring – Data Collection and Evaluation, and
- Code 202, Edge of Field Water Quality Monitoring – System Installation.

These facts lead us to the conclusion that consultation under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.S 1531 *et seq.),* is required for the proposed project and we wish to engage in such consultation.

We have reviewed the project for potential impacts to listed, candidate, and proposed species, and designated and proposed critical habitats in accordance with Section 7 of the ESA. No proposed species or designated or proposed critical habitats occur in the project area. We determined that Conservation Activity Code 201 will have no effect to any species or critical habitat because there is no ground disturbance as data are collected and evaluated. The monitoring system installation (Conservation Activity Code 202) will cause some ground disturbance but the actual data collection and evaluation simply pulls the recorded data and a small bucket of water the monitoring system has collected from the field. We determined that by following minimization measures AQ, GT1a, and PPB in the matrix accompanying the attached BE form, Conservation Activity Code 202, Edge of Field Water Quality Monitoring – System Installation, may affect, but is not likely to adversely affect Northern long-eared bat, Price's

potato bean, red-cockaded woodpecker, gopher tortoise, wood stork, yellow-blotched map turtle, ringed map turtle, Pearl darter (candidate), and Gulf sturgeon in the Upper Pascagoula Water Quality project area.

Potential effects, conservation measures, and justifications for our determinations are presented in the attached BE form. Within the BE form, we have also reviewed the proposed project for impacts to bald eagles and migratory birds in accordance with the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712), respectively and we determined take would be avoided.

This letter requests your concurrence that the Upper Pascagoula River Water Quality Enhancement Project, may affect, but is not likely to adversely affect Northern long-eared bat, Price's potato bean, red-cockaded woodpecker, gopher tortoise, wood stork, yellow-blotched map turtle, ringed map turtle, Pearl darter (candidate), and Gulf sturgeon.

To facilitate your response, should you concur with our determinations, we have attached a template response letter. If you have questions or concerns regarding this request for informal consultation, please contact Ashley Mills, Fish and Wildlife Biologist, at 812-756-2712 or ashley_mills@fws.gov.

Attachments (4)

- FWS-NRCS Section 7 Programmatic Agreement
- Amended multi-state programmatic biological opinion and conference opinion on the NRCS Working Lands for Wildlife (WLFW) partnership for the Gopher tortoise
- Biological Evaluation (BE) form with 4 attachments:
    - Project map
    - Section G continuation
    - NRCS Conservation Practice List for Nutrient Reduction
    - Measures for Upper Pascagoula Water Quality Project Conservation Practices (matrix)
- Template response letter

MISSISSIPPI NRCS CONSERVATION PRACTICE EFFECTS ON THREATENED, ENDANGERED, AND CANDIDATE SPECIES

September 13, 2016

Through collaboration with the U.S. Fish and Wildlife Service (FWS), this programmatic consultation has been developed for Federally-listed and candidate species that could be encountered during Natural Resources Conservation Service (NRCS) planning and other non-project activities. This document identifies the potential effect of all conservation practices utilized in Mississippi by the NRCS in habitats identified as potentially occupied by Federally-listed or candidate species.

Effects Determination

NRCS, through collaboration with the FWS, has determined that the conservation practices listed below in the consultation matrix will have no effect on eight federally listed species or their critical habitats because these practices are not used in areas where the following species or critical habitat occur: interior least tern, red knot, piping plover, green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and West Indian manatee. Therefore, these species are not included in the matrix.

Installation and/or management of conservation practices "may affect, but are not likely to adversely affect" the wood stork, a threatened species that can be found in Mississippi during the non-breeding season. Many practices, specifically those that create or improve foraging wetland habitat for wood storks, will have a beneficial effect on this species.

In addition, the Louisiana black bear was removed from the Lists of Threatened and Endangered Wildlife under the Endangered Species Act on March 10, 2016 due to recovery. Although no longer federally protected, the black bear remains protected under Mississippi statutes. Therefore, we have added the black bear and recommended minimization measures to the matrix.

As part of the determination process, NRCS staff will have a FWS-provided list of threatened and endangered species by county, an ESRI compatible GIS file that contains listed species by 12-digit Hydrologic Unit Code (HUC), and habitat descriptions for each species. A determination of "no effect" may be made for a practice when it is implemented in a county or 12-digit HUC lacking listed species or at a site that is not within or adjacent to any listed species habitat or upstream of aquatic listed species. When a practice would be implemented within or adjacent to any listed species habitat or upstream of aquatic listed species, NRCS staff should use information in the following matrix to assist with their determination.

All listed conservation practices conforming to the Environmental Quality Incentives Program, Conservation Stewardship Program, Agricultural Conservation Easement Program (including

compatible use authorizations), Healthy Forests Reserve Program, and the Regional Conservation Partnership Program standards are covered by this programmatic consultation. NRCS should consult with FWS on a case-by-case basis when practices will not conform to the prescribed standards.

Please note that the FWS provided a biological opinion and conference report/opinion in 2012 that evaluated the adverse, benign, and beneficial effects and consequences of NRCS's Working Lands for Wildlife Program for the gopher tortoise (WLFW-GT). Therefore, that biological opinion (and any future revisions) and the effects determinations for the conservation practices identified with the WLFW-GT supersede those listed in this programmatic consultation for gopher tortoise when those practices are implemented for the overall conservation and restoration of gopher tortoise habitat.

Matrix Description

This matrix presents all conservation practices considered during the programmatic consultation (ordered numerically) and the potential affects (if any) to federally listed species and any minimization criteria needed for each practice to avoid potential adverse effects to listed species. The matrix lumps species together based on habitat similarities or when a minimization criterion is the same for numerous species. See Table 1.

If a conservation practice has a "---" in the sub-column under a species column list, then NRCS and FWS have determined this practice will have no effect on this species or that the practice will be completely beneficial to the species. If a sub-column has a criteria symbol, then NRCS will need to adopt one or more (as needed) of the protective measures described under the criteria symbol below or contact the NRCS area and/or state biologist point of contact (POC) if the practice will adversely impact suitable habitat. The NRCS POC will coordinate with FWS before a final effect's determination is made. Note that coordinating with the FWS does not necessarily mean the practice cannot be installed; in fact, additional review and documentation with the FWS may be sufficient.

Table 1. Species identified by columns in the matrix are as follows.

Column Name	Species	Criteria Symbol
Aquatic Species	Alabama moccasinshell, Alabama red-bellied turtle, Bayou darter, Black clubshell, Cumberlandian combshell, Fat pocketbook, Gulf sturgeon, Heavy pigtoe, Inflated heelsplitter, Louisiana quillwort, Orange-nacre mucket, Ovate clubshell, Pallid sturgeon, Pearl darter, Rabbitsfoot, Ringed map turtle, Sheepsnose, Slabside pearlymussel, Snail darter, Snuffbox, Southern clubshell, Southern combshell, and Yellow-blotched map turtle	AQ1,AQ2, AQ3
Birds	Mississippi sandhill crane	MSC
	Red-cockaded woodpecker	RCW
Insects	Mitchell's satyr butterfly	MSB
Longleaf Pine Herpetofauna	Black pinesnake	BPS
	Dusky gopher frog	DGF
	Gopher tortoise	GT1,GT2
Mammals	Gray, Indiana, and Northern long-eared bats	Bat1,Bat2,Bat3
	Louisiana black bear	LBB
Plants	Pondberry	PondB
	Price's potato bean	PPB
	White fringeless orchard	WFO

Avoidance/Minimization Criteria

AQ1 – Contact NRCS POC if installation and/or management of conservation practice will occur within 50 feet of a stream within a 12-digit HUC containing aquatic listed species, and one or more, as needed, of the following protective measures cannot be implemented. Protective measures when working near suitable habitat for listed aquatic species includes: no mechanized clearing within 50 feet of streams; installing BMP's such as vegetated buffers to prevent erosion and sedimentation into streams; fencing livestock out of streams; and minimizing stream crossings associated with forest trails and landings Conservation Practice Code (P.C.) 655.

AQ2 – Contact NRCS POC if instream work (e.g. snagging, channel realignment, bank armoring, dams, bridge pilings, culverts) is proposed within a 12-digit HUC with listed aquatic

species. Protective measures include using appropriate BMP's to prevent erosion and sedimentation into streams; designing stream crossings to ensure that the natural flow and hydrology of the stream is maintained year-round; and preventing barriers to fish and other aquatic organism passage associated with instream work.

AQ3 – Contact NRCS POC if pesticides will be used within 100 feet of a stream (or 200 feet for aerial pesticide applications) within a 12-digit HUC containing aquatic listed species, and one or more, if needed, of the following protective measures cannot be implemented. Protective measures include using spot treatment techniques (e.g. hack and squirt, basal bark, cut stump and direct foliar spray), using selective herbicides that maintain native grasses, avoiding pesticide drift into non targeted area by not spraying when wind speeds are over 10 mph, and avoiding runoff into non-target streams by applying during dry weather when rainfall is not expected within 24 hours. WINPEST evaluations will be conducted to identify measures to prevent polluting surface and ground waters or affecting non-target species.

Bat1 – No tree removal (i.e., trees over 3 inch diameter at breast height) during the summer roosting season (i.e. April 15-August 31) for projects within 150 feet of a known NLEB summer roost site. No tree removal during the summer roosting season for all projects within the IBAT summer roosting range of MS. See the GIS HUC file for 12-digit HUCs with known NLEB roosts or the IBAT summer roosting range. Contact NRCS POC if trees must be removed during the summer roosting season.

Bat2 – Include bat mitigation efforts (bat gates) for the closing of natural caves and/or abandoned mines that have evidence of bat use. Avoid disturbance (e.g. use of machinery, building of roads, application of pesticides) of foraging areas near known bat caves by adhering to an activity buffer distance of 200 foot radius from the cave entrance. Maintain snags within ½ mile radius of cave entrances. See the GIS HUC file for 12-digit HUCs with known IBAT/NLEB caves. P.C. 500 should avoid impacts to bats hibernating or roosting in old buildings.

Bat3 – Conduct prescribed burns and application of pesticides outside of the summer roosting season (i.e., April 15-August 31) for projects within 2.5 miles of a known IBAT summer roost site or within 150 feet of a known NLEB summer roost site. See the GIS HUC file for 12-digit HUCs with known roosts. Spot treatment is preferred over aerial application.

BPS – Contact NRCS POC if longleaf pine forests will be permanently converted or degraded by any means (e.g. clearing, flooding, stump removal) within a 12-digit HUC known or potentially occupied by black pinesnakes. Forest stand improvements and other practices designed to improve longleaf forest conditions are acceptable (e.g. burning, thinning, herbicides).

DGF – Contact NRCS POC if installation and/or management of conservation practice will adversely impact ephemeral ponds and adjacent upland longleaf pine habitat within a 12-digit HUC containing dusky gopher frog critical habitat and one or more, as needed, of the following

protective measures cannot be implemented. Protective measures include no clearing, draining, ditching, creation of firebreaks, non-selective herbicide use, and/or land mechanical treatment within 50 feet of ephemeral ponds. Adjacent longleaf pine habitat should not be permanently converted or degraded by any means (e.g. clearing, flooding, stump removal); however, forest stand improvements and other practices designed to improve longleaf forest conditions are acceptable (e.g. burning, thinning, herbicides).

GT1 – Heavy equipment (including mowers) will stay at least 4 meters (13 feet) from known gopher tortoise burrows. Contact POC if assistance is needed to conduct gopher tortoise surveys. This applies to all practices where heavy equipment is used. Heavy equipment is defined as agricultural tractors, crawler loaders, crawler dozer, backhoe/loader, front end loader, scraper pan, motor grader, skid steer, forklift (P.I.T.), hydraulic excavator, and specialty tracked equipment. Felling of trees and brush, cutting by hand, hack and squirt, backpack application, or use of herbicide pellets is allowed within this buffer.

GT2 – Fencing should be installed so as to allow for the safe passage of gopher tortoises. When fencing for small ruminants (e.g., goats), avoid fencing in tortoise burrows.

LBB – Actual, candidate, or potential den trees (any tree with DBH $\geq$ 36 inches), regardless of the species or proximity to water, should not be removed or damaged during practice installation or maintenance. Heavy equipment should maintain a minimum 50 foot buffer from the trunk or a 10 foot buffer around the tree starting from the farthest extent of its canopy, whichever is greater.

MSB – Contact NRCS POC if installation and/or management of conservation practice will occur within 50 feet of herbaceous-shrub wetlands (typically influenced by beaver activities) within a 12-digit HUC containing potential Mitchell's satyr butterfly habitat, and one or more, as needed, of the following protective measures cannot be implemented. Protective measures include no clearing, filling, permanent inundation, or insecticide use within herbaceous shrub wetlands and adopting BMP's such as vegetated buffers to prevent sedimentation into wetlands.

MSC – Contact NRCS POC if installation and/or management of conservation practice will affect MS Sandhill Crane behavior (e.g. nesting, roosting, foraging) and/or adversely alter fire-maintained pine savannah habitat within a 12-digit HUC containing potential MSC habitat (generally south of Latimer, Vancleave, and Helena, MS). Forest stand improvements and other practices designed to improve pine savannah conditions are acceptable (e.g. burning, thinning, herbicides).

PondB – Contact NRCS POC if installation and/or management of conservation practice will permanently convert (e.g. clearing, filling, permanent inundation) bottomland hardwood forest habitat within a 12-digit HUC containing potential pondberry habitat. Forest stand improvements and other practices designed to improve bottomland hardwood forest conditions are acceptable

(i.e. WRP hardwood thinning of <20 year old planted stands) within potential suitable pondberry habitat where populations are not currently present.

PPB – Contact NRCS POC if installation and/or management of conservation practice will adversely affect (i.e. clear, thin, land mechanical treatment, herbicide use) suitable Price's potato bean habitat (i.e. forest openings in mixed hardwood stands on slopes or bluffs of alkaline soils that grade into creek or stream bottoms) within a 12-digit HUC containing potential PPB habitat. Kudzu control using herbicides or mechanical treatment is acceptable (beneficial effect) within potential suitable PPB habitat where populations are not currently present.

RCW – Contact NRCS POC if installation and/or management of conservation practice will convert, remove, damage, or degrade foraging habitat (i.e. southern yellow pine tree species greater than or equal to 10 inch DBH in a pine-dominated stand) or potential cavity trees (i.e. pine trees 60 years old or older) within 0.5 mile of an active cluster. See GIS HUC file for 12-digit HUCs with known or potential RCW clusters.

WFO – Contact NRCS POC if installation and/or management of conservation practice will permanently remove suitable white fringeless orchid habitat (i.e., spring heads, pools, and runs; and wet, boggy areas at the heads of streams and on sloping areas moist by groundwater seeping to the surface) in a 12-digit HUC containing WFO.

Table 2. NRCS Conservation Practice Effects on Federally Threatened & Endangered Species

Code	Conservation Practice	Aquatic Species (21)	Birds (2)	Insects (1)	Longleaf Herps (3)	Mammals (4)	Plants (3)
309	Agrichemical Handling Facility	AQ1	---	---	---	---	---
310	Bedding	AQ1	MSC	MSB	GT1 BPS DGF		PPB PondB WFO
313	Waste Storage Facility	AQ1	---	---	GT1	---	---
314	Brush Management	AQ1 AQ3	---	MSB	GT1 BPS DGF	---	PPB PondB WFO
315	Herbaceous Weed Control	AQ1 AQ3	---	MSB	GT1 BPS DGF	---	PPB PondB WFO
316	Animal Mortality Facility	AQ1	---	---	GT1	---	---
317	Composting Facility	AQ1	---	---	GT1	---	---
319	On-Farm Secondary Containment Facility	AQ1	---	---	GT1	---	---
320	Irrigation Canal or Lateral	AQ1 AQ2	---	---	---	---	PondB
324	Deep Tillage	AQ1	---	---	GT1	---	---
325	High Tunnel System	AQ1	---	---	GT1	---	---
326	Clearing and Snagging	AQ1 AQ2	---	---	---	---	WFO
327	Conservation Cover	---	---	---	GT1	---	---
328	Conservation Crop Rotation	---	---	---	---	---	---
329	Residue and Tillage Management, No-Till/Strip Till/Direct Seed (Farm only)	---	---	---	---	---	---
330	Contour Farming	---	---	---	---	---	---
331	Contour Orchard and Other Perennial Crops	---	---	---	---	---	---
332	Contour Buffer Strips	---	---	---	---	---	---
333	Amending Soil Properties with	AQ1	---	---	---	---	---

Code	Conservation Practice	Aquatic Species (21)	Birds (2)	Insects (1)	Longleaf Herps (3)	Mammals (4)	Plants (3)
	Gypsum Products						
338	Prescribed Burning	---	---	---	---	Bat3	---
340	Cover Crop	---	---	---	---	---	---
342	Critical Area Planting	AQ1	---	---	GT1	---	PPB
345	Residue and Tillage Management, Reduced Till	---	---	---	---	---	---
348	Dam, Diversion	AQ1 AQ2	---	---	---	---	PondB
350	Sediment Basin	AQ1	---	---	GT1	---	PPB WFO
351	Well Decommissioning	---	---	---	---	---	---
356	Dike	AQ1	---	---	---	---	PondB
359	Waste Treatment Lagoon	AQ1	---	---	GT1	---	---
360	Waste Facility Closure	---	---	---	---	---	---
362	Diversion	AQ1	---	---	---	---	PondB
368	Emergency Animal Mortality Management	AQ1	---	---	GT1	---	---
378	Pond	AQ1 AQ2	---	---	GT1 DGF	Bat1	PondB WFO
381	Silvopasture Establishment	---	MSC	---	GT1 BPS DGF	---	---
382	Fence	---	---	---	GT1 GT2	---	---
386	Field Border	---	---	---	GT1	---	---
388	Irrigation Field Ditch	AQ1 AQ2	---	---	---	---	PondB
390	Riparian Herbaceous Cover	---	---	---	---	---	---
391	Riparian Forest Buffer	---	---	---	---	---	---
393	Filter Strip	---	---	---	---	---	---
394	Firebreak	AQ1	---	---	GT1 DGF	Bat1	---
395	Stream Habitat Improvement and	AQ1 AQ2	---	---	---	---	WFO

Code	Conservation Practice	Aquatic Species (21)	Birds (2)	Insects (1)	Longleaf Herps (3)	Mammals (4)	Plants (3)
	Management						
396	Aquatic Organism Passage	AQ1 AQ2	---	---	---	---	WFO
397	Aquaculture Ponds	AQ1	MSC	---	DGF	Bat1	PondB WFO
399	Fishpond Management	AQ3	---	---	---	---	---
402	Dam	AQ1 AQ2	---	MSB	---	---	PPB PondB WFO
410	Grade Stabilization Structure	AQ1	---	---	GT1	---	PPB PondB
412	Grassed Waterway	---	---	---	---	---	---
422	Hedgerow Planting	---	---	---	GT1	---	---
428	Irrigation Ditch Lining	AQ1 AQ2	---	---	---	---	---
430	Irrigation Pipeline	AQ1 AQ2	---	---	---	---	PondB
432	Dry Hydrant	AQ1	MSC	---	GT1 DGF	---	WFO
436	Irrigation Reservoir	AQ1	---	---	---	Bat1	PondB
441	Irrigation System, Microirrigation	AQ1	---	---	---	---	---
442	Sprinkler System	AQ1	---	---	---	---	---
443	Irrigation System, Surface and Subsurface	AQ1	---	---	---	---	---
447	Irrigation System, Tailwater Recovery	AQ1	---	---	---	Bat1 LBB	PondB
449	Irrigation Water Management	---	---	---	---	---	---
450	Anionic Polyacrylamide (PAM) Application	AQ1	---	---	---	---	---
460	Land Clearing	AQ1	MSC RCW	MSB	GT1 BPS DGF	Bat1 LBB	PPB PondB WFO
462	Precision Land Forming	AQ1	---	---	---	---	PondB
464	Irrigation Land Leveling	AQ1	---	---	---	---	PondB
468	Lined Waterway or Outlet	AQ1 AQ2	---	---	---	---	---

Code	Conservation Practice	Aquatic Species (21)	Birds (2)	Insects (1)	Longleaf Herps (3)	Mammals (4)	Plants (3)
472	Access Control	---	---	---	GT1	Bat2	---
484	Mulching	AQ1	---	---	---	---	---
490	Tree/Shrub Site Preparation	AQ1 AQ3	MSC	---	GT1 BPS DGF	---	PPB PondB WFO
500	Obstruction Removal	AQ1	---	---	GT1	Bat2	---
511	Forage Harvest Management	---	---	---	GT1	---	---
512	Forage and Biomass Planting	---	---	---	GT1	---	---
516	Livestock Pipeline	AQ1	---	---	GT1 DGF	---	WFO
528	Prescribed Grazing	---	---	---	---	---	---
533	Pumping Plant	AQ1	---	---	---	---	---
543	Land Reclamation, Abandoned Mined Land	AQ1	---	---	GT1	---	---
544	Land Reclamation, Currently Mined Land	AQ1	---	---	GT1	---	---
548	Grazing Land Mechanical Treatment	AQ1	---	MSB	GT1 BPS DGF	Bat1	PPB WFO
554	Drainage Water Management	---	---	---	---	---	---
557	Row Arrangement	---	---	---	---	---	---
560	Access Road	AQ1	MSC RCW	MSB	GT1 BPS DGF	Bat1 LBB	PPB PondB WFO
561	Heavy Use Area Protection	AQ1	---	---	GT1 BPS DGF	---	WFO
572	Spoil Spreading	AQ1	---	---	GT1 BPS DGF	---	PPB PondB WFO
574	Spring Development	AQ1 AQ2	---	MSB	---	---	WFO
576	Livestock Shelter Structure	AQ1	---	---	GT1 DGF	---	WFO
578	Stream Crossing	AQ1 AQ2	---	---	---	---	---
580	Streambank and Shoreline Protection	AQ1 AQ2	---	---	---	---	PPB

Code	Conservation Practice	Aquatic Species (21)	Birds (2)	Insects (1)	Longleaf Herps (3)	Mammals (4)	Plants (3)
582	Open Channel	AQ2	---	---	---	---	---
584	Channel Bed Stabilization	AQ2	---	---	---	---	---
585	Stripcropping	---	---	---	---	---	---
587	Structure for Water Control	AQ1 AQ2	---	MSB	DGF	---	PondB WFO
590	Nutrient Management	AQ1	---	MSB	---	---	WFO
591	Amendments for Treatment of Agricultural Waste	---	---	---	---	---	---
595	Integrated Pest Management (IPM)	AQ1 AQ3	MSC RCW	MSB	GT1 BPS DGF	Bat3	PPB PondB WFO
600	Terrace	AQ1	---	---	---	---	---
601	Vegetative Barrier	---	---	---	---	---	---
606	Subsurface Drain	AQ1	---	---	---	---	---
607	Surface Drainage, Field Ditch	AQ1 AQ2	---	---	---	---	---
608	Surface Drainage, Main or Lateral	AQ1 AQ2	---	---	---	---	---
612	Tree/Shrub Establishment	---	MSC	---	GT1	---	---
614	Watering Facility	AQ1	---	---	GT1 DGF	---	WFO
620	Underground Outlet	AQ1 AQ2	---	---	---	---	---
629	Waste Treatment	AQ1	---	---	GT1	---	---
633	Waste Recycling	AQ1	---	---	GT1	---	---
634	Waste Transfer	AQ1	---	---	GT1 DGF	---	---
635	Vegetated Treatment Area	AQ1 AQ3	---	---	DGF	---	---
638	Water and Sediment Control Basin	AQ1	---	---	GT1	---	PPB WFO
642	Water Well	AQ1	---	---	GT1 DGF	---	WFO
643	Restoration and Management of Rare and Declining	AQ1 AQ2 AQ3	MSC RCW	MSB	GT1 BPS DGF	Bat1 LBB	PPB PondB WFO

Code	Conservation Practice	Aquatic Species (21)	Birds (2)	Insects (1)	Longleaf Herps (3)	Mammals (4)	Plants (3)
	Habitats						
644	Wetland Wildlife Habitat Management	AQ1 AQ3	MSC	MSB	DGF	Bat1 LBB	PondB WFO
645	Upland Wildlife Habitat Management	AQ1 AQ3	MSC RCW	---	GT1 BPS DGF	Bat1 LBB	PPB
646	Shallow Water Development and Management	AQ1 AQ3	MSC	MSB	DGF	Bat1 LBB	PondB WFO
647	Early Successional Habitat Development/ Management	AQ1 AQ3	MSC RCW	MSB	GT1 BPS DGF	Bat1 LBB	PPB PondB WFO
649	Structures for Wildlife	AQ1 AQ2	RCW	---	---	Bat1	---
655	Forest Trails and Landings	AQ1	MSC RCW	MSB	GT1 BPS DGF	Bat1 LBB	PPB PondB WFO
656	Constructed Wetland	AQ1	---	---	DGF	---	WFO
657	Wetland Restoration	AQ1 AQ3	MSC	MSB	DGF	Bat1 LBB	PondB WFO
658	Wetland Creation	AQ1 AQ3	MSC	MSB	DGF	Bat1 LBB	PondB WFO
659	Wetland Enhancement	AQ1 AQ3	MSC	MSB	DGF	Bat1 LBB	PondB WFO
660	Tree/Shrub Pruning	---	RCW	---	GT1	Bat1	---
666	Forest Stand Improvement	AQ1 AQ3	MSC RCW	MSB	GT1 BPS DGF	Bat1 LBB	PPB PondB WFO

APPENDIX A

Letter Requesting Concurrence and Support by NRCS

and

Letter Acknowledging Concurrence and Support from USFWS

USDA

United States Department of Agriculture

September 13, 2016

Mr. Stephen Ricks
Supervisor, MS Ecological Services Field Office
U.S. Fish and Wildlife Service
6578 Dogwood View Parkway, Suite A
Jackson, MS 39213

Dear Mr. Ricks,

The Natural Resources Conservation Service (NRCS) in Mississippi uses standardized conservation practices and specifications to ensure proper establishment, management and maintenance of all structural and management components for improvement of soil, water, air, plant, and animal (including wildlife) resources. Currently, there are 117 NRCS conservation practices utilized in Mississippi to promote conservation of natural resources. Beginning in March of 2016, NRCS and U. S. Fish and Wildlife Service (USFWS) biologists representing the Jackson Ecological Services Field Office consulted informally on the effects of 117 NRCS conservation practices utilized in Mississippi to promote conservation of natural resources. This team made determinations of the effects on federally listed species and developed a process to streamline the procedure for compliance with Section 7 of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). The product of this programmatic ESA consultation effort is the attached document called, "**Mississippi NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species**." This document includes a decision matrix listing the 117 conservation practices and indicates when those practices are not likely to adversely affect federally listed species, or have the potential to have adverse impacts, but can utilize minimization measures to reduce impacts to the level of "not likely to adversely affect."

Current agency policy states that when NRCS provides technical assistance by developing, updating, or revising conservation plans for clients, NRCS staffs are to conduct an Environmental Evaluation (EE) that includes ESA compliance as part of the evaluation. If the proposed action may affect listed/proposed species, NRCS shall provide alternatives that avoid any adverse effects, based on informal consultation with USFWS. If no alternatives that avoid the effect can be identified, or the client chooses to pursue an alternative that may adversely affect listed/proposed species, NRCS shall terminate technical assistance and inform the client of their potential liabilities for violation of Section 9 (take provision) of the ESA. NRCS will also direct the client to contact the USFWS for resolution. Please note that any formal or informal consultation with the USFWS that may identify a client, a species presence or a species habitat location requires written permission from the client. The results of the EE are documented on form CPA-52 Environmental Evaluation Worksheet, and maintained in the NRCS case file. Upon USFWS concurrence of this programmatic ESA consultation effort, NRCS in Mississippi will conduct planning and implementation of the proposed action using information and guidance from the document "**Mississippi NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species.**"

USDA, Natural Resources Conservation Service
Suite 1321, Federal Building, 100 West Capitol Street, Jackson, MS 39269
Voice 601.965.5205 Fax 601.965.4940

Implementation of conservation measures utilizing the process, as described above, efficiently and effectively provides compliance with the ESA. This process ensures that considerations for threatened, endangered, and candidate species and their habitats are incorporated into NRCS's conservation planning, technical assistance, and program implementation efforts by utilizing the pre-screening efforts of the USFWS under this programmatic ESA consultation. This effort also assists NRCS in meeting its responsibilities under Section 7(a)(1) of the ESA to further the purposes of the ESA by carrying out programs for the conservation of threatened and endangered species. NRCS conservation programs and technical assistance efforts represent an outstanding opportunity to provide high quality habitat benefits for fish and wildlife and to contribute towards the recovery of many at-risk species.

