DEPARTMENT OF DEFENSE GOPHER TORTOISE (*GOPHERUS POLYPHEMUS*) CONSERVATION AND CREDITING STRATEGY

Developed in consultation among:
U.S. Fish and Wildlife Service – Southeast Region
U.S. Department of Defense
Alabama Department of Conservation and Natural Resources
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources

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Executive Summary

This strategy provides a mechanism by which Department of Defense installations in the unlisted range of the gopher tortoise can volunteer to implement conservation actions for the gopher tortoise that can be used to offset impacts to the gopher tortoise if the species becomes listed in the future. The strategy defines conservation credits for the gopher tortoise and specifies how those credits can be created and used by military installations. The strategy was developed by the Department of Defense, U.S. Fish and Wildlife Service and State wildlife agencies in Alabama, Florida, Georgia and South Carolina. While this strategy focuses on protection and management of gopher tortoise populations off of military installations, it is also intended to relieve or eliminate current or anticipated challenges that could restrict, impede, or otherwise interfere with, whether directly or indirectly, current or anticipated military activities. The strategy provides an additional tool to complement ongoing and continuing military conservation programs, and assist with potential future regulatory compliance under the Endangered Species Act.

Section 1 INTRODUCTION

The gopher tortoise (*Gopherus polyphemus)*(GT) occurs in parts of Alabama, Louisiana, Mississippi, Florida, Georgia, and South Carolina. The species has been listed under the federal Endangered Species Act (ESA) as a threatened species west of the Mobile and Tombigbee rivers in Alabama, Mississippi and Louisiana (also referred to as the "Western Population") since 1987 [52 Fed. Reg. 25,376 (July 7, 1987)]. East of the Mobile and Tombigbee Rivers in Alabama, and in Florida, Georgia and South Carolina, the gopher tortoise has been identified by the U.S. Fish and Wildlife Service (FWS) as a candidate for listing (also referred to as the "Candidate Population" or the "Eastern Population") under the ESA since 2011 [76 Fed. Reg. 45,130 (July 27, 2011)]. The gopher tortoise has been designated under state law as a threatened species by the states of Florida and Georgia, and as critically endangered by South Carolina. The gopher tortoise is also subject to state law protection in Alabama.

1.1 Prior Conservation Initiatives

The Eastern Population of gopher tortoises has been the focus of substantial federal, state, tribal, and private sector conservation efforts. For example, in 2008, the FWS, U.S. Department of Defense (DoD), U.S. Department of the Army (USA), U.S. Department of the Navy (USN), U.S. Department of the Air Force (USAF), U.S. Marine Corps (USMC), U.S. Forest Service (USFS), Alabama Department of Conservation and Natural Resources (ADCNR), Florida Fish and Wildlife Conservation Commission (FFWCC), Georgia Department of Natural Resources (GaDNR), Georgia Department of Transportation (GDOT), South Carolina Department of Natural Resources (SCDNR), Poarch Band of Creek Indians,

American Forest Foundation (AFF), Longleaf Alliance, Inc. (Alliance), and the Joseph W. Jones Ecological Research Center (JWJERC) entered into a Candidate Conservation Agreement for the gopher tortoise Eastern Population (Nov. 2008, revised Dec. 2012). This agreement is a cooperative effort intended to "collectively implement proactive gopher tortoise conservation measures across its eastern range," and is intended to guide the development of conservation and management actions at different levels based on a common conservation approach and framework.

The goals and objectives of the Candidate Conservation Agreement fall into two main categories:

1. Range-wide Conservation and Management: By addressing gopher tortoise conservation holistically across its eastern range, the Parties hope to more effectively identify and conserve gopher tortoise habitat and populations; develop and implement management strategies that maintain or enhance gopher tortoise habitat; and monitor the response of the species to conservation and management.
2. Cooperation and Collaboration: By managing gopher tortoise conservation actions in a proactive and collaborative manner, the Parties plan to highlight existing individual gopher tortoise conservation actions and efforts and to share knowledge and information across a wide range and diverse collection of organizations. This also allows for an organized conservation approach that encourages uniform actions and reporting, integrates monitoring and research efforts with management, and supports partnership formation.

In their annual report, the Candidate Conservation Agreement partners provide information on:

- Acres conserved by protection level;
- Acres managed and restored;
- Invasive exotics treated;
- Population trends and survey results;
- Population manipulation (translocation);
- Education and outreach;
- Legal protection measures; and
- Research on:
    - rare plant and animal inventories and surveys;
    - disease prevalence and impacts;
    - population responses to management actions;
    - effectiveness of re-stocking tortoises;

- habitat assessments; and
- population dynamics assessments.

In addition to the Candidate Conservation Agreement, the FWS published its Range-Wide Conservation Strategy (Range-Wide Strategy) for the gopher tortoise in 2013. The Range-Wide Strategy is meant to serve as a guide to help the FWS, the six states in the gopher tortoise range, and public and private partners work together to proactively conserve the gopher tortoise (U.S. Fish and Wildlife Service et al. 2013).

If the Range-Wide Strategy is fully implemented, and threats are minimized, the tortoise may not need the ultimate protection of the ESA in its eastern range. In the western portion of the range, where it is listed as federally threatened, the FWS and its partners are learning more about the gopher tortoise with the goal of recovering the species so that one day it will not need federal protection. As discussed in detail in Section 8 below, this DoD Gopher Tortoise Conservation and Crediting Strategy will support that effort.

The Range-Wide Strategy calls for the identification of "the best remaining tortoise habitat" and the establishment of "long-term protection of those lands." Chief among the Conservation Objectives established by the Range-Wide Strategy are to:

- Identify, prioritize, manage and protect, viable tortoise populations and the best remaining tortoise habitat, and
- Increase the size and/or carrying capacity of those viable population areas (and areas with tortoise populations just below the "viable" threshold) through applied land management, land acquisition, or incentives to adjacent landowners to properly manage for tortoises.

1.2 Current Conservation Initiative

This DoD Gopher Tortoise Conservation and Crediting Strategy (Crediting Strategy) has been developed by the FWS, DoD, and the states of Alabama, Georgia, Florida, and South Carolina (the Parties). It is consistent with the conservation purposes, principles, and objectives set forth in the Candidate Conservation Agreement and the Range-Wide Strategy, and is intended to meet the Parties' mutual objectives of contributing to the conservation of the species. It has been designed to accomplish this by implementing proactive actions identified as necessary to help preclude the need to list the Eastern Population, while preserving DoD installation mission capabilities and providing DoD regulatory predictability in the event that the Eastern Population is listed under the ESA.

The Crediting Strategy is an important step in providing for the conservation of the Eastern Population of the gopher tortoise. It builds upon the collaborative efforts of many parties, including signatories to the Candidate Conservation Agreement and others. It is intended to focus conservation actions on currently unprotected lands that are of greatest

conservation value to the species. It also establishes a mechanism allowing military commanders the flexibility needed to ensure that our military men and women can test, train, and operate now and in the future by taking conservation actions to protect the gopher tortoise outside the boundaries of military installations. The conservation actions it promotes include, but are not limited to, engaging in partnerships that acquire lands or easements on lands containing gopher tortoises and/or gopher tortoise habitat for conservation management purposes. Conservation credits will be given for implementing the conservation actions and participating DoD installations within the range of the Eastern Population, at their discretion, may use these to offset actual or potential effects to gopher tortoises by their training and other mission activities. The strategy does not obligate DoD installations to use credits to offset impacts to gopher tortoises or to otherwise require mitigation for impacts on gopher tortoise.

The Crediting Strategy establishes the framework for evaluating and determining credit for DoD conservation actions throughout the range of the Eastern Population. The Crediting Strategy does not itself direct or authorize any particular conservation action, but rather establishes the framework within which the conservation value of such actions will be evaluated, and the manner in which conservation credits will be generated for voluntary use by participating installations. The Parties anticipate that specific conservation actions, and specific impacts to gopher tortoise attributable to installation training and other activities to be offset by conservation credits, will be identified and analyzed on a site-specific basis in subsequent documents.

FWS intends to evaluate the effects to gopher tortoise from implementation of the Crediting Strategy in a formal Programmatic Conference Opinion developed pursuant to Section 7(a)(4) of the ESA. As individual DoD installations elect to participate in the Crediting Strategy by identifying particular conservation actions and installation activities to be implemented, the potential "take" of gopher tortoises from those actions/activities will be assessed in site-specific, formal conference opinions tiered to the programmatic opinion. The tiered conference opinions will include an anticipatory Incidental Take Statement for such take, which will become effective if and when the Eastern Population is listed under the ESA. It is the Parties' intention that both the Programmatic Conference Opinion and future tiered site-specific conference opinions will become effective as Section 7 biological opinions if the Eastern Population is listed.

1.3 Additional Conservation Benefits

The gopher tortoise is considered a "keystone" species of the longleaf pine ecosystem since many other wildlife species benefit from its presence and abundance. More than 300 other species have been known to use gopher tortoise burrows, including listed species such as the eastern indigo snake and many at-risk species such as the gopher frog and Florida pine snake. The Parties believe that numerous listed and at-risk animal and plant species associated with the gopher tortoise will benefit from this strategy, and that implementation of the strategy may significantly reduce threats to such species by protecting important populations of these species on Gopher Tortoise Conservation Areas

(GTCAs). The Parties may elect to identify such species and their habitat requirements and to address them under this Crediting Strategy, or they may elect to establish crediting mechanisms similar to the gopher tortoise crediting system specifically for the other species. Unless or until such strategies are developed for these species, any assessment of conservation benefits of establishment of GTCAs will be accomplished through site specific surveys and analysis. Likewise, identification of any potential conservation measures related to action specific impacts will be addressed through existing processes under the National Environmental Policy Act (NEPA) or Endangered Species Act (ESA) consultations.

The Parties intend and expect that the DoD/FWS actions discussed in this document will encourage additional conservation actions for the benefit of gopher tortoises, which would enhance the conservation objectives of this strategy. The Parties desire that the principles established in this Crediting Strategy will also encourage and be consistent with third party conservation actions, and intend that this strategy be viewed as complementary to such conservation activities. This strategy may be modified and amended to provide for the formal inclusion of other federal, non-federal, or third parties seeking to participate in conservation actions consistent with the objectives and principals of the strategy and federal laws, including the generation of credits suitable for use in offsetting the effects of future actions potentially impacting the Eastern Population of the gopher tortoise.

Section 2 REGULATORY BACKGROUND

2.1 ESA Status

2.1.1 Listing Determination for Western Population

The FWS 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 Fed. Reg. 25,376 (July 7,1987)]. The listed range of the gopher tortoise includes three counties in southwestern Alabama, 14 counties in southern Mississippi, and three parishes in Louisiana (United States Fish and Wildlife Service 2014).

2.1.2 Candidate Determination for Eastern Population

While the gopher tortoise is federally-listed under the ESA in the western portion of its range, it is currently a candidate species for listing in the eastern portion. The "candidate" species status is a result of a petition to list the species submitted by Save Our Big Scrub, Inc. and Wild South on January 18, 2006. The FWS subsequently determined that listing of the Eastern Population was warranted as threatened but precluded by higher priority listing actions [12-Month Finding on a Petition to List the Gopher Tortoise as Threatened in the Eastern Portion of its Range, 76 Fed. Reg. 45,130 (July 27, 2011) (12-Month Finding)]. In 2008, FWS and other stakeholders including the state wildlife agencies of Florida, Georgia, Alabama, and South Carolina, branches of the DoD, and related non-profit organizations, drafted and executed the Candidate Conservation Agreement for the

gopher tortoise Eastern Population (Candidate Conservation Agreement or CCA), subsequently amended in 2012.

2.2 State Status

Gopher tortoises are afforded different levels of legal protection throughout their range. While the gopher tortoise is currently state-protected in Alabama, Florida, Georgia, and South Carolina, state protection varies greatly (U. S. Fish and Wildlife Service 2012).

2.2.1 Alabama

Populations west of the Tombigbee and Mobile Rivers are federally listed as Threatened. In the remainder of the state, the gopher tortoise is protected under nongame species regulation 220-2-.92 (Alabama Department of Conservation and Natural Resources Administrative Code Chapter 220-2 Game and Fish Division).

2.2.2 Florida

The gopher tortoise is designated as a threatened species within the State of Florida.

2.2.3 Georgia

The gopher tortoise is designated as a threatened species within the State of Georgia.

2.2.4 South Carolina

The gopher tortoise is listed by the State of South Carolina as a critically endangered species within the State of South Carolina.

Section 3 GOALS AND OBJECTIVES

This Crediting Strategy is intended to achieve a net conservation benefit to the Eastern Population of gopher tortoises at a scale that will address those conservation priorities necessary to help preclude the need for listing, while providing regulatory predictability to the DoD and the military services regarding gopher tortoise conservation, should the tortoise be listed. In addition to the principal objectives of the Range-Wide Strategy – identification, prioritization, management, and protection of viable populations and best remaining habitat, and increasing the size and/or carrying capacity of those viable population areas – this crediting strategy promotes establishing new, viable populations through increased connectivity or repatriation by translocating individuals into strategically placed, managed areas of sufficient habitat quality and size.

