

---

## AMPHIBIANS AND REPTILES OF UNITED STATES DEPARTMENT OF DEFENSE INSTALLATIONS

CHRISTOPHER E. PETERSEN<sup>1</sup>, ROBERT E. LOVICH<sup>2,3</sup>, AND SARAH STALLINGS<sup>1</sup>

<sup>1</sup>Naval Facilities Engineering Command Atlantic, 6506 Hampton Boulevard, Norfolk, Virginia 23508, USA

<sup>2</sup>Naval Facilities Engineering Command Southwest, 1220 Pacific Highway, San Diego, California 92132, USA

<sup>3</sup>Corresponding author, e-mail: rlovich@gmail.com

**Abstract.**—The U.S. Department of Defense (DoD) occupies approximately 10.1 million ha of land within the U.S. spanning most ecosystems contained therein. To date, no comprehensive agency-wide inventory of amphibian and reptile species has been compiled. We developed an amphibian and reptile species inventory for 415 DoD installations/sites and evaluated species diversity. The amphibian and reptile species confirmed present on DoD sites represent 66% of the total native species documented in the continental U.S. Snakes are the most widespread group found on DoD lands. Of the military services, Army sites have the greatest number of confirmed species, federally listed, state-listed, and At-risk species. There are 24 federally listed (threatened or endangered), 55 state-listed, and 70 At-risk species confirmed present on DoD sites. Thirty non-native and native transplant amphibian and reptile species/subspecies are also confirmed present on DoD sites. Lastly, we verified that approximately half of the military sites evaluated in this study have at least one venomous snake species confirmed present. Our study results assist directly with ongoing management and conservation of amphibian and reptile species on DoD lands and confirm military lands comprise a significant contribution to biodiversity conservation.

**Key Words.**—Endangered Species Act; Sikes Act; at-risk species; biodiversity; inventory; military; non-native; venomous

---

### INTRODUCTION

The U.S. Department of Defense (DoD) manages approximately 10.1 million ha of land spanning a diversity of ecosystems. The primary purpose of these lands is to train military personnel and test weapons in support of national defense. Despite the constant and long-term use of military lands for this mission, several studies have documented the critical role these lands play in maintaining biodiversity (e.g., Groves et al. 2000; Stein et al. 2008; Aycrigg et al. 2015; Zentelis and Lindenmayer 2015). For example, DoD lands have the greatest density of Endangered Species Act (ESA)-status species and NatureServe (G1-G2)-imperiled species of any federal land management agency (Stein et al. 2008; Aycrigg et al. 2015). Furthermore, even though DoD lands comprise only 5% of the total area of federal lands, they represent 82.6% of the diversity of ecological systems in the contiguous U.S. (Aycrigg et al. 2015). In fact, DoD lands contain the second-highest number of ecological systems of all federal land management agencies, second to the National Park System, which contains 27% more land area than the DoD (Aycrigg et al. 2015).

The DoD takes an ecosystem-based approach to natural resources management, which is implemented at installations using Integrated Natural Resource Management Plans (INRMPs). The Sikes Act (16 U. S. Code [U.S.C.] 670a–670o, 74 Stat. 1052), as amended,

requires DoD to prepare and implement INRMPs for installations that have been determined to have significant natural resources. The primary purpose of an INRMP is to create a single comprehensive ecosystem-based plan that ensures natural resources conservation measures and military operations are integrated and consistent with environmental stewardship, laws and regulations, and the military mission. The management and conservation of amphibians and reptiles on military lands is performed primarily through the implementation of specific management guidelines, protocols, and associated projects within INRMP for each installation.

The DoD strives to maintain healthy amphibian and reptile populations on their lands in support of military readiness because these species often surpass other vertebrate groups in terms of abundance, diversity, and biomass (Klemens 2000; Stuart et al. 2008; Vitt and Caldwell 2009; Ernst and Lovich 2009) and serve as indicators of environmental health (Hayes et al. 2006; Pounds et al. 2006; Johnson et al. 2007). The DoD has a network of subject matter experts in the field of herpetology (DoD Partners in Amphibian and Reptile Conservation) that distribute information and develop products that assist with meeting military mission goals, while promoting stewardship and conservation for amphibians and reptiles. The DoD is the first and only U.S. agency to date with a comprehensive Strategic Plan for Amphibians and Reptiles (Lovich et al. 2015), although species/habitat protection is not its primary

mission. Other federal agencies are pursuing their own strategic plans for amphibians and reptiles (e.g. U.S. Bureau of Land Management; David Hu, pers. comm.).

In this study, we provide the first detailed evaluation of the herpetofaunal biodiversity on Continental U.S. (CONUS) military installations. Our study is unique in that we used site-specific data from military installations and natural resource managers to identify species confirmed present and species that are unconfirmed and potentially present. We had our inventory data peer-reviewed by a state wildlife agency herpetologist/biologist in those states where one was available and/or a local expert for each military site. We summarize our results both by military service (Army, Air Force, Navy and Marine Corps) and all DoD Services combined. We also report on amphibian and reptile species confirmed present on DoD lands that are ESA-listed, state-listed, At-risk (NatureServe conservation rankings G1-G3), non-native and native transplants, and venomous. Lastly, we compare the total amphibian and reptile richness on DoD properties to that of all native herpetofaunal species in the contiguous (hereafter referred to as continental) U.S.

## MATERIALS AND METHODS

***Development of the national military herpetofauna inventory.***—From 2013 to 2016, we developed an inventory of amphibian and reptile species for Navy, Marine Corps, Air Force, and Army continental U.S. installations with INRMPs (See U.S. Department of Defense Reports). Species inventories for the Navy and Marine Corps sites were initially developed in 2013 and 2014, with a subsequent review and update occurring in 2017 (DoD Legacy Resource Management Program Project Numbers 12-423, 13-641). Air Force and Army species inventories were updated in 2015 and 2016, respectively (DoD Legacy Resource Management Program Project Number 13-642). We followed the protocol below to develop a new or update an existing amphibian and reptile species list for each DoD site. We developed a preliminary amphibian and reptile species list for each military site using information from field guides, VertNet (Available from <http://vertnet.org/> [Accessed 2013–2016]), the National Amphibian Atlas (Available from [https://armi.usgs.gov/national\\_amphibian\\_atlas.php](https://armi.usgs.gov/national_amphibian_atlas.php) [Accessed 2013–2016]), and HerpMapper (Available from <https://www.herpMapper.org/> [Accessed 2013–2016]) for each site. If a military installation had one or more geographically distinct properties (detachments, ranges, annexes) under its command, we developed an individual species list for each parcel. We entered species list into a Microsoft Excel spreadsheet standardizing scientific and common nomenclature using Crother (2012). During the several

years (2013–2017) it took to compile data and publish reports on all the installations and parcels analyzed, Crother (2017) was released. While there were several taxonomic changes in this newer edition, all analyses herein used taxonomy of Crother (2012) to be consistent. We used subspecies designation (as relevant) during the development of the species lists for each DoD site. This was particularly important because some subspecies had a conservation status designation (federal or state) that differed from the full species level.

We next identified those species confirmed present and unconfirmed on a military site. A species was considered confirmed when there was literature verifying that it occurred specifically on the installation. Literature was often in the form of site-specific survey/inventory data or a report produced by a professional herpetologist or contractor, a museum voucher, or data presented in the INRMP of an installation. Personal observations from a reliable source, such as an installation natural resource manager or field biologist, were also accepted in some cases following a review of the supporting information. We provided citations in the inventory spreadsheet for every confirmed species. For sea turtles, a confirmed observation was recorded only when there was documentation of a nesting or stranding event on a military property. A species was classified as being unconfirmed and potentially present on an installation when it was within the circumscribed natural or introduced range of that species, and the species had been documented in the same county as a DoD site, but a specimen had not been confirmed within the boundaries of the installation.

We sent each species list to a state wildlife agency biologist/herpetologist or a regional expert for a technical review. Additional species were sometimes confirmed on an installation based on records from state natural heritage datasets that were not found using other data sources. In addition, records were removed from the species inventory based on the professional recommendation of a reviewer that indicated an error of inclusion. A final review and validation of each updated species list was conducted by a natural resource manager of a military installation or a representative of a DoD Service headquarters.

We repeated the protocol above for all military sites individually, and then merged all together to form a comprehensive inventory of continental U.S. DoD installations. We added additional columns of data to the inventory including the status of Federally listed and state-listed species, as well as those with a NatureServe conservation status ranking of G1/T1-G3/T3. To determine ESA designations, we searched the U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (Available from <https://ecos.fws.gov/ecp0/reports/ad-hoc-species->

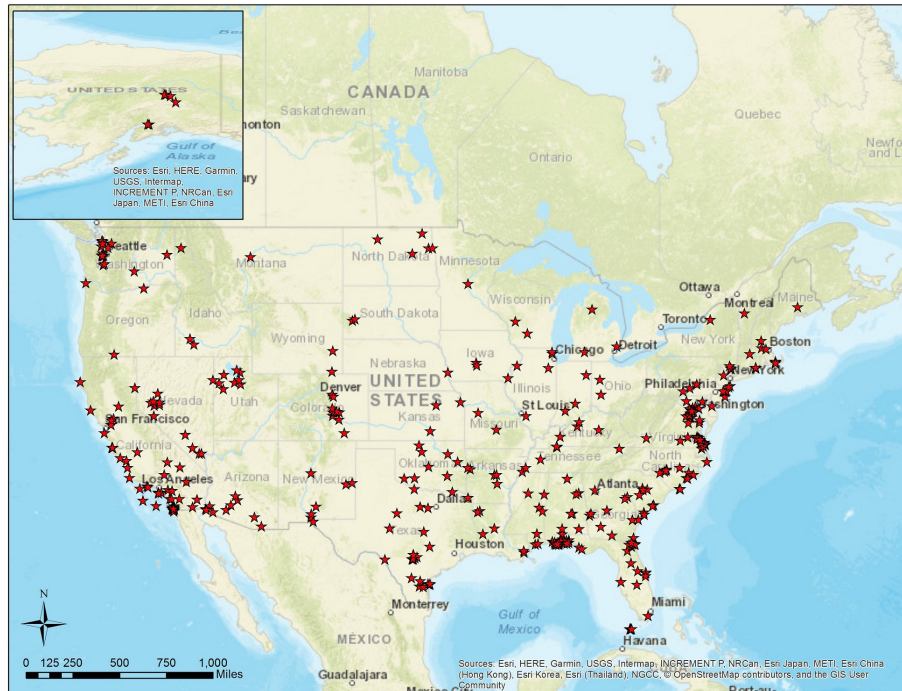


FIGURE 1. Location of U.S. Department of Defense (DoD) properties included in the amphibian and reptile inventory.

report-input [Accessed 2013–2016]). The following six ESA designations were added to the inventory for listed species: Under Review; Candidate; Proposed; Similarity of Appearance-Threatened; Threatened; Endangered. Under Review species included species that have been petitioned for listing for which a 90-d finding has not been published and species that have been petitioned for listing for which a 90-d finding has been published, but for which a 12-mo finding had not yet been published in the Federal Register. State-listed (endangered or threatened) status designations were added to the inventory using an updated version of Nanjappa and Conrad (2011). We updated these data in 2017 and had the update reviewed and validated by state wildlife professionals before being added to the dataset. We obtained NatureServe conservation status rankings for each species using NatureServe Explorer (Available from <http://explorer.natureserve.org/> [Accessed 2013–2016]). NatureServe assigns rounded global conservation status rankings on a scale of G1 to G5 (T1 to T5 for subspecies). In this paper, we define species/subspecies with a NatureServe conservation ranking of G1/T1–G3/T3 as an At-risk species.