Because NRCS provides technical and financial assistance for many conservation measures each year in Mississippi, we plan to meet annually with the USFWS to review and discuss the types of practices planned, any conservation practice updates, the issues encountered while implementing the decision matrix and to verify that the intent of the matrix is being achieved and to identify needs for improvements. Therefore, I request USFWS concur with our determination that the conservation practices listed in the document "**Mississippi NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species**" will not affect 8 federally listed species (as described in that document) and may affect, but are not likely to adversely affect, the remaining federally listed species in Mississippi (as described in the decision matrix). Thank you for your cooperation and partnership with this priority resource endeavor.

Sincerely,

Kurt Readus
State Conservationist

cc: Scott Culberson, ASTC Programs, Jackson, MS
Delaney Johnson, Acting State Resource Conservationist, Jackson, MS

Attachment

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mississippi Ecological Services Field Office
6578 Dogwood View Parkway, Suite A
Jackson, Mississippi 39213
Phone: (601)965-4900 Fax: (601)965-4340

September 20, 2016

IN REPLY REFER TO:
2016-I-810

Mr. Kurt Readus
State Conservationist
Natural Resources Conservation Service
100 West Capital Street
Jackson, Mississippi 39269

Dear Mr. Readus:

The Fish and Wildlife Service (Service) has reviewed the information in your letter dated September 13, 2016, regarding the Natural Resources Conservation Service's (NRCS) request for informal consultation on the effects of standardized conservation practices to federally listed species in Mississippi. As stated in your letter, our offices have worked closely together over the past year to analyze the effects of NRCS conservation practices on federally listed and candidate species in Mississippi and develop minimization measures to reduce potential adverse effects that could occur. The result of this effort is a decision matrix document titled "Mississippi NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species". Based on the successful implementation of this decision matrix, the Service concurs with your determination that NRCS conservation practices will have "no effect" on the interior least tern, red knot, piping plover, green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and West Indian manatee; and "may affect, but is not likely to adversely affect" all other species currently listed as candidate, threatened, or endangered in Mississippi.

Due to the programmatic nature of this consultation, we look forward to meeting with your staff annually to discuss the progress of implementing the decision matrix, to make modifications that strengthen or clarify the document, and to analyze and include future conservation practices into the matrix.

We commend your staff for the excellent job they have done with this consultation and offer our assistance in any way that may be beneficial to you. We appreciate your efforts to further the conservation of federally listed and at-risk species in Mississippi and look forward to working with you in the future.

Please feel free to contact me at (601) 321-1122 or David Felder of my staff at (601) 321-1131 regarding future coordination on this programmatic consultation.

Sincerely,

Stephen M. Ricks
Field Supervisor
Mississippi Field Office

APPENDIX B

GUIDANCE DOCUMENT FOR ENDANGERED SPECIES ACT (ESA) AND NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE IN MISSISSIPPI

GUIDANCE DOCUMENT FOR ENDANGERED SPECIES ACT (ESA) AND NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE IN MISSISSIPPI

The National Environment Policy Act (NEPA) is a law passed by Congress in 1969 and signed into law on January 1, 1970. NEPA makes Federal agencies accountable to the public for the environmental impacts of their actions. The Council on Environmental Quality (CEQ) has written regulations that establish the procedures NRCS and other Federal agencies must follow to meet NEPA requirements. These regulations require Federal agencies to follow a systematic process when a Federal action is proposed. Threatened & Endangered (T&E) species is one of several categories NRCS must evaluate for impacts.

Departmental and NRCS policy for complying with NEPA establishes policy whereby NRCS field offices will conduct an Environmental Evaluation to determine the potential effects of alternative solutions to resource problems for all planning activities and document the results of the evaluation on form NRCS-CPA-52, "Environmental Evaluation Worksheet" ("EE") including the appropriate finding.

Section 7a(2) of the Endangered Species Act (ESA) of 1973 requires NRCS, in consultation with and with the assistance of the Secretary of the Interior, to insure that its agency actions and activities do not jeopardize the continued existence of T&E species or result in the destruction or adverse modification of the species' critical habitat. The U.S. Fish and Wildlife Service (FWS) designates the extent and location of a particular species' critical habitat. Critical habitats identify areas essential to the conservation of federally listed species. The NRCS policy for T&E species is contained in the General Manual 190 Part 410.22 and the National Planning Procedures Handbook section 600.45. It states that NRCS will assist in the conservation of T&E species and consistent with legal requirements, avoid or prevent activities detrimental to such species. In addition, the ESA states that NRCS will use its authorities in furtherance of the purposes of this act by carrying out programs for the conservation of listed species.

GUIDANCE FOR NRCS PROJECT TYPE ACTIVITY (i.e. PL-566, Emergency Watershed Program)

NRCS must initiate consultation as outlined in Title 50, Chapter IV, Part 402, Code of Federal Regulations, when the NRCS-CPA-52 (Environmental Evaluation) indicates that a NRCS project type activity may adversely or beneficially affect a listed species or their critical habitat.

GUIDANCE FOR NRCS NON-PROJECT TYPE ACTIVITY (Includes all conservation planning and program activities even if only Technical Assistance is being provided.)

Conservation planners will follow this process to ensure compliance with the Endangered Species Act and National Environmental Policy Act (NEPA). Conservation planners must determine if planned conservation practices will have an effect on any listed species or critical habitat and document the findings on the NRCS-CPA-52, Environmental

Evaluation Worksheet ("EE"). To help conservation planners in making these determinations the following information and process will be used by the field office personnel.

1) **Mississippi Federally and State Threatened and Endangered Species List By County (COUNTY T&E SPECIES LIST)** – This is a FWS-provided list of threatened and endangered species by county and habitat descriptions for each species. More detailed information is also provided on aquatic species such as watershed, and stream name in a separate excel file. These lists will be updated as needed.

2) **GIS Data Layers used in Customer Service Toolkit (CST) 8.1 and 9.0.** Geospatial data layers are delivered to the NRCS GIS Specialist for all federally and state listed T&E species using a Google Earth KMZ file that contains listed species by 12-digit Hydrological Unit Code (HUC). NRCS GIS Specialist will provide timely and updated geospatial data layers to the appropriate personnel.

3) **NRCS Mississippi ESA Programmatic Consultation of NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species** – This guidance document matrix provides information on whether an NRCS practice could potentially affect a listed species or its habitat. It also provides a course of action for field office personnel to take when an adverse impact is indicated. This information will be updated as needed. **(Table 2. NRCS Conservation Practice Effects on Federally Threatened & Endangered Species is also referred to as the "Practice Effects Document".)**

CONSERVATION PLANNER's T&E DOCUMENTATION PROCESS

Conservation planners should become familiar with listed species in the counties they serve by reviewing the COUNTY T&E SPECIES LIST. Habitat types for the species that preside in a planners work area should be reviewed in the habitat descriptions for each species. Conservation Planners shall follow the process below to determine required course(s) of action and resulting effects when working with Threatened and Endangered Species, to complete the Threatened and Endangered Species Guide Sheets in the NRCS-CPA-52, and to document the findings on the NRCS-CPA-52, Environmental Evaluation Worksheet ("EE") for NEPA compliance.

1. During the planning process for any practice, the planner should overlay the geospatial data layer (ArcMAP Shapefile) in their ArMAP project and determine if the following exist: (1) Threatened and Endangered species and (2) Designated Critical Habitat to determine if a listed species is present in the area of impact.

2. If a listed species or critical habitat is indicated as being present in the area of impact, the planner should review the applicable plant or animal habitat descriptions for each species listed to determine if suitable habitat is present for the listed species in the area of impact.

3. Once a planner has determined that a listed species or critical habitat is likely present in the area of impact and that suitable habitat types are present, the planner should review the Practice Effects Document to determine if the proposed practice(s) has the potential to impact the listed species.

4. If no listed species or critical habitat is identified in the proposed work area, OR the project area does not provide necessary habitat for the species identified, OR if a listed species or critical habitat occurs in the proposed work area, but "no effect" is indicated by the Practice Effects Document then, document findings in the NRCS-CPA-52. In the Endangered and Threatened Species Evaluation Procedure Guide Sheet for STEP 1 select "NO". This indicates that no further action is required for the T&E species resource under the ESA or NEPA. Also record information on "EE" form, Section G Special Environmental Concerns (Existing/Benchmark Conditions) under Endangered and Threatened Species. If it is determined that no species or their habitat exist within the affected planning area, document the fact. The benchmark condition would read "not present." If a listed species or critical habitat occurs in the project area and "no effect" is indicated by the Practice Effects Document then record the species, amount of habitat, and field location for each species identified. For example, if Northern Long-eared Red Bat habitat is present, the recorded benchmark condition is "64 ac, bat habitat-roosting cover, field 3." Then record the impact or effect on the species in Section J of the "EE" for each applicable alternative as "No Effect" and in the cell below type in the species, amount of habitat, and field location for each species identified that is not affected and proceed with planning.

5. If critical habitat or a listed species and species habitat is likely present in the project area and a potential adverse effect is indicated on the Practice Effects Document, use the Criteria Symbol(s) and corresponding "Avoidance/Minimization Criteria" guidance to avoid the potential effect with the identified minimization/mitigation measures. If the species minimization/mitigation measures are agreed to be successfully implemented by the landowner/user, then the planner will make a determination of "May affect but not likely to adversely affect". Document this on the CPA-52 Guide Sheet, Step 1 - "YES". Then proceed to the following applicable legal protection status section(s) to identify the type of protected species; the effect on the species (Step 1 – May affect); if NRCS is providing financial assistance or otherwise controlling the action(s) (Step 2 – answer as applicable); and write in the **Notes** section a description of the species minimization measures for the conservation practices implemented as outlined in the Practice Effects Document. Also record the species, amount of habitat, and field location for each species identified on the "EE" Section G. Record the same information in Section J. However for the appropriate alternatives "May Effect" should be selected from the drop down menu and then type in "NLAA (not likely to adversely affect) - See Sections L - Mitigation & the Endangered and Threatened Species Guide Sheet." and proceed with planning.

6. **If the potential adverse effect cannot** be avoided using the guidance in the Practice Effects Document, the planner shall document in the NRCS-CPA-52 Section J for T&E species with a "✓" in the "needs further action" and section "O" with a "yes" in the seventh bullet that addresses T&E species or group of species that may be affected.

7. When an adverse effect is identified on the NRCS-CPA-52, notify the NRCS area and state biologists of the finding and advise the landowner/user of NRCS's responsibilities regarding the Endangered Species Act. Have the recipient of assistance and the landowner (if different) complete a document that will allow consent for NRCS to consult with the FWS. This consent is required if the landowner wants to continue with the planned practice(s). A copy of the completed consent letter and any supporting documentation/pictures will be sent to the State Biologist via email.

8. Once the State Biologist receives the consent letter and documented information, the State Biologist may informally consult with the FWS to identify potential impacts, specific species locations, alternative conservation treatments, or additional practice requirements to avoid and minimize adverse effects to listed species. In most cases, additional measures will be identified in the Practice Effects Document that avoid or minimize effects to threatened and endangered species thereby allowing practice implementation. Practice implementation shall not begin until the field office receives written documentation back from an NRCS state office biologist indicating project approval. The NRCS state office biologist will include additional practice requirements to avoid species effects that must be agreed to be implemented by the landowner/user and documented by the NRCS conservation planner on the NRCS-CPA-52, including any attachments if necessary. To ensure practice implementation does not begin until after project approval, field offices should not provide practice specific information including contract folders, job sheets, etc. to the clients until receiving project approval from the state office.

9. Further NRCS assistance will be provided only if alternative conservation treatments that do not adversely affect a listed species are identified and selected for installation or; at the request of the landowner, NRCS may initiate formal consultation with the FWS as outlined in Title 50, Chapter IV, Part 402, Code of Federal Regulations. **If the client does not want to comply with the alternative conservation treatments agreed to under informal consultation and does not want to initiate formal consultation, NRCS must discontinue planning and providing any type of assistance to the landowner.**

10. If the landowner requests formal consultation with the FWS, the State Biologist may work with the field office and the landowner to initiate the formal consultation with the FWS according to Title 50, Chapter IV, Part 402, Code of Federal Regulations. This process begins with NRCS's request and submittal of a complete formal consultation initiation package, including an assessment of species affects and concludes with the issuance of a biological opinion and

incidental take statement by the FWS. The NRCS State Conservationist has the option of refusing to undertake formal consultation when there is likely to be an adverse effect on a listed species or critical habitat and resources are not available to enter into formal consultation.

11. **NRCS assistance must be halted** until formal consultation is completed and the client agrees to comply with the terms of the biological opinion. The FWS must render a biological opinion within 135 days of receiving a complete consultation initiation package and biological assessment from NRCS. NOTE: Early coordination with FWS is the key to receiving biological opinion as early as possible. If the client complies with the biological opinion, continue planning, **if the client does not want to comply with the biological opinion, NRCS must discontinue planning and providing any type of assistance to the landowner.**

NRCS COORDINATION WITH FWS

The following provides guidance on how the NRCS Mississippi State Office shall coordinate activities with the Mississippi Field Office of the FWS regarding threatened and endangered species.

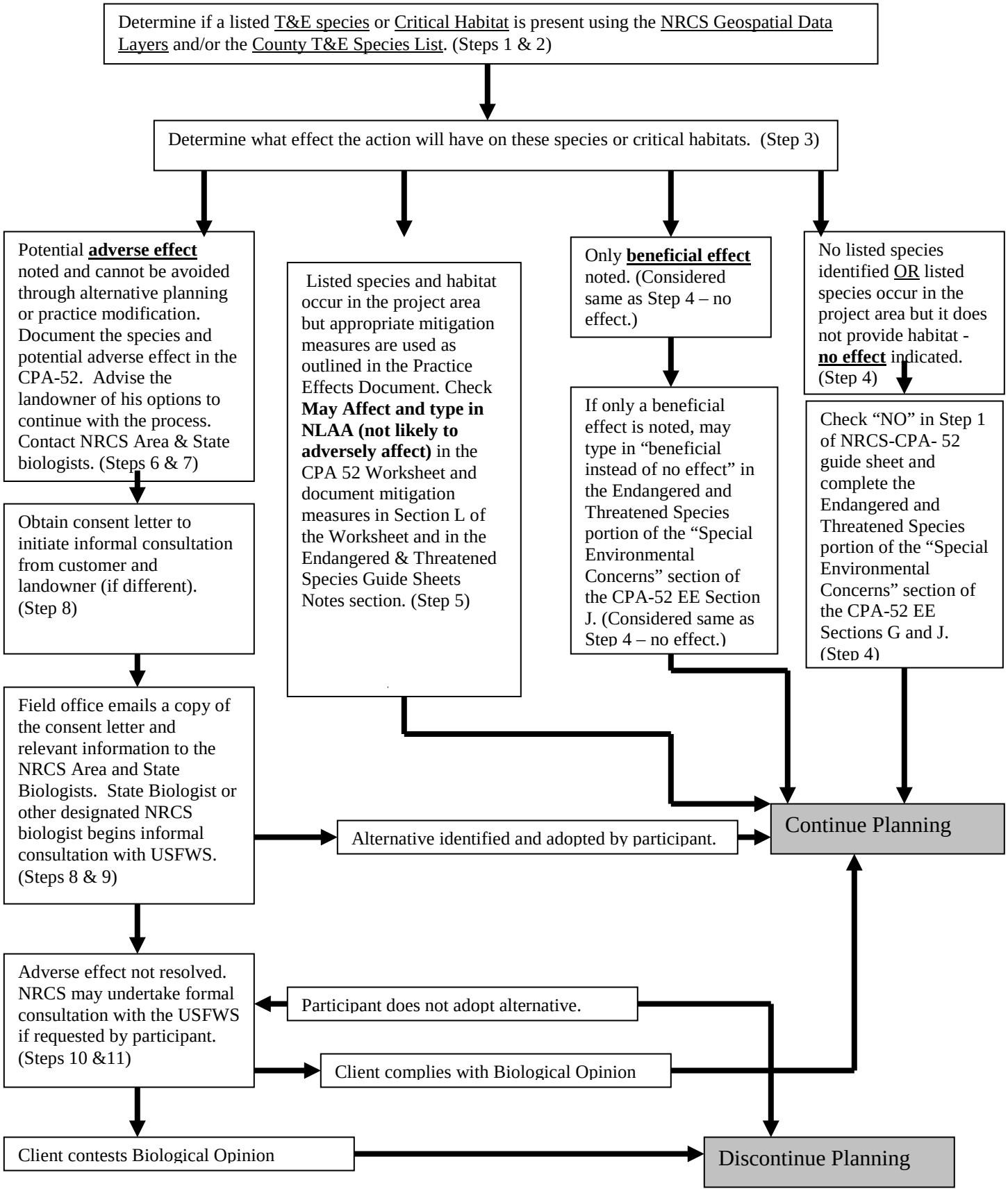
1. The NRCS State Biologist will work with the FWS to update the Mississippi County T&E Species List. Updates will be done as needed when new populations of threatened and endangered species or newly designated critical habitat are identified or if a new species is listed as a candidate species or threatened and endangered species. Additional information will be added to the geospatial data layer and issued to NRCS field offices as it becomes available.

2. The NRCS State Biologist will also coordinate with the FWS to modify the NRCS Mississippi ESA programmatic consultation titled "Mississippi NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species", including Table 2, commonly referred to as the "Practice Effects Document" when needed.

3. The NRCS State Biologist will serve as the point of contact for all NRCS field and area offices regarding the Endangered Species Act and NEPA compliance for threatened and endangered species. The NRCS State Biologist or other designated NRCS biologist will coordinate all activities including site visits, and informal and formal consultation with the FWS.

4. The NRCS State Biologist will coordinate with NRCS area offices and the FWS to conduct threatened and endangered species trainings for NRCS employees.

NRCS Procedure For Complying with NEPA and Section 7 of the ESA
Flowchart



United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

In Reply Refer To:
FWS/R4/ES

NOV 22 2016

Mr. J.E. Tillman
U.S. Department of Agriculture
Natural Resources Conservation Service
Post Office Box 2890
Washington, D.C. 20013

Dear J.E. Tillman:

This amended Biological Opinion and Conference Opinion (collectively "Amended Opinion" or "AmOp") is the U.S. Fish and Wildlife Service's (Service) response to your October 19, 2015, request to reinitiate consultation for the Natural Resources Conservation Service's (NRCS) Working Lands for Wildlife partnership for the gopher tortoise (*Gopherus polyphemus*) (WLFW-GT) on eligible private lands in the states of Alabama, Florida, Georgia, Louisiana, Mississippi, and South Carolina. We have consulted with NRCS previously on the WLFW-GT; most recently with an opinion amendment completed in October, 2013. This AmOp considers the effects of proposed WLFW-GT revisions to the same species considered in the previous amendment: gopher tortoise, dusky gopher frog, eastern indigo snake, and black pine snake, with one additional species, the striped newt (collectively, the Covered Species). The gopher tortoise is the target species for the action's beneficial effects. Except for the striped newt, the other species are gopher tortoise burrow commensals.

NRCS proposes to reduce the existing suite of conservation measures (CMs) from 18 to 9 by combining similar measures and eliminating others, and to adjust measures based on new information (Smith et al. 2015). Significant changes are proposed to CMs #1, 5, 9, 13, and 14, and to conservation practices (CPs) concerning vegetation manipulation/habitat management. This AmOp revisits our September, 2013, analyses of the WLFW-GT in light of these changes and relevant new information.

INTRODUCTION

The NRCS and the Service agreed in 2012 to a streamlined consultation process for the WLFW-GT whereby a programmatic biological assessment and biological/conference opinion were combined and jointly developed. We have similarly worked with NRCS to develop and review the currently proposed modifications as described herein. Specifically, this AmOp evaluates the adverse, benign, and beneficial effects and consequences of the revised CMs under the WLFW – GT and updates our previous analyses. This AmOp has been prepared pursuant to and complies

CONSULTATION HISTORY

In mid-December of 2011, representatives from NRCS approached the Service with the concept of applying targeted Farm Bill dollars to eligible private landowners potentially interested in the recovery and conservation of listed, candidate or declining species.

Between December of 2011 and February of 2012, the NRCS and the Service held a series of informal conference calls and meetings to further refine the concept identified above.

March 8, 2012: The Secretaries of Agriculture and Interior jointly announced a collaborative partnership collectively known as the Working Lands for Wildlife and identified seven species across the United States which would share approximately $33 million dollars of NRCS' Wildlife Habitat Incentive Program allocation under the 2008 Farm Bill. The GT was one of the selected species for this partnership.

April 17-19, 2012: The NRCS, Service, and Florida Fish and Wildlife Conservation Commission met in Tallahassee, Florida to further coordinate and refine the NRCS CPs and implementing measures that would be beneficial to the GT. Discussions included ESA requirements to consult on expenditures of federal funding and NRCS requested section 7 consultation on the WLFW-GT.

- July 3, 2012: The NRCS was provided a draft to review.
- July 31, 2012: The NRCS was provided a final opinion.
- August 6, 2012: A conference call between the Service and NRCS was held to discuss several concerns raised about two of the CMs contained in the opinion.
- August 24, 2012: The NRCS formally requested several revisions to the final opinion.
- September 19, 2012: The NRCS was provided an amended opinion.
- February 26, 2013: The NRCS notified the Service about the need to include CP #533, "Pumping Plant," as part of the proposed action.
- October 22, 2013: The NRCS was provided an amended opinion including CP #533, "Pumping Plant."
- October 19, 2015: The NRCS formally requested revisions to CMs in the amended opinion.
- March 15-17, 2016: The NRCS, Service, state wildlife biologists from Florida, Georgia, Alabama, Mississippi and Louisiana and Depart of Defense met at the Jones Ecological Research Center in Newton, Georgia to discuss priority areas for gopher tortoise conservation in WLFW-GT, impediments to implementation of WFFW-GT, and revision to conservation measures in WLFW-GT. Following the meeting, draft revised conservation measures were circulated to participants for comment.

DESCRIPTION OF THE PROPOSED ACTION

The action for the purposes of this AmOp includes the application of standard CPs incorporated into NRCS conservation plans and contracts implemented by NRCS clients in the Action Area (reference page 40) that follow the planning process and the CMs as described herein. Twenty CPs will be implemented by NRCS under the WLFW-GT (see 10/2013 AmOp). The CPs will not be revised in this AmOp, however, the CMs are being consolidated down to nine, and in some cases removed. The Service will review and analyze these actions and how they apply to each CP. Descriptions of the CMs and CPs can be found in Tables 1 and 2 (Pages: 6-9 and 13-15).

Proposed Conservation Measures

1. Heavy equipment (including mowers) will stay at least 4 meters (13 feet (ft)) from known gopher tortoise burrows. Contact Service biologist, State Wildlife Agency biologist, or NRCS state biologist if assistance is needed to conduct gopher tortoise surveys. This applies to all practices where heavy equipment is used. Heavy equipment is defined as agricultural tractors, crawler loaders, crawler dozer, backhoe/loader, front end loader, scraper pan, motor grader, skid steer, forklift (P.I.T.), hydraulic excavator, and specialty tracked equipment. Felling of trees and brush, cutting by hand, hack and squirt, backpack application, or use of herbicide pellets is allowed within this buffer.

2. Design all practices to minimize or avoid unintentional damage to non-target plants. This applies to all practices where vegetation is managed such as the use of herbicides or site prep/harvest equipment.

3. Native species shall be used to meet practice objectives. Base native plant community restoration goals on ecological site descriptions or recommendations provided by the NRCS state biologist. Planning will include the provision of forbs, grasses and grass-like plants to meet gopher tortoise foraging needs, whether by planting or site management. Consult with the NRCS state biologist if planting of non-native species is required to meet the intent of the practice. Seed mixes must be free of state-declared noxious and invasive material.

4. Stocking densities and species of trees/shrubs shall be consistent with gopher tortoise habitat needs – this varies by state. As recommended by each USDA State Technical Committee.

5. Control of invasive species (Conservation Practices 314 & 315) will occur to the extent practical for eradication. Control of non-invasive, undesirable species will be conducted on a "spot" or rotational basis to protect native grasses, forbs and legumes. Herbicides

will be restricted to those having the least effect on the seed bank, but still providing control of undesirable plant competition. Herbicide application rates will be adjusted to account for the effects of soil texture (within label rate specifications - See NRCS job sheets for Conservation practice 490 Tree and Shrub Site Preparation and Conservation Practice 666 Forest Sand Improvement). If greater than 25 acres/year of aerial spraying will occur, contact the NRCS state biologist for further assistance. After implementation, regular monitoring of the site must occur to ensure erosion and undesirable plant species concerns are addressed in a timely manner.

6. There will be no root raking, woody debris piling, scalping, or shearing that removes the top layer of soil in Service-NRCS classified suitable soil areas. Site preparation will not include bedding (a mechanical means of site preparation that mounds soil in narrow strips for tree planting). Roller chopping will be limited to single pass with single roller. Avoid placement of logging slash within 4 m (13 ft.) of known gopher tortoise burrows.

7. Burn on 2 to 3 year rotation unless weather prevents the safe use of prescribed fire. Growing season burns are encouraged to set back hardwoods and stimulate regeneration of native vegetation, such as wiregrass, Indian grass, bluestems, and forbs.

8. If implementing Conservation Practice 528 Prescribed Grazing, maintain a minimum average native forage stubble height of 6 inches. This applies to all areas that are grazed.

9. Fencing should be installed so as to allow for the safe passage of gopher tortoises. Contact NRCS state biologist for further assistance.

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TABLE 1: Current Conservation Measures and Proposed Conservation Measures

Current CMs	Proposed CMs
1. Heavy equipment (including mowers) will stay at least 25 feet from known gopher tortoise burrow aprons. Contact Service or state wildlife agency if assistance is needed to conduct gopher tortoise surveys. (Heavy equipment is defined as agricultural tractors, crawler loaders, crawler dozer, backhoe/loader, front end loader, scraper pan, motor grader, skid steer, forklift (P.I.T.), hydraulic excavator, and specialty tracked equipment).	1. Heavy equipment (including mowers) will stay at least 13 feet from known gopher tortoise burrows. Contact Service biologist, State Wildlife Agency biologist, or NRCS state biologist if assistance is needed to conduct gopher tortoise surveys. This applies to all practices where heavy equipment is used. Heavy equipment is defined as agricultural tractors, crawler loaders, crawler dozer, backhoe/loader, front end loader, scraper pan, motor grader, skid steer, forklift (P.I.T.), hydraulic excavator, and specialty tracked equipment. Felling of trees and brush, cutting by hand, hack and squirt, backpack application, or use of herbicide pellets is allowed within this buffer.
2. Spraying or other control of undesirable species will be done on a "spot" or rotational basis to protect grasses, forbs and legumes that benefit native pollinators and other wildlife. If aerial treatment will be used on Service classified priority or suitable gopher tortoise soils and the treatment area is larger than 25 acres, the Area Biologist should be contacted for further assistance.	Included with other Conservation Measures similar in nature (Proposed Number 5). No changes were made from existing Conservation Measure.
3. Regularly monitor the site after implementation to ensure erosion and undesirable plant species issues are addressed quickly.	Included with other Conservation Measures similar in nature (Proposed Number 5). No changes were made from existing Conservation Measure.
4. Woody slash shall be treated if significant buildup of fuels occurs. Slash piles shall be burned when wildfire risk is low (usually when soils are frozen or saturated). Follow state forestry laws, when applicable, for treating slash to	Included with other Conservation Measures similar in nature (Proposed Number 6). No changes were made from existing Conservation Measure.