Through land acquisition and management, the Crediting Strategy will conserve important gopher tortoise populations on lands not currently under permanent conservation management for gopher tortoise. Conservation actions will be focused in places where the best opportunities exist to enhance gopher tortoise conservation through representation, resiliency and redundancy (Shaffer and Stein 2000), based on the best available science, including an analysis of existing populations and locations.

This Crediting Strategy is further intended to provide DoD installations that elect to participate in these gopher tortoise conservation actions a substantial degree of predictability regarding the need for additional conservation measures to compensate for the effects of current and reasonably foreseeable future military activities if the gopher tortoise is listed in the future. In the first instance, this will be accomplished by pursuing habitat acquisition and management activities that contribute to the goal of making an ESA listing of the Eastern Population unnecessary. In the event the gopher tortoise is nonetheless listed, participating installations may expect that, in light of the conservation actions they have already taken both on and off the installation per this strategy, current and reasonably foreseeable mission activities on the installation may continue without the need for additional conservation measures beyond those already included in this strategy and existing Integrated Natural Resources Management Plans (INRMPs).

Section 4 AUTHORITY

The Parties listed below share a common interest in gopher tortoise conservation. Each state comprising the geographic area of the gopher tortoise's eastern range is represented, as are DoD, the Military Services, and FWS. The Parties enter into this Crediting Strategy under authority provided by federal and state law. Nothing in this Crediting Strategy is intended to limit the authority of either the FWS or DoD to fulfill their responsibilities under federal laws, nor does anything in this Crediting Strategy imply that any state or federal Party is in any way abrogating or ceding any responsibility or authority inherent in its sovereign ownership of, jurisdiction over, and control of its property interests or wildlife. All activities undertaken pursuant to this Crediting Strategy must be in compliance with all applicable state and federal laws and regulations.

4.1 Federal Agency Authorities

4.1.1 Department of Defense

The Sikes Act, 16 U.S.C. §§ 670a-670o, requires the Secretary of Defense to prepare and implement INRMPs for the conservation and rehabilitation of natural resources on military installations. These plans reflect mutual agreement among the DoD Military Services, the FWS, and the appropriate state fish and wildlife agency concerning conservation, protection, and management of fish and wildlife resources. DoD may enter into cooperative agreements with states, local governments, non-governmental organizations and individuals to provide for the maintenance and improvement of natural

resources on, or to benefit natural and historical research on, DoD installations. An INRMP is a comprehensive plan used to manage installation natural resources by providing and ensuring the sustained use of a landscape necessary to support the military mission in accordance with accepted stewardship principles. The INRMP describes how natural resources will be managed in the context of military mission needs and in compliance with applicable laws and regulations. It ensures that management of natural resources does not result in a "net loss" of mission training land and describes how ecosystems will be managed to create and maintain certain landscape characteristics needed to enhance military training opportunities.

Department of Defense Instruction (DoDI) 4715.3, Environmental Conservation Program, provides guidance to the Military Services for the integrated management of natural resources on property under DoD control. It also states that natural resources under the stewardship and control of the DoD shall be managed to support and be consistent with the military mission, while protecting and enhancing those resources for multiple use, sustainable use, and biological integrity.

DoD may also enter into cooperative or interagency agreements to provide for the maintenance and improvement of natural resources located off of a military installation or State-owned National Guard installation if the purpose of the cooperative agreement or interagency agreement is to relieve or eliminate current or anticipated challenges that could restrict, impede, or otherwise interfere with, whether directly or indirectly, current or anticipated military activities. For these off-base agreements, funds may be paid in a lump sum and may include an amount intended to cover the future costs of the natural resource maintenance and improvement activities provided for under the agreement. Such funds may be placed by the recipient in an interest-bearing or other investment account, with resulting interest or income being applied for the same purposes as the principal. Refer to 16 U.S.C. § 670c-1 for more detail.

Additionally, 10 U.S.C. §2684(a) authorizes the Military Services to enter into partnerships with private conservation organizations or state and local governments to preserve land around military installations, or lands ecologically related to a military installation or military airspace, for the purpose of preserving habitat on such lands that may serve to eliminate or relieve current or anticipated environmental restrictions that would or might otherwise restrict, impede, or otherwise interfere, whether directly or indirectly, with current or anticipated military training, testing, or operations on the installation. The scope of the phrase "real property in the vicinity of, or ecologically related to, a military installation or military airspace" [10 U.S.C. § 2684a(a)] includes any property that may be subject to incompatible development that could adversely affect the mission of a military installation; flight operations from a military airfield; or use of low-level military training routes. The phrase also includes any property that encompasses habitat that, if preserved or improved, could eliminate or relieve current or anticipated environmental restrictions on military training, testing, or operations, without limitation on where such property may be located. Agreements under this authority may also provide for management of natural resources on lands in which the DoD has acquired any right, title, or interest if it is

determined that there is a demonstrated need to preserve or restore habitat for the purpose of eliminating or relieving current or anticipated environmental restrictions that would restrict, impede, or otherwise interfere, whether directly or indirectly, current or anticipated military training, testing, or operations on the installation. Funds provided under this authority may also be paid in a lump sum and may include an amount intended to cover the future costs of natural resource management and monitoring and enforcement. Such funds may be placed by the eligible entity in an interest-bearing account, with resulting interest being applied for the same purposes as the principal.

4.1.2 U.S. Fish and Wildlife Service

Sections 2, 6, and 7 of the ESA, 16 U.S.C §§ 1531-1544, authorize the FWS and other federal parties to enter into this Agreement. Section 2 of the ESA states that encouraging parties to develop and maintain conservation programs is a key to safeguarding the nation's heritage in fish, wildlife, and plants. Section 2(c)(1) of the ESA, (16 U.S.C. § 1531(c)(1)), states "the policy of Congress is that all federal departments and agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes." Section 6 of the ESA directs FWS to "cooperate to the maximum extent" with the states (16 U.S.C. § 1535(a)). Further, Section 6 provides that the Service may authorize and participate with state agencies in establishing conservation initiatives, and may provide financial assistance to the state to monitor the status of a species within a state to prevent significant risk to the well-being of any such species (16 U.S.C. § 1535(c)). Section 7 of the ESA requires federal agencies to review programs that they administer and to utilize such programs in furtherance of the purposes of the ESA. Entering into this Agreement is an important and proactive initiative that follows the intent of Section 7 to provide for the conservation of the nation's fish, wildlife, and plants.

In addition to the ESA, the Fish and Wildlife Coordination Act of 1956 provides that the Secretary shall "take such steps as may be required for the development, advancement, management, conservation, and protection of fish and wildlife resources." The Fish and Wildlife Coordination Act states that the Secretary is authorized "to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat."

4.2 State Authorities

4.2.1 Alabama Department of Conservation and Natural Resources

In Alabama, the gopher tortoise is a protected non-game species. Nongame Species Regulation 220-2-.92 makes it illegal to take, capture, kill, or attempt to take, capture or kill gopher tortoises, or to possess, sell, trade for anything of monetary value, or offer to sell or trade gopher tortoises (or any gopher tortoise parts or reproductive products) without a scientific collection permit or written permit from the ADCNR.

4.2.2 Florida Fish and Wildlife Conservation Commission

The gopher tortoise was designated as a threatened species within the State of Florida effective November 2007. In 2012, the FFWCC released its revised Gopher Tortoise Management Plan in accordance with the Threatened and Endangered Species regulation, Florida Administrative Code, Rule 68A-27. Rule 68A-27.003 states that "No person shall take, attempt to take, pursue, hunt, harass, capture, possess, sell or transport any gopher tortoise or parts thereof or their eggs, or molest, damage, or destroy gopher tortoise burrows, except as authorized by Commission permit or when complying with Commission approved guidelines for specific actions which may impact gopher tortoises and their burrows. A gopher tortoise burrow is a tunnel with a cross-section that closely approximates the shape of a gopher tortoise. Permits will be issued based upon whether issuance would further management plan goals and objectives."

4.2.3 Georgia Department of Natural Resources

The State of Georgia has regulations (GaDNR Rules Chapter 391-4-10) for the protection of plant and animal species, including the gopher tortoise, which are listed as threatened within the state. GaDNR may issue permits for the collection, transportation, and/or possession of gopher tortoises for scientific or educational use only. Such permits do not alleviate the responsibility to acquire specific federal permits, if required. Georgia law specifically states that rules and regulations related to the protection of state protected species shall not affect rights on private property. Prohibitions are limited to the capture, killing, or selling of protected species and the protection of the habitat of these species on public lands. GaDNR has statutory and regulatory authority to enter into cooperative agreements with federal agencies and other state agencies in carrying out its objectives, including management programs for the purpose of conserving any endangered or threatened species (O.C.G.A. §§ 12-2-6 & 27-1-6; Board Rule 391-4-10-.05) (U. S. Fish and Wildlife Service 2012).

4.2.4 South Carolina Department of Natural Resources

The gopher tortoise is listed by the State of South Carolina as a critically endangered species within the State of South Carolina (SC Code of Regulations 123-150). This state designation requires that the federal ESA is observed in reference to gopher tortoises, meaning it is unlawful for any person to take, possess, transport, export, process, sell or offer for sale or shipment, and for any common or contract carrier knowingly to transport or receive for shipment any species or subspecies of wildlife that is endangered within the state. Very few tortoises reside in South Carolina, but known populations are protected on wildlife management areas, where it is illegal to take tortoises without written permission from the SCDNR.

Section 5 STATUS AND CONSERVATION NEEDS OF EASTERN 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 (Tuberville et al. 2009), but long-term monitoring data indicate that many populations have declined (McCoy et al. 2006). However, unlike the western portion of the range, there are several known populations of gopher tortoises in the eastern portion of the range that are sufficiently large to likely persist long-term. About 80 public parcels in Florida contain a substantial amount of potential gopher tortoise habitat and several of these areas have ongoing surveys or censuses to estimate the number of gopher tortoises present (Florida Fish and Wildlife Conservation Commission 2011).

The FWS' 12-Month Finding summarizes the survey results for each state in the species' unlisted range and several efforts to model the species' long-term persistence. The 12-Month Finding concluded that 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 or convert 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.

5.1 Species Status and Distribution

The gopher tortoise occurs in the southeastern Coastal Plain from southwestern South Carolina to extreme southeastern Louisiana (Figure 1). The gopher tortoise is endemic to the United States, and Florida represents the largest portion of the total range of the species.

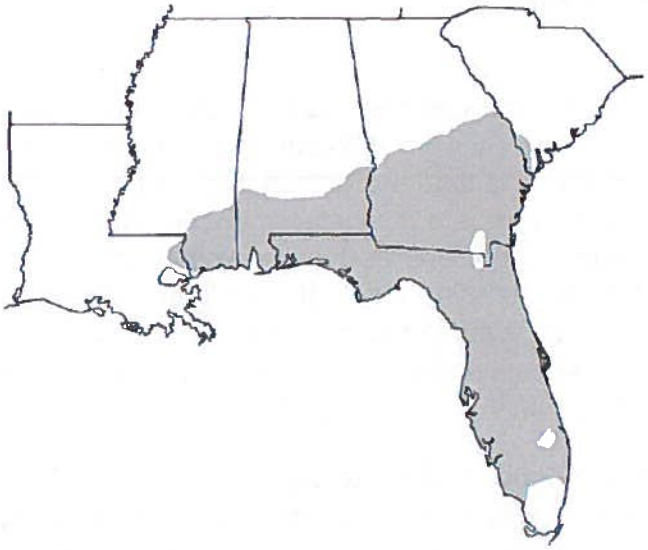

Figure 1. Gopher Tortoise Distribution (U. S. Fish and Wildlife Service 2012).

A wide variety of information is available on the number and density of gopher tortoises and their burrows throughout their range. These data are the result of numerous surveys using a variety of methods ranging from one-time population counts to repeated surveys over several decades. The diversity of data poses a challenge when trying to evaluate the status of a species from a range-wide perspective. For example, in geographic areas where there is more data, the FWS has higher confidence in drawing conclusions about the status of the population. In other areas, where there is little or no data, the FWS' confidence in assessing the status of tortoises is lower. Because of disparities in the type of data collected, methods used, and differences in the scope of studies, it is not possible to simply combine datasets to evaluate the status of the gopher tortoise throughout its range. Instead, the FWS considers each individual dataset in the context of all other best available science to form general conclusions about the status of the gopher tortoise. The FWS used this information in its 12-Month Finding when the gopher tortoise was classified as a candidate for listing in its eastern range.

What is known is that the gopher tortoise is more widespread and abundant in certain parts of the eastern portion of its range, in particular southern Georgia and central and northern Florida. These areas have been designated as the "central" portion of the tortoise's range (Tuberville et al. 2009). Estimates of adult tortoise abundance include approximately:

- 785,000 in Florida (FFWCC 2012);
- 250,000 in Georgia (M. Elliott [GaDNR], pers. comm.);
- 30,000 to 130,000 in Alabama (Guyer et al. 2011);
- 11,000 in Mississippi (Lohoefener and Lohmeier 1984);

- 1,000-1,500 in South Carolina (W. Dillman [South Carolina Department of natural Resources], pers. comm.); and
- 400 in Louisiana (K. Landry [Louisiana Department of Wildlife and Fisheries], pers. comm).