**Species inventory evaluation.**—We used Microsoft Excel for our evaluation of the military amphibian and reptile species inventory. We identified the total number of confirmed species (by military service and all DoD sites combined) by querying the inventory to identify those species confirmed present on at least one military installation. Species not confirmed present on any military site were considered unconfirmed species and

identified by querying the inventory for those species with a status of potential in the inventory. We searched Federally listed species, state-listed species, and At-risk species (NatureServe conservation status ranking G1/T1–G3/T3) by querying the inventory for those various designations.

We considered non-native species to be an introduced, alien, or non-indigenous species to the U.S., or a native U.S. species that has been translocated outside its natural range (native translocate). Species determined non-native for this study were selected using the U.S. Geological Survey (USGS) Nonindigenous Aquatic Species website (Available from <http://nas.er.usgs.gov/default.aspx> [Accessed 2013–2016]) and the Society for the Study of Amphibians and Reptiles (SSAR) North American Species Names Database (Available from <https://ssarherps.org/cndb/> [Accessed 2013–2016]). We evaluated venomous species separately in this study due to the potential risk of negative human-wildlife interactions, and identified rattlesnakes (*Crotalus* and *Sistrurus* spp.), Cottonmouth (*Agkistrodon piscivorus*), Copperhead (*Agkistrodon contortrix*), coralsnakes (*Micrurus* spp. and *Micruroides euryxanthus*), and Gila Monster (*Heloderma suspectum*) in our species inventory.

## RESULTS

We updated the species lists for 415 DoD properties (301 DoD installations and 114 detachments/ranges/annexes; Fig. 1; Supplementary Information Appendix I). The number of DoD installations included in this study

**TABLE 1.** Number of confirmed and unconfirmed amphibian and reptile species and percentages by taxonomic group on DoD properties. Abbreviations are NCS = number of confirmed species, NUS = number of unconfirmed species, NPS = Number of Potential Species (Confirmed and Unconfirmed), PC = Percent Confirmed of Total Potential, PU = Percent Unconfirmed of Total Potential.

Taxonomic Group	NCS	NUS	NPS	PC	PU
Frogs and Toads	84	12	96	88%	12%
Salamanders	80	26	106	75%	25%
Lizards	94	20	114	82%	18%
Snakes	131	21	152	86%	14%
Turtles	48	7	55	87%	13%
Crocodyles/Alligators	3	0	3	100%	0
Total	440	86	526	84%	16%

by military service were 157 (Army), 96 (Air Force), 144 (Navy), and 18 (Marine Corps) and were considered by the military to have significant natural resources that would support populations of amphibians and reptiles. Our review of the herpetofaunal inventory data from all 415 DoD sites combined shows 440 species confirmed present and an additional 86 species unconfirmed and potentially present (Table 1). Confirmed species account for 84% of the 526 species potentially present on DoD sites. There were 164 confirmed amphibian species and 276 confirmed reptile species on the DoD sites included in this inventory. The most abundant species of amphibians and reptiles confirmed present on DoD sites by taxonomic groups are: frog/toad - American Bullfrog (*Lithobates catesbeianus*); salamander - Eastern Newt (*Notophthalmus viridescens*); crocodylian - American Alligator (*Alligator mississippiensis*); snake - North American Racer (*Coluber constrictor*); lizard - Little Brown Skink (*Scincella lateralis*); and turtle - Snapping Turtle (*Chelydra serpentina*). Of the taxonomic groups, snakes have the greatest number and percentage of confirmed species on DoD sites (131 species/30%), whereas crocodylians have the least (three species/1%; Fig. 2).

Of the military services, Army properties have the most confirmed species, followed by the Air Force, Navy, and Marine Corps (Table 2, Fig. 3). The 10 DoD installations with the most confirmed amphibian and reptile species are Fort Stewart, Georgia (Army; 100 species); Camp Shelby Joint Forces Training Center, Mississippi (Army; 87 species); Fort Bragg, North Carolina (Army; 81 species); Marine Corps Base Camp Lejeune, North Carolina (79 species); Fort Gordon, Georgia (Army; 76 species); Fort Benning, Alabama and Georgia (Army; 74 species); Eglin AFB, Florida (Air Force; 74 species); McCrady Training Center, South Carolina (Army; 72 species); Naval Air Station Pensacola, Florida (Saufley Field Naval Education and Training Professional Development Center; 71

**TABLE 2.** Number of amphibian and reptile species (confirmed/unconfirmed) by U.S. military service.

Taxonomic Group	Army	Air Force	Navy	Marine Corps
Frogs and Toads	72/11	67/11	61/11	41/9
Salamanders	70/24	47/21	45/20	31/11
Lizards	65/19	72/31	57/17	36/12
Snakes	113/15	100/33	88/24	62/15
Turtles	34/10	39/9	33/11	22/4
Crocodyles/Alligators	1/0	3/0	2/0	1/0
Total	355/79	328/105	286/83	193/51

species); and Avon Park Air Force Range, Florida (69 species). Unconfirmed species that have circumscribed ranges inclusive of DoD sites account for 16% of the total number of species potentially present on DoD sites (Table 1). The native amphibian and reptile species confirmed present on the 415 DoD sites evaluated in this report represent 66% of the total native biodiversity of all herpetofaunal species documented in the continental U.S. (Table 3). Seventy-nine percent of native frog and toad species, 41% of salamander species, 100% of crocodylian species, 83% of snake species, 68% of lizard species, and 81% of turtle species documented in the continental U.S. are confirmed present on DoD sites.

**Protected species confirmed present.**—There are 24 species/subspecies of amphibians and reptiles confirmed present on 61 DoD sites in the continental U.S. that are federally listed as endangered or threatened by the USFWS (Supplementary Information Table 4), including five frogs/toads, four salamanders, one crocodylian, five snakes, and nine turtles. These 24 species found on DoD lands account for 41% of the 58 total herpetofaunal species that are federally listed in the continental U.S. The most frequently documented federally listed species on DoD sites is the

**TABLE 3.** Comparison of the number of native amphibian and reptile species confirmed present on U.S. Department of Defense (DoD) installations to continental U.S. native herpetofaunal biodiversity. Abbreviations are NSC = native species confirmed present on DoD sites, NSWUS = native species within the U.S. (Crothers 2012), and PCS/NS = percentage of native species confirmed on DoD sites to native U.S. species.

Taxonomic Group	NSC	NSWUS	PCS/NS
Frogs and Toads	81	102	79%
Salamanders	80	194	41%
Lizards	81	120	68%
Snakes	128	155	83%
Turtles	48	59	81%
Crocodyles/Alligators	2	2	100%
Total	420	632	66%



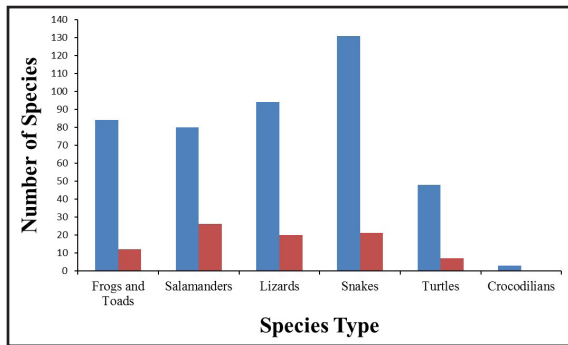


FIGURE 2. Number of confirmed (blue bars) and unconfirmed (red bars) amphibian and reptile species on U.S. Department of Defense properties by taxonomic group.

Loggerhead Sea Turtle (*Caretta caretta*); however, the Eastern Indigo Snake (*Drymarchon couperi*), Green Sea Turtle (*Chelonia mydas*), Leatherback Sea Turtle (*Dermochelys coriacea*), Kemp's Ridley Sea Turtle (*Lepidochelys kempii*), and Mohave Desert Tortoise (*Gopherus agassizii*) are also relatively common. The Army has the most confirmed federally listed endangered or threatened amphibian and reptile species/subspecies on its lands (14 species), followed by the Air Force and Navy (11 species), and Marine Corps (nine species). Eglin Air Force Base (AFB), Florida, has the most federally listed endangered or threatened herpetofaunal species/subspecies confirmed present (six species), followed by Cape Canaveral Air Force Station (AFS), Florida, MacDill AFB, Marine Corps Base (MCB) Camp Pendleton, California, and Tyndall AFB, Florida (five species each).

The American Alligator is the only amphibian or reptile species federally listed as Similarity of Appearance-Threatened on DoD lands and occurs on 49 DoD sites. Although this species was delisted in 1987, it is still protected under the ESA due to their close resemblance to the American Crocodile, which is federally listed as threatened. Two species of amphibians and reptiles confirmed present on DoD sites in the continental U.S. are federally listed as candidate species by the USFWS. The eastern population of the Gopher Tortoise (*Gopherus polyphemus*) is the most common candidate species and occurs on 25 DoD sites. The Striped Newt (*Notophthalmus perstriatus*) occurs on only two DoD sites.

There are 31 species/subspecies of herpetofauna confirmed present on 119 DoD sites in the continental U.S. that have been petitioned for listing or are currently under review by the USFWS. Of the taxonomic groups, there are six frogs/toads, seven salamanders, six snakes, four lizards, and eight turtles. The Spotted Turtle (*Clemmys guttata*) is confirmed present on more DoD sites (37 sites) than all other confirmed species that are petitioned for listing or under review. Two other

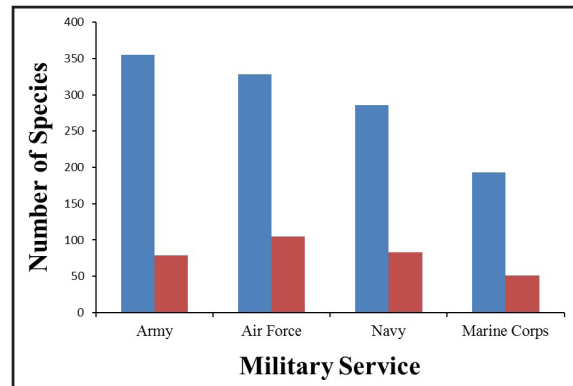


FIGURE 3. Number of confirmed (blue bars) and unconfirmed (red bars) amphibian and reptile species by U.S. military service.

species that are petitioned or under review for listing by the USFWS with a relative high number of confirmed occurrences on DoD properties are the Eastern Diamond-backed Rattlesnake (*Crotalus adamanteus*; 26 sites) and the Northern Red-bellied Cooter (*Pseudemys rubriventris*; 25 sites). The DoD installation that has the most species/subspecies confirmed present that are petitioned for listing or under review is Fort Benning, an Army installation located in Georgia (seven species).

Our results show that 55 species/subspecies of amphibians and reptiles are confirmed present on 100 DoD sites (24% of all DoD sites included in this inventory) in states where they are listed as endangered or threatened (Supplementary Information Table 5). Of the taxonomic groups, there are 11 frogs/toads, nine salamanders, two crocodylians, 16 snakes, two lizards, and 15 turtles. The Gopher Tortoise is state-listed as endangered in Mississippi and South Carolina, and state-listed threatened in Florida, Georgia, and Louisiana. This turtle species is confirmed present on more DoD sites than any other state-listed species (26 sites). Other common state-listed species on DoD lands include the Loggerhead Sea Turtle (15 sites), Texas Horned Lizard (*Phrynosoma cornutum*; 11 sites), American Alligator (10 sites), and the Eastern Indigo Snake (nine sites). The Army has the most state-listed species confirmed present (31 species), followed by the Air Force (30 species), Navy (18 species) and Marine Corps (11 species). Eglin AFB and Cape Canaveral AFS, both in Florida have the most state-listed amphibian and reptile species confirmed present (seven species each). The Army has the most installations/detachments with state-listed species/subspecies confirmed present (38 sites), followed by the Air Force (27), Navy (26 sites each), and Marine Corps (nine sites).