TABLE 1: Current Conservation Measures and Proposed Conservation Measures

Current CMs	Proposed CMs
minimize wildfire risk.	
5. Use site specific reclamation strategies using ecological site descriptions or the recommendations of the state biologist. Native species will be used wherever possible to meet practice objectives with preference to forbs, grasses and grass-like plants to meet gopher tortoise needs. Seed mixes should be State-certified, meeting the appropriate State certification criteria as being free of state declared noxious and invasive material.	Included with other Conservation Measures similar in nature (Proposed Number 3). No changes were made from existing Conservation Measure.
6. Burn on two year rotation with occasional three year burns due to weather limitations. If an occasional burn is done on a three year interval, then a growing season burns should be used to set back hardwoods and stimulate seeding of wire grass.	Included with other Conservation Measures similar in nature (Proposed Number 7). No changes were made from existing Conservation Measure.
7. A minimum of 2.5 acres (9/2013 AmOp) of gopher tortoise foraging habitat should be maintained around a burrow at all times and not be permanently converted, removed, or degraded by any means (e.g. clearing, trampling, flooding). Clearing of gopher tortoise habitat should be minimized and restored as soon as possible when such clearing is temporary. Scrub-shrub habitat may be permanently or temporarily removed without adversely affecting gopher tortoise.	Removed from required Conservation Measures.
8. Roller chopping should be limited to single pass with single roller.	Included with other Conservation Measures similar in nature (Proposed Number 6). No changes were made from existing Conservation Measure.

TABLE 1: Current Conservation Measures and Proposed Conservation Measures

Current CMs	Proposed CMs
9. Herbicide should be restricted to herbicides that would have the least effect on the seed bank but still provides the control of competition needed. Herbicides should be used at the lower rates/ac for the soil texture.	Included with other Conservation Measures similar in nature (Proposed Number 5). No changes were made from existing Conservation Measure.
10. The installation of the practice shall not impede the movement of the gopher tortoise.	Removed from required Conservation Measures.
11. Native warm season grasses shall be exclusively planted (CP 512 only).	Removed from required Conservation Measures.
12. Fields should not be overgrazed, but maintain a minimum of six inch growth of native warm season grasses.	No changes were made from existing Conservation Measure other than order of appearance (Proposed Number 8)
13. Stocking densities and species of trees/shrubs shall be consistent with gopher tortoise habitat needs – this varies by state. As recommended by each states technical committee.	No changes were made from existing Conservation Measure other than order of appearance (Proposed Number 4)
14. Avoid placement of slash over gopher tortoise burrows.	Included with other Conservation Measures similar in nature (Proposed Number 6). No changes were made from existing Conservation Measure.
15. Whenever possible, native species will be used to meet practice objectives with preference to forbs, grasses and grass-like plants preferred by gopher tortoise	Included with other Conservation Measures similar in nature (Proposed Number 3). Included descriptive language regarding native species to existing Conservation Measure.

Conservation Measure Revisions

1- Reduction of 25' (Wilson et al. 1997; 2014 USDA-FS Revised Land and Resource Management Plan for National Forests in Mississippi, Florida Department of Transportation– Listed Species Guidelines) buffer to 13' buffer (radius) from any known burrow where mechanical use is likely to occur. Additional language allowing herbicide and tree felling inside of the 13' buffer (Smith et al. 2015).

5- Defer implementation of the conservation practice within 25 feet to known burrows and nest sites until all nesting activities are completed, typically August to October, or as modified by State Wildlife Agency or State Technical Committee recommendations. **Conservation Measure was removed.**

9- A minimum of 2.5 acres (9/2013 AmOp) of gopher tortoise foraging habitat should be maintained around a burrow at all times and not be permanently converted, removed, or degraded by any means (e.g. clearing, trampling, flooding). Clearing of gopher tortoise habitat should be minimized and restored as soon as possible when such clearing is temporary. Scrub-shrub habitat may be permanently or temporarily removed without adversely affecting gopher tortoise. **This Conservation Measure was removed.**

13- The installation of the practice shall not impede the movement of the gopher tortoise. **Conservation Measure was removed.**

14- Native warm season grasses shall be exclusively planted (CP 512 only). **Conservation Measure was removed.**

Following the review of CMs 2, 3, 4, 6, 7, 8, 10, 11, 12, 15, 16, 17, and 18 the Service has determined there were no changes made to the previous CMs, outside of the assigned reference number. Therefore, the CPs (NRCS Practice Numbers 338, 528, and 342) limited to these CMs will not be addressed in this request for revision. All remaining CPs contain one or more CMs where a revision was requested and comparisons will be made to determine the validity and impacts related to each revision. Full descriptions of the existing and proposed CMs can be found in Table 1 for reference.

Proposed CPs under Review

Conservation Measure 1 is recommended for all CPs, with the exception of 338-Prescribed Fire, 528-Prescribed Grazing, and 342-Critical Area Planting. The Service will analyze the revisions made to CM 1, 5, 9, 13, and 14 in relation to the CPs listed below. Complete CP Descriptions can be found in the 9/2013 AmOp, and a condensed version with associated CMs can be located in Table 2.

Revisions to Existing Conservation Practices

643- Restoration and Management of Rare and Declining Habitats
- Reduction to a 13' buffer from the previous 25' buffer.

647- Early Successional Habitat Development/Management
- Reduction to a 13' buffer from the previous 25' buffer.

314- Brush Management
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the 25' buffer requirement during nesting requirements.

315- Herbaceous Weed Control
- Reduction to a 13' buffer from the previous 25' buffer.

327- Conservation Cover
- Reduction to a 13' buffer from the previous 25' buffer.

394- Fire Break
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.

490- Tree/Shrub Site Prep
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.

512- Forage and Biomass
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.
- Removal of exclusively planting native warm grasses.

533- Pumping Plant
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.
- Removal of requirement to avoid gopher tortoise soil types.

550- Range Planting
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.

612- Tree/Shrub Establishment
- Reduction to a 13' buffer from the previous 25' buffer.

655- Forest Harvest Trails
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.

382- Fencing
- Reduction to a 13' buffer from the previous 25' buffer.

666- Forest Stand Improvement
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of 25' buffer around burrows during nesting season.

642- Water Well
- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.

614- Watering Facility

- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.
- Removal of requirement to avoid gopher tortoise soil types.

516- Livestock pipeline

- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.
- Removal of requirement to avoid gopher tortoise soil types.

561- Heavy Use Area Protection

- Reduction to a 13' buffer from the previous 25' buffer.
- Removal of the minimum forage habitat of 2.5 acres requirement.
- Removal of requirement to avoid gopher tortoise soil types.

595- Integrated Pest Management

- Reduction to a 13' buffer from the previous 25' buffer.

TABLE 2: Requested Revisions for Conservation Practices

CP	Existing CM	Proposed CM
643- Restoration and Management of Rare and Declining Habitats	1- Implement 25' buffer	1 – Reduce buffer to 13'
647- Early Successional Habitat Development/Management	1- Implement 25' buffer	1 – Reduce buffer to 13'
314- Brush Management	1- Implement 25' buffer 2- Herbicide Use 3- Monitor erosion and plants 4- Minimize and avoid non-target plants 5- Defer 25' buffer until after nesting period 17- Woody slash management	1- Reduce buffer to 13' 2- Included in Proposed CM #5 3- Included in Proposed CM #5 4- Included in Proposed CM #2 5- Removed 6- No revision 17- Included in Proposed #6
315- Herbaceous Weed Control	1- Implement 25' buffer 2- Herbicide use	1- Reduce buffer to 13' 2- Included in Proposed CM #5
327- Conservation Cover	1- Implement 25' buffer 7- Site specific species need	1- Reduce to 13' 2- Included in Proposed CM #5
338- Prescribed Fire	8- Fire rotation schedule	8- Included in Proposed CM #7

TABLE 2: Requested Revisions for Conservation Practices

CP	Existing CM	Proposed CM
394- Fire Break	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 13- Impeding tortoise movement	1- Reduce to 13' 9- Removed 13- Included in Proposed CM #6
490- Tree/Shrub Site Prep	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 10- Bedding restriction 11- Roller chop restriction 12- Herbicide Guidance	1- Reduce to 13' 9- Removed 10- Included in Proposed CM #6 11- Included in Proposed CM #6 12- Included in Proposed CM #5
512- Forage and Biomass	1- Implement 25' buffer 2- Spot treatment herbicide 9- Minimum 2.5 acre habitat 14- Native warm season grass	1- Reduce to 13' 2- Included in Proposed CM #5 9- Removed 14- Removed
528- Prescribed Grazing	15- 6" height minimum	15- Included in Proposed CM #8
533- Pumping Plant	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 19- Native species requirement 20- Avoid gopher tortoise soil types	1- Reduce to 13' 9- Removed 19- Included in Proposed CM #3 20- Removed
550- Range Planting	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 12- Herbicide Guidance	1- Reduce to 13' 9- Removed 12- Included in Proposed CM #5
612- Tree/Shrub Establishment	1- Implement 25' buffer	1- Reduce to 13'
655- Forest Harvest Trails	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 17- Slash management tortoise	1- Reduce buffer to 13' 9- Removed 17- Included in Proposed CM #6
382- Fencing	1- Implement 25' buffer 18- Fence requirements	1- Reduce to 13' 18- Included in Proposed CM #9
666- Forest Stand Improvement	1- Implement 25' buffer 3- Monitor erosion and plants 4- Design to minimize non-target species 5- 25' Buffer during nesting 6- Slash management removal 12- Herbicide Guidance	1- Reduce buffer to 13' 3- Included in Proposed CM #5 4- Included in Proposed CM #2 5- Removed 6- No revision 12- Included in Proposed CM #5 17- Included in Proposed CM #6

TABLE 2: Requested Revisions for Conservation Practices

CP	Existing CM	Proposed CM
342- Critical Area Planting	19- Native species requirement	19- Included in Proposed CM #3
642- Water Well	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 19- Native species requirement	1- Reduce to 13' 9- Removed 19- Included in Proposed CM #3
614- Watering Facility	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 19- Native species requirement 20- Avoid gopher tortoise soil types	1- Reduce to 13' 9- Removed 19- Included in Proposed CM #3 20- Removed
516- Livestock pipeline	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 19- Native species requirement 20- Avoid gopher tortoise soil types	1- Reduce to 13' 9- Removed 19- Included in Proposed CM #3 20- Removed
561- Heavy Use Area Protection	1- Implement 25' buffer 9- Minimum 2.5 acre habitat 19- Native species requirement 20- Avoid gopher tortoise soil types	1- Reduce to 13' 9- Removed 19- Included in Proposed CM #3 20- Removed
595- Integrated Pest Management	1- Implement 25' buffer 2- Herbicide Use 3- Monitor erosion and plants 4- Design to minimize non-target species	1- Reduce buffer to 13' 2- Included in Proposed CM #5 3- Included in Proposed CM #5 4- Included in Proposed CM #2

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes the effects of all past and present actions that have led to the current status of the "Covered Species" that are relevant to formulating the BO/CO. The geographic scope of the review is the full range of the species or distinct population segment that is listed under the ESA.

Gopher tortoise (*Gopherus polyphemus*)

The Service listed the gopher tortoise in 1987 as a threatened species in the western part of its range, from the Tombigbee and Mobile Rivers in Alabama west to southeastern Louisiana on the lower Gulf Coastal Plain (52 FR 25376-25380). The species is classified as a candidate species for listing in the eastern part of its range. The Service's most recent status assessment, published July 27, 2011, was a 12-month positive finding in response to a petition to protect the eastern populations under the ESA (76 FR 45130-45162). The Service determined that the current listing of the species as threatened in the western portion of its range was accurate and that listing the species in the eastern portion of its range was warranted, but precluded by higher-priority listing actions. The Service has not proposed or designated critical habitat for the gopher tortoise.

Species description

The gopher tortoise is the only native tortoise (family Testudinidae) that occurs east of the Mississippi River. It is the largest terrestrial turtle in this region, with a domed, dark-brown to grayish-black shell (carapace) up to 14.6 inches long, and weighing up to 13 lbs. (6 kg). The lower shell (plastron) is yellowish and hingeless. Tortoises cannot completely withdraw their limbs, which remain visible when folded and retracted. The hind feet are elephantine or stumpy, and the forelimbs are shovel-like, with claws used for digging. Males are smaller than females, usually have a larger gland under the chin, a longer gular projection, and a more concave plastron. Hatchlings are up to 2 inches in length, with a somewhat soft, yellow-orange shell. As with other chelonians, gopher tortoises possess a keratinized beak, and lack teeth.

Life history

The gopher tortoise is a long-lived, native burrowing species of the open, fire-maintained longleaf pine ecosystem. Historically, typical gopher tortoise habitat consisted of open, frequently burned longleaf pine or longleaf pine/scrub oak uplands and flatwoods on moderately well drained to xeric soils. Such habitat provided adequate sunlight reaching the forest floor to stimulate the growth and development of the herbaceous plant stratum for forage, with sufficient warmth for basking and the incubation of eggs.

The burrows of a gopher tortoise are the center of normal feeding, breeding, and sheltering activity. Gopher tortoises excavate and use more than one burrow for shelter beneath the ground surface. Burrows may extend for more than 30 ft. and provide shelter from canine predators, fire, winter cold, and summer heat. Dogs and large canids are the most common predator of adult tortoises (Causey and Cude 1978).

In stable populations with fire-maintained, open longleaf pine habitat, females use an average of five burrows, while males occupy an average of 10 burrows (Eubanks *et al.* 2003). In poor habitat due to encroaching, fire intolerant shrubs and hardwoods, gopher tortoises tend to excavate and use fewer burrows. Males tend to use more burrows and move more frequently among their different burrows than females as they seek breeding opportunities with females (McRae *et al.* 1981; Diemer 1992a, 1992b; Smith 1995; Tuma 1996; Boglioli *et al.* 2000; Eubanks *et al.* 2003). An "active burrow" is likely inhabited, as indicated by: (1) fresh soil excavated from the interior of the burrow and deposited on the apron at the burrow entrance; (2) tortoise feces on the apron or near the burrow entrance; and/or (3) eggshells and tracks. Inactive burrows, which display conditions of recent use and occupancy by a tortoise, are likely within the annual home range of one or more tortoises, but are not currently occupied by a tortoise. Indicators of inactive burrows include suitable size and shape of the burrow entrance; a recognizable apron of bare soil without encroachment of grasses or shrubs; and small amounts of leaf litter in the entrance that have not been moved by a tortoise. Indications that a tortoise has abandoned a burrow include erosion, a loss of shape and structure, vegetative overgrowth, and no apron.

Tortoises spend most of their time within burrows and emerge during the day to bask in sunlight, to feed, and reproduce. Tortoises are active above ground during the growing season when daytime temperatures range from 75 to 87 °F (McRae *et al.* 1981; Butler *et al.* 1995). Daily active periods usually are unimodal in spring, followed by bimodal periods (early to mid-morning, middle to late afternoon) during the hotter temperatures of summer (McRae *et al.* 1981). Daily activity above ground becomes significantly reduced by the end of the growing season during October with cooler temperatures. Tortoises take shelter within their burrows during the dormant season, become torpid, do not eat, and rarely emerge except during periods of warm days to bask in sunlight at the burrow entrance. Except for those tortoises in southern peninsular Florida that do not have an overwintering period, most tortoises become active again during early spring.

Tortoises mostly forage on foliage, seeds, and fruits of grasses and forbs, generally in an area of about 150 ft. surrounding each burrow (McRae *et al.* 1981; Diemer 1992b). The diet of adults resembles that of a generalist herbivore, with at least some preference for some plants over others, and may also include insects and carrion (MacDonald and Mushinsky 1988; Birkhead 2001). Juvenile tortoises tend to forage on fewer plant species, eat fewer grasses, and select more forbs, including legumes, than adults (Mushinsky *et al.* 2003).

Burrows are not randomly located in the environment. Tortoises select and prefer burrow sites in open sunny areas (Boglioli *et al.* 2000; Rostal and Jones 2002). Such sites reflect areas where herbaceous plants for food are more abundant on the forest floor and, for females, sunlight and soil temperatures for egg incubation are more suitable. Males select sites and burrows that increase their proximity to females and breeding opportunities (Boglioli *et al.* 2000; Eubanks *et al.* 2003). The repeated use and travel to the same burrows by individual tortoises in stable habitat suggest that tortoises know the geography of their home range, burrows, and the location of neighboring tortoises (Eubanks *et al.* 2003).

Reproduction

Tortoises breed from May through October (Landers *et al.* 1980; McRae *et al.* 1981; Taylor 1982; Wright 1982; Diemer 1992a; Eubanks *et al.* 2003). Females ovulate during spring, but likely store sperm so that active breeding during ovulation may not be always be required for fertilization. Males travel to female burrows and copulation occurs above ground at the burrow entrance, more frequently during July to September, a period of peak sex and adrenal steroid hormones (Ott *et al.* 2000; Eubanks *et al.* 2003). Douglass (1986) described gopher tortoise "colonial" tendencies with aggregations of burrows in which dominant males competitively and behaviorally exclude other males at female burrows to maintain a loose female harem. More recent studies do not provide evidence of an exclusive dominance hierarchy. Further, aggregations of burrows observed in some studies may reflect habitat fragmentation and resulting concentration of burrows in the remaining suitable habitat (Mushinsky and McCoy 1994; Boglioli *et al.* 2003).

Females do not reproduce every year. In the listed range, about 80 percent of the females at Marion County Wildlife Management Area (WMA) in Mississippi and 85 percent of the females at Ben's Creek WMA in Louisiana were gravid each year (Smith *et al.* 1997). Females excavate a shallow nest to lay and bury eggs, usually in the apron of soil at the mouth of the burrow, but they may lay elsewhere if the apron is excessively shaded (Landers and Buckner 1981). Range-wide, average clutch size varies from about 4 to 12 eggs/clutch. Average clutch size in the listed range, from 4.8 to 5.6 eggs/clutch, is comparably low (Seigel and Hurley 1993; Seigel and Smith 1995; Tuma 1996; Epperson 2003). Clutch size generally is positively correlated with adult female size (Diemer and Moore 1994; Smith 1995; Rostal and Jones 2002).

Females usually lay about five to seven eggs from mid-May through mid-July in the soil of the apron at the burrow entrance (Butler and Hull 1996; Smith *et al.* 1997) and egg incubation lasts 80–110 days (Diemer 1986; Smith *et al.* 1997). Incubation at temperatures from 27°C to 32°C is required for successful development and hatching (Spotila *et al.* 1994; Burke *et al.* 1996; DeMuth 2001; Rostal and Jones 2002; Noel and Qualls 2004). As in other chelonians, sex determination is temperature dependent (Burke *et al.* 1996; DeMuth 2001).

Nest depredation is considered substantial, although little quantitative data is available. From studies in southern Georgia, Landers *et al.* (1980) estimated about 90 percent of nests were destroyed by predators. In a much smaller study from southern Alabama, about 46 percent of nests (n=11) were destroyed by raccoons, opossums, and armadillos (Marshall 1986). Egg hatching success at experimentally protected nests has ranged from 28 to 97 percent in Florida and Georgia (92 percent, Arata 1958; 86 percent, Landers *et al.* 1980; 28 percent, Linely 1986; 67 to 97 percent, Smith 1995; 80.6 percent, Butler and Hull 1996). In the listed range in Mississippi, mean hatching success from protected nests in the field has ranged from 28.8 to 56 percent (Epperson and Heise 2003; Noel and Qualls 2004).

Hatchlings excavate themselves from the nest and emerge from the middle of August through October (Ashton and Ashton 2008). Hatchlings and yearlings (0 to 1 year old) may temporarily use the adult burrow, bury under sand or leaf litter, or excavate a small burrow nearby (Douglass 1978; Wilson *et al.* 1994; Butler *et al.* 1995; Pike 2006). Growth is most rapid during the

juvenile stage, becoming slower at the onset of adulthood and reproductive maturity, followed by little or no adult growth (Mushinsky *et al.* 1994; Aresco and Guyer 1998, 1999). Generally, tortoises become adults at about 20 years of age, although reproductive maturity is determined by size rather than age. Growth rates and sizes at sexual maturity can vary among populations and habitat types (Landers *et al.* 1982; Mushinsky *et al.* 1994; Aresco and Guyer 1998, 1999).

Hatchlings/yearlings initially move up to about 50 ft (15 meters [m]) from their nest to establish their first burrow, from which they will subsequently excavate and use about five burrows in a home range as small as about 0.5 ac (0.2 ha), to as large as 11.8 ac (4.8 ha) (Mushinsky *et al.* 1994; Butler *et al.* 1995; Epperson and Heise 2003; Pike 2006). Yearlings move, on average, relatively short distances to establish new burrows, although they are known to have traveled up to 1,485 ft (450 m) to new burrows (Butler *et al.* 1995; Epperson and Heise 2003). Hatchlings and yearlings may take shelter beneath litter and woody debris while moving to a new burrow (Diemer 1992b; Butler *et al.* 1995). Yearlings and juveniles usually forage within about 23 ft (7 m) from their burrow (McRae *et al.* 1981; Wilson *et al.* 1994; Butler *et al.* 1995; Epperson and Heise 2003).

Home range

Home range size and movements increase with age and body size. The burrows of a gopher tortoise represent the general boundaries of a home range, which is the area used for feeding, breeding, and sheltering. Home range area tends to vary with habitat quality, becoming larger in areas of poor habitat (Auffenberg and Iverson 1979). Males typically have larger home ranges than females. Mean home ranges of individual tortoises in Alabama, Florida, and Georgia outside the federally listed area have varied from 1.3 to 5.2 ac (3.2–2.2 ha) for males and from 0.2 to 2.5 ac (0.09–1.0 ha) for females (McRae *et al.* 1981; Auffenberg and Franz 1982; Diemer 1992b; Tuma 1996; Ott 1999; Eubanks *et al.* 2003; Guyer 2003). Compared to females, males use more burrows, and during breeding season, move among burrows more frequently over longer distances (McRae *et al.* 1981; Auffenberg and Franz 1982; Diemer 1992b; Smith 1995; Tuma 1996; Ott 1999; Eubanks *et al.* 2003; Guyer 2003).

One gopher tortoise may or may not exclusively use a burrow. Two or more tortoises may share the same burrow, although the burrow is used at different times of the year by different individuals. Home ranges overlap when more than one tortoise uses a burrow. About 50 percent of the area occupied by 123 tortoises was shared by two or more tortoises in relatively pristine, stable habitat in southwestern Georgia (Eubanks *et al.* 2002). At Camp Shelby, Mississippi, average home range varied from 7.3 to 10.4 ac for males and from 12.1 to 32.9 ac for females (Tuma 1996; Guyer 2003). At another population on timber industry land in Alabama, average home range was 10.4 ac (4.2 ha) for males and 32.9 ac (13.3 ha) for females. These home ranges are larger than those typically determined for tortoises at populations in Alabama, Georgia, and Florida outside the listed range. Since gopher tortoise movements and distance increase as herbaceous biomass and habitat quality decrease (Auffenberg and Iverson 1979; Auffenberg and Franz 1982), larger home ranges at these two study sites in the listed range probably reflect differences in habitat quality. Habitat conditions on the timber industry study site were highly heterogeneous, with patches and stands of suitable habitat mixed among patches of unsuitable

habitat. These tortoises moved relatively long distances to different burrows located in suitable habitat patches within a matrix of poor and unsuitable habitat.

As distances increase between gopher tortoise burrows, isolation among tortoises also increases due to the decreasing rate of visitation and breeding (Boglioli *et al.* 2003; Guyer 2003). Using extensive data from individual tortoise inter-burrow movements and home range size, Eubanks *et al.* (2003) found that most colonies or breeding population segments would consist of burrows no greater than about 558 ft. (170 m) apart. Guyer (2003) found that males only rarely move from their burrows as far as 1,640 ft (500 m) to a female burrow for mating opportunities, and females typically experience a visitation rate of near zero when their burrows are 460–623 ft (140–190 m) from nearest neighbors. Demographically, tortoises located at distances of about 600 ft (200 m) from other tortoises are functionally isolated and subdivided as separate breeding populations. Thus, breeding populations or colonies likely consist of tortoises and burrows in suitable, unfragmented habitat within 600 ft. or less from each other.

Habitat

Gopher tortoises require well-drained, sandy soils for burrowing and nest construction, an abundance of herbaceous ground cover for food, and a generally open canopy that allows sunlight to reach the forest floor (Landers 1980; Auffenberg and Franz 1982). Longleaf pine and oak uplands, xeric hammock, sand pine and oak ridges (beach scrub), and ruderal (disturbed) habitat most often provide the conditions necessary to support gopher tortoises (Auffenberg and Franz 1982). Ruderal (*i.e.,* disturbed or atypical) habitats include roadsides and utility rights-of-way, grove/forest edges, fencerows, and clearing edges. In the western range, soils contain more silt, and xeric (dry) conditions are less common west of the Florida panhandle (Craul *et al.* 2005). Ground cover in this Coastal Plains area is different west and east of the central part of southern Alabama and northwest Florida. To the west, bluestem (*Andropogon* sp.) and panicum (*Panicum* sp.) grasses predominate; to the east, wiregrass (*Aristida stricta*) is most common (Boyer 1990). However, gopher tortoises do not necessarily respond to specific plants, but rather to the physical characteristics of habitat (Diemer 1986). Historic gopher tortoise habitats were open pine forests, savannahs, and xeric grasslands that covered the coastal plain from Mexico and Texas to Florida. Historic habitats might have had wetter soils at times and been somewhat cooler but were generally xeric, open, and diverse (Ashton and Ashton 2008).

Gopher tortoises have a well-defined activity range where all feeding and reproduction take place that is limited by the amount of herbaceous ground cover (Auffenberg and Iverson 1979). Tortoises are obligate herbivores eating mainly grasses, plants, fallen flowers, fruits, and leaves. Gopher tortoises prefer grassy, open-canopy microhabitats (Boglioli *et al.* 2000), and their population density directly relates to the density of herbaceous biomass (Auffenberg and Iverson 1979; Landers and Speake 1980; Wright 1982; Stewart *et al.* 1993) and canopy closure (Breininger *et al.* 1994; Boglioli *et al.* 2000). Grasses and grass-like plants are important in gopher tortoise diets (Auffenberg and Iverson 1979; Landers 1980; Wright 1982; Mushinsky *et al.* 2006). Vegetative diversity may contribute to the long-term sustainability of gopher tortoise populations (Ashton and Ashton 2008).

Gopher tortoises require a sparse canopy and litter-free ground not only for feeding, but also for nesting (Landers and Speake 1980). In Florida, McCoy and Mushinsky (1995) found that the number of active burrows per tortoise was lower where canopy cover was high. Females require almost full sunlight for nesting (Landers and Buckner 1981), because eggs are often laid in the burrow apron or other sunny spot and require the warmth of the sun for appropriate incubation (Landers and Speake 1980). At one site in southwest Georgia, Boglioli *et al.* (2000) found most tortoises in areas with less than 30 percent canopy cover. Diemer (1992a) found that tortoises favored ecotones created by clearing in north Florida. When canopies become too dense, usually due to fire suppression, tortoises tend to move into ruderal habitats such as roadsides with more herbaceous ground cover, lower tree cover, and significant sun exposure (Garner and Landers 1981; McCoy *et al.* 1993; Baskaran *et al.* 2006). In Georgia, Hermann *et al.* (2002) found that open pine areas (*e.g.,* pine forests with canopies that allow light to penetrate to the forest floor) were more likely to have burrows, support higher burrow densities, more active burrows, and more large adult tortoises than closed-canopy forests. Historically, frequent lightning-generated fires maintained open-canopied pine forests.

Population dynamics

Gopher tortoises are long-lived animals with delayed sexual maturity, low reproductive rates, high mortality at young ages and small size-classes, and relatively low adult mortality. The growth and dynamics of populations are stochastically affected by natural variation due to demographic rates, the environment, catastrophes, and genetic drift (Shaffer 1981). Factors affecting population growth, decline, and dynamics include the number or proportion of annually breeding and egg-laying females (breeding population size), clutch size, nest depredation rates, egg hatching success, mortality (hatchling/yearling, juvenile-subadult, adult), the age or size at first reproduction, age- or stage-class population structure, maximum age of reproduction, and immigration/emigration rates.

Several investigations have developed models to estimate the probabilities of gopher tortoise population extinction over time and to identify the important factors affecting persistence (Cox *et al.* 1987; McDearman 2006; Miller 2001; Tuberville *et al.* 2009). Although relatively small population sizes (40–50 adults) may persist for many years, modeled tortoise populations of this size generally declined and were projected for extinction depending on model parameters.