5.2 Conservation Needs and Goals for the Eastern Population of Gopher Tortoises

The Range-Wide Strategy sets forth six objectives for conservation of the Eastern Population, which are shown in Appendix A. This Crediting Strategy draws from and implements elements of several of those Objectives, which themselves encompass the five-factor analysis utilized by FWS in determining whether a species should be listed under Section 4(a)(1) of the ESA, 16 U.S.C. §1533(a)(1). Those factors include:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;
(B) Overutilization for commercial, recreational, scientific, or educational purposes;
(C) Disease or predation;
(D) The inadequacy of existing regulatory mechanisms; or
(E) Other natural or manmade factors affecting its current existence.

Objective 1 of the Range-Wide Strategy calls for the establishment of consensus on what defines a viable gopher tortoise population, the establishment of consensus on the necessary number and distribution of viable gopher tortoise populations in suitable habitat such that the species is secure in the eastern portion of its range, and integrating the use of Line Transect Distance Sampling (LTDS) as a surveying/monitoring protocol. This Crediting Strategy is founded upon the determination by the Parties that 250 adult tortoises constitute a minimum viable population (in addition to other qualifiers) for the purposes of this strategy. This strategy also utilizes LTDS as a preferred surveying/monitoring protocol (Smith et al. 2009).

Objective 2 of the Range-Wide Strategy ("Address the present and threatened destruction, modification, or curtailment of gopher tortoise habitat") is the heart of this Crediting Strategy. In particular, the Crediting Strategy is directly intended to contribute to the identification, prioritization, management and protection of viable tortoise populations and the best remaining habitat, as well as to the increase in size and/or carrying capacity of those viable population areas and areas with tortoise populations just below the "viable" threshold, through applied land management and land acquisition.

As this Crediting Strategy is implemented, various other Range-Wide Strategy Objectives may be addressed directly as circumstances warrant. In particular, the Crediting Strategy may serve as the foundation for addressing several of the elements of Objective 5 ("Investigate range-wide effective regulatory mechanisms"), including the evaluation of the need for adopting consistent mitigation strategies across the range, the

development of such strategies, and as input for a model Candidate Conservation Agreement with Assurances/Habitat Conservation Plan.

Section 6 LOCATION AND CONSERVATION STATUS OF DEPARTMENT OF DEFENSE INSTALLATIONS WITHIN THE EASTERN POPULATION RANGE

6.1 Military Installations Hosting Gopher Tortoise

6.1.1 Military Installations

Gopher tortoises are present at a number of military installations within the Eastern Population Range. Those installations utilize INRMPs to, among other things, conserve wildlife and wildlife habitat while meeting training and other mission objectives. On-installation activities are generally consistent with the conservation of gopher tortoises. For example, training activities, which require large amounts of open space, can give rise to small, localized fires in a manner that mimics uncontrolled natural fire regimes and helps to maintain gopher tortoise habitat values. As a result, military installations can represent strongholds for gopher tortoises in areas where surrounding lands are being managed for purposes other than gopher tortoise conservation. Installations at which gopher tortoises are present are identified below.

6.1.1 Department of the Air Force

The USAF operates a number of installations and associated facilities at which gopher tortoises are found, including: Avon Park Air Force Range, FL; Eglin Air Force Base, FL; MacDill Air Force Base, FL; Moody Air Force Base, GA; the 45th Space Wing (45 SW), FL (includes Patrick Air Force Base, Cape Canaveral AFS, Malabar Tracking Annex, and Jonathan Dickinson Missile Tracking Annex); and Tyndall Air Force Base, FL.

6.1.2 Department of the Army

The USA has four installations within the eastern portion of the gopher tortoise's range that have gopher tortoise populations and manage for gopher tortoises: Fort Benning, GA; Fort Gordon, GA; Fort Rucker, AL; and Fort Stewart, GA.

6.1.3 Department of the Navy

The USN has six installations within the eastern range of the gopher tortoise that have gopher tortoise populations and completed management activities: Naval Submarine Base Kings Bay, GA; Naval Air Station Jacksonville, FL; Naval Support Activity Orlando Bugg Spring Facility, FL; Naval Station Mayport, FL; Naval Air Station Whiting Field, FL (also has lands in southern AL); and Naval Air Station Pensacola, FL. Naval Support Activity Panama City, FL. Naval Support Activity Panama City, FL occurs in the range of the gopher tortoise but does not support a gopher tortoise population.

6.1.4 U.S. Marine Corps

Marine Corps Logistics Base Albany, GA, is known to host gopher tortoises. Additionally, the expansion area for Townsend Bombing Range is expected to contain gopher tortoises.

In May 2011, Marine Corps Support Facility Blount Island translocated all gopher tortoises from the installation to Apalachicola National Forest Research Recipient Site. Since the translocation, Marine Corps Support Facility Blount Island has conducted two follow-up surveys. Eleven additional tortoises were found and relocated off the island under FFWCC permit issued in November 2014.

6.1.5 National Guard

Camp Blanding Joint Training Center in Florida has a programmatic gopher tortoise permit issued by FFWCC and is seeking approval from FWS for a Candidate Conservation Agreement with Assurances for gopher tortoises and 21 other at-risk species.

Section 7 MILITARY INSTALLATION MISSION ACTIVITIES REQUIRING REGULATORY PREDICTABILITY

As mentioned previously, activities performed on military installations are generally compatible with gopher tortoise conservation. There are, however, a variety of actions that can negatively affect gopher tortoises and have the potential to result in the incidental take of gopher tortoises. Activities such as mechanized maneuver training, live fire training activities, and certain silvicultural practices can result in direct injury or mortality of individual gopher tortoises through crushing, burning, or burying. Other activities, such as construction projects, can result in the need to relocate gopher tortoises due to permanent habitat conversion. Activities giving rise to such affects led to the desire for regulatory predictability in light of the potential listing of the gopher tortoise.

Section 8 CREDITING STRATEGY

8.1 Overview

This Crediting Strategy establishes a vehicle whereby the DoD and the Military Services, in collaboration with FWS and state wildlife agencies, seek to (a) identify and acquire gopher tortoise habitat and perform or support other conservation activities that will contribute to the conservation of the Eastern Population, and (b) utilize those conservation activities to offset the effects to gopher tortoise of current and future military installation-related training and other activities for the purpose of ensuring that such activities can proceed in compliance with Section 7(a)(2) of the ESA without additional restriction should the Eastern Population become federally listed. The Parties intend that the Crediting Strategy, and actions performed thereunder, will contribute to the long-term survival and long-term conservation of the species, and will be considered under the FWS

Policy for Evaluation of Conservation Efforts When Making Listing Decisions [68 Fed. Reg. 15,100 (March 28, 2003)].

The Crediting Strategy, and its quantification and crediting systems, are based on the following concepts and principles:

1. The Crediting Strategy will achieve a net gopher tortoise conservation benefit by conserving important gopher tortoise populations on off-installation lands that are not currently under permanent conservation management and protection. This will be accomplished through a variety of means, including the acquisition and dedication of appropriate lands to gopher tortoise conservation management. This may also include the establishment of gopher tortoise conservation management regimes on lands that previously have been secured by DoD through conservation easements or other similar mechanisms upon which gopher tortoise conservation management regimes have not previously been employed, and that have not therefore been accounted for under the environmental baseline of military installations in the region. It could also include DoD funding or other support for gopher tortoise conservation actions on lands owned by third parties, including state or federal land managers.
2. Because the gopher tortoise has low reproductive and dispersal potential, efforts will focus on conserving important existing viable populations and the habitats that support these populations, including through translocation of gopher tortoise under appropriate circumstances. Gopher tortoise adults generally can be translocated successfully from areas where occupied habitat is negatively impacted, although translocation activities may result in losses of some individuals. Translocation of gopher tortoises will follow the guidelines in Appendix E.
3. Conservation acquisitions under the Crediting Strategy will be focused in places where the best opportunities exist to enhance gopher tortoise conservation through representation, resiliency and redundancy. This will be informed by the best available science, including an analysis of existing populations and locations where new or augmented populations would be most beneficial. The "Gopher Tortoise Conservation Planning Unit Map" that is under development by the FWS and state wildlife agencies is an approach to identifying conservation opportunities.
4. Acquisition of lands suitable for the conservation of the species will be dependent on the availability of both willing sellers and funding for acquisition. The potential contribution of any particular site to conservation of the Eastern Population of gopher tortoises is the predominant consideration for acquisition; where multiple conservation opportunities exist, selection criteria (in addition to cost) may include size, habitat quality, gopher tortoise population numbers, adjacency and relationship to other gopher tortoise habitat, and proximity to installations desiring to participate in the Crediting Strategy. Selection of properties for acquisition will also consider previous land use that may affect habitat quality, threats to the property from development or other factors, potential to conserve other priority

species including at-risk species and listed species, and factors that may affect the long-term management of the property such future development of adjacent properties. The Crediting Strategy incorporates components of the existing mitigation programs in the listed range of the gopher tortoise (Guidelines for the Establishment, Management, and Operation of Gopher Tortoise Conservation Banks, FWS, January 27, 2009) and in Florida (Gopher Tortoise Permitting Guidelines, April 2008 (Revised February 2015), FFWCC).

5. The Crediting Strategy is predicated on working with state wildlife agency partners in its implementation. States have expertise and legal authority for the gopher tortoise in the unlisted range and their involvement is necessary for success. States also may choose to work with DoD to develop conservation areas for the gopher tortoise.
6. The Crediting Strategy and its systems must be simple, easy to understand, transparent, easy to implement, and must meet the needs both of the gopher tortoise and of military training and readiness. The strategy recognizes and builds on the habitat conservation benefiting gopher tortoise that is currently happening on DoD installations through implementation of INRMPs.

These concepts are intended to support a voluntary DoD strategy for conservation of the gopher tortoise and provide an option for addressing potential losses from installation mission activities if the species is listed. However, the credit concepts could be used by other federal, state, or private entities to address gopher tortoise conservation needs to offset impacts from their own projects.

In developing the Crediting Strategy, the Parties have:

- Agreed on a minimum viable population number for gopher tortoise conservation actions under this strategy and established requirements for identification of suitable GTCAs under the strategy;
- Developed a methodology to quantify the conservation values to gopher tortoise of GTCAs to be acquired pursuant to the strategy, and to be used in crediting such conservation values against potential effects to the tortoise of DoD installation-related training and other mission activities;
- Agreed to develop a map identifying gopher tortoise population objectives (the "Gopher Tortoise Conservation Planning Unit Map"), including the current and desired future distribution, on a state-by-state basis;
- Established a mechanism for identifying and prioritizing potential gopher tortoise conservation opportunities, and establishing GTCAs;
- Developed crediting principles for use in matching conservation actions to DoD installation activities seeking regulatory predictability; and

- Agreed to establish a database of information for use in tracking and evaluating the ecological effects of DoD gopher tortoise conservation actions implemented hereunder.

Each of these components is discussed below.

8.2 Conservation Strategies

While the focus of this Crediting Strategy is the incorporation of off-base properties into the conservation baseline, on-base conservation will continue to play a critical role to the status of the species, and nothing in this strategy is intended to preclude on-base conservation. The Military Services, FWS, and state wildlife agencies have a long history of collaborative conservation in the Southeast, and historically many installations have demonstrated success in managing for gopher tortoise conservation. The Parties recognize and underscore the importance to the well-being of gopher tortoises of on-installation conservation actions. This Strategy is intended to provide a new and additional tool for installation use in balancing mission responsibilities, including conservation, and does not supplant on-installation conservation; however, the principal intent of DoD participation in the strategy is to eliminate or relieve current or anticipated environmental restrictions on military activities.

8.2.1 Relationship to On-Installation Conservation Actions

Mission considerations and requirements are a necessary component in determining installation management and conservation goals, for both on and off base conservation actions. Maintenance of ecosystem integrity and health not only supports wildlife conservation, but also benefits the DoD mission by preserving and restoring training and testing lands for long-term use. The keys to successfully balancing mission and conservation requirements are long term planning and effective management to prevent conflicts between these interests. Integration of on-base and off-base conservation will preserve critical readiness capabilities, while meeting conservation requirements. Establishment of this Crediting Strategy as a tool for obtaining and ensuring off-installation gopher tortoise conservation will add flexibility in installation mission and compliance planning.

As installations continue to amass data on their gopher tortoise population trends, it may become evident that on-post populations at some installations are stable or increasing. This could indicate that impacts to gopher tortoise are being offset by proactive management. Under these circumstances, the need for off-site credits could be limited or precluded.

In appropriate circumstances, some installations could seek to establish on-base gopher tortoise population goals through their INRMPs in their efforts to balance mission capabilities and conservation. This Strategy does not limit or affect their ability to do so.

Other installations, including small installations with small gopher tortoise populations, may face significant challenges in seeking to establish and manage on-base gopher tortoise populations without conflicting with other mission responsibilities. This would be especially true if the gopher tortoise is listed as threatened or endangered. On-base management efforts will require the development of innovative strategies to maintain the balance between mission capabilities and conservation obligations, and this Crediting Strategy is intended to provide one such means of doing so.