Our results verify that 70 species/subspecies of herpetofauna confirmed present on DoD sites have a NatureServe status of G1/T1-G3/T3 (Supplementary Information Table 6). Six species/subspecies are listed as G1/T1-Critically Imperiled, 24 species/subspecies

are listed as G2/T2-Imperiled, and 40 species are listed as G3/T3-Vulnerable. Taxonomic groups include 11 frogs/toads, 13 salamanders, one crocodylian, 14 snakes, 17 lizards, and 14 turtles. At least one At-risk species is confirmed present on 130 DoD sites (31% of all sites included in this inventory). The Army has the most installations/detachments with confirmed At-risk species/subspecies (48 sites), followed by the Navy (42 sites), Air Force (27 sites), and Marine Corps (13 sites). As with state-listed species, the Gopher Tortoise is the most common At-risk species confirmed present on DoD sites (two sites where it is federally listed as threatened and 25 sites where it is listed as a candidate). Other common At-risk species confirmed present include Loggerhead Sea Turtle (16 sites), Alligator Snapping Turtle (*Macrochelys temminckii*; 15 sites), and Gopher Frog (*Lithobates capito*; 15 sites). The Army has the most confirmed At-risk species/subspecies on its installations/detachments (39 species), followed by the Air Force (35), Navy (31 species) and Marine Corps (22 species). Eglin AFB has the most At-risk species/subspecies confirmed present (11 species).

Our results show 30 non-native and native transplant herpetofaunal species/subspecies confirmed present on 88 DoD sites (21% of all sites included in the inventory) in the continental U.S. (Supplementary Information Table 7). Ten of these species/subspecies (American Bullfrog; Cane Toad, *Rhinella marina*; Rio Grande Chirping Frog, *Eleutherodactylus cystignathoides*; Barred Tiger Salamander, *Ambystoma m. mavortium*; San Diego Alligator Lizard, *Elgaria multicarinata webbii*; Snapping Turtle; Red-eared Slider, *Trachemys scripta elegans*; Spiny Softshell, *Apalone spinifera*; Western Painted Turtle, *Chrysemys picta bellii*; Yellow-bellied Slider, *Trachemys scripta scripta*) are native to the U.S., but have been transported outside their natural range. Of the remaining species/subspecies confirmed present, 20 are considered introduced, alien, or non-indigenous to the USA. Homestead AFB, located in southern Florida, has more confirmed invasive amphibian and reptile species (19) than any other DoD installation.

The native translocated American Bullfrog and Red-eared Slider, along with the non-native Mediterranean Gecko (*Hemidactylus turcicus*) are the most common species in this category on DoD sites. At least one of these three species is confirmed present on 75 of the 88 DoD sites that have confirmed non-native and native translocated herpetofaunal species. These species are also potentially present on an additional 148 military sites.

There are 24 venomous reptile species confirmed present on 203 DoD sites (49% of all sites included in this inventory) in the continental USA (Supplementary Information Table 8). Species confirmed present

include two species of *Agkistrodon* (*A. contortrix* and *A. piscivorus*), two species of *Micrurus* (*M. fulvius* and *M. tener*), one species of *Micruroides* (*M. euryxanthus*), 16 species of *Crotalus*, and two species of *Sistrurus* (*S. catenatus* and *S. miliarius*). In addition, the Gila Monster is confirmed present on several military sites in the southwestern U.S. The Copperhead is confirmed present on more DoD sites (81) than any other venomous snake species. The Arizona Black Rattlesnake (*Crotalus cerberus*), Twin-spotted Rattlesnake (*Crotalus pricei*), and Ridge-nosed Rattlesnake (*Crotalus willardi*) are the least common venomous snake species on DoD lands, and are only confirmed present on one site each. Located in Arizona, the Army site Fort Huachuca and the Air Force site Luke AFB (Barry M. Goldwater Range - East) have more confirmed venomous snake species (seven species each) than all other DoD sites included in this inventory. Fort Benning, Fort Stewart, and MCB Camp Lejeune (located in Alabama/Georgia, Georgia and North Carolina, respectively) have the second-greatest number of venomous snake species (six species each).

**Protected species unconfirmed and potentially present.**—There are 10 species of amphibians and reptiles unconfirmed and potentially present on DoD sites in the continental U.S. that are federally listed as endangered or threatened by the USFWS (Supplementary Information Table 9). Of the taxonomic groups, there are two frogs/toads, one salamander, five snakes, one lizard and one turtle. The Hawksbill Sea Turtle (*Eretmochelys imbricata*) is potentially present on at least 23 DoD sites, whereas the remaining unconfirmed species are potentially present on two or fewer DoD sites. There are no species of amphibian or reptiles potentially present on DoD installations that are listed as candidate species by the USFWS.

There are 13 species/subspecies unconfirmed and potentially present on DoD sites in the continental U.S. that have been petitioned for listing or are currently under review by the USFWS. Of the taxonomic groups, there are seven salamanders, two snakes, and four turtles. The Alabama Map Turtle (*Graptemys pulchra*) is currently under review by the USFWS and is potentially present on more military sites (five sites in Alabama and Mississippi) than all other unconfirmed species that are petitioned for listing or under review.

Our results show 44 species of amphibians and reptiles are unconfirmed and potentially present on 91 DoD sites in states where they are listed as endangered or threatened (Supplementary Information Table 10). Of the taxonomic groups, there are four frogs/toads, 11 salamanders, 19 snakes, three lizards, and seven turtles. The Army has the most state-listed species unconfirmed (30 species), followed by the Air Force

and Navy (13 species each), and Marine Corps (two species). The Iowa Army Ammunition Plant has more state-listed species unconfirmed and potentially present (seven species) than all other DoD sites. The Navy has the most installations/detachments where State-listed species/subspecies are potentially present (38 sites), followed by the Army (32 sites), Air Force (17 sites), and Marine Corps (four sites). In comparison to all other unconfirmed state endangered or threatened species/subspecies, the Hawksbill Sea Turtle has the most observations and is potentially present on 21 DoD sites in state-listed.

In addition to the confirmed At-risk species/subspecies listed above, there are an additional 39 species/subspecies with a NatureServe status of G1/T1-G3/T3 that are unconfirmed and potentially present on DoD sites (Supplementary Information Table 11). Seven species/subspecies are listed as G1/T1-Critically Imperiled, 18 species/subspecies are listed as G2/T2-Imperiled, and 14 species are listed as G3/T3-Vulnerable. Taxonomic groups include three frogs/toads, 16 salamanders, 12 snakes, three lizards, and five turtles. The Navy has the most unconfirmed At-risk species/subspecies on its installations/detachments (26 species), followed by the Army (20 species), Air Force (15 species) and Marine Corps (six species).

Six additional unconfirmed and potentially present non-native and native translocated species/subspecies occur on DoD sites. These species/subspecies are confirmed present in the same county as a military site but have not been confirmed present on the military site. These species include five native transplant species: Mudpuppy (*Necturus maculosus*); Northern Leopard Frog (*Lithobates pipiens*); Reef Gecko (*Sphaerodactylus notatus*); Rio Grande Leopard Frog (*Lithobates berlandieri*); Texas Horned Lizard; and one non-native species, Coqui (*Eleutherodactylus coqui*).

### DISCUSSION

We developed the first comprehensive amphibian and reptile species inventory for the U.S. Department of Defense that included data from 415 DoD sites (301 DoD installations and 114 detachments/ranges/annexes) within the continental U.S. Our results revealed that DoD properties support an extensive diversity of amphibian and reptile species (Supplementary Information Table 7). In fact, the species confirmed on DoD sites represent 66% of the total biodiversity of all native amphibian and reptile species documented in the continental U.S., confirming military lands make a significant contribution to biodiversity conservation. In addition, the relatively low number of unconfirmed species potentially present on DoD sites (16%) demonstrates the success of DoD at documenting these

species on their lands through inventory and monitoring efforts and/or developing survey partnerships with state wildlife agencies, nongovernmental organizations, universities, etc.

The greater species richness found on Army and Air Force properties is likely the result of the greater number of installations and hectares managed by the two Services (approximately 4.9 and 3.6 million ha, respectively) as compared to the Navy and Marine Corps (approximately 0.8 million ha each). The geographical location of the various military installations also plays a role in the species diversity found on land of the individual Services. Army and Air Force installations are more common in the interior of the U.S. whereas Navy and Marine Corps installations are more common along coastal regions. As a result, we observed that there are more amphibian and reptile species associated with coastal environments (for example, sea turtles) on Navy and Marine Corps lands than Army and Air Force lands.

Snakes are the most common amphibian or reptile taxonomic group confirmed present on DoD installations. These results were surprising to us, given that salamanders have the most species (approximately 194) in the U.S. Snake species, however, generally have larger geographical ranges in comparison to salamander species, many species of which have small or isolated geographical ranges, particularly in the southeastern Appalachian Mountains of the U.S., where military sites are not present and do not overlap the range of many species of montane endemic salamanders.

We could find no other agency-wide amphibian and reptile inventories conducted on other U.S. federal lands to directly compare our results. Although not describing exact counts of species, Stohlgren et al. (1995) reported on the biotic inventories of U.S. national parks. Few parks contained relatively complete systematic inventories of any major plant or animal group. Although most parks had species lists for at least some biological groups, about 80% of the lists are reported to be less than 80% complete in their taxonomic, geographic, and ecological coverage. This trend was true for amphibian and reptile species.

While comprising a relatively low percentage of the overall species, it is of significant interest to understand the occurrence or lack thereof for those species unconfirmed on DoD lands. A species could be unconfirmed because it is present on a DoD site, but not yet documented, or because it is not present on an installation. It could be that field sampling needs to be done differently to detect some of these species, such as for aquatic, cryptic species, or narrowly endemic species. Resource managers require accurate information of all species present on their lands for effective management and to prevent impacts to the training and testing mission

if additional species achieve legal protections through endangered species listing at either the state or federal level. Our amphibian and reptile inventory provides the foundation for understanding which species are confirmed and unconfirmed on individual military sites and across the DoD landscape. We encourage other U.S. federal agencies to follow the example of the DoD and develop agency-wide inventory data of species on their properties.

As expected, amphibian and reptile species that were the most abundant on DoD sites (American Bullfrog, Eastern Newt, American Alligator, North American Racer, Little Brown Skink, Snapping Turtle) have large geographical ranges within the U.S. This was also true for venomous reptile species. Copperheads were the most abundant venomous snake confirmed present on military lands. This species range is extensive and extends from Massachusetts south to northern Florida, and west from southeastern Nebraska to southwestern Texas and northeastern Mexico (Conant and Collins 1998).

Non-native and native transplant species were generally uncommon on military lands and represented approximately 7% of all amphibian and reptile species confirmed present on military properties. Crother (2012) reports that there are at least 69 non-native amphibian and reptile species confirmed present in the U.S. (including Hawaii), 60 species that have populations within the continental U.S. DoD sites have 33% of the 60 non-native species confirmed present in the continental U.S. confirmed on its properties. We expected more non-native species on DoD sites given that military personnel and equipment is generally very mobile, which could increase the chances of a non-native or native transplant species being accidentally transported. As expected, most of the non-native species were on military sites in Florida, where these species are exceedingly diverse and widespread (Meshaka 2011).