Miller (2001) assessed tortoise persistence in Florida over a 100-year period for all known populations and for those on public lands applying a range of assumptions regarding survivorship, carrying capacity constraints, disease, etc. The model results suggest that gopher tortoises have greater than 80 percent chance of persisting in Florida over the next 100 years, whether looking at all known populations or only those on public lands. This study concluded that populations as small as 50 individuals can have conservation value under favorable conditions, but under less favorable habitat conditions, populations larger than 250 individuals are necessary to ensure survival due to stochastic factors that increase hatchling and adult mortality.

The most recent modeling effort recognized the need to evaluate the viability of individual populations, rank populations most appropriate for in-situ protection, and determine whether

nonviable populations are more likely to contribute to the species' conservation through augmentation or translocation (Tuberville *et al.* 2009). All model scenarios resulted in a population decline of one to three percent per year, which varied as a function of habitat quality and location within the range. Only populations with at least 250 tortoises were able to persist for 200 years, which is substantially different than earlier model results. Researchers have generally considered the population dynamics of long-lived animals sensitive to changes in adult survival and, in some cases, juvenile survival (Gibbons 1987; Congdon *et al.* 1993; Heppell and Crowder 1996), and accordingly, viability simulations of gopher tortoise populations are most sensitive to adult, hatchling, and juvenile survival rates (Miller 2001; Epperson 2003; Wester 2004). For example, the slow, but positive, population growth rates modeled for a stable base population became negative when mortality of tortoises > 3 years old increased from 3.0 to 5.0 percent, or when yearling (< 1 year old) mortality increased from 95 to 97 percent (Miller 2001; McDearman 2006).

Styrsky *et al.* (2010) developed segmented regression models to evaluate the relationship between area of habitat occupied by gopher tortoises and abundance of gopher tortoises to identify how many individuals constitute a population and how much area is required for such a population. Data synthesized from 21 study sites in Alabama, Georgia, and Mississippi with varying tortoise population numbers indicated that an average gopher tortoise population consists of 444 burrows, covers 755 ha (1,865 ac), and contains 240 tortoises (Styrsky *et al.* 2010). This average population contained a density of 0.3 tortoises per ha (0.1 per ac). The authors noted that the data for these calculations came from landscapes that varied substantially in current management and land-use history and, therefore, did not represent the characteristics of a population occupying habitat managed with frequent fire and containing the uneven-aged mix of trees that characterize old-growth longleaf pine forests. The authors concluded that tortoises could persist on smaller parcels, but only if the habitat is aggressively managed.

Population estimates and trends (threatened populations)

The decline of the gopher tortoise is linked to the decline of the open, fire maintained longleaf pine forest and ecosystem (USFWS 1990). About 80 percent of the original habitat for the gopher tortoise within its listed range has been lost due to urbanization and agriculture (McDearman 2005). In remaining forests, management practices involving dense pine stands for pulpwood production, the silvicultural conversion from longleaf to other pines, and fire exclusion or infrequently prescribed fire have further reduced habitat for the species. These practices eliminate the open, sunny forest with a well-developed groundcover of grasses and forbs needed by tortoises for burrowing, nesting, and feeding (Landers and Buckner 1981; Auffenberg and Franz 1982). Other threats and causes for decline include habitat fragmentation, fire ants, predation, and human-caused mortality as a result of roads and heavy equipment operations during forest site preparation and timber harvest (USFWS 1990).

The listed range of the gopher tortoise includes 3 counties in southeastern Alabama, 14 counties in southern Mississippi, and 3 parishes in Louisiana. Most gopher tortoise habitat is privately owned (70 percent), while about 20 percent is owned by the U.S. Forest Service (USFS), and 10 percent by other public agencies (Noss 1988). Within this range, gopher tortoise populations are small and occur in fragmented habitat. The largest and most substantial gopher tortoise

populations in the western portion of its range occur on the De Soto National Forest in southern Mississippi. Long-term monitoring here indicates a decline in population sizes, a tendency towards adult-dominated populations, and a lack of, or very low, recruitment. Results of smaller-scale surveys of forest lands in Mississippi and public and private lands in Louisiana are largely consistent with findings on the De Soto National Forest. There are no known populations large enough (*e.g.,* > 250 individuals) to persist long-term based on projections resulting from recent modeling efforts. Depending on burrow density and home range overlap, the minimal reserve size for a single minimally viable population may range from 50 to 200 ac (19–81 ha) (Eubanks *et al.* 2002).

The Service's recovery plan (USFWS 1990) for the gopher tortoise establishes short-term and long-term criteria involving public and private lands to delist the species (USFS 1990). The DeSoto National Forest represents a core area where management actions are required to prevent this threatened species from becoming endangered. This is the first and most immediate objective of the recovery plan. The long-term objective, delisting, involves substantial voluntary commitments from private landowners.

The short-term objective is to establish and maintain populations on the DeSoto National Forest, including Camp Shelby, on 18,144 ac (7,343 ha) at densities of 1.2 to 2.8 burrows/ac (3–7 burrows/ha). This is the acreage estimated to consist of deep sandy soils, designated as priority soils, and at burrow densities indicative of large, stable populations on such soils in Florida. By these criteria and using a 0.61 burrow occupancy rate, the Service's recovery plan estimates the total recovery population on DeSoto National Forest would consist of 13,437 to 31,354 tortoises. More recent data on the average percentage of active and inactive burrows inhabited by tortoises in the listed range reveals that the 0.61 burrow conversion factor is too large (*e.g.,* Mann 1995; Wester 1995). Using Mann's (1995) correction factor of 0.414, then 9,120–21,280 tortoises would occur on DeSoto National Forest by this acreage with burrow density criteria at 0.5–12 tortoises/ac. For a minimally viable population of at least 75 tortoises, the lower range of the recovery criterion of about 9,120 tortoises would represent up to 122 viable populations, or less with larger individual populations.

On private lands, the long-term objective for recovery is the establishment of 1.2 gopher tortoise burrows/ac (3 burrows/ha) on 45,945 ac (18,594 ha) of sandhill communities, where such burrow densities are most likely (USFWS 1990). This acreage represents the area of privately-owned upland forests on sandy soils estimated by Lohoefener and Lohmeier (1984) at about the time of listing, although recovery objectives for private lands are not necessarily restricted to priority soil types. Using the 0.414 burrow conversion factor, recovery on private lands would represent about 23,094 tortoises by these criteria, or about 300 or fewer individual populations, each with 75 or more tortoises with good, long-term habitat management commitments.

About 400,500 acres (ac) of longleaf pine stands remained within the listed range of the gopher tortoise by the 1990's. Gopher tortoises are not restricted to longleaf pine stands, but the best opportunity for recovery on both public and private lands is in managed longleaf stands. Longleaf pine silviculture for timber production using frequent prescribed fire is highly compatible with gopher tortoise conservation. The Service, state, and private organizations are providing incentives and technical assistance to private landowners for longleaf pine habitat

restoration. These programs include Partners for Wildlife, Mississippi Partners for Fish and Wildlife, the Healthy Forest Reserve Program, the Emergency Conservation Reserve Program, and the Safe Harbor Program. Currently, about 2,000 ac of longleaf pine and potential gopher tortoise habitat has been treated by some form of habitat restoration management in the listed range. These and other efforts must increase substantially on private lands in order to achieve recovery, because the primary factor limiting gopher tortoise recovery is the interruption of natural processes imposed by human land uses that suppress fire and fragment the longleaf pine forest. In the absence of frequent prescribed fire and other active management measures to control encroaching hardwoods and shrubs, suitable habitats eventually lose the characteristics that support viable gopher tortoise populations.

Population estimates and trends (candidate populations)

The gopher tortoise is more widespread and abundant in the eastern portion of its range, particularly in southern Georgia and central and northern Florida, but long-term monitoring data indicate that many populations have declined and most are relatively small and widely separated. Unlike the western portion of the range, there are several known populations of tortoises in the eastern portion of the range that are sufficiently large to likely persist long-term (*e.g.,* Camp Blanding Joint Training Center, Florida; Chassahowitzka Wildlife Management Area, Florida; Fort White Wildlife and Environmental Area, Florida; Jennings Forest Wildlife Management Area, Florida; Three Lakes Wildlife Management Area, Florida; Fort Benning, Georgia; Fort Stewart, Georgia; River Creek Wildlife Management Area, Georgia; Townsend Wildlife Management Area, Georgia). About 80 other public parcels in Florida contain a substantial amount of potential gopher tortoise habitat, but surveys or censuses of these areas have not yet estimated the number of tortoises present (FFWCC 2011b).

The Service's 2011 12-month finding on a petition to list the gopher tortoise as threatened in the eastern portion of its range (76 FR 45130-45162) summarizes the findings of surveys in each state of the species' unlisted range and of several efforts to model the species' long-term persistence, which we incorporate in this BO/CO by reference. The 12-month finding concluded that listing the eastern populations was warranted, but precluded by higher-priority listing actions. The primary factor limiting gopher tortoise recovery range-wide is the interruption of natural processes imposed by human land uses that suppress fire and fragment the longleaf pine forest. In the absence of frequent prescribed fire and other active management measures to control encroaching hardwoods and shrubs, suitable habitats eventually lose the characteristics that support viable gopher tortoise populations.

Striped newt (Notophthalmus perstriatus)

The Service published on June 7, 2011, a 12-month positive finding that protecting the striped newt under the ESA was warranted, but precluded by higher-priority listing actions (76 FR 32911-32929). Our most recent status assessment confirms this species' status as a continuing candidate for listing throughout all its range (USFWS 2013b). As a candidate, the Service has not yet proposed or designated critical habitat for the striped newt.

Species description

The striped newt is a small salamander that reaches a total length of 2 to 4 inches (5 to 10 centimeters (cm)) (Conant and Collins 1991). A continuous red stripe runs the length of the side of its trunk and extends onto the head and tail where it may become fragmented. The stripe is dark-bordered, but not so boldly and evenly as in the broken striped newt (*N. viridescens dorsalis*) (Conant and Collins 1991). A row of red spots is sometimes present along the side of the body and a faint light stripe down the center of the back. The ground color of the sides and back is olive-green to dark brown. The belly is yellow, usually sparsely marked with black specks. The skin of newts is generally rougher and less slimy than other salamanders. The costal grooves (grooves along the side body of salamanders used in species identification) are indistinct.

Life history

Life-history stages of the striped newt are complex, and include the use of both aquatic and terrestrial habitats throughout their life cycle. Striped newts are opportunistic feeders that prey on frog eggs, worms, snails, fairy shrimp, spiders, and insects (adult and larvae) that are of appropriate size (Dodd *et al.* 2005; Christman and Franz 1973; Christman and Means 1992). Christman and Franz (1973) found that newts were attracted to frog eggs by smell. Feeding behavior of newts has only been documented with aquatic adults; little is known of the feeding habits in the terrestrial stage (Dodd *et al.* 2005).

Aquatic and breeding adults occur in isolated, temporary ponds associated with well-drained sands. Sexually mature adults migrate to these breeding ponds, which lack predatory fish, and courtship, copulation, and egg-laying take place there. Females lay eggs one at a time and attach them to aquatic vegetation or other objects in the water. It may take one female several months to lay all of her eggs (Johnson 2005). Eggs hatch and develop into externally-gilled larvae in the temporary pond environment.

Once larvae reach a size suitable for metamorphosis, they may either undergo metamorphosis and exit the pond as immature, terrestrial efts, or remain in the pond and eventually mature into gilled, aquatic adults (paedomorphs) (Petranka 1998; Johnson 2005). The immature, terrestrial efts migrate into the uplands where they mature into terrestrial adults. Efts will remain in the uplands until adequate rainfall prompts a return to ponds to reproduce. Johnson (2005) found that 25 percent of larvae became paedomorphs at his study pond. Paedomorphs postpone metamorphosis until after they have matured and reproduced. At about 1 year old, they will

reproduce, metamorphose, and migrate into the uplands adjacent to the pond (Johnson 2005). Following adequate rainfall, terrestrial adults will move back to the ponds to court and reproduce, where they are referred to as aquatic adults.

Striped newts as well as other *Notophthalmus* sp. have long lifespans (approximately 12 to 15 years) in order to cope with unfavorable stochastic environmental events (*e.g.,* drought) that can adversely affect reproduction (Dodd 1993; Dodd *et al.* 2005; Wallace *et al.* 2009). Movement of striped newts by both emigration and immigration occurs between ponds and surrounding uplands. Adult newts immigrate to ponds from uplands during the fall and winter months, but some newts also immigrate during the spring and summer months as well, when environmental conditions (*e.g.,* adequate rainfall) are conducive to breeding (Johnson 2005). Extended breeding periods allow striped newts to adapt to temporary breeding habitats whose conditions fluctuate within seasons (Johnson 2002). Even with suitable water levels in ponds, adults emigrate back into uplands after breeding. Adult immigration into ponds and eft emigration into uplands is staggered due to the 6 months required for larvae to undergo metamorphosis into efts (Johnson 2002).

Upland habitat suitability around breeding ponds influences the pattern of immigration, emigration, and directional movements (Dodd 1996; Dodd and Cade 1998; Johnson 2003). Dodd and Cade (1998) found that striped newts migrated in a direction that favored high pine sandhill habitats. Newts migrate into terrestrial habitats at significant distances from their breeding ponds. Dodd (1996) found that 82.9 percent of 12 wetland breeding amphibians (including striped newts) were captured 600 m (1,969 ft.) from the nearest wetland, and only 28 percent of amphibians were captured less than 400 m (1,300 ft.) from the wetland. Johnson (2003) found that 16 percent of striped newts in his study migrated more than 500 m (1, 600 ft.) from ponds. Dodd and Cade (1998) showed that striped newts travelled up to 709 m (2,330 ft.) from ponds. These long-distance movements of striped newts from breeding ponds to terrestrial habitats suggest that buffer zones around ponds should be established to protect upland habitats, as well as breeding ponds (Dodd 1996; Dodd and Cade 1998, Johnson 2003; Semlitsch and Bodie 2003). Trenham and Shaffer (2005) found that protecting at least 600 m (2,000 ft.) of upland habitat would maintain a population with only a 10 percent reduction in mean population size in the California tiger salamander (*Ambystoma californiense*). Dodd and Cade (1998) suggested that terrestrial buffer zones need to consider both distance and direction (migratory patterns) when created. Johnson (2003) recommended a protected area extending 1,000 m (3,300 ft.) from a breeding site as upland core habitat surrounding breeding ponds.

Pond hydrology strongly influences the complex life-history pathways of striped newts. Without enough water in ephemeral ponds, larvae will not have enough time to reach the minimum size needed for metamorphosis and will die as ponds dry up (Johnson 2002). However, permanent ponds could support predatory fish that feed on aquatic-breeding amphibians (Johnson 2005; Moler and Franz 1987). Variable hydroperiods in breeding ponds over a long time period could result in varying reproductive success. Dodd (1993) found a decline in striped newts due to persistent drought conditions. Johnson (2002) found that heavy rainfall in the winter of 1997 to spring of 1998 filled ponds to their maximum depth and contributed to reproductive success at these ponds. At one breeding pond, a minimum hydro-period of 139 days (Dodd 1993) was needed for larvae to reach complete metamorphosis. Larvae undergo metamorphosis into efts

after a period of 6 months, and in order for larvae to mature into paedomorphs, a breeding pond must hold water for at least a year (Johnson 2005). For a paedomorph to successfully reproduce, ponds must hold water for an additional 6 months to allow sufficient time for its larvae to undergo metamorphosis.

Striped newts form metapopulations that persist in isolated fragments of longleaf pine-wiregrass ecosystems (Johnson 2001; Johnson 2005). Within metapopulations, ponds function as focal points for local breeding populations that experience periods of extirpation and recolonization through time (*e.g.,* ponds as patches) (Johnson 2005; Marsh and Trenham 2001). Striped newts typically have limited dispersal, which can lead to pond isolation when stochastic events (*e.g.,* drought) affect rates of colonization and extinction (Marsh and Trenham 2001). In order for striped newts to recolonize local breeding ponds within the metapopulation, newts must disperse through contiguous upland habitat (Dodd and Johnson 2007). Protecting the connectivity between uplands and breeding ponds of diverse hydroperiods is crucial for maintaining metapopulations (Dodd and Johnson 2007; Gibbs 1993; Johnson 2005). Only a few stronghold locations exist, where there are multiple breeding ponds with appropriate upland habitat that allow dispersal to occur among the ponds (Johnson 2005). These stronghold locations represent different metapopulations across the range of the striped newt (Johnson 2005). In Florida, these include Apalachicola National Forest, Ocala National Forest, Jennings State Forest, Katherine Ordway-Swisher Biological Station, and Camp Blanding Training Site. In Georgia, they are found at Joseph Jones Ecological Research Center and Fort Stewart Military Installation (Johnson 2005; Stevenson 2000).

Habitat

Ephemeral ponds are important components of upland habitat in the southeastern United States (LaClaire and Franz 1990). Ephemeral ponds tend to be described as small (typically less than 5 ha (12.4 ac), isolated wetlands with a cyclic nature of drying and refilling known as hydroperiods. Ephemeral ponds can hold water at various times throughout a year to allow for reproduction. Precipitation is the most important water source for ephemeral ponds (LaClaire and Franz 1990). The cyclical nature of ephemeral ponds prevents predatory fish from inhabiting breeding ponds (Dodd and Charest 1988; LaClaire and Franz 1990; Moler and Franz 1987). Ephemeral ponds are biologically unique, because they support diverse species that are different than species found in larger, more permanent wetlands or ponds (Moler and Franz 1987).

The frequency and duration of water in ephemeral ponds creates different zones of vegetation within ponds. One species, maidencane (*Panicum hemitomon*), has been found at ephemeral ponds where striped newts have been found, and seems to be a good indicator of the extent of previous flooding in ponds (LaClaire 1995; LaClaire and Franz 1990). Persistence of maidencane helps to reduce the rate of oxidation of organic matter, reduce soil moisture loss, and inhibit growth and establishment of upland plant species (LaClaire 1995). The center of flooded ponds may contain plants with floating leaves surrounded by vegetation with submerged roots growing along the wet edges. Surrounding the wet areas are tall and short emergents, such as sedges, grasses, rushes, followed by other grasses such as bluestem grass (*Andropogon virginicus*) found in the drier margins of ponds. Water-tolerant shrubs or trees, such as

sandweed (*Hypericum fasciculatum*), are found in some transitional zones between ponds and uplands (LaClaire 1995; LaClaire and Franz 1990).

Ephemeral ponds are surrounded by upland habitats of high pine, scrubby flatwoods, and scrub (Christman and Means 1992). Longleaf pine-turkey oak stands with intact ground cover containing wiregrass (*Aristida beyrichiana*) are the preferred upland habitat for striped newts, followed by scrub, then flatwoods.

Striped newt habitat is fire-dependent, and naturally ignited fires and prescribed burning maintain an open canopy and reduce forest floor litter. An open canopy provides sunlight necessary for ground cover growth needed by newts for foraging and sheltering. Fire is also an important factor for wetland vegetation (LaClaire and Franz 1990; Means 2008). Historically, naturally ignited upland fires would occur during the late spring and early summer, and would sweep through dry pond basins, reducing organic matter and killing encroaching upland plant species (Means 2008; Myer 1990). Lack of fire in uplands that buffer breeding ponds allows fire-intolerant hardwoods to shade out the herbaceous understory that striped newts use for foraging and sheltering and may form fire shadows along the upslope wetland and upland boundary. Such fire shadows contains fire-intolerant evergreen shrubs (*Ilex* sp., *Vaccinium* sp., *Morella* (formerly *Myrica*) sp., and *Ceratiola* sp.) and sometimes xeric oak hammock zones (LaClaire and Franz 1990). Ponds that are completely burned from the upland margin to the opposite margin lack this vegetation; however, if the ponds are filled with water, fire will burn out at the pond, and allow the invasion of fire-intolerant hardwoods (LaClaire and Franz 1990). The impacts of fire on these temporary ponds promote species richness of grasses and sedges, especially during droughts (Means 2006). To eliminate hardwood encroachment, prescribed fire every 1 to 3 years during May to June, in necessary to maintain striped newt habitat (Means 2006).

Striped newts use upland habitats that surround breeding ponds to complete their life cycle. Efts move from ponds to uplands where they mature into terrestrial adults. The uplands also provide habitat for the striped newt to forage and burrow during the non-breeding season (Dodd and Charest 1988). Striped newts also use uplands to access alternative ponds that are needed if the original breeding pond is destroyed or the hydroperiod is altered (Means 2006), which indicates the interdependence between upland and aquatic habitats in the persistence of populations (Semlitsch and Bodie 2003). Semi-aquatic species (such as the striped newt) depend on both aquatic and upland habitats for various parts of their life cycle in order to maintain viable populations (Dodd and Cade 1998; Johnson 2001; Semlitsch 1998; Semlitsch and Bodie 2003).

Population estimates and trends

Surveys have been conducted for striped newts at many sites within Florida and Georgia. These surveys have found that the number of known occupied sites has declined and occupied sites are limited to just a few counties. However, historical information on the location of striped newts is difficult to confirm, as most of these sites underwent substantial land use changes since newts were first collected (Dodd *et al.* 2005).

Franz and Smith (1999) reviewed 100 records from 20 counties in Florida between 1922 and 1995, and conducted surveys between 1989 and 1995. They found that 4 historical ponds had newts, but also found 34 new ponds containing newts that were not previously documented. All 38 breeding ponds were found on 7 public lands that included the Apalachicola National Forest, Camp Blanding Military Reservation, Favor-Dykes State Park, Jennings State Forest, Katharine Ordway Preserve-Swisher Memorial Sanctuary, Ocala National Forest, and Rock Springs State Preserve (Franz and Smith 1999).

Johnson and Owen (2005) visited 51 sites in 11 counties in Florida from 2000 to 2003 that overlapped with the sites visited by Franz and Smith. They found that of 51 sites visited (totaling 64 ponds), only 26 ponds and adjacent upland habitat had excellent habitat quality (*e.g.*, multiple ephemeral ponds surrounded by fire-maintained native uplands) capable of supporting striped newts. Only 4 of these 26 sites had multiple breeding ponds needed to comprise metapopulations. They were found in Clay, Marion, and Putnam Counties at Camp Blanding Military Reservation (Clay), Jennings State Forest (Clay), Ocala National Forest (Marion), and Katherine Ordway Preserve-Swisher Memorial Sanctuary (Putnam) (Johnson and Owen 2005).

From 2005 to 2010, Enge (FFWCC, pers. comm., 2010, cited in USFWS 2013b) surveyed ponds in suitable habitat on 32 conservation lands in Florida. He found breeding ponds with newts in 58 ponds on 11 of the 32 conservation lands. He also found that although newts had a wider range in Florida than Georgia, they remained abundant only on public lands in Clay, Marion, and Putnam counties. This is consistent with the surveys conducted by Franz and Smith (1999) and Johnson and Owen (2005). Enge found that there were a total of 49 extant populations known from peninsular Florida and 7 from the panhandle. He considered an isolated breeding pond farther than 1,000 m (3,300 ft.) from the nearest breeding pond as a separate population. The striped newt metapopulations (*i.e.*, multiple breeding ponds with enough upland to allow for dispersal) are now only found on public lands in Clay, Putnam, and Marion counties. Populations still exist in 10 other counties in Florida, but these counties have fewer than 3 breeding ponds and these populations are considered vulnerable to extirpation.

In 2013, Enge (FFWCC, pers. comm., 2013, cited in USFWS 2013b) found a new striped newt pond 5.3 km north of two known ponds at Guana River WMA in St. Johns County, Florida. The pond is a smaller depression marsh adjacent to scrub habitat that had been sampled in 2010 without success. During two survey efforts, Enge located three paedomorphs and 8 large larvae at the new pond, and 9 paedomorphs and 10 large larvae at the two known ponds. Also in 2013, Enge found a new striped newt pond within a large dome swamp at Jennings State Forest in Clay County, Florida, where he captured a single paedomorph.

Data on the status of striped newts on private lands are limited due to the difficulty in accessing these lands. A survey of 227 ephemeral ponds on commercial forest lands in northern Florida in 1998 found striped newts in only four ponds in Clay and Putnam counties (Wigley 1999). Google Earth imagery and a visual roadside reconnaissance in 2012 of the degraded upland habitat surrounding the three ponds in Putnam County, which are located approximately 100 meters (m) apart, suggest that this population is either extinct or in severe decline (Enge, FFWCC, pers. comm., 2013, cited in USFWS 2013b). Enge also surveyed five privately-owned ponds in striped newt habitat in 2010, but did not find any newts.

The suitability of striped newt breeding ponds at the Apalachicola National Forest (ANF) and other areas within the Munson Sandhills region of Leon County, Florida, are in decline. The ANF was once considered a metapopulation for striped newt (Johnson 2005; Johnson and Owen 2005; Enge, FFWCC, pers. comm., 2010, cited in USFWS 2013b). However, the western Munson Sandhills in ANF was surveyed from 1997 to 2007, and researchers were only able to locate 18 breeding ponds (containing larvae or breeding adults) in 265 ephemeral ponds surveyed (Means and Means 1998a; Means *et al.* 2008). Means *et al.* (2008) found only five adult striped newts and no larvae during these surveys. Beginning in 2000, these ponds experienced severe drought conditions and a decline in newt populations. Despite recent survey efforts, the last Munson Sandhills adult striped newt was observed in 2007 (Means *et al.* 2012). By 2012, researchers with the Coastal Plains Institute concluded that the striped newt was extirpated from the Munson Sandhills of the ANF due to the cumulative effects of several stressors, including extended drought conditions, disease, and/or habitat alteration (Means *et al.* 2008). The apparent precipitous declines at ANF could occur elsewhere on protected lands within the striped newt's range, despite the protection of habitat.

As mentioned above, striped newts have only been found at five locations in Georgia, and these sites are highly fragmented and isolated (Stevenson 2000). An amphibian survey on 196 ephemeral ponds in 17 counties on timber company lands in the Coastal Plain of southeastern Georgia did not locate any striped newts in Georgia; however, striped newts were found in 4 ponds in Florida (Wigley 1999).

Stevenson (2000) looked at 25 historic striped newt localities in Georgia and was only able to find 2 sites (8 percent) that had multiple breeding ponds and upland habitat that would support striped newt populations. As of 2010, only two properties in the State are known to support viable populations: the Joseph Jones Ecological Research Center (JJERC) and Fort Stewart Army Base (Jensen, GADNR, pers. comm., 2010, cited in USFWS 2013b; Stevenson *et al.* 2009c). The Fort Stewart population lies within the range of the eastern genetic group on the Atlantic Coastal Plain and was represented by approximately 10 known wetlands. Since 2002, striped newts have been found at only one wetland at Fort Stewart (Stevenson *et al.* 2009c). The JJERC population lies within the range of the western genetic group on the Gulf Coastal Plain, and is represented by five known wetlands. In annual surveys from 2002 to 2010, researchers confirmed striped newts from only three of these five known wetlands (Smith, JJERC, pers. comm., 2010, cited in USFWS 2013b). Evidence suggests that both the eastern and western striped newt populations in Georgia are rare and declining. Most suitable striped newt habitat in Georgia has been lost to development or converted to pine plantations and silviculture (Dodd and LaClaire 1995).

Dusky (=Mississippi) Gopher Frog (*Rana sevosa*)

Species/critical habitat description

The gopher frog is a mid-sized, stocky, frog in the large cosmopolitan family, Ranidae ("true frogs"). The dusky gopher frog has a stubby appearance due to its short, plump body, comparatively large head, and relatively short legs (Conant and Collins 1991). The coloration of its back is dark and varies in individual frogs. It ranges from an almost uniform black to a pattern of reddish brown or dark brown spots on a ground color of gray or brown (Goin and Netting 1940). Warts densely cover the back. The belly is thickly covered with dark spots and dusky markings from chin to mid-body (Conant and Collins 1991). Males are distinguished from females by their smaller size, enlarged thumbs, and paired vocal sacs on either side of the throat (Godley 1992). Richter (Richter 1998; 1998b) reported mean snout-vent lengths from three years of data. They ranged from 2.5 to 2.8 inches (in) (63.2 to 70.2 millimeters (mm)) for males and 3.1 to 3.3 in (78.0 to 82.7 mm) for females in the extant population. Currently, there is no standardized method to consistently distinguish dusky gopher frog tadpoles from those of leopard frogs and other gopher frogs when in the field (Altig et al. 2001). There are four existing populations of dusky gopher frogs distributed across Harrison and Jackson Counties in Mississippi.