If an installation decides to voluntarily establish pre-listing on-base population goals, the installation should define specific habitat management actions to attain and sustain the goals, and monitoring protocols to estimate population response to training, testing or operational activities for purposes of informing regulatory processes in the event the species is listed under the ESA. If the species is subsequently listed, then provided the level of impacts from readiness activities can be shown to not restrict maintenance of population goals, the FWS normally will provide the regulatory flexibility to allow for continued military mission and/or other activities with little to no additional limitations. However, where conflicts between mission activities and conservation goals cannot be avoided, off-installation credits will provide a means for continuing to provide for the conservation of the species while maintaining land use flexibility for military mission activities.

8.2.2 Off-Installation Habitat Acquisition and Management for Gopher Tortoise Conservation

The principal focus of this Crediting Strategy is to acquire and conserve important gopher tortoise populations on off-installation lands that are not currently under permanent protection. This will be accomplished using the mechanisms described below.

8.2.2.1 Minimum Viable Population Requirements

The Parties, working through the Gopher Tortoise Council Minimum Viable Population Workgroup established under the Gopher Tortoise Council, have determined that a minimum viable population of gopher tortoises is a minimum of 250 adult tortoises (at least 180 mm carapace). Unfragmented areas of at least 100 hectares (250 acres) supporting or capable of supporting a population of this size (and minimum population density requirements of no less than 0.4 gopher tortoise per hectare, or 1 gopher tortoise per 6 acres), will be eligible for identification and acquisition as a GTCA under this strategy. However, smaller sites may be considered if they contribute to connectivity of populations or provide other significant benefits.

8.2.2.2 Quantification of Gopher Tortoise Habitat Acquisition and Management Benefits

For the purposes of this strategy, the metric for defining conservation benefits to gopher tortoises will be defined as one adult gopher tortoise (at least 180 mm carapace) and the habitat needed to support that gopher tortoise. The gopher tortoise metric thus

represents both individual tortoises (directly) and their habitat needs (as a surrogate). Based on the guidelines applicable to the listed (western) population of gopher tortoises, the required habitat per gopher tortoise is estimated to be 1.5 acres on highly suitable soils and 2.5 acres on moderately or less suitable soils. Soil suitability classifications for the gopher tortoise in those portions of Alabama, Georgia, and Florida that are located in the U.S.D.A. Natural Resources Conservation Service (NRCS) Major Land Resource Area 133a (Southern Coastal Plain) will use the system developed for the listed range of the gopher tortoise (U.S. Fish and Wildlife Service and Natural Resources Conservation Service 2012). Those portions of Alabama and Georgia that are in NRCS Major Land Resource Area 133 (Carolina and Georgia Sandhills) will also use the system developed for this listed range. That portion of Georgia in the NRCS Major Land Resource Area 153a will use the soil classification system developed for the NRCS Working Lands for Wildlife Program. In peninsular Florida, suitable soils will be as defined as those soils with depth to water table exceeding 130 cm. As additional soil suitability parameters are developed for the range of the Eastern Population, they will supersede and replace the listed population soil guidelines and the guidelines for NRCS Major Land Resource Area 153a and those for peninsular Florida.

In addition to soil suitability parameters, GTCAs must meet other minimum habitat requirements as well (Appendix B). These habitat requirements include minimum ground cover, maximum shrub cover, and maximum basal area measurements (see Appendix B table).

8.2.2.3 Gopher Tortoise Conservation Planning Unit Mapping

The FWS, in concert with partner state wildlife agencies, is developing Gopher Tortoise Conservation Planning Unit Maps for the Eastern Population. Conservation Planning Unit Maps are being developed based on the best available science, including an analysis of existing populations and locations where new or augmented populations would be most beneficial to the conservation of gopher tortoises. The final Planning Unit Map will be developed on an ecoregional scale. State-level planning unit maps exist in draft form for Georgia and will be developed for Alabama and Florida. Planning unit maps will be incorporated as available as appendices to this strategy and will be used to identify and prioritize gopher tortoise conservation opportunities for acquisition and conservation management.

8.2.2.4 Establishing Gopher Tortoise Conservation Areas (GTCAs) and Gopher Tortoise Credits

Implementation of this strategy is predicated primarily on the identification and conservation of high-value gopher tortoise conservation properties, defined hereunder as GTCAs. GTCAs may be established anywhere within the existing occupied range of the Eastern Population of gopher tortoises. Where multiple conservation properties are available, relevant factors for ranking and prioritizing potential acquisitions include size, habitat quality, gopher tortoise population numbers, adjacency and relationship to other

gopher tortoise habitat, and proximity to an installation that chooses to participate under this strategy.

The gopher tortoise conservation credit approach recognizes and provides two types of credits: (1) a resident gopher tortoise credit that will be given for conservation of existing individuals in a GTCA, and (2) a translocation gopher tortoise credit that will be given for those individuals translocated from other areas onto a GTCA. During the establishment of a GTCA, population surveys and analysis of the area will identify the number of resident gopher tortoise credits present at the site as well as the number of translocation gopher tortoise credits available for use, if needed, for receiving tortoises from future project development areas. Line Transect Distance Sampling (LTDS)(Smith et al. 2009) is the accepted sampling method for determining the number of resident gopher tortoises, but other methods that produce more accurate information may be used. Ideally, a GTCA should support a minimum viable population when established. However, consideration will be given to sites that are capable of reaching minimum viable population status through translocation and habitat restoration, especially if these sites contribute to connectivity of populations.

For GTCAs upon which habitat restoration actions are expected to result in significant increases in resident gopher tortoise numbers (independent of translocation), it may be appropriate to develop a release-schedule for additional resident gopher tortoise credits tied to demonstrated population responses. Additionally, an area may be considered for establishment as a GTCA if it is located adjacent to lands containing and managed for gopher tortoises, and if its use for gopher tortoise conservation pursuant to this Crediting Strategy will contribute to the support of a viable population of gopher tortoises on the combined lands.

The process for establishing a GTCA is as follows:

1. Identify one or more GTCAs currently supporting or capable of supporting viable populations (more than 250 adult gopher tortoises) within one or more Gopher Tortoise Conservation Planning Units. Gopher Tortoise Conservation Planning Units will be identified during development of the strategy. GTCAs may or may not be adjacent to other populations or DoD installations. Site selection will consider contribution to achieving the desired number of conserved populations as identified in the Gopher Tortoise Conservation Planning Unit Map.
2. Establish a conservation easement/fee acquisition for the GTCA that will ensure its management for gopher tortoises under this Crediting Strategy, and identify an appropriate land management entity to hold the easement. Ordinarily, lands to be acquired and managed as a GTCA will be dedicated for such use in perpetuity utilizing relevant legal instruments such as conservation easements or deed restriction, or other equivalent vehicles provided for in state law. For lands in which DoD currently holds an interest, but which are not being actively managed for gopher tortoises, the establishment of contractual or other mechanisms necessary

to provide for active management for gopher tortoises shall meet the purpose of this section.

3. Develop a Gopher Tortoise Habitat Management Plan for the GTCA, and assign management responsibility to an appropriate entity. The management plan (and management contract requirements) will be developed through coordination among the acquisition sponsor (DoD or a participating installation), FWS, and the relevant state wildlife agency. Habitat management guidelines are provided in Appendix B.
4. Assess existing gopher tortoise habitat and population size through LTDS. Surveys must be sufficient to provide an estimate baseline population with a coefficient of variation of 0.15 or less. Credits will be quantified in units of individual gopher tortoises, but a total of 250+ adult gopher tortoises must be achievable at the GTCA in unfragmented areas capable of maintaining the viable population density requirements of no less than 0.4 gopher tortoises per hectare (1 gopher tortoise per 6 acres).
5. Resident and translocation credits will be determined based upon the results of the surveys. Resident gopher tortoise credits will be the number of adult gopher tortoises at the site as estimated in the surveys. Translocation credits will be the number of adult gopher tortoises that can be translocated to the site if needed in the future. To receive translocated gopher tortoises, sufficient suitable habitat must be available for those gopher tortoises with consideration of gopher tortoise habitat requirements. Gopher tortoise credits will be determined utilizing habitat suitability criteria set forth in Appendix B. Additional translocation credits may be accrued through habitat management that improves additional acreage to suitable conditions. Gopher tortoise credits will be determined through coordination among the acquisition sponsor (DoD or a participating installation), FWS, and the relevant state wildlife agency. The Parties recognize that GTCAs will host juvenile as well as adult gopher tortoises. However, for the purposes of this strategy, gopher tortoise credits will be based solely on the number of adult gopher tortoises existing at the site and the number of adult gopher tortoises that the site is calculated to be capable of sustaining.
6. A Monitoring and Adaptive Management Plan will be developed and implemented at each GTCA. The plan will be developed through coordination among the acquisition sponsor (DoD or a participating installation), FWS, and the relevant state wildlife agency, and will include a tabulation of available (unutilized) and utilized resident and/or translocation credits. Annual reports will be produced to document habitat management actions and any translocations of gopher tortoises to the GTCA. Report preparation will be the responsibility of the entity charged with management of the GTCA, and reports will be submitted to the FWS, the relevant state fish and wildlife agency, and the DoD sponsor(s) of the GTCA. Such reports will be submitted starting on the anniversary of establishment of the GTCA, and then annually thereafter. The gopher tortoise population will be surveyed every five years using LTDS to monitor the population. Habitat conditions (forest stand, midstory, and herbaceous groundcover) will be surveyed and measured every five years using an

approved methodology as described in Appendix C. Population survey data and habitat condition data will be prepared and reported by the GTCA manager to the FWS, relevant state fish and wildlife agency, and the DoD sponsor(s) of the GTCA in a timely manner following completion of the relevant study period. Timelines and reporting requirements for a particular GTCA can be altered by agreement of the DoD/military service sponsor, FWS, and the relevant state wildlife agency based on GTCA conditions and management regime. Habitat conditions, as determined by monitoring, will be evaluated in relation to desired conditions and modifications to management activities (such as prescribed fire) will be made as needed.

8.2.2.5 Example Credit Calculation

This Crediting Strategy recognizes two types of gopher tortoise credits: a resident tortoise credit and a translocation tortoise credit, both of which are defined as one adult gopher tortoise (≥ 180 mm carapace) and the habitat needed to support that tortoise. Resident tortoise credits will be given for conservation of individuals that exist on the property when the GTCA is established.

The total number of available credits in the example below is based on the current credit calculation method of the listed range: one tortoise per 1.5 acres on priority soils (currently called highly suitable soils in unlisted range) and one tortoise per 2.5 acres on suitable soils (currently called moderately or less suitable soils in unlisted range). The ratio of tortoise credits to soil types will likely be adjusted based on forthcoming analysis of survey data from the unlisted range, but the current ratios are used here as an example.

The example tract is 1,597 acres in size and has soils in five categories (highly suitable, moderately suitable, less suitable, marginal, and unsuitable). Habitat conditions meet the criteria described in Appendix B.

Soil Type	Total Acres	Tortoise Carrying Capacity	Resident Tortoise Credits	Translocation Tortoise Credits
Highly Suitable	89	60	12	48
Moderately Suitable	524	210	17	193
Less Suitable	362	145	8	137
Marginal	247	N/A	2	N/A
Unsuitable	375	N/A	N/A	N/A
Total	**1597**	**415**	**39**	**378**

The total available resident tortoise credits for this example site is 39. Although marginal and unsuitable soils are not used to calculate tortoise carrying capacity for the overall conservation area, should resident tortoises exist in areas with marginal or unsuitable soils at the time the conservation area is established, those tortoises will be added to the available resident tortoise credits. The number of translocation tortoise credits equals the total carrying capacity of the conservation area minus the number of resident tortoise credits per highly suitable, moderately suitable, and less suitable soil types. To calculate the number of available translocation tortoise credits for this example, use the following formula: (89/1.5) – 12 = 48 for highly suitable soils; (524/2.5) – 17 = 193 for moderately suitable soils; and (362/2.5) – 8 = 137 for less suitable soils. Total translocation tortoise credits for this example site is 378.

As resident tortoise or translocation tortoise credits associated with a GTCA are used to offset activities that result in harm or translocation of individual tortoises, the total available tortoise credits at that GTCA will be reduced accordingly.

8.2.2.6 Documenting Gopher Tortoise Conservation Area Credits

The DoD or military service sponsor(s) of a GTCA will prepare a biological assessment (BA) documenting the actions to be taken in establishing the GTCA, consistent with the process outlined in Section 8.2.1.4. The BA will document the number of gopher tortoise credits attributable to the GTCA. The BA will be submitted to the FWS and to the relevant state fish and wildlife agency for review. Following such review, FWS will issue a Section 7(a)(4) conference opinion regarding the suitability of the GTCA for use under the crediting system.

A credit register of available (unutilized) and utilized resident and/or translocation credits will be established for each GTCA and will be maintained by the entity charged with management of the GTCA. As credits are utilized to offset military installation activities, the register will be adjusted to reflect both the application of credits to particular installations and activities, and the number of remaining, unutilized credits. When the credits provided by a particular GTCA have been exhausted, the register will reflect that the GTCA is no longer available for crediting offsets. The GTCA manager will report the use of credits and the availability of unutilized credits to the FWS, relevant state fish and wildlife agency, and the DoD sponsor(s) of the GTCA in a timely manner following completion of a credit transfer. The report of unutilized credits will include additional translocation credits, if any, that have been developed through habitat management that improves additional acreage to suitable conditions. Register reporting will cease upon exhaustion of available credits for the GTCA in question.