This study has provided a wealth of data that can be used for conservation assessments, project-specific evaluations, natural resource management decisions, and local and regional biodiversity comparisons both on, and adjacent to military lands. Other researchers are currently using these data for a regional biodiversity comparison. The authors look forward to continued use of this information for science at large.

*Acknowledgments.*—We thank Military Service headquarters, including the Office of the Army's Assistant Chief of Staff, Installation Management; Naval Facilities Engineering Command Headquarters; Marine Corps Headquarters, and Air Force Environmental Management Directorate/Technical Support Division for their support with collecting data for this analysis and coordinative review of this report. We also thank the

many military installation personnel who provided data for this study and reviewed and validated their updated species lists.

We would also like to thank the following federal and state agency personnel and individuals from non-governmental organizations for their technical review of the DoD amphibian and reptile installation species lists: Andy Gluesenkamp, Angelena Ross, Barbara Sargent, Benjamin A. Walker, Bill Bosworth, Bill Reeves, Bob Jones, Brad Glorioso, Brian Zarate, Bryce A. Maxell, Charlotte Snoberger, Chris Phillips, Chris Urban, Cris Tomlinson, Curtis J. Schmidt, Dan Fogell, Dane Ward, Danny Martin, Dede Olson, Eileen Dowd Stukel, Eric Soehren, George Oliver, Greg Lipps, Holly Niederriter, Jason Jones, Jeff Beane, Jeff Briggler, Jeff Hall, Jenny Dickson, John Jensen, Joseph Mitchell, Josh Campbell, Karen Kinkead, Kathy Shelton, Kelly Irwin, Kendra Wecker, Keri Landry, Kevin Enge, Kurt Buhlmann, Larry L.C. Jones, Laura Patterson, Leland Pierce, Lin Pi-est, Lisa Hallock, Lori Sargent, Mark Howery, Michael Marchand, Michael Welch, Mike Jones, Patrick Isakson, Paul Moler, Rex Sallabanks, Rich Baker, Rori Paloski, Sarabeth Klueh-Mundy, Susan Watson, Tasha Forman, Tina Jackson, Tom Jones, Will Dillman, and Zack Walker. This project was funded through the DoD Legacy Resource Management Program (Project Numbers 12-423, 13-641, 13-642). We are very appreciative of the support we received from Peter Boice, Ryan Orndorff and Alison Dalsimer to conduct this study.

#### LITERATURE CITED

- Aycrigg, J.L., R.T. Belote, M.S. Dietz, G.H. Aplet, and R.A. Fischer. 2015. Bombing for biodiversity in the United States: response to Zentelis and Lindenmayer 2015. *Conservation Letters* 8:306–307.
- Conant, R., and J.T. Collins. 1998. *A Field Guide to Reptiles and Amphibians: Eastern and Central North America*. Houghton Mifflin, Boston, Massachusetts, USA.
- Crother, B.I. (Ed.). 2012. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, With Comments Regarding Confidence in Our Understanding*. Society for the Study of Amphibians and Reptiles, *Herpetological Circular* 39:1–92.
- Crother, B.I. (Ed.). 2017. *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding*. Society for the Study of Amphibians and Reptiles, *Herpetological Circular* 43:1–102.
- Ernst, C.H., and J.E. Lovich. 2009. *Turtles of the United States and Canada*. 2nd Edition. Johns Hopkins University Press, Baltimore, USA.



- Groves, C.R., L.S. Kutner, D.M. Stoms, M.P. Muray, J.M. Scott, M. Schafale, A.S. Weakley, and R.L. Pressey. 2000. Owning up to our responsibilities: who owns lands important for biodiversity? Pp. 275–300 *In* Precious Heritage: The Status of Biodiversity in the United States. Stein, B.A., L.S. Kutner, and J.S. Adams (Eds.). Oxford University Press, New York, New York, USA.
- Hayes, T.B., P. Case, S. Chui, D. Chung, D.C. Haeffele, K. Hatson, and M. Tsui. 2006. Pesticide mixtures, endocrine disruption, and amphibian declines: are we underestimating the impact? *Environmental Health Perspectives* 114:40–50.
- Johnson, P.T.J., J.M. Chase, K.L. Dosch, R.B. Hartson, J.A. Gross, D.J. Larson, D.R. Sutherland and S.R. Carpenter. 2007. Aquatic eutrophication promotes pathogenic infection in amphibians. *Proceedings of the National Academy of Sciences of the United States of America* 104:15781–15786.
- Klemens, M.W. (Ed.). 2000. *Turtle Conservation*. Smithsonian Institution Press, Washington, D.C., USA.
- Lovich, R.E., C. Petersen, A. Dalsimer. 2015. Department of Defense Natural Resources Program. Strategic Plan for Amphibian and Reptile Conservation and Management on Department of Defense Lands. U.S. Department of Defense, Washington, D.C., USA. 14 p.
- Meshaka, W.E., Jr. 2011. A runaway train in the making: the exotic amphibians, reptiles, turtles and crocodylians of Florida. Monograph 1. *Herpetological Conservation and Biology* 6:1–101.
- Nanjappa, P., and P.M. Conrad (Eds.). 2011. State of the Union: Legal Authority over the Use of Native Amphibians and Reptiles in the United States. Version 1.04. Association of Fish and Wildlife Agencies, Washington D.C., USA. 233 p.
- Pounds, J.A., M.R. Bustamante, L.A. Coloma, J.A. Consuegra, M.P.L. Fogden, P.N. Foster, E. La Marca, K.L. Masters, A. Merino-Viteri, R. Puschendorf, et al. 2006. Widespread amphibian extinctions from epidemic disease driven by global warming. *Nature* 439:161–167.
- Stein, B., C. Scott, and N. Benton. 2008. Federal lands and endangered species: the role of military and other federal lands in sustaining biodiversity. *BioScience* 58:339–347.
- Stohlgren, T.J., J.F. Quinn, M. Ruggiero, and G.S. Waggoner. 1995. Status of biotic inventories in U.S. national parks. *Biological Conservation* 71:97–106.
- Stuart, S.N., M. Hoffmann, J.S. Chanson, N.A. Cox, R.J. Berridge, P. Ramani, and B.E. Young (Eds.). 2008. *Threatened Amphibians of the World*. Lynx Edicions, Barcelona, Spain; International Union for Conservation of Nature, Gland, Switzerland; and Conservation International, Arlington, Virginia, USA.
- Vitt, L.J., and J.P. Caldwell. 2009. *Herpetology: An Introductory Biology of Amphibians and Reptiles*. 3<sup>rd</sup> Edition. Academic Press, Burlington, Massachusetts, USA.
- Zentelis, R. and D. Lindenmayer. 2015. Bombing for biodiversity—enhancing conservation values of military training areas. *Conservation Letters* 8:299–305.

### U.S. DEPARTMENT OF DEFENSE REPORTS

- Petersen, C., S. Stallings and R.E. Lovich. 2014a. Herpetofauna Biodiversity on Department of the Navy Shore Installations. Final report submitted to Department of Defense Legacy Resource Management Program. Project Number 12–423. Available from <https://www.denix.osd.mil/dodparc/parc-resources/materials-for-installation-personnel/herpetofauna-biodiversity-on-department-of-the-navy-shore-installations-20141>.
- Petersen, C., R.E. Lovich, and S. Stallings. 2014b. Herpetofauna Biodiversity on Marine Corps Installations. Final report submitted to Department of Defense Legacy Resource Management Program. Project Number 13–641. Available from <https://www.denix.osd.mil/dodparc/parc-resources/materials-for-installation-personnel/herpetofauna-biodiversity-on-marine-corps-installations-2014>.
- Petersen, C., R.E. Lovich, and S. Stallings. 2015. Herpetofauna Biodiversity on United States Air Force Installations. Final report submitted to Department of Defense Legacy Resource Management Program. Project Number 13–642. Available from <https://www.denix.osd.mil/dodparc/parc-resources/materials-for-installation-personnel/herpetofauna-biodiversity-on-united-states-air-force-installations-2015>.
- Petersen, C., R.E. Lovich, and S. Stallings. 2016. Herpetofauna Biodiversity on United States Army Installations. Final report submitted to Department of Defense Legacy Resource Management Program. Project Number 13–642. Available from <https://www.denix.osd.mil/dodparc/parc-resources/materials-for-installation-personnel/herpetofauna-biodiversity-on-united-states-army-installations>.

Supplemental Information at end of paper.



**CHRISTOPHER E. PETERSEN** is a Senior Natural Resources Specialist at Naval Facilities Engineering Command Atlantic and the Department of Defense Partners in Amphibian and Reptile Conservation (DoD PARC) National Representative. He earned a B.S. and M.S. in Biological Sciences (1993, 1995) from Old Dominion University, Norfolk, Virginia, USA, where he studied the movement patterns and habitat use of Copperheads (*Agkistrodon contortrix*). After graduating, he worked seven years for the Old Dominion University Research Foundation studying the movement patterns of Timber Rattlesnakes (*Crotalus horridus*) on a naval installation in Virginia. Chris is a graduate of the Navy Professional Development Center Program and the Navy Leadership Development Program. He served on the Herpetologists' League Board of Trustees in 2016 and 2017 and is currently the junior co-chair for the national Partners in Amphibian and Reptile Conservation (PARC) network. His research interests are focused on the conservation and management of amphibians and reptiles on military lands. (Photographed by Peter J. Tolson).



**ROBERT E. LOVICH** is a Senior Natural Resources Specialist at Naval Facilities Engineering Command Southwest and the Department of Defense Partners in Amphibian and Reptile Conservation (DoD PARC) National Technical Representative. He earned a B.S. (1996) from the University of Hawaii, Honolulu, USA, and M.S. (1999) and Ph.D. (2009) from Loma Linda University, Loma Linda, California, USA. His M.S. thesis was on the phylogeography of the Granite Night Lizard (*Xantusia henshawi*), and Ph.D. on the conservation genetics of the endangered Arroyo Toad (*Anaxyrus californicus*). Robert is an Associate Editor and Communications Editor for *Herpetological Conservation and Biology*. When not working on his muscle cars, or hanging out with his family, his work and interests include: (1) natural history and evolution of herpetofauna; (2) endangered species conservation; and (3) integrating science into natural resource management. (Photographed by Chris Petersen).



**SARAH STALLINGS** is a Natural Resources Specialist at Naval Facilities Engineering Command Atlantic. In 2009, she earned a B.S. in Biological Sciences with a focus in environmental studies from Old Dominion University, Norfolk, Virginia, USA. She earned a Masters of Natural Resources from Virginia Tech, Blacksburg, USA, in 2013 after completing her capstone project on the Herpetofauna Biodiversity on the U.S. Department of the Navy Shore Installations. Sarah completed the Naval Facilities Engineering Command (NAVFAC) intern program in 2012 and has since been in the Environmental Planning Division where she primarily prepares Environmental Impact Statements and Environmental Assessments to comply with the U.S. National Environmental Policy Act. (Photographed by Michael Chereskin).

## SUPPLEMENTAL INFORMATION

# AMPHIBIANS AND REPTILES OF UNITED STATES DEPARTMENT OF DEFENSE INSTALLATIONS

*CHRISTOPHER E. PETERSEN, ROBERT E. LOVICH, AND SARAH STALLINGS*

The following material is provided by the authors and was not subjected to peer review or editing by *Herpetological Conservation and Biology*.

**Appendix I.** DoD installations included in the amphibian and reptile inventory. Names listed alphabetically by Military Service.