Goin and Netting (1940) originally described gopher frogs from the geographic range of the dusky gopher frog as a distinct species, *Rana sevosa*. However, in subsequent years these frogs were considered part of the subspecies, *Rana capito sevosa* (Conant and Collins 1991). For this reason, the dusky gopher frog was listed as an endangered distinct population segment (December 4, 2001; 66 FR 62993). At listing, the species was identified by the common name Mississippi gopher frog to distinguish it from the wider ranging subspecies. Since listing, the scientific community has recognized the validity of the original description and accepted the species designation, *Rana sevosa*, for gopher frogs occurring in Mississippi (Young and Crother 2001). In the final rule designating critical habitat for the dusky gopher frog (77 FR 35118), the common name and scientific name of the listed entity were changed to be in agreement with the accepted taxonomy of the scientific community.

Critical habitat for the dusky gopher frog was designated on June 12, 2012, and includes 1,544 ac (625 hectares (ha)) in St. Tammany Parish, Louisiana, and 4,933 ac (1,996 ha) in Forrest, Harrison, Jackson, and Perry Counties, Mississippi (77 FR 35118). The areas (units/subunits) designated include occupied habitat (18 percent of total critical habitat acreage) and unoccupied habitat (82 percent of total critical habitat acreage). Critical habitat consists of ephemeral wetland breeding habitat, upland forested nonbreeding habitat surrounding the wetlands where dusky gopher frogs spend most of their lives, and upland connectivity habitat between breeding and nonbreeding habitats.

Life history

Dusky gopher frog habitat, both the upland sandy sites historically forested with longleaf pine and the isolated temporary wetland breeding sites embedded within the forested landscape, are

maintained by fires frequent enough to support an open canopy and abundant herbaceous groundcover vegetation. Adult and subadult dusky gopher frogs spend the majority of their lives underground. Gopher frogs use active and abandoned gopher tortoise burrows, abandoned mammal burrows, and holes in and under old stumps as refugia (Allen 1932; LaClaire 1996; Richter et al. 2001). Gopher tortoise burrows probably represent preferred underground habitats (Godley 1992). The remaining dusky gopher frog populations occur in areas with very few gopher tortoises, most likely as a result of habitat degradation.

Dusky gopher frogs are generally active above ground only in winter when they travel to and from breeding ponds where they mate and deposit eggs, and larvae develop into metamorphic frogs. Gopher frogs can move considerable distances between their breeding and upland sites. A movement of 2.2 miles (3.5 kilometers) between upland habitat and breeding site was recorded in North Carolina (Humphries and Sisson 2011).

Breeding sites are small, relatively shallow, isolated (not connected to any other water body), depressional ponds that dry completely on a cyclic basis. Emergent herbaceous vegetation is important for egg attachment. The dominant source of water to the ponds is rainfall within small, localized watersheds. Substantial winter rains are needed to ensure that ponds fill sufficiently to allow hatching, development, and metamorphosis of larvae. The timing and frequency of rainfall are critical to the successful reproduction and recruitment of dusky gopher frogs. Breeding typically occurs from December to April (Richter et al. 2003), although chorusing and breeding has occurred outside this time frame following tropical storms and hurricanes (Seigel and Kennedy 2000; Sisson 2005).

Female dusky gopher frogs deposit a single clutch of eggs per breeding event that range from 500 to 2,800 eggs (Allen 1932; Richter 1998; Richter and Seigel 1998b, 1998a). Tadpoles metamorphose in 81 to 179 days in the field (Richter et al. 2003), generally in mid-May to late June. Size at metamorphosis can vary widely among years, primarily as a result of hydroperiod length (Richter et al. 2003).

The minimum age at maturity for male dusky gopher frogs is four to six months and age at maturity for females is estimated to be two to three years (Richter and Seigel 2002). No data exist on longevity, however an estimate of maximum longevity of 6 to 10 years was made by Richter et al. (2003). Most adults probably do not survive longer than five years (Richter and Jensen 2005).

Adult dusky gopher frogs are carnivorous, especially insectivorous. Goin and Netting (1940) reported gut contents of carabid (*Pasimachus* sp.) and scarabaeid (general *Canthon* sp. and *Ligryus* sp.) beetles. Dusky gopher frogs probably also eat frogs, toads, other beetles, hemipterans, grasshoppers, spiders, roaches, and earthworms as reported for other species of gopher frogs (summarized in Richter and Jensen 2005).

Population dynamics

Currently, there are only three known naturally occurring breeding sites (populations) of the dusky gopher frog. These populations have been named based on the designation given to their

breeding ponds: Glen's Pond, Mike's Pond, and McCoy's Pond. It is estimated that the population at Glen's Pond is composed of less than 100 adult frogs. Data are insufficient to make population estimates for the other two sites. The assumption can be made that the Mike's Pond population is considerably smaller than the Glen's Pond population, based on preliminary genetic work, and the McCoy's Pond population smaller yet since it is based on the record of one calling male frog. The small number of populations of the dusky gopher frog makes it extremely vulnerable to extinction from natural and man-made processes. Major factors affecting population persistence include life span, the number or proportion of annually breeding and egg-laying females, egg hatching success, percent survival of larvae, and survival rate of metamorphic frogs at the end of their first year. Larval caddisfly predation on eggs and young tadpoles can have important negative effects on recruitment (Richter 2000). Disease in developing tadpoles has been a threat, responsible in one year for nearly 100 percent mortality of Glen's Pond tadpoles. The on-going drought has significantly reduced the opportunity for frogs to breed in years when their pond does not fill, and caused breeding sites to frequently dry before a significant number of gopher frogs can metamorphose. Natural metamorphic frogs (not raised in tanks) have been produced at Glen's Pond in only three of the past six years.

Status and distribution

Historically, the dusky gopher frog occurred in at least nine counties or parishes in the States of Alabama, Mississippi, and Louisiana (Service 2001). Today it is known from only four sites (includes one newly translocated population) in two counties in Mississippi. The only breeding site known at the time of listing (Glen's Pond) occurs on the DeSoto National Forest in Harrison County, Mississippi. Subsequent to listing, potential habitat through-out the historic range of the frog (Florida parishes in Louisiana, coastal Mississippi counties, and coastal Alabama west of the Mobile Basin) has been searched extensively for additional breeding populations. In 2004, dusky gopher frogs were found at two other ponds sites, named McCoy's Pond and Mike's Pond, in Jackson County, Mississippi. A single calling male was heard at McCoy's Pond located on 16th section land owned by the state of Mississippi and managed by the Jackson County School board. A small group of tadpoles was collected from the Mike's Pond site located on private land. In 2004, an effort was initiated to translocate tadpoles and metamorphic frogs from the Glen's Pond population to a pond on the Old Fort Bayou Mitigation Bank in Jackson County, Mississippi. As a result of these releases over a period of seven years, two dusky gopher frog egg masses have been observed at the pond and we believe a small breeding population has been established at the site. In 2013, dusky gopher frogs moved 0.8 mi (1.3 km) from Glen's Pond to a restored pond named Pony Ranch Pond where they had never been observed previously; seven individual adult frogs were captured using a temporary drift fence (Pechmann and Tupy 2013). Dusky gopher frogs deposited three egg masses in Pony Ranch Pond which produced 18 metamorphosed juveniles (Pechmann and Tupy 2013).

Habitat destruction and degradation are considered the primary factors in the decline of the dusky gopher frog. Longleaf pine forested habitat has been reduced to less than five percent of its original distribution (Outcalt and Outcalt 1994). Longleaf pine forests have been converted to pine plantations and developed as residential areas. Ponds appropriate for breeding have been altered by bedding, clearing, damming, and nutrient loading during conversion of the surrounding forested habitat or no longer exist due to land use changes. The frog's remaining

habitat continues to be degraded due to fire suppression. In addition, these same factors have resulted in the decline of the gopher tortoise, whose burrows are most likely the preferred habitat for adult gopher frogs. Due to the decline of the gopher tortoise and the historical practice of pushing and hauling away stumps for the naval stores industry, fossorial habitat may be limiting in the frog's upland habitat.
Glen's Pond on the DeSoto National Forest is located in close proximity to an area proposed for a 4,000-acre residential development. Urban and commercial development of this area, including several highway projects, has the potential to further degrade this habitat. Residential development is also occurring in the vicinity of the Mike's Pond site.

In 2003, an undescribed disease was discovered in gopher frog tadpoles at Glen's Pond. Initial work on the disease by researchers at the National Wildlife Health Research Center indicates it is similar to *Perkinsus*, a genus of Mesomycetozoan that occurs in marine invertebrates including oysters. During field work conducted to study the *Perkinsus*-like disease, an additional disease, a chytrid fungus, was found in two other species of adult amphibians at Glen's Pond. This disease has been implicated in amphibian declines worldwide. The effect of these two diseases on the survival of the dusky gopher frog is unknown.

Glen's Pond has been monitored for the presence of gopher frog egg masses since 1988. In December of 1995, a drift fence was established to completely encircle Glen's Pond. The use of a drift fence allows monitoring of ingress and egress of both adult and metamorphic frogs. Both egg mass surveys and drift fence monitoring are currently being used to assess population status. When egg masses are laid, the eggs are counted and tadpole development at the mass is monitored until the tadpoles become free-swimming. Tadpoles in the pond are surveyed periodically to monitor development rate. Movements of adult and metamorphic gopher frogs are monitored by capturing them as they enter and exit the breeding pond. When breeding occurs, gopher frog eggs are collected, and after hatching, are raised in cattle tanks in the vicinity of Glen's Pond as a hedge against pond drying or other catastrophic events. These tadpoles have also been used in ecological and natural history experiments and translocated to a pond at the Old Fort Bayou Mitigation Bank in Jackson County, Mississippi, in an attempt to start a new population there.

Breeding at the primary breeding site, Glen's Pond, has resulted in a very small number of natural metamorphs since the late 1990's. When breeding occurs, the population there continues to be augmented with a few hundred metamorphs raised in cattle tanks. However, a year with a recruitment class of several thousand metamorphs is needed to protect against the extinction of this species. The likelihood of this event is unknown.

Dusky gopher frogs are held in captivity at zoos across the United States. The decision to move frogs into captivity as a hedge against extinction was made after the discovery of an undescribed disease and the complete loss of reproduction from the 2003/2004 breeding event. The Memphis Zoo, Memphis, Tennessee, has taken the lead in monitoring the captive population and maintaining the studbook. A population analysis and breeding and transfer plan has recently been completed. In the future, translocating tadpoles/frogs from the captive population is planned as a recovery strategy for the dusky gopher frog.

Eastern indigo snake (*Drymarchon couperi*)

The Service listed the eastern indigo snake as threatened in 1978 (43 FR 4028) due to population declines caused by habitat loss, over-collecting for the domestic and international pet trade, and mortality caused by rattlesnake collectors who gas gopher tortoise burrows to collect snakes. At the time of listing, the eastern indigo snake was considered a subspecies (*Drymarchon corais couperi*). Currently, the eastern indigo snake is recognized as a separate species (*Drymarchon couperi*) (Crother 2000; Wuster *et al.* 2001). At the time of listing, very little was known about the distribution and overall population trend of the eastern indigo snake. Historically, the eastern indigo snake occurred throughout Florida and in the coastal plain of Georgia, Alabama, and Mississippi (Diemer and Speake 1983; Moler 1985a). The Service's most recent status review of the eastern indigo snake was completed in 2008 and provides more detailed information on the status of the species (USFWS 2008). The Service has not designated critical habitat for the eastern indigo snake.

Species description

The eastern indigo snake was historically known as the largest North American snake species until recently when a 8.76 ft. (267 centimeter (cm)) bull snake (*Pituophis catenifer*) was discovered (Devitt *et al.* 2007). The maximum total length recorded for an eastern indigo individual is 8.6 ft. (262.9 cm), while most adult eastern indigo snakes average 5.0–7.0 ft. (152–213 cm) (Conant and Collins 1998) in length. This stout-bodied serpent is uniformly iridescent bluish black above and uniformly slate blue below. Throughout much of its range, the gular scales on the underside of the head found in the throat region and labial scales bordering the mouth opening are orange to coral-red; however, head and throat coloration are variable, with red coloration limited or entirely absent, or the center of the throat is white. The head is generally indistinct from the neck. Scales are smooth and wide, with 17 scale rows at mid-body. Adult male eastern indigo snakes have weakly-keeled scales on the median 3–5 dorsal scale rows (Conant and Collins 1998). Young eastern indigo snakes are 17–24 inches (43.2–61 cm) at hatching and resemble the adults in coloration (Conant and Collins 1998).

Life history

In Georgia and north Florida, eastern indigo snakes breed between November and April (Moulis 1976; Speake *et al.* 1987), with females depositing 4 to 12 eggs during May or June (Moler 1992). Young hatch in approximately three months. Limited information on the reproductive cycle in south-central Florida suggests the breeding season may extend from June to January, egg-laying from April to July, and hatching during mid-summer to early fall (Layne and Steiner 1996). There is no evidence of parental care. Snakes in captivity take three to four years to reach sexual maturity (Speake *et al.* 1987). Maturity in wild snakes is estimated at 60 in (150 cm) total length (Speake *et al.* 1987; Layne and Steiner 1996). There is no information on longevity of eastern indigo snakes in the wild; however one captive individual lived 25 years, 11 months (Shaw 1959).

Eastern indigo snakes are active and spend a great deal of time foraging and searching for mates. They are one of the few snake species that are active during the day and rest at night. Eastern indigo snakes are generalized predators, eating any vertebrate small enough to overpower and swallow alive. Prey include fish, frogs, toads, snakes (venomous, as well as non-venomous), lizards, turtles, turtle eggs, small alligators, birds, and small mammals (Keegan 1944; Babis 1949; Kochman 1978; Steiner *et al.* 1983; and Stevenson *et al.* 2010). Eastern indigo snakes range over large areas and into various habitats throughout the year, with most activity occurring in the summer and fall (Smith 1987; Moler 1985b). Adult indigo snakes have very large activity ranges; most estimates of home ranges vary from several hundred to several thousand acres.

Indigo snakes use below-ground shelters year-round as thermal refugia; where available, gopher tortoise *(Gopherus polyphemus)* burrows are frequently used. In the northern part of the indigo snake's range, gopher tortoise burrows are used to protect against the cold and over-wintering site fidelity at individual gopher tortoise burrows has been documented (Stevenson *et al.* 2003; Hyslop *et al.* 2006). In summer, indigo snakes are susceptible to desiccation and use burrows as protection from heat and dry conditions (Bogert and Cowles 1947). Throughout their range, they also use burrows for foraging, nesting, mating, and shelter prior to shedding (Stevenson *et al.* 2009b). They also move seasonally between upland and wetland habitats. Reliance on xeric sandhill habitats throughout the northern portion of the range in Georgia and northern Florida is attributed primarily to the availability of gopher tortoise burrows as winter refugia. In wetter habitats and in the more southern portions of their range without gopher tortoises, eastern indigo snakes may take shelter in hollowed root channels, hollow logs, stump holes, or the burrows of rodents, armadillos *(Dasypus novemcinctus),* or land crabs *(Cardisoma guanhumi)* (Lawler 1977; Moler 1985a; Layne and Steiner 1996; Hyslop 2007).

Population estimates and trends

The eastern indigo snake is very difficult to observe in the field, even in areas where it is known to occur; therefore standard population survey and mark/recapture methods are not effective. Lacking such studies, population attributes such as age structure, fecundity, and mortality in the wild are generally unknown; however, several estimates of sex ratios are available. Two studies of hatchlings/juveniles reported sex ratios not significantly differing from 1:1 (Moulis 1976; Steiner *et al.* 1983). However, sex ratios become more male biased in adult snakes (Layne and Steiner 1996; Stevenson *et al.* 2009b). Stevenson *et al.* (2009b) attributed this bias to lower female survival rates; however, since males have larger home range sizes and greater distance of daily movements (Hyslop 2007), males are more likely captured than females. Adult males are significantly longer and heavier than females (Layne and Steiner 1996; Stevenson *et al.* 2009b). Although both sexes mature at about the same total length, males continue to grow after sexual maturity, whereas females apparently devote most available energy to vittellogenesis (USFWS 2008; Stevenson *et al.* 2009b).

Due to the difficulties of observing and capturing indigo snakes, the viability of existing populations is unknown. Sites with historical and/or current (post-1999) records for the species are considered to support a population. The species' broad range and individuals' large territory

size further complicate evaluation of its population status and trends; therefore, population trend data for the eastern indigo snake are generally not available. Some researchers have inferred abundance, population trends, and the extent of habitat required to support eastern indigo snake populations using data on movements and estimates of home range size (100 percent minimum convex polygons) developed from studies using radio telemetry. In Georgia, Speake *et al.* (1978) reported average home ranges of 12 ac (4.8 ha) during the winter (December to April), 106 ac (42.9 ha) during late spring/early summer (May to July), and 241 ac (97.4 ha) during late summer and fall (August to November). In peninsular Florida, home ranges for females and males ranged from 4.7 to 371 ac (1.9 to 150 ha) and 3.9 to 807 ac (1.6 to 326.6 ha), respectively (Moler 1985b; Layne and Steiner 1996; Bolt 2006; Dodd and Barichivich 2007). At the Archbold Biological Station in Florida, Layne and Steiner (1996) determined an average home range size for female indigos of 47 ac (19 ha), and 185 ac (75 ha) for overlapping male home ranges. In a more recent radio telemetry study in Georgia, Hyslop (2007) reported home range sizes of 87.5–885 ac (35–354 ha) for females and 350–3,825 ac (140–1,530 ha) for males. Analysis of habitat use suggested an avoidance of paved roads, urban areas, and deciduous forest.

Eastern indigo snakes can move considerable distances in short periods of time. Speake *et al.* (1978) reported that two snakes moved a maximum distance from release points of 2.2 miles (mi) (3.5 kilometers (km)) in 42 days and 2.4 mi (3.8 km) in 176 days. Moler (1985b) recorded snakes traveling from their wintering dens in mid to late March distances of 0.5 mi (0.8 km) and 1.1 mi (1.7 km). Stevenson *et al.* (2009b) recaptured an adult male 14 mi (22 km) from its initial site of capture two years earlier, suggesting that longer annual movements may occur. Indigo snakes exhibit a homing instinct and may return annually to previously used winter dens (Speake *et al.* 1978; Moler 1985b; Speake *et al.* 1987; Stevenson *et al.* 2003; Hyslop 2007). There is some evidence of cannibalism, male territorial combat (ritualized fighting, often at or near gopher tortoise burrows that contain adult females), and little overlap in the home ranges of same-sex adults in parts of the species range (low population density) (Speake *et al.* 1987; Layne and Steiner 1996; Bolt 2006). These data suggest that this large terrestrial species requires a large area to survive. Due to their large home ranges and other behavioral traits, Moler (1992) estimated that suitable habitat of at least 2,500 ac (1,000 ha) is needed to support an eastern indigo snake population.

Black pine snake (*Pituophis melanoleucus lodingi*)

The Service listed the black pine snake in October, 2015 as a threatened species throughout all of its range, including Alabama, Louisiana, and Mississippi (80 FR 60468-60489). Critical habitat has been proposed, but not been assigned to the black pine snake as of September 19, 2016.

Species description

Pine snakes (genus *Pituophis*) are large, short-tailed, powerful constricting snakes with keeled scales and disproportionately small heads (Conant and Collins 1991). Their snouts are pointed and they are good burrowers. Black pine snakes are distinguished from other pine snakes by dark brown to black coloration on both the upper and lower surfaces of their bodies; however, adult coloration varies considerably (Vandeventer and Young 1989). Some adults have russet-brown snouts, may have white scales on their lips and throat, and may have a vague pattern of blotches on the end of the body approaching the tail. The length of adult black pine snakes ranges from 48–74 in (122–188 cm) (Mount 1975; Conant and Collins 1991). Young black pine snakes often have a blotched pattern, typical of other pine snakes, which darkens with age.

Taxonomists recognize three subspecies of *Pituophis melanoleucus* (pine snakes) distributed across the eastern United States (Crother 2000; Rodriguez-Robles and De Jesus-Escobar 2000). Blanchard (1924) originally described the black pine snake, *P. m. lodingi*. It is geographically isolated from all other pine snakes; however, evidence suggests that the black pine snake mixed with other pine snakes in the past. A form intermediate between the black pine snake and the Florida pine snake (*P. m. mugitus*) occurs in Baldwin and Escambia counties, Alabama, and Escambia County, Florida. These snakes are separated from populations of the true black pine snake by the extensive Mobile River Delta and the Alabama River (Duran 1998a,). A study of the genetic structure of the three subspecies supports recognizing all three as genetically distinct groups (Getz *et al.* 2012).

Life history

Black pine snakes are active during the day but only rarely at night. With a pointed snout and enlarged rostral scale (the scale at the tip of their snout), pine snakes are accomplished burrowers for digging nests and excavating rodents for food (Ernst and Barbour 1989). In addition to rodents, wild black pine snakes have been reported to eat nestling rabbits and quail (Vandeventer and Young 1989). In captivity, black pine snakes will eat rats, mice, and chicks (Vandeventer and Young 1989). During field studies of black pine snakes in Mississippi, hispid cotton rats (*Sigmodon hispidus*) and cotton mice (*Peromyscus gossypinus*) were the most frequently trapped small mammals within black pine snake home ranges (Duran and Givens 2001; Baxley and Qualls 2006).

Duran and Givens (2001) estimated the average size of black pine snake home ranges on Camp Shelby, Mississippi, at 47.5 ha (117.4 ac) using data obtained during their radio-telemetry study, and reported some evidence of territoriality. A more recent study conducted on Camp Shelby

provided home range estimates from 55 to156 ha (135–385 ac) (Lee 2009a). Baxley and Qualls (2006) reported home range calculations from data collected on the DeSoto National Forest and other areas of Mississippi of 91–395 ha (225–976 ac). The smaller home range sizes at Camp Shelby may reflect higher habitat quality due to conservation management for a gopher tortoise population.

Very little information on breeding and egg-laying is available from the wild. Lyman *et al.* (2007) described mid-May through mid- June as the period when black pine snakes breed at Camp Shelby, and reported that mating activities generally take place in or at the entrance to armadillo burrows. Based on dates when hatchling black pine snakes have been captured, the potential nesting and egg deposition period of gravid females extends from the last week in June to the last week of August (Lyman *et al.* 2009). In 2009, a natural nest with a clutch of six recently hatched black pine snake eggs was found at Camp Shelby (Lee 2011). The nest was located 74 cm (29 in) below the soil surface at the terminus of a juvenile gopher tortoise burrow. The microhabitat within a tortoise burrow likely provides a suitable microclimate for egg incubation in warm climate areas (Lee 2011).

Hatchlings average 46 cm (18 in) at birth (Vandeventer and Young 1989). Longevity of wild black pine snakes is not well documented, but is at least 10 years, based on recapture data from Camp Shelby (Lee, The Nature Conservancy, *in litt.* 2013a, cited in USFWS 2013a). The longevity record for a captive male black pine snake is 14 years, 2 months (Slavens and Slavens 1999). Recapture and growth data from black pine snakes on Camp Shelby indicate that they do not reach sexual maturity until their 4th or possibly 5th year (Yager *et al.* 2006).

Habitat

Black pine snakes are endemic to the upland longleaf pine forests of the southeastern United States. Habitat consists of sandy, well-drained soils with an overstory of longleaf pine, a fire suppressed mid-story, and dense herbaceous ground cover (Duran 1998a). Duran (1998) conducted a radio-telemetry study of the black pine snake that provided data on habitat use. Snakes in this study were usually located on well-drained, sandy-loam soils on hilltops, ridges, and toward the tops of slopes. They were rarely found in riparian areas, hardwood forests, or closed canopy conditions. More than half of the time, black pine snakes were located underground, usually in the trunks or root channels of rotting pine stumps.

During two additional radio-telemetry studies (Yager, *et al.* 2006; Baxley 2007), pine snakes were observed more frequently in riparian areas, hardwood forests, and pine plantations than in Duran's (1998b) study, which suggests a requirement for some degree of habitat heterogeneity. However, individual snakes tracked in these studies also repeatedly used the same pine stump and associated rotted root system from year to year, which demonstrates site fidelity within a longleaf pine habitat setting. Black pine snakes moved seasonally between warm weather active areas and winter hibernacula located in inactive areas. Snakes emerged from hibernacula in mid-February, made short movements within the inactive area, and moved to their active area in late

March. They occupied the active areas until late September when they moved back to their inactive areas.

Rudolph *et al.* (2007) and Baxley (2007) noted that black pine snakes do not appear to exhibit true hibernation behavior, because they observed movements above ground on warm days throughout all months of the year. However, black pine snakes are inactive underground for significant periods of time from early December through late March, hiding singly at shallow depths (mean of 25 cm (9.8 in); maximum of 35 cm (13.8 in)) in chambers formed by the decay and burning of pine stumps and roots, with minimal enlargement of the preexisting chambers (Rudolph *et al.* 2007).

Population estimates and trends

The black pine snake is a difficult species to locate even in areas where it is known to occur, and all available population estimates and trend characterizations are inferential. Based on habitat assessment of historic records, Duran and Givens (2001) reported that black pine snakes probably no longer occur at least 53 of 157 previously documented sites (34 percent). Correcting for potential bias in this methodology, the Service's status review dated April 18, 2013, estimates that black pine snakes more likely no longer occur at 51 percent of the historic record sites.

Based on data from Duran and Givens (2001), Hart (2002), D. Baxley, University of Southern Mississippi (*in litt.* 2006, cited in USFWS 2013a), and B. Porter, U.S. Fish and Wildlife Service (*in litt.* 2005, cited in USFWS 2013a), the Service estimates that the extant range contains 16 populations of black pine snakes (USFWS 2013a). Nine of these are in Alabama and seven are in Mississippi; however, populations on the DeSoto National Forest in Mississippi account for 79 percent of the total occupied area. The 2,024 ha (5,000 ac) Fred T. Stimpson State Game Sanctuary in Clarke County, Alabama, represents the best opportunity for long-term survival of the black pine snake in Alabama.

ENVIRONMENTAL BASELINE

The Action Area encompasses the known range of the GT (shown in Figure 1), eastern indigo snake, black pine snake, striped newt, and dusky gopher frog in their entirety. Therefore, the status of the species within the Action Areas and factors affecting the species' environment within the Action Area are identical to those described in the Species Status sections above.

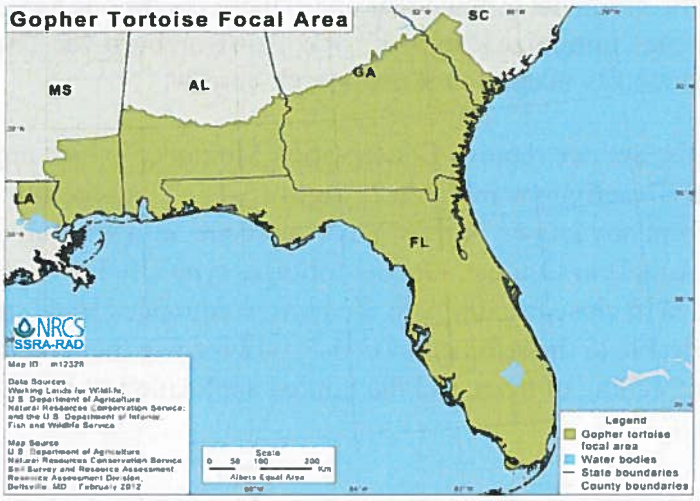

Figure 1: WLFW-GT Action Area (9/2013 AmOp)

EFFECTS OF THE ACTION

NRCS has requested the Service revise CMs 1, 5, 9, 13, and 14, and the related CPs where applicable. Besides the gopher tortoise, the covered species evaluated in this section refer to those that may potentially be found in a gopher tortoise burrow (i.e. burrow commensals); and therefore may be affected by those actions that damage the structure of the burrow. These three burrow commensal species are Dusky Mississippi gopher frog, black pinesnake, and Eastern indigo snake. The Service will follow a similar format throughout the revision process as previously used on the 9/2013 AmOp to provide clarity and uniformity between the documents.