8.2.2.7 Multispecies Crediting

This system for establishing GTCAs is currently being developed to support a conservation and credit system for the gopher tortoise in the unlisted range. Gopher tortoises have been described as a "keystone" species, whose burrows are utilized by over 300 wildlife species. Gopher tortoise habitat often supports other listed species, such as indigo snakes, and many other at-risk species such as the gopher frog, striped newt, and southern hognose snake. GTCAs may also be used to provide credits for other at-risk species in the future if credit systems for these species are needed and developed.

8.2.3 Crediting Principles and System

The habitat acquisition and/or management activities described above are intended to create a portfolio of GTCAs. Funding for such activities will be contributed by DoD. The purpose of such funding is to (1) contribute to the avoidance of a future listing of the Eastern Population that would result in constraints on military installation mission activities, and (2) in the event listing occurs, to obtain regulatory predictability for such activities through installation participation in this strategy. Installations wishing to participate in the crediting system under this Crediting Strategy can receive anticipatory Section 7 determination with respect to current and reasonably foreseeable future training and other actions, thus providing regulatory predictability that such activities will continue. While the use of credits provides a predictable mitigation option for impacts to the gopher tortoise, the application of credits by the installations is a discretionary conservation measure, not compulsory. Installations may choose to employ alternative conservation measures.

8.2.3.1 Gopher Tortoise Conservation Credit System

This credit system has been developed for use within the Eastern Population of the gopher tortoise. This approach is designed to compensate for two types of impacts to gopher tortoises associated with actions occurring on military installations: 1) unavoidable impacts that result in direct incidental take (in the form of actual death or injury) of gopher tortoises during training, and 2) permanent impacts to habitat from development projects that result in the need to translocate gopher tortoises outside of the impact area (examples include converting existing gopher tortoise habitat into land uses that will no longer support gopher tortoises, such as from development, construction of buildings, or range maintenance activities). The Parties recognize that potential impacts to gopher tortoises would affect both adult and juvenile gopher tortoises. However, for purposes of this Crediting Strategy, impacts to gopher tortoises will be measured in terms of impacts to adult tortoises.

To ensure that use of this Crediting Strategy and credit system provides a net conservation benefit to the gopher tortoise, impacts to gopher tortoises must be compensated at a ratio greater than 1:1. With respect to particular installation mission activities such as certain types of mechanized training, it is neither feasible nor desirable to relocate all potentially affected gopher tortoises, and thus take is unavoidable. For such

activities, anticipated incidental take of gopher tortoises shall be compensated for by resident gopher tortoise credits at a ratio of two resident gopher tortoise credits for each gopher tortoise estimated to be taken (a ratio of 2:1).

Example: A BA and analysis determines that a military training operation at an installation in the eastern range will result in the direct take of 15 gopher tortoises over the planning period for the operation. Thirty resident gopher tortoise credits shall be debited from existing resident credits at the GTCA.

With respect to impacts to gopher tortoise habitat resulting from development projects, and where practicable with respect to other impacts to gopher tortoises, if off-site mitigation from a GTCA is to be used, tortoises will be translocated from the impacted areas to the GTCA. Each gopher tortoise translocated to a GTCA will utilize one translocation credit at that GTCA. To account for losses during translocation and thus ensure a net conservation benefit, for every gopher tortoise translocated to the GTCA, one half credit shall be debited from the resident gopher tortoise credits at the GTCA. This will ensure that there is a net conservation benefit from translocation of gopher tortoises. No gopher tortoise will be moved to a GTCA until specific habitat requirements have been met at that area. If sufficient resident gopher tortoise credits are not available at the GTCA where the gopher tortoises are being translocated, resident credits may be used from another GTCA.

Where possible, gopher tortoise translocations should occur in the vicinity of the installation from which gopher tortoises will be relocated. Translocations must comply with applicable state and federal law. Furthermore, although impacts and credits are determined and defined by reference to adult gopher tortoises, where translocation of gopher tortoises is anticipated, the installation will make reasonable effort to secure and translocate juvenile gopher tortoises as a part of the translocation action. Such translocations will not affect credit utilization. Efforts will be made to ensure that no gopher tortoises are left in sites where translocation is necessary.

Example: Construction of a new building at a military installation in the eastern range will eliminate habitat that supports ten adult gopher tortoises. Four juvenile gopher tortoises are identified and captured together with the ten adult gopher tortoises. The ten adult gopher tortoises (and four juveniles) will be translocated to a GTCA that has at least ten available gopher tortoise translocation credits. Ten gopher tortoise translocation credits will be debited from those available at the GTCA. Also, five resident gopher tortoise credits will be debited from the receiving GTCA or, if not available at that site, from another GTCA where credits are available. The four translocated juveniles will not require additional debiting of credits.

In recognition of the successful conservation efforts and opportunities on installations, no credits will be required or used for gopher tortoises that are relocated within or between populations on an installation. However, habitat and temporary enclosures (soft release) requirements must be met as in translocations to GTCAs.

8.2.3.2 Use of Credits

Gopher tortoise credits will be generated through the establishment of GTCAs. GTCAs may be established prior to and independent of the identification of installation impacts to be offset under this Crediting Strategy, or in conjunction with an application for credit offsets to installation impacts. The procedures for documenting the creation and use of gopher tortoise credits are outlined in Appendix F.

The number of credits (including both resident and translocation credits) will be calculated for each GTCA. These credits will be available for use and application against gopher tortoise take anticipated at military installations. Because the credit system (and the establishment and management of GTCAs) provides both habitat benefits to gopher tortoises and population benefits, installation impacts to gopher tortoises and gopher tortoise habitat will be measured in terms of the individual gopher tortoises affected.

Gopher tortoise credits may be utilized to offset gopher tortoise impacts at participating military installations. Installations seeking to utilize credits shall identify the ongoing and/or reasonably foreseeable future activities for which credit offset is desired. If credits are available, they can be utilized to offset the impacts to gopher tortoises of on-installation training and related activities that are determined to be likely to cause incidental take of gopher tortoises, or impacts to gopher tortoises from development projects that result in permanent conversion and loss of habitat. If credits are not available, installations seeking credit offset under this Crediting Strategy can participate in identification of potential GTCAs and utilize credits secured by establishment of one or more GTCAs pursuant to the strategy.

Installations seeking regulatory predictability for current and/or reasonably foreseeable future on-installation mission activities will identify the activities for which they seek coverage as well as the impacts to gopher tortoises. Information regarding the activities for which coverage is sought, and the gopher tortoise impacts to be offset by gopher tortoise credits, will be identified in a BA.

In preparing a BA, participating installations will identify the current or proposed activities to be considered (federal actions) and their anticipated impacts to gopher tortoises, and will quantify the number of credits desired to offset those impacts. Gopher tortoise impact evaluations will be determined based on the continued implementation of the installation's INRMP. The impact to gopher tortoises of training or other actions for which credit is sought under this system will be measured in terms of the number of individual adult gopher tortoises expected to be injured or killed through crushing or other direct impacts. Development projects that result in the permanent conversion and loss of gopher tortoise habitat will be measured in terms of individual adult tortoises displaced as a result of the particular project. Gopher tortoises expected to be displaced by such projects will either be translocated to a GTCA that has available translocation and resident credits or relocated within the gopher tortoise population(s) existing on the installation.

Where gopher tortoise impacts of a development project are addressed through relocation on-installation, no GTCA credits are required, provided that the relocation action meets habitat and penning requirements. Standard operating procedures for gopher tortoise relocation and penning should be delineated in each installation's INRMP. Penning of gopher tortoises would not be required for temporary relocation from construction projects that do not permanently alter the habitat so that it is not suitable for gopher tortoises. Examples of such projects include creation or expansion of utility rights-of-way, creation or maintenance of berms, and environmental remediation. Instead temporary exclusion fences will be used to protect gopher tortoises during construction. In either case, the number of gopher tortoise taken will be documented in a BA.

A BA prepared pursuant to this strategy will identify the GTCA or GTCAs from which gopher tortoise credits will be drawn to offset gopher tortoise impacts. A BA may propose to draw credits from more than one GTCA. There is no requirement that an installation must utilize a GTCA that is proximate to the installation in question (GTCAs may be used for crediting irrespective of location or distance from the installation), nor is there any requirement that the GTCA from which credits will be used serve the population or subpopulation of gopher tortoises affected by the impacts in question.

If an installation proposes to establish, or to participate in the establishment of, one or more GTCAs as a part of a crediting transaction, the installation will identify the location(s) of the proposed GTCA, the actions to be performed in connection with the establishment of the GTCA, and the credits anticipated to be developed thereon in its BA. GTCAs may also be established prior to and independent of any proposal to apply credits for the benefit of a particular installation. In no case, however, will credits be available for use prior to the establishment of the GTCA as specified in this strategy.

Upon submittal of an installation BA prepared pursuant to this strategy, FWS will confer with the proponent and the relevant state wildlife agency(ies), pursuant to Section 7(a)(4) of the ESA. FWS will evaluate the effects to gopher tortoise of the proposed action(s) identified therein, including the use of the gopher tortoise conservation credit system, and will issue a formal Conference Opinion (or Biological Opinion if listed) documenting its assessment of the effects of the action(s) considered therein and the likelihood that such action(s) will cause or contribute to jeopardy to gopher tortoise.

8.2.4 Other Conservation Actions

Under some circumstances it may be desirable for DoD or a participating installation to fund habitat management and population enhancement activities for gopher tortoise on other federal or nonfederal lands, rather than utilize an existing or new GTCA. The Parties anticipate that such occasions will be limited in number. If, however, the Parties determine that the use of DoD funding would address high-priority conservation needs of gopher tortoise and thereby contribute to the conservation of gopher tortoise in a manner likely to reduce the potential need to list the Eastern Population, DoD may do so and apply for credits utilizing the principles established in this Crediting Strategy.

8.3 Identification, Assessment and Tracking of Conservation Results of Crediting Strategy Implementation

One of the objectives of this Crediting Strategy is to track and evaluate the ecological effects of DoD gopher tortoise conservation actions implemented hereunder, and to support the assessment of such actions with respect to the likely persistence in the wild of the Eastern Population of gopher tortoises. DoD and participating installations will submit information regarding the establishment and use of the GTCA system and other gopher tortoise conservation actions contemplated in this strategy to FWS and the other Parties on an annual basis.

The Parties intend that the tracking and reporting of conservation benefits to gopher tortoises of actions performed under this Crediting Strategy be suitable for use in a consolidated data base and clearing house for information concerning the status of the Eastern Population suitable for use by FWS in evaluating the potential listing of the Eastern Population of gopher tortoises under the ESA.

8.4 Future Crediting Strategy Development

As discussed above, gopher tortoises have been described as a "keystone" species, whose habitat is also utilized by both ESA and state-listed and unlisted sensitive species of wildlife. Conservation and management of gopher tortoise habitat can thus provide significant, and perhaps essential, conservation benefits to multiple other species. This suggests that implementation of the Gopher Tortoise Crediting Strategy can reasonably be anticipated to contribute to the conservation of many other species of mutual concern to the Parties.

In addition to its keystone status, the gopher tortoise is unique with regard to the relative ease with which gopher tortoises can be located and monitored. It is therefore positioned to serve as a potential surrogate for other, more cryptic species sharing similar habitat requirements.

The Parties recognize that the Gopher Tortoise Crediting Strategy may be suitable for development and use as a tool to provide for the conservation needs of associated sensitive, candidate, and ESA and state-listed species. The Parties intend to explore the expansion of this Crediting Strategy to encompass its value and use as a tool to contribute to the conservation of other species associated with gopher tortoises. Alternatively, the Parties may elect to adopt crediting systems tailored to the unique needs of other species for which use of this strategy may not be appropriate.

Section 9 Eastern Population Gopher Tortoise Conservation Opportunities

The Candidate Conservation Agreement for the gopher tortoise tasked the Parties with identifying presently occupied, suitable, and potentially suitable gopher tortoise areas and habitat, and with documenting "those that are exceptional ecosystems known to support high biodiversity and/or numerous federal-and-state listed threatened and endangered plant and animal species" (Candidate Conservation Agreement, page 15). Where such areas are identified and documented, this strategy will be revised to incorporate that information.

Section 10 Conservation Action Contributions to Species Persistence

The Parties recognize the value of being able to develop and utilize information regarding the contribution of conservation efforts and resulting species benefits to assessment of species persistence for various purposes, including in decisions to list or delist species under Section 4 of the ESA. The Parties agree to work together to develop a methodology to quantify the benefits to gopher tortoises of the conservation actions performed pursuant to this Crediting Strategy for use by FWS in future listing determinations.

Section 11 Regulatory Predictability

One of the objectives of this Crediting Strategy is to provide the DoD and the Military Services regulatory predictability with respect to the potential impacts to gopher tortoises from current and reasonably foreseeable future military installation-related training and other activities. Each DoD installation containing gopher tortoises currently implements conservation programs for the benefit of gopher tortoise pursuant to the installation's INRMP. Such conservation programs are designed to conserve gopher tortoises while providing for the continued performance of the training and other activities for which the installation was established (mission activities). If the Eastern Population of gopher tortoises were to be listed as a threatened or endangered species under the ESA, under existing authorities additional constraints on mission activities might be required, which could compromise the installation's ability to execute its mission responsibilities.