<b>Military Service</b>	<b>Installation Name</b>	<b>State Name</b>	<b>Index Number</b>
Army	Aberdeen Proving Ground	Maryland	1
Army	Adelphi Laboratory Center	Maryland	2
Army	Anniston Army Depot	Alabama	3
Army	Arden Hills Army Training Site	Minnesota	4
Army	Auburn Training Site	Maine	5
Army	Austin Training Area	South Dakota	6
Army	Bangor IAP ANGB	Maine	7
Army	Bangor Training Site	Maine	8
Army	Bethany Beach Training Site	Delaware	9
Army	Biak Training Center	Oregon	10
Army	Blossom Point Research Facility	Maryland	11
Army	Blue Grass Army Depot	Kentucky	12
Army	Bog Brook Training Site	Maine	13
Army	Bordentown CSMS	New Jersey	14

---

Army	Brunswick Training Site	Maine	15
Army	Buckeye Training Area	Arizona	16
Army	Camel Tracks Training Site	New Mexico	17
Army	Camp Ashland	Nebraska	18
Army	Camp Atterbury Joint Maneuver Training Center	Indiana	19
Army	Camp Beauregard Training Site	Louisiana	20
Army	Camp Blanding Joint Training Center	Florida	21
Army	Camp Bowie	Texas	22
Army	Camp Butner (Main Base)	North Carolina	23
Army	Camp Butner (Snow Camp Training Site)	North Carolina	24
Army	Camp Clark Training Site	Missouri	25
Army	Camp Curtis Guild	Massachusetts	26
Army	Camp Dawson	West Virginia	27
Army	Camp Dodge	Iowa	28
Army	Camp Edwards	Massachusetts	29
Army	Camp Grafton (Camp Grafton North)	North Dakota	30
Army	Camp Grafton (Camp Grafton South)	North Dakota	31
Army	Camp Grayling Joint Maneuver Center	Michigan	32
Army	Camp Gruber Maneuver Training Center	Oklahoma	33
Army	Camp Guernsey Training Site	Wyoming	34
Army	Camp Mabry	Texas	35
Army	Camp Maxey	Texas	36
Army	Camp McCain	Mississippi	37
Army	Camp Minden Training Center	Louisiana	38
Army	Camp Murray	Washington	39
Army	Camp Navajo	Arizona	40
Army	Camp Perry Training Site	Ohio	41
Army	Camp Ravenna Joint Military Training Center	Ohio	42
Army	Camp Ripley	Minnesota	43
Army	Camp Roberts Training Site MTC-H	California	44
Army	Camp San Luis Obispo	California	45
Army	Camp Shelby Joint Forces Training Center	Mississippi	46
Army	Camp Sherman Joint Training Center	Ohio	47
Army	Camp Smith Training Site	New York	48

---



---

Army	Camp Swift	Texas	49
Army	Camp Villere	Louisiana	50
Army	Camp Williams	Utah	51
Army	Cape May Court House Armory	New Jersey	52
Army	Carlisle Barracks	Pennsylvania	53
Army	Caswell Training Site	Maine	54
Army	Catoosa Training Site	Georgia	55
Army	Devens Reserve Forces Training Area	Massachusetts	56
Army	Disney Training Center (Artemus)	Kentucky	57
Army	Douglas Creek Local Training Area	North Dakota	58
Army	Dover Armory	New Jersey	59
Army	Dugway Proving Ground	Utah	60
Army	Eastern Kentucky Training Site	Kentucky	61
Army	Florence Military Reservation	Arizona	62
Army	Floyd Edsall Training Center	Nevada	63
Army	Fort A.P Hill	Virginia	64
Army	Fort Belvoir	Virginia	65
Army	Fort Benning	Alabama, Georgia	66
Army	Fort Bliss	Texas, New Mexico	67
Army	Fort Bragg	North Carolina	68
Army	Fort Campbell Military Reservation	Kentucky, Tennessee	69
Army	Fort Carson	Colorado	70
Army	Fort Carson (Pinon Canyon Maneuver Site)	Colorado	71
Army	Fort Chaffee	Arkansas	72
Army	Fort Custer Training Center	Michigan	73
Army	Fort Detrick	Maryland	74
Army	Fort Dix-UTES Facility	New Jersey	75
Army	Fort Drum	New York	76
Army	Fort George G. Meade	Maryland	77
Army	Fort Gordon	Georgia	78
Army	Fort Hood	Texas	79

---

---

Army	Fort Huachuca	Arizona	80
Army	Fort Hunter Liggett	California	81
Army	Fort Indiantown Gap	Pennsylvania	82
Army	Fort Irwin	California	83
Army	Fort Jackson	South Carolina	84
Army	Fort Knox	Kentucky	85
Army	Fort Leavenworth	Kansas	86
Army	Fort Lee	Virginia	87
Army	Fort Leonard Wood	Missouri	88
Army	Fort McClellan Army National Guard Training Center	Alabama	89
Army	Fort McCoy	Wisconsin	90
Army	Fort Pickett Maneuver Training Center	Virginia	91
Army	Fort Polk	Louisiana	92
Army	Fort Riley	Kansas	93
Army	Fort Rucker	Alabama	94
Army	Fort Sill	Oklahoma	95
Army	Fort Stewart	Georgia	96
Army	Fort Walters	Texas	97
Army	Fort William H. Harrison	Montana	98
Army	Franklin Armory	New Jersey	99
Army	Gardiner Training Site	Maine	100
Army	Greenleaf Training Site	Nebraska	101
Army	Hawthorne Army Depot	Nevada	102
Army	Hollis Training Site	Maine	103
Army	Illinois Army National Guard (Sparta Training Area)	Illinois	104
Army	Iowa Army Ammunition Plant	Iowa	105
Army	Joint Base Lewis-McCord	Washington	106
Army	Joint Systems Manufacturing Center -Lima	Ohio	107
Army	Kansas Army National Guard Training Range Salina	Kansas	108
Army	Lander Training Area	Wyoming	109
Army	Letterkenny Army Depot	Pennsylvania	110
Army	Limestone Hills Training Area	Montana	111
Army	Lovell Training Area	Wyoming	112
Army	Marseilles Training Site	Illinois	113

---

---

Army	McAlester AAP	Oklahoma	114
Army	McCrary Training Center	South Carolina	115
Army	Mead Training Site	Nebraska	116
Army	Milan Army Ammunition Plant	Tennessee	117
Army	Milan Training Site	Tennessee	118
Army	Military Ocean Terminal Concord	California	119
Army	Military Ocean Terminal Sunny Point	North Carolina	120
Army	Morristown Armory	New Jersey	121
Army	Muscatatuck Urban Training Center	Indiana	122
Army	Nevada Army National Guard (Stead Training Site)	Nevada	123
Army	New Castle River Road Training Site	Delaware	124
Army	New Hampshire Army National Guard Training Site	New Hampshire	125
Army	Orchard Training Site	Idaho	126
Army	Oregon Army National Guard (Camp Adair)	Oregon	127
Army	Oregon Army National Guard (Camp Rilea)	Oregon	128
Army	Parks Reserve Force Training Area	California	129
Army	Pembroke Regional Training Institute	New Hampshire	130
Army	Picatinny Arsenal	New Jersey	131
Army	Pine Bluff Arsenal	Arkansas	132
Army	Plymouth Training Site	Maine	133
Army	Presidio Of Monterey/Fort ORD	California	134
Army	Pueblo Chemical Depot	Colorado	135
Army	Radford Army Ammunition Plant (Main Base)	Virginia	136
Army	Radford Army Ammunition Plant (New River Storage Unit)	Virginia	137
Army	Red River Army Depot	Texas	138
Army	Redstone Arsenal	Alabama	139
Army	Robinson Maneuver Training Center	Arkansas	140
Army	Sea Girt	New Jersey	141
Army	Sheridan Training Area	Wyoming	142
Army	Sierra Army Depot	California	143
Army	Smyrna Training Site	Tennessee	144
Army	Snake Creek Training Site	Florida	145
Army	Tarlton Readiness Center	Ohio	146

---

---

Army	Tooele Army Depot (Main Base)	Utah	147
Army	Tooele Army Depot (TEAD North Area)	Utah	148
Army	Tooele Army Depot (TEAD South Area)	Utah	149
Army	Tuckerton Armory	New Jersey	150
Army	Tullahoma Training Site	Tennessee	151
Army	Wendell H Ford Regional Training Center	Kentucky	152
Army	West Camp Rapid Training Area	South Dakota	153
Army	West Point Military Reservation	New York	154
Army	White Sands Missile Range	New Mexico	155
Army	Yakima Training Center	Washington	156
Army	Yuma Proving Ground	Arizona	157
Air Force	611th Air Support Group (Eareckson Air Station)	Alaska	158
Air Force	611th Air Support Group (King Salmon Airport)	Alaska	159
Air Force	Altus Air Force Base (AFB)	Oklahoma	160
Air Force	Arnold AFB	Tennessee	161
Air Force	Avon Park AFR	Florida	162
Air Force	Bangor ANGB	Maine	163
Air Force	Barksdale AFB	Louisiana	164
Air Force	Beale AFB	California	165
Air Force	Buckley AFB	Colorado	166
Air Force	Cannon AFB/Melrose Air Force Range	New Mexico	167
Air Force	Cape Canaveral Air Force Station (AFS)	Florida	168
Air Force	Cape Cod AFS	Massachusetts	169
Air Force	Cavalier AFS	North Dakota	170
Air Force	Cheyenne Mountain AFS	Colorado	171
Air Force	Columbus AFB	Mississippi	172
Air Force	Dare County Range	North Carolina	173
Air Force	Davis-Monthan	Arizona	174
Air Force	Dobbins Air Reserve Base (ARB)	Georgia	175
Air Force	Dyess AFB	Texas	176
Air Force	Edwards AFB	California	177
Air Force	Eglin AFB	Florida	178
Air Force	Eielson AFB (Birch Lake Recreation Area)	Alaska	179
Air Force	Eielson AFB (Blair Lake Air Force Range)	Alaska	180

---



---

Air Force	Ellsworth AFB	South Dakota	181
Air Force	Fairchild AFB (Clear Lake Recreation Area)	Washington	182
Air Force	Fairchild AFB (Cusick Survival Training Site)	Washington	183
Air Force	Fairchild AFB (Lookout Pass Survival Training Site)	Washington	184
Air Force	Fairchild AFB	Washington	185
Air Force	Francis E. Warren	Wyoming	186
Air Force	Gila River Air Force Space Surveillance Station	Arizona	187
Air Force	Goodfellow AFB	Texas	188
Air Force	Grand Forks AFB	North Dakota	189
Air Force	Hanscom AFB (Main Base)	Massachusetts	190
Air Force	Hanscom AFB (Maynard/Sudbury Geophysics Radar Laboratory Annex)	Massachusetts	191
Air Force	Hanscom AFB (Sagamore Hill Solar Weather Observatory Annex)	Massachusetts	192
Air Force	Hill AFB (Little Mountain Test and Training Range)	Utah	193
Air Force	Hill AFB (Main Base)	Utah	194
Air Force	Hill AFB (Utah Test and Training Range)	Utah	195
Air Force	Holloman AFB	New Mexico	196
Air Force	Homestead ARB	Florida	197
Air Force	Hurlburt Field	Florida	198
Air Force	Jacksonville Air National Guard	Florida	199
Air Force	Jefferson Proving Grounds	Indiana	200
Air Force	Joint Base Andrews	Maryland	201
Air Force	Joint Base Antonio (Camp Bullis Training Annex)	Texas	202
Air Force	Joint Base Antonio (Lackland AFB/Randolf AFB)	Texas	203
Air Force	Joint Base Charleston (Weapons Station)	South Carolina	204
Air Force	Joint Base Elmendorf-Richardson	Alaska	205
Air Force	Joint Base Langley-Eustis (Fort Eustis)	Virginia	206
Air Force	Joint Base McGuire-Dix-Lakehurst (MDL)	New Jersey	207
Air Force	Kirtland AFB	New Mexico	208
Air Force	Laughlin AFB	Texas	209
Air Force	Little Rock AFB	Arkansas	210
Air Force	Luke AFB (Barry M. Goldwater Range - East)	Arizona	211
Air Force	Luke AFB (Main Base)	Arizona	212