NRCS has requested the Service adjust Conservation Measure 1 which applies to all Conservation Practices with the exception of CP 338, 528, and 342 (Descriptions in Table 2). Conservation Measure 1 reduces the 25' buffer (Wilson et al. 1997; 2014 USDA-FS Revised Land and Resource Management Plan for National Forests in Mississippi, Florida Department of Transportation– Listed Species Guidelines) to 13' buffer (radius) (Smith, et. al., 2015) from any known burrow where mechanical use is likely to occur. Additional language was also added to allow the application of herbicide and tree felling inside of the 13' buffer (Smith et al. 2015). The Service has reviewed the publication, *Recommendation for Gopher Tortoise Burrow Buffer to Avoid Collapse from Heavy Equipment*. According to the authors, heavy equipment utilized

during the study was limited to three types of equipment (tractor with tree mowing attachment, front-end loader, and feller buncher), with a maximum weight of roughly 33,000 pounds, and a wheel span of greater than six feet. Only adult burrows >8.6 inches in width were tested, two soil types were tested; deep sandy and sandy-clay-loam soil types (typic quartzipsamment; Lake-land, bigbee series, grossarenic kandiutdult; Troup series; NRCS SOIL MAP TYPES), and each type of machinery made passes over 5 burrows of each soil type (30 total burrows during the analysis). Following the experiment, the greatest distance into a burrow collapse that occurred was roughly 10 feet. This collapse was located in deep sandy soils using the front-end loader. Following the study, the group determined that under these conditions a minimum buffer of 13 feet would be adequate to "minimize [the] risk" of collapse on burrows. They also suggested that each burrow be conspicuously marked to identify each burrow.

NRCS has requested the Service remove Conservation Measure 5 which applies to Conservation Practices 314 and 666 (Descriptions in Table 2, pages 13-15). Conservation Measure 5 limited these CPs to 25 feet from any known burrow and/or nest site until all nesting activities are completed, typically August to October. Gopher tortoises typically lay clutches of eggs in the apron or in a sunny area in close proximity to the burrow entrance (16-67cm) (Butler and Hull, 1996). Both CPs applicable to the removal of CM-5, will receive the protection of a 13' buffer from heavy equipment, felling of trees, and the limited application of herbicide afforded under CM-1.

NRCS has requested the Service remove Conservation Measure 9 which applies to Conservation Practices 394, 490, 512, 533, 550, 655, 642, 614, 516, and 561 (Descriptions in Table 2, pages 13-15). Conservation Measure 9 required; a minimum of 2.5 acres (9/2013 AmOp) of gopher tortoise foraging habitat be maintained around a burrow at all times, not be permanently converted, removed, or degraded by any means (e.g. clearing, trampling, flooding), clearing of gopher tortoise habitat be minimized and restored as soon as possible when such clearing is temporary, and allowed scrub-shrub habitat to be permanently or temporarily removed without adversely affecting gopher tortoise. The intent of the WLFW-GT and the associated requirements land owners are contractually liable to maintain limits the possibility of permanent conversion of land cover to non-target species and structure.

NRCS has requested the Service remove Conservation Measure 13 which applies to Conservation Practice 394 (Description in Table 2, pages 12-15). Conservation Measure 13 stated the installation of a fire break should not impede the movement of a gopher tortoise. The use of prescribed fire and associated fire breaks are well known and historically used across gopher tortoise habitat. There is no literature available that shows the use of fire breaks limits the movement of gopher tortoises. Whereas, the use of prescribed fire and associated benefits are well understood and agreed upon across literature and experts.

NRCS has requested the Service remove Conservation Measure 14 which applies to Conservation Practice 512 (Description in Table 2, pages 12-15). Conservation Practice 512 limits the use of planting to only native warm season grasses. Historically, gopher tortoises inhabit areas with longleaf pine and a diversity of herbaceous ground cover dominated by wiregrass or bluestem (Ware et al., 1993). Planting only native warm season grasses would

reduce the likelihood of a diverse ground cover, and out compete some of the more desirable forbs, and plant life gopher tortoise utilize for foraging and cover.

The Service evaluated the identified CMs for revision in the context of how the individual CPs have the potential to produce beneficial and adverse effects to the covered species at the individual, population, and landscape scales. The Service believes that, as implemented, the CMs should result in improving, minimizing, or eliminating potential adverse effects. However, even with the implementation of the CMs, some remaining adverse effects will occur to the gopher tortoise and other covered species as described below. Nevertheless, the Service believes that the CMs, in concert with the goals and objectives of the WLFW-GT, should collectively produce a net benefit to all covered species.

The Service acknowledges that a net conservation benefit should occur for species other than the covered species identified above as a result of implementing WLFW-GT management and restoration activities. However, in the short-term, they may adversely affect individuals of non-covered species that may occur on enrolled properties.

If federally-listed species other than the covered species potentially exist on an enrolling property, then NRCS and the Service will consult with and assist the landowner in tailoring management actions to avoid take, and minimize any disturbance of those species. In the unlikely event that avoidance and minimization measures cannot be identified and implemented to the extent that incidental take cannot be avoided, then separate reinitiation of Section 7 consultation under the Act would occur. The Service will make every effort to expedite such consultations.

Analysis for Effects of the Action

In evaluating the direct, indirect and cumulative effects of the proposed action, the Service was able to identify and evaluate adverse effects common to the covered species. As such, the Service is able to collectively evaluate the effects and summarize them as described below. It is important to note that the Service evaluation and determination of these common adverse effects (prescribed fire, herbicide application and mechanical removal) duly considers and incorporates the conservation value of the identified CMs jointly developed by the partnership.

The Service acknowledges when CPs are installed or applied to the land, short-term and long-term effects are likely to occur to the covered species. The following potential direct and indirect effects have been identified:

1. VEGETATION MODIFICATION – The reduction of the required buffer from CPs is to maintain or improve vegetation on the land for a variety of conservation benefits. The installation or application of some CPs with a buffer of 13 feet involves the removal or reduction of unwanted vegetation through mechanical removal (heavy equipment), and the use of herbicides. A revision has also been requested to modify vegetation up to the burrow entrance including the use of backpack herbicide application, hack-and-squirt treatments, manual tree felling, and the use of hand tools. Vegetation modification may be permanent or temporary, and may entail complete removal or targeted removal or reduction of undesirable or invasive species.

2. GROUND DISTURBANCE – The installation or application of a 13' buffer across applicable CPs will result in soil surface disturbance and/or compaction. Protection from compaction and disturbance will be reduced by 48% through application of the revision. The ground disturbance may involve minor surface disturbance, removal of forage, or deeper disturbance such as pipeline trenches.

3. HUMAN DISTURBANCE – The installation or application of a 13' buffer across applicable CPs will temporarily or permanently increase the presence and/or level of human activities (noise, visual disturbance). Temporary disturbance will occur during installation of structural practices such as pipelines and watering facilities. Long-term increases in human activity will occur where the CP requires regular operation, maintenance, or monitoring.

4. EXOTICS – Many CPs are applied to remove or control undesirable non-native plants and animals. The installation or application of applicable CPs also has the likelihood of introducing undesirable species into the area, or enhance the ability of undesirable species present in the area to increase or spread on the site, or be transported from the site.

Temporary soil disturbance, vegetation removal, and increased potential of introduction of invasive plants

Temporary soil disturbance and vegetation removal are expected from the implementation of many of the CPs. This disturbance may result in short-term loss of cover and forage; and increase the potential spread or establishment of invasive plants such as cogongrass. For purposes of this analysis, the Service is combining these conservation issues into a single discussion of their potential adverse effects.

Sources of the disturbance would include use of equipment (bush hogs, skidder sprayers, tractors, and other machinery) as well as practices that involve the planting or manipulation of vegetation (examples such as brush management, shrub control, and fire breaks). Common adverse effects identified by the Service include degradation of habitat conditions, nest disturbance, and the potential for increased habitat fragmentation if the scale of the disturbance is large enough and the potential to create opportunities for colonization of these disturbed sites by invasive plants.

Temporary adverse effects on individuals are likely to include reproductive isolation, increased levels of stress hormones, reduced forage availability, burrow abandonment, and reduced shade/cover access. If these risks are realized, individual fitness is reduced and may have population level effects if disturbance is over a broad enough spatial or temporal scale.

Permanent Removal/loss of suitable habitat

Certain Facilitating Practices where the revised buffer is applicable (firebreak, watering facility, pumping plant, water well, pipeline, and fence) in this AmOp have the potential to result in the permanent removal/loss of habitat for the covered species.

Most of the structural practices may produce localized losses which can be minimized using the identified recommended CMs. The CMs focus on design and planning aspects of the CPs so as to avoid large expanses of habitat loss especially from linear CPs (e.g., fence lines, water pipelines, etc.), as well as minimize impacts to priority gopher tortoise habitat (specifically highly suitable soils), and adverse effects to the populations.

Increased Susceptibility of accidental mortality or injury to individuals

Conservation Practices that require the use of heavy mechanized equipment were identified as potentially causing mortality or injury to individuals of the covered species. These events can arise from: (a) fires that burn too fast and/or hot and/or does not provide a tortoise adequate time to reach refuge; (b) direct collision between the equipment and adults, juveniles, eggs and/or nests; and (c) burrow collapse and subsequent entombment. The reduction of the buffer from 25' to 13' will increase the susceptibility of direct mortality or injury caused by heavy equipment use. The use of specific CMs focusing on design, timing, and method of operation of machinery, including the use of avoidance buffers surrounding known gopher tortoise burrows, is expected to reduce the potential adverse effects of these CPs.

Risk is primarily associated with the use of heavy machinery directly adjacent to or on top of the burrows, and should not restrict the use of hand tools within the buffer area. Since the majority of gopher tortoise nests are found directly outside the burrow entrance (i.e. burrow "apron"), maintaining a heavy machinery buffer around each known burrow should greatly reduce the risk of either directly destroying a nest or compacting the soil to the extent that an emerging hatchling cannot dig out. Although studies have shown that most adult gopher tortoises are capable of self-excavation following burrow collapse, the long-term individual and population-level effects are unknown, as are the abilities of commensals to self-excavate (9/2013 AmOp).

Estimating Impacts to Individuals of the Covered Species on Enrolled Properties

We do not have data about the degree to which the proposed conservation measures may fail to prevent direct impacts to the Covered Species (*i.e.*, death or injury as described above, such as by failing to detect and avoid a tortoise burrow during site preparation). At this time, we believe that the proposed conservation measures would protect at least 90 percent of the Covered Species that may occur on properties enrolled under the Action; *i.e.*, we assume no more than a 10 percent failure rate for these measures. Due to the unsuitable or marginally suitable habitat conditions at enrolled properties (conditions which warrant the proposed restoration and enhancement practices), the Covered Species are likely present at low densities, if at all, and occupying a larger-than-average home range. To estimate the extent of potential death/injury that may result from the proposed practices, we apply a 10 percent assumed failure rate to available density and range data for the Covered Species that we believe best represent the enrolled properties.

Gopher Tortoise

Synthesizing data from 21 study sites with variable habitat conditions, land-use history, and current management in Alabama, Georgia, and Mississippi, Styrsky *et al.* (2010) reported that an "average" gopher tortoise population contains 240 tortoises on 1,865 ac (0.129 tortoises/ac). Assuming that properties enrolled in WLFW-GT support a density less than or equal to this average population, direct impacts from restoration activities could kill or injure 1 tortoise for every 77.5 ac enrolled (1 / ((0.129 tortoises/ac) * 0.1 failure rate). Lacking data or methods that could support comparable calculations for potential nest destruction, we conservatively assume (*i.e.*, overestimate) that this impact would occur at no more than half of the juvenile/adult rate, or 1 nest for every 155 acres (77.5 ac * 2), since the number of nests depends on the number of females, which we assume represent half of the population. These impact rates should apply separately to acreage enrolled in the listed and candidate portions of the gopher tortoise's range within the WLFW-GT action area.

Eastern Indigo Snake

Density data for the eastern indigo snake are not available. The most recent radio telemetry study of eastern indigo snakes conducted within the WLFW-GT action area (Georgia portion only) reported home range size of 87.5–885 ac for females and 350–3,825 ac for males (Hyslop 2007). There is some evidence of cannibalism, male territorial combat, and little overlap in the home ranges of same-sex adults in low-density parts of the species range (Speake *et al.* 1987; Layne and Steiner 1996; Bolt 2006). Sex ratios of hatchlings/juveniles do not vary significantly from 1:1 (Moulis 1976; Steiner *et al.* 1983), and adult sex ratios may become more male-biased snakes (Layne and Steiner 1996; Stevenson *et al.* 2009b). Therefore, in habitats of marginal suitability such as properties enrolled in WLFW, we assume that the lower limit reported for male home range size in Georgia would likely encompass the range of one additional female snake (*i.e.*, a density of 2 snakes per 350 ac). This assumption yields an estimated death or injury rate of 1 indigo snake resulting from the proposed practices for every 1,750 ac enrolled (1 / ((2 snakes / 350 ac) * 0.1 failure rate). We conservatively assume that nest destruction would occur at no more than half of the juvenile/adult rate, or 1 nest for every 3,500 ac (1,750 ac * 2), since number of nests depends on the number of females, which we assume represent half of the population.

Black Pine Snake

Density data for the black pine snake are not available. Home range size is reported for radio telemetry studies on Camp Shelby and the DeSoto National Forest in Mississippi. Home ranges in the DeSoto study were larger, probably reflecting lower habitat quality. As with the indigo snake, some evidence of territoriality is reported for the black pine snake; therefore, we assume that the lower limit of home range size (225 ac) on the DeSoto National Forest (Baxley and Qualls 2006) would likely encompass the range of at most one male and one female (*i.e.*, a density of 2 snakes per 225 ac). This assumption yields an estimated death or injury rate of 1 black pine snake resulting from the proposed practices for every 1,125 ac enrolled (1 / ((2 snakes / 225 ac) * 0.1 failure rate). We conservatively assume that nest destruction would occur at no

more than half the juvenile/adult rate, or 1 nest for every 2,250 ac (1,125 ac * 2), since number of nests depends on the number of females, which we assume represent half of the population. The range of the black pine snake encompasses only the three western-most counties of the WLFW-GT action area in Alabama; therefore, these impact rates should apply only to the acreage enrolled in in these counties.

Striped Newt

The possible presence of the striped newt on an enrolled property in the NRCS-WLFW-GT Action Area is dependent on suitable ephemeral ponds for breeding, but even if present, the probability that the striped newt occupies the property is low. Extant populations are known from only five locations in Georgia, including Fort Stewart, Lentile Property, Joseph W. Jones Ecological Research Center (JJERC), Fall Line Sandhills Wildlife Management Area, and Ohoopee Dunes Wildlife Management Area (USFWS 2013). An amphibian survey on 196 ephemeral ponds in 17 counties on timber company lands in the Coastal Plain of southeastern Georgia failed to detect the striped newt (Wigley 1999). On the JJERC, where previous studies had documented five ponds supporting the species, annual surveys of all five from 2002 to 2009 detected striped newts at only three of these (Smith, JJERC, pers. comm., 2010, cited in USFWS 2013b). Based on the nature of the Conservation Measures and Conservation Practices, the Service believes this Action is not likely to adversely affect the species.

Dusky Gopher Frog

Historically, the dusky gopher frog occurred in at least nine counties or parishes in the States of Alabama, Mississippi, and Louisiana (Service 2001). Today, it is known from only four sites (includes one newly translocated population) in two counties in Mississippi. The only breeding site known at the time of listing (Glen's Pond) occurs on the DeSoto National Forest in Harrison County, Mississippi, and following listing a new population was discovered nearby (0.8mi) in Pony Ranch Pond. . In 2004, dusky gopher frogs were found at two other ponds sites, named McCoy's Pond and Mike's Pond, in Jackson County, Mississippi. Potential habitat through-out the historic range of the frog (Florida parishes in Louisiana, coastal Mississippi counties, and coastal Alabama west of the Mobile Basin) has been searched extensively for additional breeding populations. Based on the required habitat and breeding needs of the dusky gopher frog, the Service believes this Action is not likely to adversely affect the species.

Interrelated and Interdependent Activities

We must consider the effects of other federal activities that are interrelated to, or interdependent with, the proposed Action (50 CFR §402.02). Interrelated actions are part of a larger action and depend on the larger action for their justification. Interdependent actions have no independent utility apart from the action under consideration. The proposed Action is one of several initiatives (*e.g.,* the Range-Wide Conservation Strategy for the Gopher Tortoise [USFWS *et al.* 2013]) to restore longleaf pine habitats for gopher tortoises and other species, but does not

depend on these other initiatives for its justification, nor does the utility of these other initiatives depend on the Action. At this time, we are unaware of federal actions that satisfy the definitions of interrelated and interdependent actions that will not undergo Section 7 Consultation in the future or that are not already included in the environmental baseline. We address non-federal actions that may affect the Covered Species in the Action Area under section 5, Cumulative Effects.

Summary of Effects

Habitat maintained by landowner participation in the WLFW-GT will increase the optimal matrix of habitat for the gopher tortoise, thereby reducing potential isolation between colonies within the boundary of the managed property. Implementation of the CPs, and associated CMs, within the Action Area is expected to increase the amount and quality of suitable gopher tortoise and covered species habitats on private lands, thereby furthering recovery and conservation goals (1990 GT Recovery Plan). Without management of the current and historic areas where these species occur but are not afforded protection and conservation, declines in populations have occurred or are expected. Although longleaf pine stands exist in the project area, pine plantations also exist, creating isolation and fragmentation between populations.

Natural regeneration of more open pine stands will be developed, and the WLFW-GT is designed to provide a mosaic of habitat, retention of forest cover, as well as the strategic recruitment of colonies within the landscape of the identified Action Area as a means of combating the effects of forest fragmentation. The implementation of these CMs should carry much greater long-term positive effects such as enhancing occupied habitat through restoration of native grasses and canopy structure.

Creation, restoration, and enhancement of desired habitat structure will likely facilitate some adults and/or juveniles to reoccupy previously abandoned lands/habitats, and new populations and associated habitat components will be created which will contribute to the recovery and conservation of the species. Implementation of the described management practices may have a temporary impact to the gopher tortoise and other covered species in the form of harm and/or harassment; however, benefits from the creation, restoration and maintenance of habitat, especially when coupled with established CMs, will produce a conservation net gain for the covered species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this BO/CO. Future federal actions that are unrelated to the proposed action are not considered, because they require separate consultation under section 7 of the Act.

The conversion of native southern pine forests to intensively managed pine forests (planted pine plantations or regenerated forests) is anticipated to continue in the future (Bailey and Smith

2007), although projected conversion rates vary and appear to have declined over the past decade compared to rates documented in the 1980s and 1990s. Prestemon and Abt (2002) predicted that southeast Alabama would experience a gradual loss of up to 25 percent of its forest lands, due mostly to urban development. Likewise, in 10 coastal Georgia counties within the proposed WLFW-Gt action area, the human population is expected to increase 51 percent by 2030 (Center for Quality Growth and Regional Development 2006), but no estimate of impact on native habitats was provided.

In addition to habitat loss resulting from urbanization or conversion to pine plantations, habitat for the Covered Species will continue to degrade from fire suppression and/or ineffective use of prescribed fire. Funding, staff, and smoke management issues substantially constrain the ability of public and private land managers to adequately maintain and implement prescribed fire programs.

Several initiatives and incentives to conserve and restore longleaf pine forests within the range of the gopher tortoise, including the WLFW-Gt action area, are in progress (National Council for Air and Stream Improvement, Inc. 2010; Tall Timbers 2010). These include large-scale and comprehensive programs, such as the ecosystem restoration effort in the Conecuh National Forest, which is a federal action subject to consultation. Other initiatives are promoting voluntary silvicultural practices on industrial and private timber lands that are beneficial to tortoises and other longleaf pine-associated species. These practices include the use of prescribed fire, lower basal area after thinning, lower planting densities, increased planting of longleaf pine, mid-rotation woody brush control with herbicides, and planting plans that provide a continuous supply of early-age planted pines in the vicinity of known tortoise populations (Jones and Dorr 2004).

We anticipate that landowner agreements under the proposed Action will result in higher populations and a broader distribution of the Covered Species and other longleaf pine-associated species than the future without the Action. Whether the Action combined with other conservation initiatives will successfully reverse the decline in the longleaf pine ecosystem and its associated wildlife in the WLFW-GT action area is uncertain.

CONCLUSION

After reviewing the current Status of the Species, the Environmental Baseline for the Action Area, the effects of the Proposed Action, and the cumulative effects, it is the Service's biological and conference opinion that the NRCS WLFW-GT, as proposed, is not likely to adversely affect the striped next and Mississippi dusky gopher frog, and not jeopardize the continued existence of the gopher tortoise, eastern indigo snake or the black pine snake.

Critical habitat has been designated for the dusky (=Mississippi) gopher frog in Mississippi and Louisiana, and for proposed for the black pine snake. However, no permanent destruction or modification of that habitat is anticipated.

The Service agrees that the use of heavy equipment with a restricted wheel base greater than 6 feet and a gross weight under 30,000 pounds within the 13' buffer will provide equal protection against the collapse of gopher tortoise burrows. Due to the limitations placed on heavy equipment in the Smith et al, 2015 study, any heavy equipment outside of the wheel span and weight thresholds as described by (Smith et. al., 2015) shall remain outside of the existing 25' buffer. Herbicide application within the 13' buffer will avoid all areas with signs (tracks, scat, and possible nest sites) of tortoise use, and herbicide application shall be applied in a deliberate/prescriptive manner that avoids forage preferred by the gopher tortoise (e.g. prickly pear, native grasses, and desired forbs).

Removal of the 25' buffer from known burrows and/or nest sites during the nesting activity period will pose minimal risk to gopher tortoise eggs. Gopher tortoises are known to typically lay clutches of eggs in the apron or in a sunny area in close proximity to the burrow entrance (16-67cm) (Butler and Hull, 1996), and all related CPs applicable will receive the protection of a 13' buffer from heavy equipment, felling of trees, and the limited application of herbicide afforded under CM-1. The Service believes removal of current Conservation Measure 5 will not likely result in a greater risk to the gopher tortoise and/or nest sites.

Conservation Measure 9 required; a minimum of 2.5 acres (9/2013 AmOp) of gopher tortoise foraging habitat be maintained around a burrow at all times, not be permanently converted, removed, or degraded by any means (e.g. clearing, trampling, flooding), clearing of gopher tortoise habitat be minimized and restored as soon as possible when such clearing is temporary, and allowed scrub-shrub habitat to be permanently or temporarily removed without adversely affecting gopher tortoise. The intent of the WLFW-GT and the associated requirements land owners are contractually liable to maintain limits the possibility of permanent conversion of land cover to non-target species and structure. Application of the associated Conservation Measures required under the applicable Conservation Practices where CM-9 was removed will likely produce a net benefit of suitable habitat for the gopher tortoise.

The use of prescribed fire and associated fire breaks are well known and historically used across gopher tortoise habitat. There is no literature available that reflects the use of Conservation Measure 13 reduces the ability of a gopher tortoise to travel across the landscape. However, the use of prescribed fire and associated benefits are well understood and agreed upon across literature and experts. The Service believes the associated risk with removal of CM-13 is minimal, and a net benefit will result in the installation of fire breaks and use of prescribed fire.

Conservation Measure 14 is limited to the Conservation Practice 512, and promotes the use of planting only native warm season grasses. Historically, gopher tortoises inhabit areas with longleaf pine and a diversity of herbaceous ground cover dominated by wiregrass or bluestem (Ware et al., 1993). The Service understands that planting only native warm season grasses will reduce the likelihood of diverse ground cover, and possibly allow other desirable vegetation to be out competed restricting possible suitable habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation under section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behaviors which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The prohibitions against taking the species found in Section 9 of the Act do not apply until the species is listed. However, the Service advises the NRCS to consider implementing the following reasonable and prudent measure. If this conference opinion is adopted as a biological opinion following a listing of the gopher tortoise in the eastern portion of its range, or a designation of critical habitat, these measures, with its implementing terms and conditions, will be non-discretionary.

The measures described below are non-discretionary and must be undertaken by the NRCS so that they become binding conditions of any grant or permit issued to the applicants, as appropriate, for the exemption in Section 7(o)(2) to apply. The NRCS has a continuing duty to regulate the activity covered by this incidental take statement. If the NRCS fails to assume or implement the terms and conditions or fails to require the landowner to adhere to the terms and conditions of this Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of Section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the NRCS or landowner must report the progress of the action and its impact on the gopher tortoise (and other listed species) to the Service as specified in this Incidental Take Statement [50 CFR 402.14(I)(3)].

Amount or Extent of Take Anticipated

Based on our analyses of the Effects of the Action, the Service anticipates the action to take individuals at the following rates:

1. Gopher tortoise (in both the listed and candidate ranges): no more than one (1) tortoise for every 77.5 ac enrolled, and no more than one (1) nest for every 155 ac enrolled.
2. Eastern indigo snake: no more than one (1) snake or nest for every 1,750 ac enrolled, and no more than one (1) nest for every 3,500 ac enrolled.
3. Black pine snake: no more than one (1) snake or nest for every 1,125 ac enrolled, and no more than one (1) nest for every 2,250 ac enrolled.
4. Striped newt: no take is anticipated.
5. Mississippi dusky gopher frog: no take is anticipated.

We expect incidental take of the Covered Species in the form of death and injury resulting from the use of heavy equipment during habitat restoration activities and/or prescribed burning.

The Action is expressly intended to benefit the Covered Species, which are likely either absent from, or present in low numbers on, properties enrolled in WLFW agreements due to degraded habitat conditions. The proposed conservation measures should limit incidental taking to the per-acre rates specified above within the species range. Enrolled acreage within the listed range of the gopher tortoise applies to taking in the listed range; enrolled acreage within the tortoise's candidate range applies to a loss of an individual in the candidate range, and enrolled acreage within the black pine snake's range applies to taking in its range. The amount of take we anticipate is relative to the Action Area as a whole within the applicable range of the Covered Species for its duration; however, per-acre rates of incidental take exceeding those specified above on an individual landowner agreement should prompt a review of the agreement and its conservation measures.

Although we believe that take (dead or injured animals) resulting from heavy equipment use or prescribed burning on an enrolled property may prove difficult to detect, we are unable to define a practical surrogate measure to circumvent this difficulty. The proposed activities (site preparation with heavy equipment; prescribed burning) that may cause the adverse effects also facilitate improvements in habitat conditions that support the Covered Species; therefore a surrogate measure of take based on the spatial extent of adverse habitat effects that could serve as a trigger for reinitiating consultation is not applicable. Further, setting such a trigger would unnecessarily cap the spatial extent of habitat restoration that could be accomplished without reinitiating consultation. The purpose of the Action is to benefit the Covered Species and others associated with longleaf pine habitats. Documenting take that exceeds the per-acre rates specified above annually or cumulatively for the duration of the Action will trigger a reinitation of this consultation.

The duration of the incidental take exemption provided by this ITS confers to each individual landowner agreement implemented under the Action and is effective for the duration of each agreement plus an additional 30 years provided all conservation measures are maintained.

Effect of the Take

In the accompanying Biological Opinion and Conference Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the Covered Species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes that the conservation measures included in the proposed Action are sufficient to minimize take of the Covered Species. Therefore, reasonable and prudent measures are not necessary and appropriate at this time.

Terms and Conditions

The NRCS shall annually report to the Service, by December 31st of each year, the number of acres of gopher tortoise habitat enrolled in the WLFW-GT.