DoD intends to consider pursuing Eastern Population conservation actions both inside and outside of the boundaries of DoD installations to conserve gopher tortoises and thereby avoid further constraints on its national defense and military mission responsibilities. DoD will use its authority under the Sikes Act (16 U.S.C. §§ 670c-1) and 10 U.S.C. § 2684a to support partnership activities that ensure suitable conservation lands are obtained and/or managed to recover, enhance or preserve gopher tortoises and gopher tortoise habitat, thereby precluding the need for restrictions on mission activities. This

may be accomplished through a variety of means, including management of on-post populations to achieve goals established in consultation with FWS, as well as conservation contracts and acquisition of conservation easements and lands containing gopher tortoises and/or gopher tortoise habitat. In the case of off-post conservation, the benefits to the species of such activities will be quantified as gopher tortoise conservation credits. DoD installations participating in the Gopher Tortoise Crediting Strategy will be able to utilize such credits to offset the actual or potential effects to gopher tortoises of their training and other activities within or associated with the installation in question, and thereby preclude the imposition of additional constraints should the species become federally listed.

The Parties contemplate that this Crediting Strategy will be the subject of a conference opinion and conference report under Section 7(a)(4) of the ESA, which will analyze the effects to gopher tortoises of utilizing the Crediting Strategy and actions identified herein in lieu of the potential application of more restrictive conservation measures in the event of a federal listing. Because of the nature of this strategy, it will be analyzed programmatically, and will result in a programmatic conference opinion which will consider the effects to gopher tortoises if this strategy were employed to offset listing conservation requirements at DoD installations throughout the range of the Eastern Population. As a programmatic conference, the resulting conference opinion will not consider or address any site-specific conservation action or set of installation activities, nor would it convey anticipatory take coverage for such activities.

The Parties further contemplate that one or more DoD installations will seek to participate under the terms of this Crediting Strategy to obtain the benefits outlined above. To do so, an installation would prepare and submit to FWS an Election to Participate, which would (1) outline the status of gopher tortoises and tortoise habitat associated with and subject to potential impacts from mission activities, (2) identify the current and future mission activities potentially affecting gopher tortoises, and (3) identify the off-installation conservation actions, including the use of credits associated with existing GTCA(s), that are intended to offset potential impacts. That Election to Participate would then be the subject of a conference opinion tiered to the programmatic opinion, consistent with the provisions of the FWS Policy on Programmatic Consultations. The tiered conference would allow the identification and consideration of site-specific information necessary to support both an analysis of the effects of the conjoined action, and the preparation of an anticipatory Incidental Take Statement covering take associated with both the mission and conservation activities identified in the Election to Participate.

Section 12 Non-Federal Participation [Reserved]

Section 13 Literature Cited

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Section 14 APPENDICES

Appendix A. Range-Wide Conservation Strategy for the Gopher Tortoise (Conservation Objectives for the Eastern Population)

Appendix B. Habitat Management Guidelines for the Gopher Tortoise

Appendix A.

Range-Wide Conservation Strategy for the Gopher Tortoise

Conservation Objectives for the Eastern Population of Gopher Tortoise

Objective 1: Determine population viability parameters and status.

1) Establish consensus within the research community on what defines a viable gopher tortoise population across various states and habitats (e.g., age structure, number of individuals, acreage, recruitment rate, spatial distribution, etc.);
2) Establish consensus on the necessary number and distribution of viable gopher tortoise populations in suitable habitat, such that the species in the eastern portion of its range would be considered secure, and in the western range would be considered recovered;
3) Investigate the potential use of captive-reared or head-started gopher tortoises (that are placed with starter burrows) to augment a population or re-populate a previously occupied area to increase viability of the general population;
4) Integrate the use of Line Transect Distance Sampling (LTDS) as a surveying/monitoring protocol (where applicable) into state, federal, and local policy as the approved method to accurately assess gopher tortoise population levels, trends, and responses to management. In addition, determine the appropriate timeframes for surveying, and acceptable alternative survey protocols in small parcels and in scrub or flatwoods communities;
5) Where appropriate and requested by the state agency, use the FWS's Section 6 funding may be used to conduct surveys and censuses of large, suitable public parcels that contain a substantial amount of potential gopher tortoise habitat, to estimate the number of tortoises present and evaluate those sites for potential tortoise population enhancement or re-establishment.
6) Provide information and incentives to private landowners to manage their land for tortoises, possibly working with partners to offer higher cost-sharing for more aggressive habitat management.

Objective 2: Address the present and threatened destruction, modification, or curtailment of gopher tortoise habitat.

1) Identify, prioritize, manage and protect, viable tortoise populations and the best remaining tortoise habitat;
2) Increase the size and/or carrying capacity of those viable population areas (and areas with tortoise populations just below the "viable" threshold) through applied land management, land acquisition, or incentives to adjacent landowners to properly manage for tortoises;

3) Work with partners and land managers to maximize the amount of acreage appropriately maintained by prescribed fire, with specific emphasis on developing implementation plans that include recommendations on fire intensity, frequency, seasonality, and post-fire analyses. Part of this effort should be educational outreach with the public, emphasizing the benefits of prescribed fire for both habitat management and for decreasing the chances of catastrophic wildfire;
4) Create a draft document detailing Best Management Practices (BMPs) and Desired Future Conditions (DFCs) for various gopher tortoise habitat types (longleaf pine forests, sandhills, scrub, etc.) for range-wide distribution; encourage participation from the silvicultural industry, private lands foresters, migratory birds biologists and rare species biologists in the development of these recommendations to ensure they are practical as well as compatible with existing conservation measures;
5) Locate areas of "secondary priority" where re-stocking and restoration can most effectively be accomplished by creating large, contiguous tracts or habitat corridors that may or may not be occupied by tortoises. These lands are likely to be directly adjacent to current managed lands.

Objective 3: Address issues related to overutilization for commercial, recreational, scientific, or educational purposes.

1) Work with partners to convert the two remaining rattlesnake round-ups to wildlife festivals;
2) Work with the state partners to improve protections against gassing for venomous snakes.

Objective 4: Investigate and mitigate disease and predation effects.

1) With a gopher tortoise health/disease working group:
    - Do a risk assessment study to determine the level of threat of disease.
    - Investigate if and when disease testing should be performed on gopher tortoises, and for what diseases.
2) Identify the predators having the largest impact on gopher tortoise populations, with special emphasis on documenting unnaturally high rates from nuisance, invasive, and introduced predators (e.g., imported red fire ants, coyotes, armadillos, feral hogs). This should include documenting predation on various tortoise age classes, and recommendations for predator control;
3) Work with local and state law enforcement to investigate the magnitude of tortoise harvest for human consumption, evaluating current regulations and creating outreach to educate the public on the ecological and cultural value of gopher tortoises, and the laws protecting them.

Objective 5: Investigate range-wide effective regulatory mechanisms.

1) Develop minimum standards for regulatory mechanisms (existing or future mechanisms) that should be in place in order to minimize threats to the species.
2) Evaluate the need of adopting consistent mitigation strategies across the range to address the ongoing need to relocate tortoises in a way that minimizes loss of preferred habitat (sandy soils, open forest structure, herbaceous groundcover), maximizes site fidelity, and provides protection of relocated tortoises and the recipient site;
3) Evaluate whether each state in the candidate range for the tortoise should have a step-down action plan (State Management/Conservation Plan);
4) Encourage and assist in the development and implementation of a model CCAA/HCP (preferably one that is state-wide and programmatic) that details effective, measurable conservation objectives and habitat management goals;
5) Complete a study investigating gopher tortoise burrow collapse, specifically to determine the minimum distance from the entrance where the burrow integrity is still maintained when run over by heavy equipment (in different representative soil types). This value can then be used as a burrow buffer recommendation range-wide for conservation measures during habitat management practices;
6) Evaluate state regulatory processes to minimize and mitigate the loss and degradation of tortoise habitat resulting from agricultural land conversion;
7) Work with urban development planning authorities to include considerations for gopher tortoise priority habitats and the importance of utilizing prescribed fire for management.

Objective 6: Investigate other natural or man-made factors affecting its continued existence

1) Initiate a risk assessment of the use of herbicides in gopher tortoise habitat, specifically where broad-spectrum herbicides are utilized as a common management tool and not just for treating invasive species. The study should evaluate the potential short-term and long-term impacts on forage availability, as well as tortoise health and reproduction;
2) Work with state and federal transportation agencies to identify areas with high incidence of gopher tortoise mortality due to road construction and traffic where impact minimization or mitigation practices could be implemented.

Appendix B.

Habitat Management Guidelines for the Gopher Tortoise

Gopher tortoises (*Gopherus polyphemus*) occupy a range of habitats across the southeastern United States. They are typically associated with longleaf pine (*Pinus palustris*) and xeric oak (*Quercus* spp.) sandhills that are thinned and burned every few years, have relatively well-drained, sandy soils appropriate for burrow establishment, ample sunlight for basking and nesting, and understory vegetation suitable for foraging (i.e., grasses and forbs), but gopher tortoises also occur in scrub, xeric hammock, pine flatwoods, dry prairie, coastal grasslands and dunes, mixed hardwood-pine communities, and a variety of man-made environments such as pastures, old fields, and grassy roadsides (Auffenberg and Franz 1982; Kushlan and Mazzotti 1984; Diemer 1986, 1987, 1992b; Breininger *et al.* 1994).

Gopher tortoises are believed to respond to habitat structure rather than any specific plant community types (Campbell and Christman 1982). Generally, habitat features required by this species include an open canopy, a low basal area, a sparse shrub cover, and a lush and diverse herbaceous ground cover (Cox *et al.* 1987; DeBerry and Pashley 2004). A multi-aged forest is desirable, ranging from small treeless sites to limited, scattered areas of 50–70% tree canopy cover (Berish 2001).

All gopher tortoise age classes use burrows, although some hatchlings and juveniles may bury themselves in sandy soil or push under litter to create a depression or excavation directly below the soil surface called a "pallet" (Innes 2009). Where available, gopher tortoise burrows are typically located on well drained (rapid to moderate percolation rate), sandy soils where the groundwater table or impermeable clay or rock layer is at least 2 feet (0.5 m) below the soil surface. However, burrows may be dug in a variety of soils such as "shallow shelly soils", "heavy periodically flooded soils", and "rich loamy soils" (Ashton and Ashton 2008).

The following table provides general guidelines for optimal tortoise habitat parameters in the eastern range:

Plant Community	Fire Regime	Canopy Cover	Shrub Cover	Ground Cover	Basal Area (ft^2/ac)	Density (trees/ac)
Dry Prairie	1-3 yrs	≤ 10%	≤ 40%	≥ 50%	0-10	< 5
Upland Pine Forest	1-3 yrs	≤ 50%	≤ 30%	≥ 40%	20-70	-
Pine-Oak Sandhill	2-5 yrs	≤ 50%	≤ 30%	≥ 40%	20-70	-

Plant Community	Fire Regime	Canopy Cover	Shrub Cover	Ground Cover	Basal Area (ft^2/ac)	Density (trees/ac)
Pine Flatwoods	2-5 yrs	≤ 60%	≤ 50%	≥ 50%	20-80	-
Scrubby Flatwoods	3-7 yrs	≤ 40%	≤ 60%	≥ 30%	20-60	-
Oak Scrub	7-12 yrs	≤ 40%	≤ 60%	≥ 15%	0-20	-

Sources: Lohoefener and Lohmeier 1981, Aresco and Guyer 1999, Jones and Dorr 2004, Florida Fish and Wildlife Conservation Commission 2012, Tuberville et al. 2007. All values rounded to nearest integer.

Most GTCAs will require some form of habitat restoration, which will be detailed in the individual site's management plan. Approved restoration practices include timber thinning, clearcutting, natural or artificial regeneration, prescribed fire, planting native herbaceous cover, and the limited use of Service-approved herbicides. Any resident tortoise burrows should be temporarily marked and protected against collapse by vehicular equipment by a minimum 15-foot radius buffer.

Prescribed Fire

Prescribed fire may not be effective at sites where fire has been excluded and there is heavy shrub encroachment and poor ground fuels. Under these or related conditions, herbicide applications by directed foliar or stem sprays and/or mechanical suppression can be used to reduce and eliminate encroaching shrubs and hardwoods. Aerial herbicide broadcast applications may be used in rare instances, particularly in habitat not occupied by gopher tortoises and where the application will not adversely affect the residual herbaceous plant layer. Once restored, however, the habitat must be maintained by frequent, phenologically appropriate, prescribed fire. Fire frequency will be determined by site conditions, but most restored sites will require fire at intervals no longer than three to five years. Growing season prescribed fire will be required in most instances to effectively maintain suitable site conditions.

Canopy Cover

Longleaf pine (*Pinus palustris*) is the preferable overstory species because it is more fire tolerant and has fewer economic and silvicultural conflicts with the required management for GTCAs. Loblolly (*P. taeda*) or slash (*P. elliotti*) pine in existing stands at the time the GTCA is established are acceptable when stocked according to the basal area and cover standards in the above table. However, any loblolly or slash pine stand thinned to suitable basal area must be converted to longleaf pine when regenerated, either naturally or

artificially, whether management is even- or uneven-aged, and at a rate that will provide suitable habitat cover and forage for tortoises. If artificial regeneration is used, hand planting is preferred and intensive site preparation practices, including bedding, shearing, root-raking, and similar practices, are prohibited. However, intensive site preparation normally should not be required in restored and maintained stands because desired understory and ground conditions will exist as a result of ongoing management with prescribed fire to exclude shrub encroachment.