---

---

Air Force	MacDill AFB	Florida	213
Air Force	Malmstrom AFB	Montana	214
Air Force	March ARB	California	215
Air Force	Maxwell AFB	Alabama	216
Air Force	McConnell AFB	Kansas	217
Air Force	McEntire Joint National Guard Base (NGB)	South Carolina	218
Air Force	Minot AFB	North Dakota	219
Air Force	Moody AFB	Georgia	220
Air Force	Mountain Home AFB (Electronic Combat Site)	Idaho	221
Air Force	Mountain Home AFB (Juniper Butte Range)	Idaho	222
Air Force	Mountain Home AFB (Saylor Creek Range)	Idaho	223
Air Force	Mountain Home AFB (Small Arms Range)	Idaho	224
Air Force	Nellis AFB/Creech Air Force Base/Nevada Test and Training Range	Nevada	225
Air Force	New Boston AFS	New Hampshire	226
Air Force	Niagara Fall Air Reserve Station	New York	227
Air Force	Offutt AFB	Nebraska	228
Air Force	Otis Air National Guard	Massachusetts	229
Air Force	Patrick AFB	Florida	230
Air Force	Peterson AFB	Colorado	231
Air Force	Pillar Point AFS	California	232
Air Force	Pope AFB	North Carolina	233
Air Force	Robins AFB	Georgia	234
Air Force	San Diego Air Force Space Surveillance Station	California	235
Air Force	Schriever Air Force Base	Colorado	236
Air Force	Scott AFB	Illinois	237
Air Force	Selfridge ANGB	Michigan	238
Air Force	Seymour-Johnson AFB (Fort Fisher Recreation Area)	North Carolina	239
Air Force	Seymour-Johnson AFB	North Carolina	240
Air Force	Shaw AFB/Poinsett Electronic Combat Range	South Carolina	241
Air Force	Sheppard AFB	Texas	242
Air Force	Tinker AFB	Oklahoma	243
Air Force	Travis AFB	California	244
Air Force	Tyndall AFB	Florida	245

---

---

Air Force	US Air Force Academy	Colorado	246
Air Force	Vance AFB (Kegelman Auxiliary Airfield)	Oklahoma	247
Air Force	Vance AFB (Main Base)	Oklahoma	248
Air Force	Vandenberg AFB	California	249
Air Force	Warren Grove Air National Guard	New Jersey	250
Air Force	Westover Air Reserve Base	Massachusetts	251
Air Force	Whiteman AFB	Missouri	252
Air Force	Wright-Patterson	Ohio	253
Navy	Great Pond Outdoor Adventure Center	Maine	254
Navy	Joint Expeditionary Base Little Creek-Fort Story (Fort Story)	Virginia	255
Navy	Joint Expeditionary Base Little Creek-Fort Story (NAB Little Creek)	Virginia	256
Navy	Joint Base Anacostia-Bolling	Washington D.C.	257
Navy	Manchester Fuel Depot	Washington	258
Navy	NAF El Centro (Main Base)	California	259
Navy	NAF El Centro (Parachute Drop Zone -Range 2510)	California	260
Navy	Naval Air Facility (NAF) El Centro (Target 101 -Range 2510)	California	261
Navy	NAF El Centro (Target 103 -Range 2510)	California	262
Navy	NAF El Centro (Target 68 -Range 2512)	California	263
Navy	NAF El Centro (Target 95 -Range 2512)	California	264
Navy	Naval Air Station (NAS) Corpus Christi (Main Base)	Texas	265
Navy	NAS Corpus Christi (NOLF Canbaniss)	Texas	266
Navy	NAS Corpus Christi (NOLF Goliad)	Texas	267
Navy	NAS Corpus Christi (NOLF Waldron)	Texas	268
Navy	NAS Corpus Christi (Peary Place Transmitter Site)	Texas	269
Navy	NAS Fallon (Dixie Meadows)	Nevada	270
Navy	NAS Fallon (Dixie Valley Highway)	Nevada	271
Navy	NAS Fallon (Dixie Valley Settlement Area)	Nevada	272
Navy	NAS Fallon (Horse Creek)	Nevada	273
Navy	NAS Fallon (Main Base)	Nevada	274
Navy	NAS Fallon (Range B-16)	Nevada	275

---

---

Navy	NAS Fallon (Range B-17)	Nevada	276
Navy	NAS Fallon (Range B-19)	Nevada	277
Navy	NAS Fallon (Range B-20)	Nevada	278
Navy	NAS Jacksonville (Main Base)	Florida	279
Navy	NAS Jacksonville (OLF Whitehouse)	Florida	280
Navy	NAS Jacksonville (Pinecastle Range)	Florida	281
Navy	NAS Jacksonville (Rodman Bombing Target Range)	Florida	282
Navy	NAS Joint Reserve Base NOLA	Louisiana	283
Navy	NAS Key West (Boca Chica)	Florida	284
Navy	NAS Kingsville (Main Base)	Texas	285
Navy	NAS Kingsville (McMullen Range Complex)	Texas	286
Navy	NAS Kingsville (NALF Orange Grove)	Texas	287
Navy	NAS Lemoore	California	288
Navy	NAS Meridian (Joe Williams)	Mississippi	289
Navy	NAS Meridian (McCain Field)	Mississippi	290
Navy	NAS Meridian (Searay Target Range)	Mississippi	291
Navy	NAS Oceana (Dam Neck Annex)	Virginia	292
Navy	NAS Oceana (Main Base)	Virginia	293
Navy	NAS Oceana (NALF Fentress)	Virginia	294
Navy	NAS Patuxent River (Bloodsworth Island Bombing Range)	Maryland	295
Navy	NAS Patuxent River (Main Base)	Maryland	296
Navy	NAS Patuxent River (Webster Field)	Maryland	297
Navy	NAS Pensacola (Center for Information Dominance, Corry Station)		298
Navy	NAS Pensacola (Main Base)	Florida	299
Navy	NAS Pensacola (NOLF Bronson Field)	Florida	300
Navy	NAS Pensacola (Saufley Field NETPDTC)	Florida	301
Navy	NAS Whidbey Island (Ault Field)	Washington	302
Navy	NAS Whidbey Island (Lake Hancock)	Washington	303
Navy	NAS Whidbey Island (OLF Coupeville)	Washington	304
Navy	NAS Whidbey Island (Seaplane Base)	Washington	305
Navy	NAS Whiting Field (Main Base)	Florida	306
Navy	NAS Whiting Field (NOLF Evergreen)	Alabama	307
Navy	NAS Whiting Field (NOLF Harold)	Florida	308

---



---

Navy	NAS Whiting Field (NOLF Santa Rosa)	Florida	309
Navy	NAS Whiting Field (NOLF Site 8-A)	Florida	310
Navy	NAS Whiting Field (NOLF Spencer)	Florida	311
Navy	NAS Whiting Field (NOLF Wolf)	Alabama	312
Navy	NAS Whiting Field (OLF Holley)	Florida	313
Navy	NAS Whiting Field (OLF NOLF Pace)	Florida	314
Navy	National Maritime Intelligence Center	Maryland	315
Navy	Naval Base Coronado (Camp Michael Monsoor)	California	316
Navy	Naval Base Coronado (Camp Morena)	California	317
Navy	Naval Base Coronado (Naval Air Station North Island)	California	318
Navy	Naval Base Coronado (Naval Outlying Landing Field, Imperial Beach)	California	319
Navy	Naval Base Coronado (Remote Training Site, Warner Springs)	California	320
Navy	Naval Base Coronado (San Clemente Island)	California	321
Navy	Naval Base Coronado (Silver Strand Training Complex North)	California	322
Navy	Naval Base Coronado (Silver Strand Training Complex South)	California	323
Navy	Naval Base Kitsap (Bremerton)	Washington	324
Navy	Naval Base Kitsap (Camp Mckean)	Washington	325
Navy	Naval Base Kitsap (NBK Bangor)	Washington	326
Navy	Naval Base Kitsap (Naval Hospital Bremerton)	Washington	327
Navy	Naval Base Kitsap (NBK Keyport)	Washington	328
Navy	Naval Base Kitsap (Toandos Peninsula)	Washington	329
Navy	Naval Base Kitsap (Zelatched Point)	Washington	330
Navy	Naval Base Kitsap Camp Wesley Harris)	Washington	331
Navy	Naval Base Point Loma	California	332
Navy	Naval Base San Diego (Chollas Heights Housing Area)	California	333
Navy	Naval Base San Diego (Eucalyptus Ridge Housing Area)	California	334
Navy	Naval Base San Diego (Howard Gillmore Housing Area)	California	335
Navy	Naval Base San Diego (Mission Gorge Recreational	California	336

---

---

	Facility)		
Navy	Naval Base San Diego (Murphy Canyon Housing Area)	California	337
Navy	Naval Base San Diego (Naval Medical Center San Diego)	California	338
Navy	Naval Magazine Indian Island	Washington	339
Navy	Naval Observatory Flagstaff Station	Arizona	340
Navy	Naval Recreation Center Solomons	Maryland	341
Navy	Naval Station Mayport (Greenfield Plantation)	Florida	342
Navy	Naval Station Mayport (Main Base)	Florida	343
Navy	Naval Station Mayport (Naval Fuel Depot)	Florida	344
Navy	Naval Station Mayport (Ribault Bay Village Housing)	Florida	345
Navy	Naval Support Activity Orlando (LEFAC/Bugg Spring Facility)	Florida	346
Navy	Naval Support Facility Dahlgren (Mainside)	Virginia	347
Navy	Naval Support Facility Dahlgren (Pumpkin Neck)	Virginia	348
Navy	Naval Surface Warfare Center Acoustic Research Detachment Bayview	Idaho	349
Navy	Naval Weapons Station Seal Beach (Defense Fuel Support Point San Pedro)	California	350
Navy	Naval Weapons Station Seal Beach (Fallbrook Detachment)	California	351
Navy	Naval Weapons Station Seal Beach (Main Base)	California	352
Navy	Naval Weapons Station Seal Beach (NORCO/Corona)	California	353
Navy	Naval Weapons Systems Training Facility Boardman	Oregon	354
Navy	Naval Base Ventura County (Point Mugu)	California	355
Navy	Naval Base Ventura County (Port Hueneme)	California	356
Navy	Naval Base Ventura County (San Nicolas Island)	California	357
Navy	Naval Station Newport	Rhode Island	358
Navy	Submarine Base Kings Bay	Georgia	359
Navy	Submarine Base New London (Admiral Fife Recreational Area)	Connecticut	360
Navy	Submarine Base New London (Beaverdam Brook Wetland)	Connecticut	361
Navy	Submarine Base New London (Main Base)	Connecticut	362