If a dead, injured, or sick covered species is found in the project area, the nearest Service office shall immediately, within 24 hours, be contacted. Care should be taken in handling sick or injured wildlife to ensure effective treatment and in the handling of dead specimens to preserve biological materials for later analysis.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species (i.e. Federal funding provided through USDA and NRCS Programs). Conservation recommendations are in addition to the NRCS CMs discussed in this AmOp. The Service offers the following conservation recommendations:

- Heavy equipment use within the 13' buffer is restricted to a wheel base greater than 6 feet and a gross weight under 30,000 pounds. Heavy equipment outside of the wheel span and weight thresholds as described by (Smith et. al., 2015) shall remain outside of the existing 25' buffer.
- Equipment operators shall be instructed by NRCS staff to avoid any snakes. If one is encountered, operations shall be temporarily halted until the snake moves out of harm's way.
- All stumps should be retained (avoid stump pulling) where possible for habitat for the black pine snake. Stump grinding to ground level is authorized where safety or travel concerns are present.
- NRCS shall meet with the Service on an annual basis to evaluate the progress, successes, and challenges of the implementation of the WLFW-GT.
- The Service will continue its efforts to actively pursue plans to develop Programmatic Conservation Agreements for the gopher tortoise and other listed species included in this BO/CO which provide willing landowners enrolled with long-term assurances and provide for the conservation of the species on private lands.
- Develop training to ensure local NRCS and affected Service offices have the appropriate level of training and understanding of the CMs, and other operational components identified in the 9/2013 Amended Biological and Conference Opinion. The Service's Partners for Fish and Wildlife Program will continue to closely coordinate with NRCS to help implement the WLFW-GT and related conservation efforts.

- As the science support and monitoring elements of the WLFW-GT begin to produce information and data, NRCS will share this information with a wide range and diverse collection of partners (State Fish and Wildlife Agencies, Association of Fish and Wildlife Agencies, and others) to further enhance the conservation outcomes of the WLFW-GT.

- The Service would like to reaffirm and express strong support for NRCS' use of CP #338, Prescribed Fire. Prescribed fire is one of the top priorities for gopher tortoise habitat restoration and conservation. The NRCS should consider giving greater priority to funding landowners who are willing to do growing season burns over cool season burns. Also if NRCS pays for more than one burn on the same acre, priority should be given to a landowner who is willing to vary the time of year and frequency when they conduct the prescribed burn.

- The Service requests that NRCS provide assistance and full support in the Service's effort to develop and execute Gopher Tortoise Candidate Conservation Agreements with Assurances and/or Safe Harbor Agreements for enrolled WLFW landowners throughout the range of the covered species.

REINITIATION-CLOSING STATEMENT

Consultation for revisions to the NRCS WLFW-GT (the Action) described in the NRCS request to reinitiate consultation dated October19, 2015, is concluded. While NRCS retains discretionary involvement or control over the Action, NRCS shall request to reinitiate formal consultation if:

- The anticipated amount or extent of incidental take of listed species (gopher tortoise listed range, dusky gopher frog, eastern indigo snake, black pine snake) is exceeded;
- New information shows that the action may affect listed species in a manner or to an extent not considered in this AmOp;
- The Action is subsequently modified in a manner that causes an effect to the listed species not considered in this AmOp; or
- A new species is listed or critical habitat designated that may be affected by the Action [50 CFR §402.16].

In instances when the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The conference for the Action is also concluded. If the gopher tortoise (candidate range) or striped newt are listed while NRCS retains discretionary involvement or control over the Action, the NRCS may submit a written request for the Service to confirm the Conference Opinion portion of this AmOp as a biological opinion for the newly-listed species. The request must be in writing. During review of the request, if the Service finds no significant changes in the Action as proposed or in the information considered herein, the Service will confirm the Conference Opinion as a Biological Opinion, which shall conclude formal consultation.

The incidental take statement provided in this AmOp does not become effective for the gopher tortoise (candidate range) and striped newt until the species is listed and the conference portion of this AmOp is adopted as a biological opinion issued through formal consultation. At that time, the agencies will review the Action to determine whether any incidental take of these species has occurred, and whether modifying the opinion and incidental take statement to reflect such take is appropriate. No take of the gopher tortoise in the candidate portion of its range, or the striped newt may occur between the listing of the species and the adoption of the conference opinion through formal consultation.

The Service appreciates the cooperation of the NRCS during this consultation. For further coordination as necessary, please contact Mr. Michael Harris of my staff.

Aaron L Valter — Nov 22, 2016

for Leopoldo Miranda — Date
Assistant Regional Director
Ecological Services
U.S. Fish and Wildlife Service, Southeast Region

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Biological Evaluation Form

Deepwater Horizon Oil Spill Restoration

U.S. Fish and Wildlife Service & National Marine Fisheries Service

This form will be filled out by the Implementing Trustee and used by the regulatory agencies. The form will provide information to initiate informal Section 7 consultations under the Endangered Species Act (ESA) and may be used to document a No Effect determination or to initiate pre-consultation technical assistance.

It is recommended that this form also be completed to inform and evaluate additional needs for compliance with the following authorities: Migratory Bird Treaty Act (MBTA), Marine Mammal Protect Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA) and Section 106 of the National Historic Preservation Act (NHPA).

Further information may be required beyond what is captured on this form. Note: if you need additional space for writing, please attach pages as needed.

A. Project Identification

Federal Action Agency: U.S. Fish and Wildlife Service

Agency Contact(s)

USFWS: Ashley Mills at 812-756-2712 and Ashley_Mills@fws.gov
NMFS: Christy Fellas at 727-551-5714 and Christina.Fellas@noaa.gov

I. *Implementing Trustee*: United States Department of Agriculture, Natural Resource Conservation Service

II. *Contact Person*: Andree DuVarney (representing NRCS)

III. *Phone*: (202) 384-7408

Email: andree.duvarney@wdc.usda.gov

IV. *Project Name and ID# (Official name of project and ID number assigned by Trustees in DIVER)*: Upper Pascagoula River Water Quality Enhancement

V. *NMFS Office (Choose appropriate office based on project location)*: Not Applicable

USFWS Office (Choose or write in appropriate office based on project location): Mississippi Ecological Services Field Office (Jackson)

VI. *Project Type #1*: Reduce Nutrient Loads to Coastal Watersheds

VII. *Project Type #2, if helpful*: Promote Environmental Stewardship, Education, and Outreach

B. Project Location

I. Physical Address of action area (If applicable)

The proposed Upper Pascagoula River Water Quality Enhancement Project project area includes a 20,000-acre area within the Chunky-Okatibbee watershed.

II. *State & County/Parish of action area*

Newton, Lauderdale, Kemper, Clarke, and Neshoba counties in Mississippi

III. *Latitude & Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83]*
[online conversion: https://www.fcc.gov/encyclopedia/degrees-minutes-seconds-tofrom-decimal-degrees])

32.401558, -88.926474 NAD83

IV. Township, range and section of the action area

C. Description of Action Area

1. Attach a separate map delineating where the action will occur. 2. Describe ALL areas that may be affected directly or indirectly by the action and not merely the immediate action area involved in the action, or just where species or critical habitat may be present. Provide a description of the existing environmental conditions and characteristics (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural). 3. If habitat for species is present in the action area, provide a general description of the current state of the habitat. 4. Identify any management or other activities already occurring in the area. 5. Provide or attach a detailed map of the area of potential effect for ground disturbing activities if the area is different from the action area.

The Upper Pascagoula River Water Quality Enhancement project area includes 20,000 acres of land within portions of Newton, Lauderdale, Clarke, Neshoba, and Kemper counties, Mississippi. Lauderdale and Kemper counties contain the largest percentage of the project area. The project boundary is the Chunky-Okatibbee watershed boundary (project area map is attached). That portion of the watershed upstream of the Okatibbee Lake Reservoir in northwestern Lauderdale County is not a part of the project area. Named tributaries within the action area include (but are not limited to) the Chunky River, Okatibbee Creek, Sowashee Creek, Tallashua Creek, Tallahatta Creek, and Suqualena Creek, all of which are part of the Pascagoula River system. Major rivers carry high sediment load into the Mississippi Sound.

The following Land Use categories are located in the Chunky-Okatibbee subbasin:

- Cropland – Land used primarily for the production and harvest of annual or perennial field, forage, food, fiber, horticultural, orchards, vineyards and/or energy crops
- Associated Agriculture Lands – Land associated with farms and ranches that are not purposefully managed for food, forage or fiber and are typically associated with nearby production and/or conservation lands. This could include incidental areas such as idle center pivot corners, odd areas, ditches and watercourses, riparian areas, field edges, seasonal and permanent wetlands, and other similar areas.
- Pasture/Grassland
  - Pasture – Lands composed of introduced or domesticated native forage species that are used primarily for the production of livestock. They receive periodic renovation and/or cultural treatments, such as tillage, fertilization, mowing, weed control, and may be irrigated. They are not in rotation with crops.
  - Grassland – Land used primarily for the production of grazing animals. Includes native plant communities and those seeded to native or introduced species, or naturalized by introduced species, that are ecologically managed using range management principles.
- Forestland – Land on which the primary vegetation is tree cover (climax, natural or introduced plant community) and use is primarily for production of wood products and/or non-timber forest products.
- Developed Land (Urban) – Land occupied by buildings and related facilities used for residences, commercial sites, public highways, airports, and open space associated with towns and cities.
- Water – Geographic area whose dominant characteristic is open water/permanent ice or snow. May include intermingled land, including tidal influenced coastal marsh lands.

a. *Waterbody*
(If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If the location is in a river or estuary, please approximate the navigable distance from the project location to the marine environment.)

Pascagoula basin (HUC 6, 031700): Chunky-Okatibbee subbasin (HUC 8, 03170001).
1. Chunky River watershed (HUC 10, 0317000157)
2. Tallahatta Creek watershed (HUC 10, 0317000158)
3. Upper Okatibbee Creek watershed (HUC 10, 0317000159)
4. Okatibbee Creek watershed (HUC 10, 0317000160)

b. *Existing Structures*
(If applicable. Describe the current and historical structures found in the action area (e.g., buildings, parking lots, docks, seawalls, groynes, jetties, marina.)). If known, please provide the years of construction.

Some parcels may have agricultural production or conservation related structures and/or facilities.

c. *Seagrasses & Other Marine Vegetation*
(If applicable. Describe seagrasses found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the action area.)

N/A

d. *Mangroves*
(If applicable. Describe the mangroves found in action area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the action area.)

N/A

e. *Corals*
(If applicable. Describe the corals found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the action area.)

N/A

f. *Uplands*
(If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).

Cropland (3,580 acres); associated agriculture lands (40,322 aces); forestland (248,874 acres); developed land (45,689 acres); pasture/grassland (135,078 acres).

g. *Marine Mammals*
(If applicable. Indicate and describe the species found in the action area. Use NMFS' Stock Assessment Reports (SARs) for more information, see http://www.nmfs.noaa.gov/pr/sars/region.htm)

N/A

D. Project Description

I. *Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)*

The project would be implemented over a 5-year period with the first year consisting primarily of landowner outreach and planning. Implementation of the conservation practices would begin in year two and continue through year five.

II. *Describe the Proposed Action: 1. What is the purpose and need of the proposed action? 2. How do you plan to accomplish it? Describe in detail the construction equipment and methods** needed; permanent vs. temporary impacts; duration of temporary impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained. 3. Attach a separate map showing project footprint, avoidance areas, construction accesses, staging/ laydown areas.* *****If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, artificial reefs or fishery activities, list the method here, but complete the next section(s) in detail.***

The primary goal for the project is water quality improvement by nutrient and sediment reduction. Runoff from cropland, pasture/grassland, and forests contributes excess nutrients and sediment that adversely impacts the health of coastal waters of the Gulf. The MS TIG is proposing that the USDA NRCS would develop conservation plans within a 20,000-acre area of the Okatibbee-Chunky watersheds. Priority would be given to areas with potential to contribute the greatest reduction in nutrient losses that are also within one mile of tributaries. Conservation practices, especially those that avoid, control and trap nutrient and sediment losses, will be implemented by willing landowners on cropland, pasture/grassland, forestland, and associated agriculture land in the watershed.

During the first year of the project, NRCS USDA will conduct outreach to identify landowners willing to voluntarily implement conservation practices to reduce the amount of nutrients and sediments entering waterways, and will develop conservation plans for those landowners. The conservation plans will identify the specific practices needed to address the sedimentation and nutrient issues on their land. Table 1 (attached) is a list of all USDA-NRCS conservation practices that could be implemented as part of the project. During years 2 through 5, NRCS will begin providing funds to landowners to implement the conservation plans and will continue outreach and planning to the extent funds allow.

With the exception of Conservation Practice (CP) 201, Edge of Field Water Quality Monitoring Data Collection and Evaluation and CP 202, Edge of Field Water Quality Monitoring System Implementation, informal ESA programmatic consultation has been completed for all NRCS conservation practices with FWS concurring that NRCS conservation practices, when following the measures identified in the attached document titled "Species by County - Upper Pascagoula Project," may effect but are not likely to adversely affect species listed as threatened or endangered in Mississippi. CP 201, Edge of Field Water Quality Monitoring Data Collection and Evaluation will have no effect as there is no ground disturbance associated with these data collection activities. See section G for more information on the consultation process and the effects of CP 202, Edge of Field Water Quality Monitoring System Implementation.

Based on project location, there are no ESA-listed species under NMFS jurisdiction in the project area. Therefore the BE form only address those under USFWS jurisdiction.

II. *Specific In-Water and/or Terrestrial Construction Methods (Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what type and size of materials will be used and if machines will be used, manual labor, or both. Indicate if work will be done from upland, barge, or both.)*

a. *Overwater Structures (Place your answers to the following questions in the box below.)*

i. *Is the proposed use of this structure for a docking facility or an observation platform?*

ii. *If no, is this a fishing pier? Public or Private? How many people are expected to fish per day? How do you plan to address hook and line captures?*

iii. *Use of "Dock Construction Guidelines"?* http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/dockkey2002.pdf

iv. *Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing?*

v. *Height above Mean High Water (MHW) elevation?*

vi. *Directional orientation of main axis of dock?*

vii. *Overwater area (sqft)?*

N/A

b. *Pilings & Sheetpiles (What type of material is the piling or sheetpiles? What size and how many will be used? Method used to install: impact hammer, vibratory hammer, jetting, etc.?)*

N/A

c. *Marinas and Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)*

N/A

d. *Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)*

N/A

e. *Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the action area.*

N/A

f. *Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft^2) to be dredged, volume of material (yd^3) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). If digging in the terrestrial environment, please describe fully with details about possible water jetting, vibration methods to install pilings for dune walk-over structure, or other methods. If using devices/methods/turtle relocation dredging to relocate sea turtles then describe the methods here.*

N/A

g. *Blasting (Projects that use blasting might not qualify as "minor projects," and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)*

N/A

h. *Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions (i.e., management and siting considerations, stakeholder considerations, environmental considerations), deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.*

N/A

i. *Fishery Activities (Describe any use of gear that could entangle or capture protected species. This includes activities that may enhance fishing opportunities (e.g. fishing piers) or be fishery/gear research related (e.g. involve trawl gear, gillnets, hook and line gear, crab pots etc)).*

N/A

E. NOAA Species & Critical Habitat and Effects Determination Requested

1. *List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area.*

2. *Attach a separate map identifying species/critical habitat locations within the action area.*

For information on species and critical habitat under under NMFS jurisdiction, visit: http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf.

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

SPECIES and/or **CRITICAL HABITAT**	**CH UNIT** (if applicable)	**LOCATION** (sea turtles and Gulf sturgeon only)	**DETERMINATION** (see definitions below)
Select One		Select One	Select Most Appropriate
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Select One		Select One	Select Most Appropriate

Determination Definitions

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

NLAA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources.

Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

LAA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat.

Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. Response requested for proposed and candidate species is "Conference." This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

F. USFWS Species & Critical Habitat and Effects Determination Requested

1. *List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area.*
2. *Attach a separate map identifying species/critical habitat locations within the action area.*

For information on species and critical habitat under USFWS jurisdiction, visit http://www.fws.gov/endangered/species/.

Identify if Gulf sturgeon are in marine or in freshwater in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Gulf sturgeon CH - marine). Identify if sea turtles are in water or on land in your Species and/or Critical Habitat list to determine which federal agency will perform the analysis (e.g. Loggerhead sea turtle CH - terrestrial).

SPECIES and/or **CRITICAL HABITAT**	**CH UNIT** (if applicable)	**LOCATION** (sea turtles and Gulf sturgeon only)	**DETERMINATION** (see definitions below)
Northern long-eared bat		Terrestrial	May Affect, Not Likely to Adversely Affect
Price's potato bean		Terrestrial	May Affect, Not Likely to Adversely Affect
Red-cockaded woodpecker		Terrestrial	May Affect, Not Likely to Adversely Affect
Gopher tortoise		Terrestrial	May Affect, Not Likely to Adversely Affect
Wood stork		Terrestrial	May Affect, Not Likely to Adversely Affect
Yellow-blotched map turtle		Riverine/freshwater	May Affect, Not Likely to Adversely Affect
Pearl darter		Riverine/freshwater	May Affect, Not Likely to Adversely Affect
Ringed map turtle		Riverine/freshwater	May Affect, Not Likely to Adversely Affect
Gulf sturgeon		Riverine/freshwater	May Affect, Not Likely to Adversely Affect
Select One		Select One	Select Most Appropriate
Select One		Select One	Select Most Appropriate
Select One		Select One	Select Most Appropriate
Select One		Select One	Select Most Appropriate
Select One		Select One	Select Most Appropriate
Select One		Select One	Select Most Appropriate
		Select One	Select Most Appropriate
		Select One	Select Most Appropriate

Determination Definitions

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

NLAA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources.

Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

LAA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat.

Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. Response requested for proposed and candidate species is "Conference." This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

G. Effects of the Proposed Project

I. *Explain the potential beneficial and adverse effects to each species listed above (Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, interdependent, interrelated, connected actions, and cumulative impacts. Where possible, quantify effects. If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.)*

In the programmatic ESA consultation document called, "Mississippi NRCS Conservation Practice Effects on Threatened, Endangered, and Candidate Species" (MS programmatic consultation), the FWS concurred that all but two (2) of the conservation practices to be implemented in the Upper Pascagoula Water Quality Project are Not Likely to Adversely Affect (NLAA) any of the identified T&E species or the Pearl darter, which is a candidate species. This programmatic consultation document includes a decision matrix listing 117 conservation practices (more than will be used in this project) and indicates when those practices are NLAA federally listed species, or have the potential to have adverse impacts, but can utilize minimization measures to reduce impacts to the level of "NLAA."

Subsequent to the conclusion of the MS programmatic consultation, NRCS reinitiated a multi-state programmatic consultation with the USFWS for the NRCS Working Lands for Wildlife partnership for the Gopher Tortoise. The conservation measures resulting from this November 2016, "Amended Biological Opinion and Conference Opinion for the NRCS Working Lands for Wildlife Partnership for the Gopher Tortoise" (amended Gopher Tortoise BO/CO) amended the conservation measures for the Gopher Tortoise identified in the MS programmatic consultation document. The amended Gopher Tortoise BO/CO measures have been adopted to replace the original measures agreed to in the MS programmatic consultation for all practices. The summary of conservation measures that now apply to all species in each county of the proposed project area are identified in the attached matrix titled "Measures for Upper Pascagoula Water Quality Project Conservation Practices."

The NRCS uses standardized conservation practices and specifications to ensure proper establishment, management and maintenance of all structural and management practices. If the proposed action may affect listed species or species proposed for listing, NRCS shall provide alternative conservation measures that avoid or minimize any adverse effects as specified in the

THIS DISCUSSION IS CONTINUED IN BOX ii BELOW

II. *Explain the potential beneficial and adverse effects to critical habitat listed above (Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, interdependent, interrelated, connected actions, and cumulative impacts. Where possible, quantify effects (e.g. acres of habitat, miles of habitat). Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.*

Continued from Box I. above

Mississippi NRCS programmatic agreement with USFWS. Conservation practices will at a minimum be designed to have no adverse effect, but most will have long term beneficial impacts to the native species located in the area. If a potential adverse effect cannot be avoided or significantly minimized using the approved conservation measures, the NRCS point of contact (POC) will coordinate with USFWS before a final effect determination is made. If there are no alternatives that avoid the adverse effect, or the client chooses to pursue an alternative that may adversely affect listed species or species proposed for listing, NRCS will not provide assistance and will inform the client of their potential liabilities for violation of Section 9 of the ESA. NRCS will also direct the client to contact the USFWS for resolution.

Of the two conservation practices not included in the existing programmatic consultation, Code 201, Edge of Field Water Quality Monitoring - Data Collection and Evaluation will have no effect as there is no ground disturbance. NRCS is initiating consultation on Code 202, Edge-of-Field Water Quality Monitoring – System Installation. These activities are undertaken using acceptable tools and protocols to identify, inventory, assess, evaluate, or otherwise measure the presence and extent of a water quality resource concern and how to address the concern through one or more conservation practices. The following describes the activities under Codes 201 and 202 and the types of effects anticipated.

Code 201 Edge of Field Water Quality Monitoring – Data Collection and Evaluation
Implementation of this conservation activity includes the development of a Quality Assurance Project Plan (QAPP), and a monitoring plan. These plans outline the methods for quality assurance, sample collection, lab analysis and statistical analysis used in determining conservation practice effectiveness. Weekly or bi-weekly maintenance checks with documentation are required. Historic and current year farm operations (fertilizer application, tillage type etc.) must be documented semi-annually. A report of findings will be submitted annually while water quality data will be submitted semi-annually. At the completion of all monitoring (5-9 years) a comprehensive report that outlines final findings related to practice effectiveness must be submitted.

Code 201, Edge of Field Water Quality Monitoring - Data Collection and Evaluation will have no effect as there is no ground disturbance.

THIS DISCUSSION IS CONTINUED IN THE ATTACHMENT TITLED "UPPER PASCAGOULA WATER QUALITY BE FORM SECTION G CONTINUATION"

H. Actions to Reduce Adverse Effects

I. *Explain the actions to reduce adverse effects to each species listed above (For each species for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.)*

See attached Matrix.

II. *Explain the actions to reduce adverse effects to critical habitat listed above (For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.)*

N/A

I. Marine Mammals

I. The Marine Mammal Protection Act prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals (e.g.,whales, dolphins, manatees). However, the MMPA allows limited exceptions to the take prohibition if authorized, such as the incidental (i.e., unintentional but not unexpected) take of marine mammals. The following questions are designed to allow the Agencies to quickly determine if your action has the potential to take marine mammals. If the information provided indicates that incidental take is possible, further discussion with the Agencies is required.

Is your activity occurring in or on marine or estuarine waters, or could it impact the quality (e.g., salinity, temperature) of marine or estuarine waters?

☑ NO ☐ YES

II. Does your activity involve any of the following:

NO	YES	
☑	☐	*a) Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz*
☑	☐	*b) In-water construction or demolition*
☑	☐	*c) Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)*
☑	☐	*d) In-water Explosive detonation*
☑	☐	e) *Building or enhancing areas for water-related recreational use or fishing opportunities (e.g. fishing piers, bridges, boat ramps, marinas)*
☑	☐	*f) Aquaculture*
☑	☐	*g) Dredging or in-water construction activities to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.*
☑	☐	*h) Restoration of barrier islands, levee construction or similar projects*
☑	☐	*i) Fresh-water river diversions*

III. If you checked "Yes" to any of the activities immediately above or whether the activity could impact the quality of marine or estuarine waters, please describe the nature of the activities in more detail or indicate which section of the form already includes these descriptions:

N/A

IV. Are any measures planned to mitigate potential impacts to marine mammals? If yes, provide text in box below. NO ☑ YES ☐

J. Bald Eagles

Are bald eagles present in the action area? ☐ NO ☑ YES

If YES, the following conservation measures should be implemented:

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/ courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances, activities conducted at a distance greater than 660 feet of a nest may result in disturbance. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

Will you implement the above measures? ☐ NO ☑ YES

If these measures cannot be implemented, then you must contact the Service's Migratory Bird Permit Office.
Texas – (505) 248-7882 or by email: **permitsR2MB@fws.gov**
Louisiana, Mississippi, Alabama, Florida – (404) 679-7070 or by email: **permitsR4MB@fws.gov**

K. Migratory Birds

Identify the species anticipated in the action area and behaviors (breeding, roosting, foraging) anticipated during project implementation. You may list similar species on a single line and categorize by type (e.g., Wading birds - great blue heron, snowy egret, reddish egret). If species or habitat impacts could occur, identify avoidance and minimization measures to prevent incidental take. Incidental take of Migratory Birds cannot be authorized. Use additional tables on the next page if needed.

I.

Species/Species Group	Behavior	Species/Habitat Impacts and Conservation Measures to Minimize Impacts
		The project is not likely to result in a take (intentionally or unintentionally) of any migratory bird, nest or eggs because NRCS conservation practices will be implemented/ conducted outside the primary nesting season for migratory birds in Mississippi, which is April 1 to August 15. For Bald Eagles: Activities will be avoided within 660 feet of an active bald eagle nest between Dec. 1 - June 30. Below are the habitats used by migratory bird species groups in the project area. If the practice requires permanent removal of vegetation or implementation during the nesting season, the vegetation will be removed only in the footprint of the impacted area prior to the primary nesting season - April 1 to August 15 to ensure no migratory birds will build nests or lay eggs prior to construction. This mitigation avoids adverse effects to nesting birds. Foraging and resting birds may temporarily be displaced during management activities,but are able to fly to another nearby location to continue foraging/feeding and resting. Roosting would not be affected because management activities would occur during daylight hours.
Wading birds (herons, egrets, ibises)	Foraging, feeding, resting, roosting, nesting	Wading birds primarily forage and feed at the water's edge. There would be limited habitat in the project area except for ponds and potential habitat that could occur in streams. These birds primarily nest and roost in trees or shrubs (e.g. pines, Bacchurus).
Raptors (osprey, hawks, eagles, owls)	Foraging, feeding, resting, roosting, nesting	Raptors forage, feed, rest and nest in the project area.
Goatsuckers	Foraging, feeding, resting, roosting, nesting	Goatsuckers forage, feed, rest, nest and roost in the project area. They are nocturnal/crepuscular, and they nest in thickets and woodlands.

Migratory Birds

Continuation page if needed.

II.

SPECIES/SPECIES GROUP	BEHAVIOR	SPECIES/HABITAT IMPACTS and CONSERVATION MEASURES TO MINIMIZE IMPACTS
Waterfowl (ducks, loons, and grebes)	Foraging, feeding, resting, roosting, nesting	Waterfowl forage, feed, rest, and roost in the project area. These birds primarily roost and nest in low vegetation. There would be limited if any habitat suitable for nesting waterfowl.
Doves and pigeons	Foraging, feeding, resting, roosting	Doves and pigeons forage, feed, rest, and roost in the project area.
Rails and coots	Foraging, feeding, resting, roosting, nesting	Rails and coots forage, feed, rest, roost and nest in the project area. These birds primarily roost and nest in wetland areas,and in areas adjacent to streams where in-water restoration activities may be conducted.

NEPA Documents

Is the NEPA analysis for this project complete or in progress? ☑ Yes ☐ No

Does this project fall under a programmatic NEPA document different from the PDARP/PEIS? ☑ Yes ☐ No

(e.g. US Army Corps of Engineers, BOEM or other agency)

Fish and Wildlife Coordination Act (FWCA) consultation initiated or completed, if applicable? ☐ Yes ☑ No

If yes to any question above, please provide details in the text box (i.e. link to the document, or name of the document, year, lead federal agency, USFWS Field Office involved, etc.). If you do not have a link, attach documents to this BE form. Any documentation or information provided will be very helpful in moving your project forward.

The Mississippi Trustee Implementation Group Draft 2016-2017 Restoration Plan/Environmental Assessment provides the NEPA analysis for this project and is available at http://www.restore.ms/wp-content/uploads/2016/12/MS-TIG-Draft-RP-EA-12-22-16-reduced-1.pdf

Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS) http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan

Environmental Quality Incentives Program, Final Programmatic Environmental Assessment, March 2016

NMFS ESA § 7 Consultation

We request that all ESA §7 consultation requests/packages be submitted electronically to: **Christina.Fellas@noaa.gov**

Questions about consultation status may be directed to the email address above or by phone: Christy Fellas: 727-551-5714

USFWS ESA § 7 Consultation

We request that all consultation requests/packages to USFWS be submitted electronically to: **Ashley_Mills@fws.gov**.
You will be notified when we receive your Biological Evaluation. Upon receipt, we will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information. If modifications or additional information is necessary, we will work with you until the Biological Evaluation form is considered complete. Once complete, we will send your Biological Evaluation to the appropriate Field Office to conduct consultation.