Shrub and Ground Cover

The midstory and understory plays a major role in determining the quality of gopher tortoise habitat in a forest. Gopher tortoises feed primarily on broadleaf grasses, wiregrass, grass-like asters, legumes, and fruits (Garner and Landers 1981, Macdonald and Mushinsky 1988), but they are known to eat >300 species of plants (Ashton and Ashton 2004). Therefore, a diversity of native grasses, sedges, and forbs is ideal for gopher tortoises. Maintenance of a low stocking density, elimination of a woody midstory, and use of fire (or in some cases herbicides) to maintain a healthy ground cover will provide for optimal gopher tortoise habitat (DeBerry and Pashley 2004).

Basal Area

Basal area provides an easy way to understand how much competition exists for resources (light, water, nutrients, etc.) among trees within a given area. The optimal basal area depends heavily on the site index (a measure of growth potential) of a stand. Stands with higher site indexes can support higher basal areas and still remain very productive, with light being the limiting factor (as basal area gets higher less light reaches the forest floor reducing or even eliminating ground cover). On some sites, habitat may still be suitable with the basal area as high as 90ft^2/acre. Generally, the target basal area should be 60-80ft^2/acre or below to provide good wildlife habitat. An ideal basal area spectrum (from a high point when thinning is required to the low point that is reached once a stand is thinned) will promote tree growth for saw logs and timber as well as creating gopher tortoise habitat (DeBerry and Pashley 2004).

Invasive, Non-native Species

In addition to habitat and restoration activities, invasive, non-native species should be assessed and minimized as much as possible on GTCAs.

Plants -In order to successfully restore and maintain a suitable herbaceous layer for gopher tortoises, cogongrass (*Imperata cylindrica*) infestations will need to be monitored and controlled with a target for reduction. Monitoring shall consist of determining the location and size of cogongrass patches on a yearly basis, though comprehensive surveys will not be required. Cogongrass will require herbicide treatment before restoration work begins, and possible ongoing treatment based on rate of infestation. Any equipment used in areas that

have cogongrass should be cleaned before moving to other areas to prevent the spread of the plant.

Other exotic and highly invasive plants, such as Brazilian pepper tree (*Schinus terebinthifolius*), Glossy and Chinese privet (*Ligustrum sp.),* Japanese climbing fern (*Lygodium japonicum),* Chinese tallow tree (*Triadica sebifera*), shrub lespedeza (*Lespedeza bicolor*), Tung oil tree (*Aleurites fordii*), and kudzu (*Pueraria lobata),* should be suppressed through basic restoration and management required to maintain the percent shrub cover standard. Overall, these particular exotics should not comprise more than 10 percent of the entire bank. Any future new exotics deemed highly invasive by the Service shall be treated similarly. It is recommended to have contingency funding in place to deal with this potential situation.

Food Plots - Small food plots of non-native, non-invasive species (e.g., clover, cowpea, soybeans, wheat, oats, sunflower, rye, corn, American joint vetch) are allowed on up to two percent total of the GTCA and do not count toward the 10 percent non-native total above. Use of native (and non-invasive) species is recommended where possible. Food plots should not be placed on highly suitable soils and species such as Bermuda grass (*Cynodon dactylon)* and bahia grass (*Paspalum notatum)* will not be allowed as these species have been known to encumber longleaf restoration/regeneration. Rye grass (*Lolium spp.*) is highly discouraged. Care should be taken to avoid tortoises that may reside in or near the plot during management activities (burrows should be marked and protected in a 15 foot radius buffer from motorized equipment). The location, size, and type of food plots should be detailed in the management plan.

Fire Ants - Red imported fire ants (RIFA-*Solenopsis invicta*) have been shown to be detrimental to tortoise hatchling survivorship, especially on less suitable soils. Therefore, reduction of RIFA may be necessary to enhance the reproductive success of gopher tortoises. A high density of RIFA (greater than 35 mounds/acre) will require chemical suppression. During initial setup of GTCAs, if RIFAs are found to be in high density, the area must be treated for RIFA before tortoises can be relocated to the site. Service-approved chemicals will be used according to label instructions, and care will be taken to apply chemicals in such a fashion that native ant species will not be significantly affected (there is some evidence that broadcast treatment of RIFA in areas where their density is very low can be detrimental to native ant populations). Cooperation with the USDA on use of non-chemical control measures, such as establishment of experimental plots for introduction of phorid flies, is also encouraged.

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Appendix C.

Habitat Assessment and Monitoring Guidelines for the Gopher Tortoise

Habitat assessment and monitoring is required to verify the long-term integrity of the restored habitat on the GTCA and to document changes from the baseline conditions at the time of establishment. Each GTCA will be required to submit an annual monitoring report to the Service describing land management activities that occurred the previous year and the resulting habitat conditions on the site. Monitoring reports will be due January 31st for the preceding year and should include the following information:

1. A cumulative summary table or chart (by stand/area and year) of habitat management and restoration activities and approximate acreage subject to such activities, including but not limited to: timber harvests, prescribed fire (date of burn), mechanical removal of hardwoods, and herbicide applications.
2. The table should also include a listing of important habitat parameters, including canopy cover, shrub cover, herbaceous ground cover, pine and hardwood basal area, and invasive species information (provided at appropriate intervals as described below)
3. Photo documentation of habitat management activities (photos should be date stamped).

The monitoring report should include measurements for canopy cover, shrub cover, herbaceous ground cover, and pine and hardwood basal area on each stand in the GTCA at least every five years. For areas that need intensive habitat restoration, shrub and herbaceous ground cover will require annual reporting for the first five years after restoration activities commence, but then the interval can increase to at least every five as the habitat is restored and becomes managed primarily by frequent fire. GIS format (UTMs, lat/long, shapefiles, etc.) is desired where applicable. In addition, an estimate of the number of acres impacted by cogongrass and red imported fire ants should also be reported annually. We recommend establishing permanent photographic monitoring locations at each section or stand in the GTCA to photographically document changes in ecological structure for the annual report.

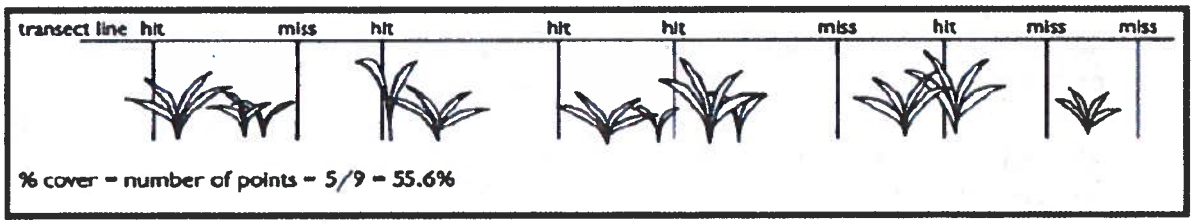
In addition to the annual monitoring reports, the Service and appropriate state biologists should visit the GTCA at least every other year to inspect the progress of the conservation activities at the site, preferably after the latest annual report is received.

Assessing Habitat Parameters

Each GTCA should be divided into stand units based on unique habitat types (i.e., dry prairie, upland pine forest, pine-oak sandhill, pine flatwoods, scrubby flatwoods, and oak scrub). Each unit should establish at least one photographic monitoring station for every 100 acres of unique habitat type. At each photographic monitoring station, take four

photographs (one facing north, south, east, and west). Be sure the camera is set with date and time so that information can be correlated with the plots. We recommend installing permanent PVC pipe or rebar at the monitoring station with 1 meter and 2 meter heights marked with bright tape or paint to indicate the scale of vegetation in each of the four photographs. Alternatively, the PVC pipe or rebar could be temporarily held in place if not able to be permanently installed.

To measure ground, shrub, and canopy cover, use the point-intercept method along a 50-meter field tape placed at each photographic monitoring station. Measure the cover of each of the vegetation categories (i.e., ground, shrub, and canopy) by using a series of evenly spaced points along the field tape. Start at the 2 meter mark on the field tape, and continue every two meters all the way through 50 meters (measure at the 50 meter point too), for a total of 25 points. Each point extends in a conceptual line vertically up from the field tape. Any of the measured variables that is "crossed" by the vertical line is recorded as one "hit". A hit occurs when vegetation/ground cover touches the vertical distance for that vegetation category (i.e., ground cover, shrub cover, and canopy cover). Shrubs include woody vegetation less than 5 meters tall and canopy includes trees 5 meters tall and above. Using a PVC pipe at each 2 meter interval helps to establish the heights of the various vegetative categories and whether or not vegetation at that point "hits" the category or not. For categories taller than the PVC pipe, use an ocular estimate of what would hit the PVC pipe if it were to extend upward through the canopy. Be careful to hold the pipe exactly perpendicular to the ground. The percent cover equals the number of "hits" divided by the total number of points. See the conceptual picture below.



To measure basal area, hold a 10 factor prism over the photographic sampling point at arm's distance and eye level. Look through the prism at all of the live trees around the sampling point. Look at the trunks right at their "breast height" (4.5 feet). The prism will cause the image of the trunks to shift. If the shifted image at 4.5 feet overlaps with the actual image, that tree is counted "in", if there is no overlap the tree is "out". "In" trees receive one score. If the shifted image lines up exactly with the edge of the real image, the tree gets a score of 0.5. For trees with multiple trunks, if the trunk split is below 4.5 feet look at both trunks through the prism, if the split is above 4.5 feet look only at the one main trunk. The final basal area value is the total of scores, multiplied by 10.

Long Term Tortoise Monitoring

In addition to evaluating habitat management parameters, the GTCA annual report should also verify the status of the resident and relocated tortoises by including the following information:

1. A cumulative summary table or chart (by stand/area and year) of total number of tortoises present before relocations each year, number of tortoises relocated every year (by sex, date of release, location of donor and release site, photographs, relocation project identifier - biological opinion name or number and date, and any markings drilled on the marginal scutes of the tortoise's shell, plastron measurement and weight), and the number of credits used and available at the end of each year.
2. Any known loss of tortoises.
3. Population trends (including burrow size-class distribution), if known.
4. Any other listed species encountered during gopher tortoise surveys or land management activities.

During GTCA operation, the status of the resident population will be assessed every five years using Line Transect Distance Sampling. (LTDS) full surveys (where appropriate) or pilot surveys. Once an initial survey is performed on the GTCA, all subsequent surveys must be performed using the same methodology. If LTDS full surveys are performed, a maximum allowable percent coefficient of variation (%CV) of 15 should be used, for all initial and subsequent surveys. If there is a significant decrease of the known population (baseline plus relocated tortoises) at any given interval, the Service and DoD will determine why the population is decreasing and work to fix the problem. A significant decrease is defined as a population decline of ≥10 percent at any interval. The Service and/or the State reserves the right to stop relocation of additional tortoises (and credits being used) if warranted (e.g., due to disease outbreak that would endanger newly relocated tortoises), though as long as the management plan is being followed this would be needed under very rare circumstances. Once the GTCA is full (all the credits have been used/capacity is reached), the resident population should be assessed at least every 10 years to determine population status.

Appendix D. List of Acronyms and Defined Terms

ADCNR	Alabama Department of Conservation and natural Resources
AFF	American Forest Foundation
AL	Alabama
BA	Biological Assessment
BO/CO	Biological Opinion and Conference Opinion
CCA	Candidate Conservation Agreement
Crediting Strategy	Department of Defense Gopher Tortoise (*Gopherus polyphemus*) Conservation and Crediting Strategy
DoD	U.S. Department of Defense
DoDI	U.S. Department of Defense Instruction
ESA	Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)
FFWCC	Florida Fish and Wildlife Conservation Commission
FL	Florida
°F	degrees Fahrenheit
ft^2	square feet
FWS	U.S. Fish and Wildlife Service
GA	Georgia
GaDNR	Georgia Department of natural Resources
GIS	Geographic Information System
GTCA	Gopher Tortoise Conservation Area
INRMP	Integrated Natural Resources management Plan
LTDS	Line Transect Distance Sampling
JWJERC	Joseph W. Jones Ecological Research Center
mm	millimeter
NEPA	National Environment Policy Act
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
Range-wide Strategy	Range-wide Conservation Strategy for the Gopher Tortoise
SC	South Carolina
SCDNR	South Carolina Department of Natural Resources
Service	U.S. Fish and Wildlife Service
USA	U.S. Department of the Army
USAF	U.S. Department of the Air Force
USMC	U.S. Marine Corps
USN	U.S. Department of the Navy
USFS	U.S. Forest Service
UTM	Universal Transverse Mercator

Appendix E.