---

---

Navy	Naval Air Weapons Station China Lake	California	363
Navy	Naval Construction Battalion Center Gulfport (Western Maneuver Area)	Mississippi	364
Navy	NCTAMSLANT DET Cutler (High Frequency Site)	Maine	365
Navy	NCTAMSLANT DET Cutler (Very Low Frequency Site)	Maine	366
Navy	Naval Research Laboratory (NRL) Washington (Chesapeake Bay Detachment)	Maryland	367
Navy	NRL Washington (Midway Research Center)	Virginia	368
Navy	NRL Washington (Pomoukey Detachment)	Maryland	369
Navy	Naval Radio Transmission Facility (NRTF) Dixon	California	370
Navy	NRTF Jim Creek	Washington	371
Navy	Naval Station Everett (Smokey Point Support Complex)	Washington	372
Navy	Naval Station Great Lakes	Illinois	373
Navy	NS Norfolk (Craney Island)	Virginia	374
Navy	NS Norfolk (Main Base)	Virginia	375
Navy	Naval Support Activity (NSA) Annapolis	Maryland	376
Navy	NSA Crane (Glendora Test Area)	Indiana	377
Navy	NSA Crane (Main Base)	Indiana	378
Navy	NSA Midsouth Memphis	Tennessee	379
Navy	NSA Monterey (Dunes/Research Area)	California	380
Navy	NSA Monterey (Lab/Recreation Area)	California	381
Navy	NSA Monterey (Main Grounds)	California	382
Navy	NSA Monterey (NIROP Santa Cruz)	California	383
Navy	NSA Monterey (Point Sur)	California	384
Navy	NSA Hampton Roads Northwest Annex	Virginia, North Carolina	385
Navy	NSA Panama City	Florida	386
Navy	Naval Support Facility (NSF) Carderock	Maryland	387
Navy	NSF Indian Head	Maryland	388
Navy	Naval Weapons Station (NWS) Earle (Chapel Hill)	New Jersey	389
Navy	NWS Earle (Main Base)	New Jersey	390
Navy	NWS Earle (Waterfront)	New Jersey	391
Navy	NWS Yorktown (Cheatham Annex)	Virginia	392

---

---

Navy	NWS Yorktown (Main Base)	Virginia	393
Navy	NWS Yorktown (Sugar Grove Leased Operations Area)	Virginia	394
Navy	NWS Yorktown (Yorktown Fuel Depot)	Virginia	395
Navy	Survival, Evasion, Resistance and Escape School	Maine	396
Navy	U.S. Navy Observatory	Washington D.C.	397
Marine Corps	Marine Corps Air Ground Combat Center Twentynine Palms	California	398
Marine Corps	Marine Corps Air Station (MCAS) Beaufort	South Carolina	399
Marine Corps	MCAS Camp Pendleton	California	400
Marine Corps	MCAS Cherry Point	North Carolina	401
Marine Corps	MCAS Miramar	California	402
Marine Corps	MCAS Yuma (Barry M. Goldwater Range)	Arizona	403
Marine Corps	MCAS Yuma (Chocolate Mountain Aerial Gunnery Range)	California	404
Marine Corps	MCAS Yuma (Main Base)	Arizona	405
Marine Corps	Marine Corps Base (MCB) Camp Lejeune	North Carolina	406
Marine Corps	MCB Camp Pendleton	California	407
Marine Corps	MCB Quantico	Virginia	408
Marine Corps	Marine Corps Logistics Base (MCLB) Albany	Georgia	409
Marine Corps	MCLB Barstow	California	410
Marine Corps	Marine Corps Mountain Warfare Training Center Bridgeport	California	411

---



Marine Corps	Marine Corps Reserve Center Battle Creek	Michigan	412
Marine Corps	Marine Corps Recruit Depot Parris Island	South Carolina	413
Marine Corps	Marine Corps Support Facility Blount Island	Florida	414
Marine Corps	Townsend Bombing Range	Georgia	415

**Table 4.** Federally listed species (endangered, threatened, similarity of appearance-threatened, candidate) confirmed present on DoD installations in the continental U.S. Species arranged alphabetically by common name. Numbers in second column refer to installation names in Appendix I.

<b>Common Name (Scientific Name)</b>	<b>DoD Installations Confirmed Present</b>
American Alligator ( <i>Alligator mississippiensis</i> )	Army: 20, 21, 46, 50, 66, 84, 92, 94, 96, 115, 120, 132, 138, 139; Air Force: 161, 164, 168, 173, 178, 197, 198, 204, 213, 220, 230, 234, 241, 245; Navy: 279, 280, 282, 283, 284, 286, 299, 300, 301, 343, 344, 346, 359, 364; Marine Corps: 399, 401, 406, 409, 413, 414, 415
American Crocodile ( <i>Crocodylus acutus</i> )	Air Force: 197; Navy: 284
Arroyo Toad ( <i>Anaxyrus californicus</i> )	Army: 81; Navy: 320, 351; Marine Corps: 400, 407
Black Pinesnake ( <i>Pituophis melanoleucus lodingi</i> )	Army: 46
Bog Turtle ( <i>Glyptemys muhlenbergii</i> )	Army: 53; Air Force: 207
Brown Gartersnake ( <i>Thamnophis eques megalops</i> )	Army: 80
California Red-legged Frog ( <i>Rana draytonii</i> )	Army: 45, 119, 129; Air Force: 232, 249; Navy: 384

---

California Tiger Salamander ( <i>Ambystoma californiense</i> )	Army: 81, 119, 129; Air Force: 244
Eastern Indigo Snake ( <i>Drymarchon couperi</i> )	Army: 21, 96; Air Force: 162, 168, 178 (extirpated), 197, 198 (extirpated), 213, 220, 230, 245 (extirpated) Navy: 282, 359
Eastern Massasauga ( <i>Sistrurus catenatus catenatus</i> )	Army: 32
Frosted Flatwoods Salamander ( <i>Ambystoma cingulatum</i> )	Army: 96; Marine Corps: 415
Gopher Tortoise ( <i>Gopherus polyphemus</i> )	Army: 21, 46, 66, 78, 94, 96; Air Force: 162, 168, 178, 198, 213, 220, 230, 245; Navy: 279, 280, 299, 300, 301, 306, 313, 343, 346, 359; Marine Corps: 409, 413, 414
Green Sea Turtle ( <i>Chelonia mydas</i> )	Air Force: 168, 178, 213, 230, 245; Navy: 322, 343; Marine Corps: 406, 407
Kemp's Ridley Sea Turtle ( <i>Lepidochelys kempii</i> )	Air Force: 168, 178, 213, 245; Navy: 292, 295, 296
Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	Air Force: 168, 178, 213, 230, 245, 249; Navy: 295, 343; Marine Corps: 407
Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	Air Force: 168, 178, 213, 230, 245; Navy: 255, 284, 292, 295, 296, 297, 299, 300, 343; Marine Corps: 406, 407
Louisiana Pinesnake ( <i>Pituophis ruthveni</i> )	Army: 92
Mohave Desert Tortoise ( <i>Gopherus agassizii</i> )	Army: 63, 83; Air Force: 177, 255; Navy: 363; Marine Corps: 398, 403, 410
Olive Ridley Sea Turtle ( <i>Lepidochelys olivacea</i> )	Marine Corps: 407 (stranding event)
Oregon Spotted Frog ( <i>Rana pretiosa</i> )	Army: 106
Reticulated Flatwoods Salamander ( <i>Ambystoma bishop</i> )	Air Force: 178, 198; Navy: 313
Ringed Map Turtle	Navy: 364

---

---

<i>(Graptemys oculifera)</i>	
Sierra Nevada Yellow-legged Frog	Marine Corps: 411
<i>(Rana sierra)</i>	
Sonoran Tiger Salamander	Army: 80
<i>(Ambystoma mavortium stebbinsi)</i>	
Striped Newt	Army: 21, 96
<i>(Notophthalmus perstriatus)</i>	
Yosemite Toad	Marine Corps: 411
<i>(Anaxyrus canorus)</i>	

---

**Table 5.** State-listed endangered and threatened species confirmed present on DoD installations in the continental U.S. DoD installations reported are those only where a species/subspecies is confirmed present and State-endangered or –threatened. Species arranged alphabetically by common name. Numbers in second column refer to installation names in Appendix I.

---

<b>Common Name (Scientific Name)</b>	<b>DoD Installations Confirmed Present</b>
Alligator Snapping Turtle	Army: 138
<i>(Macrochelys temminckii)</i>	
American Alligator	Army: 84, 115, 120; Air Force: 173, 204, 241; Marine
<i>(Alligator mississippiensis)</i>	Corps: 399, 401, 406, 413
American Crocodile	Air Force: 197; Navy: 284
<i>(Crocodylus acutus)</i>	
Barbour's Map Turtle	Army: 66
<i>(Graptemys barbouri)</i>	
Black Pinesnake	Army: 46
<i>(Pituophis melanoleucus lodingi)</i>	
Blanchard's Cricket Frog	Army: 73
<i>(Acris blanchardi)</i>	
Blanding's Turtle	Army: 4, 56, 76, 125; Air Force: 226
<i>(Emydoidea blandingii)</i>	
Bog Turtle	Army: 53; Air Force: 207

---

---

<i>(Glyptemys muhlenbergii)</i>	
California Tiger Salamander	Army: 81, 119, 129; Air Force: 244
<i>(Ambystoma californiense)</i>	
Cascade Caverns Salamander	Air Force: 202
<i>(Eurycea latitans)</i>	
Crawfish Frog	Air Force: 200
<i>(Lithobates areolatus)</i>	
Eastern Cricket Frog	Army: 110
<i>(Acris crepitans)</i>	
Eastern Diamond-backed Rattlesnake	Marine Corps: 406
<i>(Crotalus adamanteus)</i>	
Eastern Hog-nosed Snake	Army: 130; Air Force: 226
<i>(Heterodon platirhinos)</i>	
Eastern Indigo Snake	Army: 21, 96; Air Force: 162, 168, 197, 213, 220; Navy: 282, 359
<i>(Drymarchon couperi)</i>	
Eastern Narrow-mouthed Toad	Navy: 296
<i>(Gastrophryne carolinensis)</i>	
Eastern Spadefoot	Army: 110
<i>(Scaphiopus holbrookii)</i>	
Eastern Tiger Salamander	Army: 68
<i>(Ambystoma tigrinum )</i>	
Florida Bog Frog	Air Force: 178; Navy: 301
<i>(Lithobates okaloosae)</i>	
Florida Brownsnake	Navy: 284
<i>(Storeria victa)</i>	
Florida Pinesnake	Army: 21; Air Force: 162, 168
<i>(Pituophis melanoleucus mugitus)</i>	
Frosted Flatwoods Salamander	Army: 96; Marine Corps: 415
<i>(Ambystoma cingulatum)</i>	
Gopher Frog	Army: 68, 115, 120; Air Force: 241; Marine Corps: 406

---

---

<i>(Lithobates capito)</i>	
Gopher Tortoise	Army: 21, 46, 66, 78, 96; Air Force: 162, 168, 178, 198,
<i>(Gopherus polyphemus)</i>	213, 220, 230, 245; Navy: 279, 280, 299, 300, 301, 306,
	313, 343, 346, 359; Marine Corps: 409, 413, 414
Green Sea Turtle	Air Force: 168, 178, 213, 230, 245; Navy: 343; Marine
<i>(Chelonia mydas)</i>	Corps: 406
Harlequin Coralsnake	Marine Corps: 406
<i>(Micrurus fulvius)</i>	
Hellbender	Army: 88
<i>(Cryptobranchus alleganiensis)</i>	
Kemp's Ridley Sea Turtle	Air Force: 168, 178, 213, 245; Navy: 292, 295, 296
<i>(Lepidochelys kempii)</i>	
Kirtland's Snake	Army: 200
<i>(Clonophis kirtlandii)</i>	
Leatherback Sea Turtle	Air Force: 168, 178, 213, 230, 245; Navy: 295, 343
<i>(Dermochelys coriacea)</i>	
Lesser Siren	Army: 36
<i>(Siren intermedia)</i>	
Loggerhead Sea Turtle	Air Force: 168, 178, 213, 230, 245; Navy: 255, 284, 292,
<i>(Caretta caretta)</i>	295, 296, 297, 299, 300, 343; Marine Corps: 406
Mabee's Salamander	Navy: 393
<i>(Ambystoma mabeei)</i>	
Northern Leopard Frog	Air Force: 185
<i>(Lithobates pipiens)</i>	
Northern Pinesnake	Army: 151; Air Force: 161, 207, 250
<i>(Pituophis melanoleucus</i>	
<i>melanoleucus)</i>	
Northern Red-bellied Cooter	Army: 82
<i>(Pseudemys rubriventris)</i>	
Oregon Spotted Frog	Army: 106
<i>(Rana pretiosa)</i>	