Questions about consultation status may be directed to the email address above or by phone: Ashley Mills: 812-756-2712

Name of Person Completing this Form:	Andree DuVarney, Ron Howard, Glynda Clardy
Name of Project Lead:	
Date Form Completed:	01/03/2017
Date Form Updated:	3/16/17

Endangered Species Act Programmatic Biological Opinion

Deepwater Horizon Oil Spill Restoration

National Marine Fisheries Service

Complete this section **only** if your project qualifies for streamlined ESA consultation under the ESA Framework Programmatic Biological Opinion completed by NMFS on February 10, 2016. To be eligible for streamlined ESA consultation with NMFS, you must implement all Project Design Criteria (PDCs) applicable to your project. By checking all boxes below that apply to this project you are confirming that PDCs are incorporated into the project design and construction. The entire Biological Evaluation Form must be completed and include any information necessary to verify that all applicable PDCs are incorporated into the project. If the project incorporates more than one type of restoration, check boxes in all appropriate categories.

You must receive NMFS approval before proceeding with your project. Note that this PDC checklist does not apply to ESA consultation with USFWS.

Full text of the PDCs can be reviewed at:
http://sero.nmfs.noaa.gov/protected_resources/section_7/freq_biop/documents/DWH_bo/appendix_a.pdf

Oyster Reef Creation and Enhancement ◯ Yes ◯ No

- ☐ Project is designed to avoid techniques and locations listed in the oyster reef creation and enhancement PDCs 1.a-1.e.
- ☐ Follows NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions (PDC 2.a)
- ☐ Follows NMFS' Vessel Strike Avoidance Measures and Reporting for Mariners (PDC 2.b)
- ☐ In-water construction does not impede sea turtle access to or from nesting sites during nesting season (PDC 2.c)
- ☐ In Gulf sturgeon critical habitat, oyster reef creation and enhancement occurs only on existing shell substrata or relic reef locations (PDC 2.d)
- ☐ Cultch material is free of debris and contaminants (PDC 2.e)
- ☐ Fresh shell has been properly aged or quarantined before being deployed (PDC 2.f)
- ☐ Cultch material is placed in a manner to minimize disturbance of sediment (PDC 2.g)
- ☐ Methods are employed to avoid turbidity impacts to ESA-listed species (PDC 2.h)
- ☐ Plan/drawings for intermittent breaks between oyster reef segment has been provided (2.i)
- ☐ Spill prevention and response plan has been developed (2.j)
- ☐ Design and materials used avoid entanglement and entrapment risks for ESA-listed species (2.k)
- ☐ Monitoring plan is included and final reports will be submitted to NMFS (PDC 3 and 4)

Marine Debris Removal ◯ Yes ◯ No

- ☐ This project is designed to avoid techniques and locations listed in the marine debris removal PDCs 1.a-1.c
- ☐ All on-water operations shall take place during daylight hours (PDC 2.a)
- ☐ Follows NMFS' Sea Turtle and Smalltooth Sawfish Conditions (PDC 2.b)
- ☐ Follows NMFS' Vessel Strike Avoidance Measures and Reporting for Mariners (PDC 2.c)
- ☐ Project personnel have been notified of procedures if approached by a marine mammal or sea turtle (PDC 2.d)
- ☐ Trash and debris will be disposed of at an upland location (PDCs 2.e)
- ☐ Monitoring plan is included and final reports will be submitted to NMFS (PDC 3 and 4)

Construction of Living Shorelines

◯ Yes ◯ No

- ☐ This project is designed to avoid techniques and locations listed in the living shoreline PDCs 1.a-1.h
- ☐ Follows NMFS' Sea Turtle and Smalltooth Sawfish Conditions (PDC 2.a)
- ☐ All in-water work activities will conducted during daylight hours (PDC 2.b)
- ☐ Piles for navigation of public safety purposes are less than 24" diameter and non-metal if impact hammer used (PDC 2.c)
- ☐ Spill prevention and response plan has been developed (2.d)
- ☐ Fill material is not sourced using hopper dredge or from sea turtle, Gulf sturgeon or smalltooth sawfish critical habitat and in-water borrow sites do not impact turtle nesting beaches (PDC 2.e)
- ☐ Design and materials do not create entrapment or entanglement risks to ESA-listed species and do not block migration (PDC 2.f)
- ☐ In-water construction does not impede sea turtle access to or from nesting sites during nesting season (PDC 2.g)
- ☐ Methods are employed to avoid turbidity impacts to ESA-listed species (PDC 2.h)
- ☐ Follows NMFS' Vessel Strike Avoidance Measures and Reporting for Mariners (PDC 2.i)
- ☐ Monitoring plan is included and final reports will be submitted to NMFS (PDC 3 and 4)

Marsh Creation and Enhancement

◯ Yes ◯ No

- ☐ Project is designed to avoid techniques and locations listed in the marsh creation PDCs 1.a-1.f
- ☐ Follows NMFS' Sea Turtle and Smalltooth Sawfish Conditions (PDC 2.a)
- ☐ Follows NMFS' Vessel Strike Avoidance Measures and Reporting for Mariners (PDC 2.b)
- ☐ All in-water work activities will be conducted during daylight hours (PDC 2.c)
- ☐ Spill prevention and response plan has been developed (PDC 2.d)
- ☐ Fill material is not sourced using hopper dredge or from sea turtle, Gulf sturgeon or smalltooth sawfish critical habitat and in-water borrow sites do not impact turtle nesting beaches (PDC 2.e)
- ☐ Design and materials do not create entrapment or entanglement risks to ESA-listed species and do not block migration (PDC 2.f)
- ☐ In-water construction does not impede sea turtle access to or from nesting sites during nesting season (PDC 2.g)
- ☐ Methods are employed to avoid turbidity impacts to ESA-listed species (PDCs 2.h)
- ☐ Monitoring plan is included and final reports will be submitted to NMFS (PDC 3 and 4)

Construction of Non-Fishing Piers

◯ Yes ◯ No

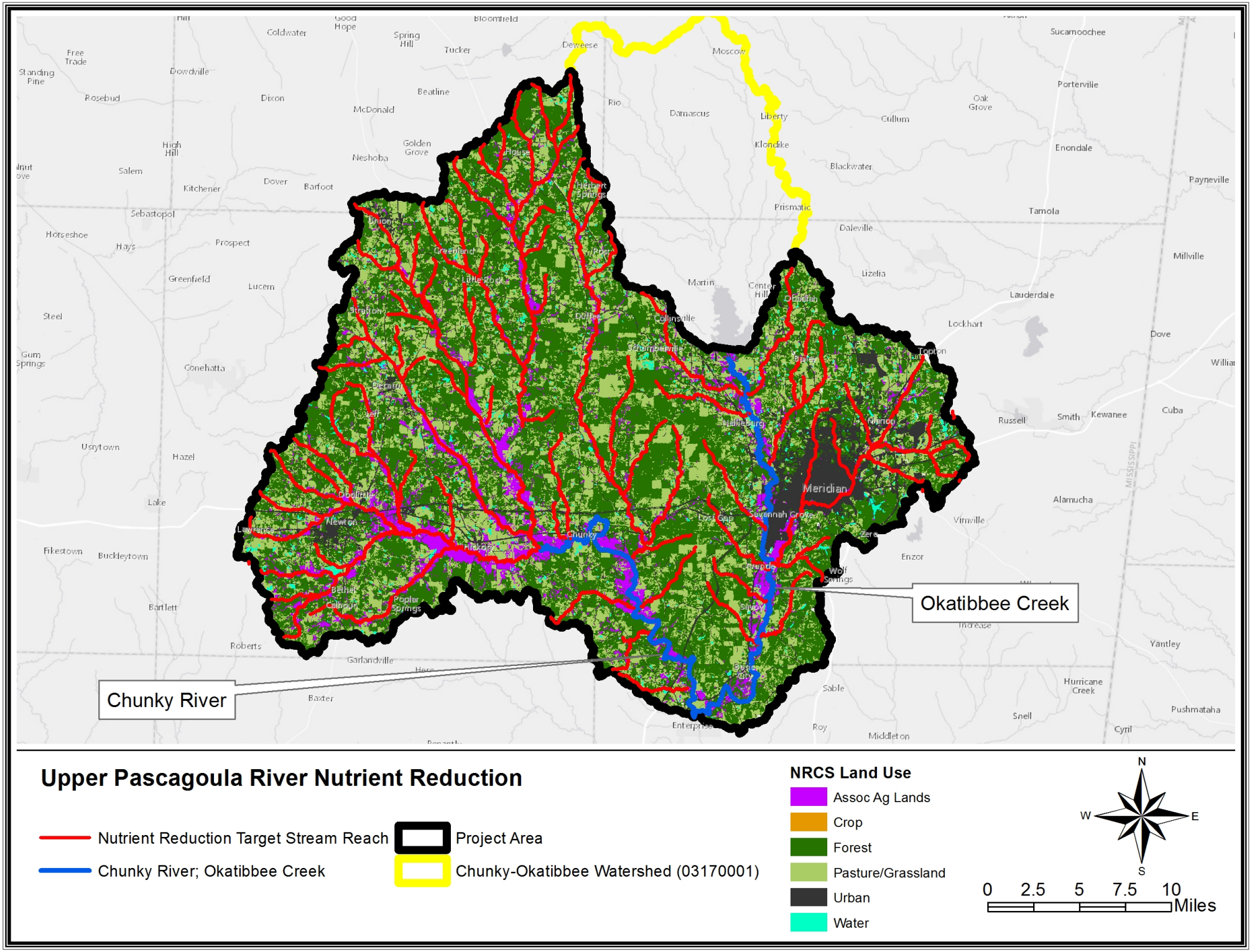
- ☐ This project is designed to avoid locations listed in the non-fishing piers PDCs 1.a
- ☐ Spill prevention and response plan has been developed (PDC 2.a)
- ☐ Design and materials do not create entrapment or entanglement risks to ESA-listed species and do not block migration (PDC 2.b)
- ☐ Follows NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions (PDC 2.c)
- ☐ Follows NMFS' Vessel Strike Avoidance Measures and Reporting for Mariners (PDC 2.d)
- ☐ Follow Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat (PDC 2.e)
- ☐ In-water construction does not impede sea turtle access to or from nesting sites during nesting season (PDC 2.f)
- ☐ Follows methods and timing for pile driving (2.g)
- ☐ Follows construction sequencing and avoids propwashing (PDC 2.h)
- ☐ Water depth will not be altered (PDC 2.i)
- ☐ Lighting specifications are incorporated for piers on or adjacent to sea turtle nesting beaches (PDC 2.j)
- ☐ Follows educational and fishing signage requirements (PDC 2.k)
- ☐ Methods are employed to avoid turbidity impacts to ESA-listed species (PDC 2.l)
- ☐ Monitoring plan is included and final reports will be submitted to NMFS (PDC 3 and 4)

Check the box to confirm that all applicable requirements are met and a streamlined consultation with NMFS is requested: ☐

Name of person completing this form: _____

Date form completed: _____

*You must receive NMFS approval before proceeding with your project *


Upper Pascagoula River Nutrient Reduction
Nutrient Reduction Target Stream Reach
Chunky River; Okatibbee Creek
Project Area
Chunky-Okatibbee Watershed (03170001)
NRCS Land Use
Assoc Ag Lands
Crop
Forest
Pasture/Grassland
Urban
Water
N
W
E
S
0 2.5 5 7.5 10
Miles
Okatibbee Creek
Chunky River
Meridian
Goldwater
Bloomfield
Deweese
Moscow
Sucarnoochee
Porterville
Dowdville
Rosebud
Dixon
Beatline
McDonald
Rio
Damascus
Liberty
Cullum
Oak Grove
Enondale
Salem
Kitchener
Dover
Barfoot
Neshoba
Golden Grove
Klondike
Blackwater
Payneville
Sebastopol
Prismatic
Tamola
Horseshoe
Hays
Prospect
Daleville
Millville
Greenfield
Lucern
Martin
Lizelia
Lauderdale
Steel
Lockhart
Dove
Gum Springs
Gonehatta
Russell
Smith
Kewanee
Cuba
Usrytown
Hazel
Alamucha
Lake
Vimville
Fikestown
Buckleytown
Enzor
Bartlett
Roberts
Garlandville
Baxter
Yantley
Hurricane Creek
Sable
Snell
Pushmataha
Enterprise
Roy
Middleton
Cyril

Upper Pascagoula Water Quality Project BE Form Section G continuation

202 Edge of Field Water Quality Monitoring – System Installation

This activity is applicable when used in conjunction with Edge-of-Field Water Quality Monitoring – Data Collection and Evaluation activity code standard 201. Implementation of this activity includes the installation of the monitoring system to be used in collecting water samples for analysis under activity standard 201. The monitoring systems will be installed at a controlled water outlet between the conservation practice to be evaluated and the waterbody receiving the water leaving the conservation practice.

In many cases, the edge of field water quality monitoring system would be installed with other structural conservation practices that include controlled water outlets as part of their design, such as a CP 410, Grade Stabilization Structure. These structural practices were already evaluated as part of the MS Programmatic Agreement and the Amended Gopher Tortoise BO/CO and the "Avoidance/ Minimization Criteria" have already been identified for each practice to avoid potential adverse effects to ESA-protected species. The small footprint of the monitoring system will not have any additional effect beyond those of the structural conservation practice it is evaluating.

In some cases, the water quality monitoring system may be installed in conjunction with a conservation practice such as CP 393, Filter Strip that does not already have a controlled water outlet. In these cases, installation of a water collection system will be required. Installation of the monitoring system below such vegetated buffer practices would have a similar potential adverse effect as structural conservation practices, such as 410 Grade Stabilization Structure, but with a smaller footprint. Therefore, NRCS proposes using the same Avoidance/Minimization Criteria as structural practices, such as CP 410, Grade Stabilization Structure, to avoid potential adverse effects to listed species. This would result in NRCS applying measure AQ1 when implementing the water quality monitoring system. NRCS requests FWS concurrence that Conservation Activity Code 202, Edge of Field Water Quality Monitoring – System Installation, when implemented using the minimization measures identified for structural practices in the attached Matrix, may affect, but would be not likely to adversely affect threatened or endangered species in the Upper Pascagoula Water Quality project area."

There is no designated critical habitat in the action area. The Chunky River, Okatibbee Creek, Sowashee Creek, Tallashua Creek, Tallahatta Creek, and Suqualena Creek are tributaries of the Chickasawhay, in the Pascagoula River system. The main stem of the Pascagoula River and its distributaries (portions of the Bouie, Leaf, and Chickasawhay tributaries, and all of the Big Black Creek tributary) are included in the designated critical habitat for Gulf sturgeon. This project will improve water quality by reducing nutrient and sediment runoff from cropland, pasture/grassland, and forests. The following describes the habitats used by protected species in the project area.

Northern long-eared bat: This species may exist in forested areas where there are snags or under exfoliating bark, cracks, or crevices in trees. There are currently no known maternity roost trees in the state of Mississippi and one hibernaculum located in the northeastern part of the state outside of the project area.

Price's Potato Bean: This species is an herbaceous, twining vine that belongs to the pea family. It is found on slopes or bluffs with open woods that often grade into creek and river bottoms. The species may also be found along forested margins of power-line and road rights-of-ways. These areas are typically underlain by alkaline soils.

Red-cockaded woodpecker: This species excavates nesting and roosting cavities in mature pine trees (60+ years old). A mated pair of birds and all helper birds forms a clan. A cluster of cavity trees where the clan nests and roosts is called a colony. All cavity trees, active and inactive, are important to the colony and should therefore be avoided. Also, older (30+ years) pine stands within a half-mile of a colony should be considered foraging habitats and should not be disturbed.

Gopher tortoise: This species occupies a wide range of upland habitat types. The general physical and biotic features thought to characterize suitable tortoise habitat are: presence of well-drained, sandy soils, which allow easy burrowing; an abundance of diverse herbaceous ground cover; and an open canopy and sparse shrub cover, which allows sunlight to reach the ground floor. The gopher tortoise digs burrows for shelter, and groups of tortoises dig burrows in the same location, forming a colony. In Mississippi, these areas often support a mixture of longleaf pine and scrub oaks.

Yellow-blotched map turtle: Habitat is river stretches with moderate currents, abundant basking sites, and sand bars for nesting.

Ringed map turtle: This species prefers river stretches with moderate currents, abundant basking sites, and sand bars for nesting.

Wood Stork: This species only occurs seasonally in Mississippi during the non-breeding season (May-October). In the project area wood stork may use habitat for foraging and loafing. Typical foraging sites include freshwater marshes, swales, ponds, hardwood and cypress swamps, narrow tidal creeks or shallow tidal pools, and artificial wetlands (such as stock ponds; shallow, seasonally flooded roadside or agricultural ditches; and impoundments).

Pearl Darter: This small species of fish is a *candidate species* historically found in the Pearl and Pascagoula River systems, but is currently found only in the Pascagoula River system. The darter prefers stable gravel riffles or sandstone exposures with large sized gravel or rock. Though the species is not currently protected under the ESA, this project will contribute to improved water quality, potentially contributing to the recovery of the species.

Gulf Sturgeon: This species is a primitive, anadromous fish that annually migrate from the Gulf of Mexico into freshwater streams to spawn. Subadults and adults spend eight to nine months each year in rivers. Adult and subadult holding areas have been identified in the Pascagoula River.

Code	Practice
201	Edge of Field Water Quality Monitoring Data Collection and Evaluation
202	Edge of Field Water Quality Monitoring - System Implementation
313	Waste Storage Facility
314	Brush Management
315	Herbaceous Weed Control
317	Composting Facility
327	Conservation Cover
328	Conservation Crop Rotation
329	Residue and Tillage Management, No-Till
338	Prescribed Burning
340	Cover Crop
342	Critical Area Planting
345	Residue and Tillage Management, Reduced Till
350	Sediment Basin
356	Dike
362	Diversion
378	Pond
381	Silvopasture
382	Fence
386	Field Border
390	Riparian Herbaceous Cover
391	Riparian Forest Buffer
393	Filter Strip
394	Firebreak (New construction)
410	Grade Stabilization Structure
412	Grassed Waterway
422	Hedgerow Planting
430	Irrigation Pipeline
441	Irrigation System, Microirrigation
442	Sprinkler System (previously known as Irrigation System, Sprinkler)
443	Irrigation System, Surface and Subsurface
449	Irrigation Water Management
460	Land Clearing
464	Irrigation Land Leveling
468	Lined Waterway Or Outlet
484	Mulching
490	Tree/Shrub Site Preparation (previously known as Forest Site Preparation)
511	Forage Harvest Management
512	Forage and Biomass Planting (previously known as Pasture and Hay Planting)
516	Livestock Pipeline (previously known as Pipeline)

528	Prescribed Grazing
554	Drainage Water Management
561	Heavy Use Area Protection
576	Livestock Shelter Structure
578	Stream Crossing
580	Streambank and Shoreline Protection
587	Structure For Water Control
590	Nutrient Management
595	Integrated Pest Management (previously known as Pest Management)
600	Terrace
612	Tree/Shrub Establishment
614	Watering Facility
642	Water Well
644	Wetland Wildlife Habitat Management
666	Forest Stand Improvement

MEASURES FOR UPPER PASCAGOULA WATER QUALITY PROJECT CONSERVATION PRACTICES

County	Species	Measures to be Used	
Clarke	Wood stork	None required. Wood stork uses habitat primarily for non-breeding season loafing and foraging and can leave the area during construction and return.	
	Gulf sturgeon, Pearl darter, Yellow-blotched map turtle	**AQ1** - Contact NRCS POC for possible further consultation if installation and/or management of conservation practice will occur within 50 feet of a stream within a 12-digit HUC containing aquatic listed species, and one or more, as needed, of the following protective measures cannot be implemented. Protective measures when working near suitable habiat for listed aquatic species includes: no mechanized clearing within 50 feet of streams; installing BMP's such as vegetated buffers to prevent erosion and sedimentation into streams; fencing lievstock out of streams; and minimizing stream crossing associated with forest trails and landings Conservation Practice Code (PC) 655.	
		AQ2 - Contact NRCS POC for possible further consultation if instream work (e.g., snagging, channel realignment, bank armoring, dams, bridge pilings, culverts) is proposed within a 12-digit HUC with listed aquatic species. Protective measures include using appropriate BMP's to prevent erosion and sedimentation into streams; designing stream crossings to ensure that the natural flow and hydrology of the stream is maintained year-round; and preventing barriers to fish and other aquatic organism passage associated with instream work.	
		AQ3 - Contact NRCS POC for possible further consultation if pesticides will be used within 100 feet of a stream (or 200 feet for aerial pesticide applications) within a 12-digit HUC containing aquatic listed species, and one or more, if needed, of the following protective measures cannot be implemented. Protective measures include using spot treatment techniques (e.g. hack and squirt, basal bark, cut stump and direct foliar spray), using selective herbiddes that maintain native grasses, avoiding pesticide drift into non targeted area by not spraying when wind speeds are over I 0 mph, and avoiding runoff into non-target streams by applying during dry weather when rainfall is not expected within 24 hours. WINPEST evaluations will be conducted to identify measures to prevent polluting surface and ground waters or affecting non-target species.	
		GT1a	Heavy equipment (including mowers) will stay at least 4 meters (13 feet (ft)) from known gopher tortoise burrows. Contact Service biologist, State Wildlife Agency biologist, or NRCS state biologist if assistance is needed to conduct gopher tortoise surveys. This applies to all practices where heavy equipment is used. Heavy equipment is defined as agricultural tractors, crawler loaders, crawler dozer, backhoe/loader, front end loader, scraper pan, motor grader, skid steer, forklift (P.l.T.), hydraulic excavator, and specialty tracked equipment. Felling of trees and brush, cutting by hand, hack and squirt, backpack application, or use of herbicide pellets is allowed within this buffer.
		GT1b	Design all practices to minimize or avoid unintentional damage to non-target plants. This applies to all practices where vegetation is managed such as the use of herbicides or site prep/harvest equipment.
		GT1c	Native species shall be used to meet practice objectives. Base native plant community restoration goals on ecological site descriptions or recommendations provided by the NRCS state biologist. Planning will include the provision of forbs, grasses and grass-like plants to meet gopher tortoise foraging needs, whether by planting or site management. Consult with the NRCS state biologist if planting of non-native species is required to meet the intent of the practice. Seed mixes must be free of state-declared noxious and invasive material.
		GT1d	Stocking densities and species of trees/shrubs shall be consistent with gopher tortoise habitat needs - this varies by state. As recommended by each USDA State Technical Committee.

	Gopher tortoise	**GT1e**	Control of invasive species (Conservation Practices 314 & 315) will occur to the extent practical for eradication. Control of non-invasive, undesirable species will be conducted on a "spot" or rotational basis to protect native grasses, forbs and legumes. Herbicides will be restricted to those having the least effect on the seed bank, but still providing control of undesirable plant competition. Herbicide application rates will be adjusted to account for the effects of soil texture (within label rate specifications - See NRCS job sheets for Conservation practice 490 Tree and Shrub Site Preparation and Conservation Practice 666 Forest Sand Improvement). If greater than 25 acres/year of aerial spraying will occur, contact the NRCS state biologist for further assistance. After implementation, regular monitoring of the site must occur to ensure erosion and undesirable plant species concerns are addressed in a timely manner.
		GT1f	There will be no root raking, woody debris piling, scalping, or shearing that removes the top layer of soil in Service-NRCS classified suitable soil areas. Site preparation will not include bedding (a mechanical means of site preparation that mounds soil in narrow strips for tree planting). Roller chopping will be limited to single pass with single roller. A void placement oflogging slash within 4 m (13 ft.) of known gopher tortoise burrows.
		GT1g	Bum on 2 to 3 year rotation unless weather prevents the safe use of prescribed fire. Growing season bums are encouraged to set back hardwoods and stimulate regeneration of native vegetation, such as wiregrass, Indian grass, bluestems, and forbs.
		GT2a	If implementing Conservation Practice 528 Prescribed Grazing, maintain a minimum average native forage stubble height of 6 inches. This applies to all areas that are grazed.
		GT2b	Fencing should be installed so as to allow for the safe passage of gopher tortoises. Contact NRCS state biologist for further assistance.
Kemper	Wood stork	None required. Wood stork uses habitat primarily for non-breeding season loafing and foraging and can leave the area during construction and return.	
	Price's potato-bean	**PPB** - Contact NRCS POC if installation and/or management of conservation practice will adversely affect (i.e. clear, thin, land mechanical treahnent, herbicide use) suitable Price's potato bean habitat (i.e. forest openings in mixed hardwood stands on slopes or bluffs of alkaline soils that grade into creek or stream bottoms) within a 12-digit HUC containing potential PPB habitat. Kudzu control using herbicides or mechanical treatment is acceptable (beneficial effect) within potential suitable PPB habitat where populations are not currently present.	
	Northern long-eared bat (NLEB)	**Bat1** - No tree removal (i.e., trees over 3 inch diameter at breast height) during the summer roosting season (i.e., April 15-August 31) for projects within 150 feet of a known NLEB summer roost site. See the GIS HUC file for 12-difit HUCs with known NLEB roosts. Contact NRCS POC if trees must be removed during the summer roosting season.	
		Bat2 - Include bat mitigation efforts (bat gates) for the closing of natural caves and/or abandoned mines that have evidence of bat use. Avoid disturbance (e.g. use of machinery, building of roads, application of pesticides) of foraging areas near known bat caves by adhering to an activity buffer distance of 200 foot radius from the cave entrance. Maintain snags within Yz mile radius of cave entrances. See the GIS HUC file for 12-digit HUCs with known NLEB caves.	
		Bat3 - Conduct prescribed bums and application of pesticides outside of the summer roosting season (i.e., April 15-August 31) for projects within 150 feet of a known NLEB summer roost site. See the GIS HUC file for 12-digit HUCs with known roosts. Spot treatment is preferred over aerial application.	
Lauderdale	Wood stork	None required. Wood stork uses habitat primarily for non-breeding season loafing and foraging and can leave the area during construction and return.	
	NLEB	**Bat1, Bat2, Bat3**	

Neshoba	Wood stork	None required. Wood stork uses habitat primarily for non-breeding season loafing and foraging and can leave the area during construction and return.
	Ringed map turtle	**AQ1, AQ2, AQ3**
	NLEB	**Bat1, Bat2, Bat3**
Newton	Wood stork	None required. Wood stork uses habitat primarily for non-breeding season loafing and foraging and can leave the area during construction and return.
	Red-cockaded woodpecker	**RCW** - Contact NRCS POC if installation and/or management of conservation practice will convert, remove, damage, or degrade foraging habitat (i.e. southern yellow pine tree species greater than or equal to 10 inch DBH in a pine-dominated stand) or potential cavity trees (i.e. pine trees 60 years old or older) within 0.5 mile of an active cluster. See GIS HUC file for 12-digit HU Cs with known or potential RCW clusters.
	NLEB	**Bat1, Bat2, Bat3**

In Reply Refer To:

Date

Memorandum

To: Deputy Case Manager, *Deepwater Horizon* Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR)

From: Field Supervisor, [Field Office Name]

Subject: Informal Consultation and Conference for the Proposed [project name], [project location]

This memorandum acknowledges our receipt of your memorandum on [month day], 2015. This response is in accordance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA). We have reviewed your proposed project and concur with your [month day], 2015 determinations for endangered and threatened species, their critical habitat, and at-risk species (should they become listed). We based our concurrence on the justification below. Where more than one justification was applicable, multiple boxes are checked and additional comments are added.

☐ Species-specific surveys were conducted and there are no endangered, threatened, or at-risk species or designated critical habitat on site. Comments: _____
_____

☐ Endangered, threatened, and at-risk species are not known from and are not expected to occur within the vicinity of the proposed project. Comments: _____
_____

☐ Appropriate avoidance and minimization measures have been included within the project description to ensure that any effects to listed species (or at-risk species should they become listed) are insignificant or discountable. Comments: _____
_____

☐ Critical habitat is not present on site and does not occur within the vicinity of the proposed project. Comments: _____
_____

☐ Appropriate avoidance and minimization measures have been included within the project description to ensure PCEs and/or critical habitat will not be adversely modified or destroyed. Comments: _____
_____

☐ The proposed project is completely beneficial to the listed or at-risk species and/or critical habitat considered. Comments: _____
_____

Unless the project description changes, or new information reveals that the effects of the proposed action may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the ESA is necessary.

If you have questions, please contact [Field Office lead] at [###-###-####] or email [first_last@fws.gov].