Gopher Tortoise Translocation Guidelines

[Adapted from "Gopher Tortoise Permitting Guidelines" (Florida Fish and Wildlife Conservation Commission, 2015); and "Standard Gopher Tortoise Relocation Guidelines" (U.S. Fish and Wildlife Service, 2012)]

Timing

Gopher tortoises may only be trapped, excavated and translocated between April 1 and October 15 of a given year. During this time period, tortoises will only be translocated when the low temperature at the recipient site is forecasted by the National Weather Service (www.nws.noaa.gov) to be above 50° Fahrenheit for three consecutive days after release (including the day of translocation). This three-day window of milder overnight temperatures is required to allow the tortoises to settle into the recipient site and to reduce the chance of cold-related stress or mortality. Additionally, during summer months, releases should not be made during the hottest part of the day at sites where shade is limited. Heat stress on gopher tortoises being captured and transported for translocation can be reduced or eliminated by assuring that captured tortoises and those tortoises being transported for release are continually in shaded or climate-controlled conditions.

Inspection and Handling of Nests

Before any activities take place during the nesting season (mid-May through mid-September), the apron in front of each burrow must first be examined for eggs. Nest chambers may be 6-10 inches below the surface, so thorough inspection is required, by manually digging through the soil (no tools). Care must be taken throughout digging and removal of eggs from the nest chamber as gopher tortoise eggs are fragile. As soon as a nest is located, but before excavation begins, fill a container with sand/soil from around the eggs, and make egg-sized depressions into the sand. Prior to moving them, and as new eggs are uncovered, use a pencil to place a small "x" on top of each egg to help maintain its orientation throughout the process. Carefully place each egg in a depression in the container with the "x" facing up, make sure to remove all eggs from the nest (measuring the approximate depth of the bottom of the nest when completed), and then cover the eggs with more sand. During all transport, minimize sun exposure/overheating and agitation of the container. At the translocation site, locate an existing burrow apron in an open, sunlit area and excavate to the approximate depth of the original nest, place eggs "x" up in the new nest in approximately the same orientation as they were originally located, and re-bury them.

Choosing a Capture Method

Tortoises may be captured via bucket traps, live traps, hand-capture outside burrows, and excavation by hand shovel or backhoe. Capturing gopher tortoises using mechanical excavation (backhoe) is often preferred because it typically is quicker than other capture methods and often leads to lower costs; however, it comes with an increased level of risk to the tortoises. Backhoe excavation of gopher tortoise burrows must be conducted by at least two individuals at all times; the backhoe operator and another person on the ground monitoring the gopher tortoise burrow. All other capture methods can be performed by one person, but may take weeks to complete if the tortoise does not immediately go into the trap; however, many traps can be set at the same time. Prior to any method of capture, examine the burrow with a burrow camera to try to ascertain occupancy. While this is not a definitive method to conclude a burrow is unoccupied, presence of a tortoise can at least be verified if seen with the camera. Additionally, whichever capture method is used, the burrow should be re-scoped with a burrow camera after a tortoise is caught/extracted, to check for additional tortoises or commensals still present in the burrow. To minimize the risk of disease transmission, all material used during the displacement of gopher tortoises from the original site (e.g., traps, shovels, backhoe buckets, remote video cameras, etc.) to the translocation area will be disinfected with a dilute chlorine solution after each use.

Mechanical Excavation

To prevent injury to tortoises during backhoe excavation, the backhoe bucket must have a smooth cutting edge that lacks teeth (long prongs). Typically a flat blade is welded or bolted across the digging surface of the bucket. Any burrow excavation efforts must be performed by a backhoe operator with experience or training in excavating gopher tortoise burrows. A flexible tube or hose will be inserted into the burrow to ensure that the burrow path is not lost and to indicate the distance to the end of the burrow or to the tortoise. Throughout the excavation process, the burrow will be frequently inspected to ensure that the tortoise has not moved to a position where it might be injured by the backhoe or shovel. The last 1-2 feet of the burrow will be excavated by hand using shovels and small hand spades. Burrow excavation is not complete until the burrow terminus is reached and all side chambers are found and completely excavated. If the end of a burrow is reached without capturing a tortoise, the soil must be thoroughly probed in all directions to try to locate a tortoise that may have dug beyond the end to escape capture. If the excavation of a burrow is interrupted for any reason before the tortoise is captured and excavation cannot resume that day, an open burrow tunnel path must be left so the tortoise can exit the trench or a bucket or live trap must be set at the entrance to the burrow at the bottom of the trench. The excavation should be resumed as soon as safely possible to lessen the possibility of a newly created burrow or a roaming tortoise. All hatchling and juvenile burrows (burrow width <5 inches) must be hand excavated, using shovels. Following removal of the tortoise/commensal, all excavated burrows will be refilled.

Traps

If bucket or live traps are used, the traps must be shaded, they must be checked twice per day—once in the morning and once in the late afternoon, and they must remain in place for at least 28 consecutive days or until the resident tortoise is captured, whichever occurs first. All traps must be closed if at any time during the 28 consecutive days trapping period the forecasted low temperature is below 50 °F. The 28 consecutive day trapping period shall restart at day 1 when a trap is closed for any reason. For bucket traps, a hole should be dug outside of the burrow entrance large enough so that a buried 5-gallon bucket is flush with the ground level. Drainage holes must be drilled into the bottom and lower sides of bucket traps to prevent rainwater from accumulating in the bucket. Cover the bucket with paper or cloth and soil (for camouflage) to create a pitfall trap for a gopher tortoise. The trap must be set up so that a tortoise would be completely shaded (using burlap, other cloth, plywood, and/or vegetation) once it falls into the bucket. Alternatively, a mesh wire cage trap may be used, either homemade (e.g., "flap trap") set over the burrow entrance; or commercially available (e.g., Havahart ®) that is set directly in front of a burrow to capture the resident tortoise. It is possible that other state- or federally-listed or at-risk species may be encountered during trapping activities, depending on the geographic region where trapping is taking place. If any of these species are found in traps, they should be photographed to provide unequivocal identification, and the Service and/or appropriate state agency should be contacted immediately regarding appropriate disposition of these animals.

Marking and Data Collection

All trapped or excavated gopher tortoises must be individually marked, measured, weighed, and given a health assessment. Care should be taken to clean all marking instruments with a dilute chlorine solution to prevent contamination between animals. Marking is performed by drilling holes in, or using a triangular file to notch, one or a combination of the eight rearmost marginal scutes (the four right ones and the four left ones) and the two right and left front marginal scutes, following an approved numbering system. Drilling or notching should be carefully undertaken to avoid injury to the limbs or head. Also, holes should be drilled closer to the marginal edge (without breaking through the edge) rather than higher up on the scute. To avoid injury to tortoises that have pliable shells, juveniles (<130 mm carapace length) cannot be marked using a drill; instead, a triangular file or sharp scissors must be used to notch the appropriate scutes.
Data collected should include the sex and identification number of the tortoise, as well as straight-line carapace length, plastron length, width, weight, and photographs.
Additionally, the project site and recipient site should be included on the data sheet, along with the results of a basic health assessment. The health assessment should consist of a cursory physical examination of the posture/behavior of the tortoise, any apparent injuries or trauma, and an examination of the eyes, nostrils, skin, muscle mass, and shell. Some clinical signs to watch for include: nasal discharge; congested breathing; severely eroded nares; sunken eyes; eyes/eyelids severely swollen or reddened, with discharge; poor

muscle mass and emaciated (abnormally thin) appearance (see Wendland et al. 2009 for additional health evaluation procedures). If a potentially-ill or injured tortoise is discovered, that tortoise must be isolated and a wildlife rehabilitation facility/veterinarian must be contacted, as well as the appropriate regulatory agency. Immediately following data collection and health assessment, each tortoise will be given an opportunity to drink water.

Holding and Transport

Gopher tortoises must be held in shaded conditions and in individual containers that are large enough to allow the tortoise to turn around. To help prevent dehydration, especially during times of drought, tortoises should be soaked for 20-30 minutes in just enough water to cover the container bottom and to allow the tortoise to easily drink. Moist soil may be used to cover the bottom of the bin. It is appropriate to use soil from the burrow depths during backhoe excavation. Hay, straw, or shredded paper are other acceptable materials to place in the bin. Gopher tortoises must not be held more than 72 hours after capture—and preferably not more than 24 hours. Tortoises should be transported within covered, well-ventilated areas of vehicles (not in open trucks) and should be kept at moderate temperatures (i.e., 70-85 °F). Containers should be marked with the identification number and sex of the tortoise, and must be disinfected with a dilute chlorine solution after each use.

Release

Translocated gopher tortoises will be released onto the recipient site into secure enclosures containing appropriately-managed habitat on suitable soils. All enclosures must provide abundant open, sunlit areas; ample shaded areas; and plentiful, diverse, herbaceous forage. Enclosures should be designed in a way and constructed of a material that prevents the passage of all sizes of tortoises, and should be large enough to allow for stocking rates of 1-2 tortoises per acre; with up to 4 tortoises allowable per acre (on high quality habitat only). Tortoises will be released into either existing abandoned burrows or excavated starter burrows. Naturally-occurring burrows will be inspected with a remote video system to confirm (to the greatest extent possible) that they are unoccupied before releasing tortoises. Where no abandoned burrows exist, starter burrows will be dug at a 30-40 degree angle in suitable soils with (sharpshooter) shovels, post hole diggers, or power augers to the greatest distance possible (minimum 3 feet). Starter burrows should have a size and shape similar to the burrow being replaced. It is important that the roof of the starter burrow should be close to the same height as the depth of the shell of the animal to be placed therein. This can be difficult to do with post-hole diggers, so sharpshooter shovels are recommended over conventional shovels for creation of broad, relatively flat tunnels. Enclosures shall be monitored at least once a month to check for structural integrity and for any issues regarding the safety and welfare of resident tortoises. All tortoises shall remain in an enclosure for at least 9 months; at the end of the confinement

period the enclosure fencing will either be removed or opened up to allow for free movement of tortoises across the site.

Literature Cited

Wendland L, Balbach H, Brown M, Diemer-Berish J, Littell R, Clark M. 2009. Handbook on gopher tortoise (Gopherus polyphemus) health evaluation procedures for use by land managers and researchers. ERDC/CERL TR-09-1. US Army Corps of Engineers, Washington, DC, 82 pp.

Appendix F.

Procedures for Documenting Creation and Use of Gopher Tortoise Credits

The DoD Gopher Tortoise Conservation and Crediting Strategy provides a mechanism by which military installations in the unlisted range of the gopher tortoise can implement conservation actions for the gopher tortoise that can be used to offset impacts to the gopher tortoise if the species becomes listed in the future. This documents the administrative process to utilize the Strategy.

1. The Strategy will be signed by the Fish and Wildlife Service (Service), Department of Defense (DoD) and those military services and states that wish to utilize the strategy. The DoD will submit a Biological Assessment of the Strategy to the Service and the Service will complete a framework programmatic BO/CO the strategy. The BO/CO will analyze the process of utilizing the Strategy but will not address specific projects that create credits or utilize credits.

2. The creation of a gopher tortoise conservation area will be documented by a Biological Assessment developed by the military service(s) and submitted to the Service. The Biological Assessment will include maps, a management plan, and a summary of surveys detailing how many resident and translocation credits are available at the conservation area. The Service will analyze the information and complete a BO/CO for the action of creating the gopher tortoise conservation area. The completed BO/CO will be accompanied by a letter confirming the number of resident and translocation credits at the conservation area.

3. The use of credits from a conservation area will be documented through a Biological Assessment of the action requiring credits and this will be submitted to the Service for analysis. The Service will complete a BO/CO for the action utilizing the credits. The completed BO/CO will be accompanied by a letter confirming the number of resident and translocation credits at the conservation area that were used in association with the action.

4. The Service will maintain an administrative record for each gopher tortoise conservation area with all documents including the Biological Assessment and BO/CO for the creation of the area, and all Biological Assessments and BO/COs for use of credits from the area. The Service will also maintain a current summary of credits and debits for the conservation area as well as copies of all monitoring reports.

Section 15 AUTHORIZING SIGNATURES

By signing this Strategy, the organization below agrees that any actions taken pursuant to this Strategy will apply the defined standards and procedures as appropriate and within the scope of the stated authorities.

3/24/17

Chuck Sykes
Director
Alabama Department of Conservation and Natural Resources

Date

By signing this Strategy, the organization below agrees that any actions taken pursuant to this Strategy will apply the defined standards and procedures as appropriate and within the scope of the stated authorities.

Rusty Garrison
Director
Georgia Department of Natural Resources
Wildlife Resources Division

3/24/17
Date

By signing this Strategy, the organization below agrees that any actions taken pursuant to this Strategy will apply the defined standards and procedures as appropriate and within the scope of the stated authorities.

Nick Wiley for
Executive Director
Florida Fish and Wildlife Conservation Commission

3/24/17
Date

By signing this Strategy, the organization below agrees that any actions taken pursuant to this Strategy will apply the defined standards and procedures as appropriate and within the scope of the stated authorities.

Alvin A. Taylor
Director
South Carolina Department of Natural Resources

3/29/17
Date

By signing this Strategy, the organization below agrees that any actions taken pursuant to this Strategy will apply the defined standards and procedures as appropriate and within the scope of the stated authorities.

Maureen Sullivan
Deputy Assistant Secretary of Defense
(Environment, Safety, and Occupational Health)

3/16/2017
Date

By signing this Strategy, the organization below agrees that any actions taken pursuant to this Strategy will apply the defined standards and procedures as appropriate and within the scope of the stated authorities.

Cynthia K. Dohner
Regional Director
U.S. Fish and Wildlife Service

3/24/2017
Date