---

---

Ornate Box Turtle ( <i>Terrapene ornate</i> )	Army: 104
Pine Barrens Treefrog ( <i>Hyla andersonii</i> )	Air Force: 207, 250; Navy: 390
Rainbow Snake ( <i>Farancia erythrogramma</i> )	Air Force: 172
Red Cornsnake ( <i>Pantherophis guttatus</i> )	Air Force: 207
Reticulate Collared Lizard ( <i>Crotaphytus reticulatus</i> )	Navy: 286
Reticulated Flatwoods Salamander ( <i>Ambystoma bishop</i> )	Air Force: 178, 198; Navy: 313
Ringed Map Turtle ( <i>Graptemys oculifera</i> )	Navy: 364
Short-tailed Kingsnake ( <i>Lampropeltis extenuata</i> )	Air Force: 162
Sierra Nevada Yellow-legged Frog ( <i>Rana sierra</i> )	Marine Corps: 411
Smooth Greensnake ( <i>Opheodrys ventralis</i> )	Army: 42; Air Force: 253
Southern Hog-nosed Snake ( <i>Heterodon simus</i> )	Army: 66, 78, 96, 115; Air Force: 220, 241
Spotted Turtle ( <i>Clemmys guttata</i> )	Air Force: 226; Marine Corps: 399
Striped Newt ( <i>Notophthalmus perstriatus</i> )	Army: 96
Texas Horned Lizard ( <i>Phrynosoma cornutum</i> )	Army: 22, 35, 36, 79, 97; Air Force: 176, 188, 203, 209, 242; Navy: 286
Texas Lyresnake ( <i>Trimorphodon vilkinsonii</i> )	Army: 67
Texas Tortoise	Air Force: 202, 209; Navy: 265, 285, 286

---

---

<i>(Gopherus berlandieri)</i>	
Timber Rattlesnake	Army: 131, 154; Air Force: 207, 250; Navy: 294, 378,
<i>(Crotalus horridus)</i>	385; Marine Corps: 408
Wood Turtle	Army: 65, 90, 99, 131
<i>(Glyptemys insculpta)</i>	

---

**Table 6.** At-risk species/subspecies confirmed present on DoD installations in the continental U.S. Species arranged by NatureServe status and alphabetically by common name. Numbers in third column refer to installation names in Appendix I.

---

<b>Common Name (Scientific Name)</b>	<b>NatureServe Status</b>	<b>DoD Installations Confirmed Present</b>
Black-spotted Newt <i>(Notophthalmus meridionalis)</i>	G1/T1	Navy: 286
Kemp's Ridley Sea Turtle <i>(Lepidochelys kempii)</i>	G1/T1	Air Force: 168, 178, 213, 245; Navy: 292, 295, 296
San Clemente Night Lizard <i>(Xantusia riversiana reticulata)</i>	G1/T1	Navy: 321
San Nicolas Night Lizard <i>(Xantusia riversiana riversiana)</i>	G1/T1	Navy: 357
Sonoran Tiger Salamander <i>(Ambystoma mavortium stebbinsi)</i>	G1/T1	Army: 80
Texas Salamander <i>(Eurycea neotenes)</i>	G1/T1	Army: 202
American Crocodile <i>(Crocodylus acutus)</i>	G2/T2	Air Force: 197; Navy: 284
Arroyo Toad <i>(Anaxyrus californicus)</i>	G2/T2	Army: 81; Navy: 320, 351; Marine Corps: 400, 407
Barbour's Map Turtle <i>(Graptemys barbouri)</i>	G2/T2	Army: 66
Black Pinesnake <i>(Pituophis melanoleucus lodingi)</i>	G2/T2	Army: 46

---



---

California Red-legged Frog ( <i>Rana draytoni</i> )	G2/T2	Army: 45, 119, 129; Air Force: 232, 249; Navy: 384
California Tiger Salamander ( <i>Ambystoma californiense</i> )	G2/T2	Army: 81, 119, 129; Air Force: 244
Colorado Checkered Whiptail ( <i>Aspidoscelis neotesselata</i> )	G2/T2	Army: 70, 71
Escambia Map Turtle ( <i>Graptemys ernsti</i> )	G2/T2	Navy: 299, 300, 301
Florida Bog Frog ( <i>Lithobates okaloosae</i> )	G2/T2	Air Force: 178; Navy: 301
Florida Scrub Lizard ( <i>Sceloporus woodi</i> )	G2/T2	Air Force: 162
Frosted Flatwoods Salamander ( <i>Ambystoma cingulatum</i> )	G2/T2	Army: 96; Marine Corps: 415
Kirtland's Snake ( <i>Clonophis kirtlandii</i> )	G2/T2	Army: 85, 200
Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	G2/T2	Air Force: 168, 178, 213, 230, 245, 249; Navy: 295, 343; Marine Corps: 407
Louisiana Pinesnake ( <i>Pituophis ruthveni</i> )	G2/T2	Army: 92
Neuse River Waterdog ( <i>Necturus lewisi</i> )	G2/T2	Marine Corps: 401
Oregon Spotted Frog ( <i>Rana pretiosa</i> )	G2/T2	Army: 106
Pearl River Map Turtle ( <i>Graptemys pearlensis</i> )	G2/T2	Navy: 364
Reticulated Flatwoods Salamander ( <i>Ambystoma bishopi</i> )	G2/T2	Air Force: 178, 198; Navy: 313
San Bernardino Ring-necked Snake ( <i>Diadophis punctatus modestus</i> )	G2/T2	Air Force: 215; Navy: 355
San Joaquin Coachwhip	G2/T2	Army: 44, 81

---

---

<i>(Coluber flagellum ruddocki)</i>		
Sierra Nevada Yellow-legged Frog <i>(Rana sierra)</i>	G2/T2	Marine Corps: 411
Southern Hog-nosed Snake <i>(Heterodon simus)</i>	G2/T2	Army: 66, 68, 78, 96, 115; Air Force: 220, 241; Navy: 299, 300, 301; Marine Corps: 406
Striped Newt <i>(Notophthalmus perstriatus)</i>	G2/T2	Army: 21, 96
Yosemite Toad <i>(Anaxyrus anorus)</i>	G2/T2	Marine Corps: 411
Alligator Snapping Turtle <i>(Macrochelys temminckii)</i>	G3/T3	Army: 66, 72, 92, 138, 140; Air Force: 164, 210, 220, 245; Navy: 283, 299, 300, 301, 306, 364
Arizona Toad <i>(Anaxyrus microscaphus)</i>	G3/T3	Army: 40
Blainville's Horned Lizard <i>(Phrynosoma blainvillii)</i>	G3/T3	Army: 44, 81; Air Force: 249; Navy: 316, 317, 318, 319, 320, 351; Marine Corps: 402, 407
Bog Turtle <i>(Glyptemys muhlenbergii)</i>	G3/T3	Army: 53; Air Force: 207
Brown Gartersnake <i>(Thamnophis eques megalops)</i>	G3/T3	Army: 80
California Legless Lizard <i>(Anniella pulchra)</i>	G3/T3	Army: 44, 45, 81, 129, 134; Air Force: 249; Navy: 288, 352, 355, 356, 363, 380
Cascade Caverns Salamander <i>(Eurycea latitans)</i>	G3/T3	Air Force: 202
Cascades Frog <i>(Rana cascadae)</i>	G3/T3	Navy: 371
Colorado Desert Fringe-toed Lizard <i>(Uma notata)</i>	G3/T3	Navy: 260, 261, 262, 263, 264; Marine Corps: 403
Desert Massasauga	G3/T3	Army: 155; Air Force: 196, 208

---

---

<i>(Sistrurus catenatus edwardsii)</i>		
Eastern Hellbender	G3/T3	Army: 69, 88
<i>(Cryptobranchus alleganiensis alleganiensis)</i>		
Eastern Indigo Snake	G3/T3	Army: 21, 96; Air Force: 162, 168, 178
<i>(Drymarchon couperi)</i>		(extirpated), 197, 198 (extirpated), 213, 220, 230, 245 (extirpated) Navy: 282, 359
Eastern Massasauga	G3/T3	Army: 32
<i>(Sistrurus catenatus catenatus)</i>		
Flat-tailed Horned Lizard	G3/T3	Navy: 260, 261, 262; Marine Corps: 403
<i>(Phrynosoma mcallii)</i>		
Florida Pinesnake	G3/T3	Army: 21, 66, 78, 94; Air Force: 162, 168;
<i>(Pituophis melanoleucus mugitus)</i>		Marine Corps: 415
Florida Worm Lizard	G3/T3	Air Force: 162
<i>(Rhineura floridana)</i>		
Foothill Yellow-legged Frog	G3/T3	Army: 81
<i>(Rana boylei)</i>		
Goode's Horned Lizard	G3/T3	Marine Corps: 403
<i>(Phrynosoma goodei)</i>		
Gopher Frog	G3/T3	Army: 21, 66, 68, 96, 115, 120, 151; Air
<i>(Lithobates capito)</i>		Force: 162, 168, 178, 213, 241; Navy: 301, 313; Marine Corps: 406
Gopher Tortoise	G3/T3	Army: 21, 46, 66, 78, 94, 96; Air Force:
<i>(Gopherus polyphemus)</i>		162, 168, 178, 198, 213, 220, 230, 245; Navy: 279, 280, 299, 300, 301, 306, 313, 343, 346, 359; Marine Corps: 409, 413, 414
Green Salamander	G3/T3	Army: 139
<i>(Aneides aeneus)</i>		
Green Sea Turtle	G3/T3	Air Force: 168, 178, 213, 230, 245; Navy:
<i>(Chelonia mydas)</i>		322, 343; Marine Corps: 406, 407

---

---

Gulf Saltmarsh Watersnake ( <i>Nerodia clarkii clarkii</i> )	G3/T3	Air Force: 245
Island Glass Lizard ( <i>Ophisaurus compressus</i> )	G3/T3	Army: 96; Air Force: 162
Loggerhead Sea Turtle ( <i>Caretta caretta</i> )	G3/T3	Air Force: 168, 178, 213, 230, 245; Navy: 255, 284, 292, 295, 296, 297, 299, 300, 343; Marine Corps: 406, 407
Louisiana Slimy Salamander ( <i>Plethodon kisatchie</i> )	G3/T3	Army: 20
Mimic Glass Lizard ( <i>Ophisaurus mimicus</i> )	G3/T3	Army: 96; Air Force: 178; Navy: 301, 313
Mohave Desert Tortoise ( <i>Gopherus agassizii</i> )	G3/T3	Army: 63, 83; Air Force: 177, 225; Navy: 363; Marine Corps: 398, 403, 410
Mohave Fringe-toed Lizard ( <i>Uma scoparia</i> )	G3/T3	Army: 83, 157; Marine Corps: 398, 410
Olive Ridley Sea Turtle ( <i>Lepidochelys olivacea</i> )	G3/T3	Marine Corps: 407
One-toed Amphiuma ( <i>Amphiuma pholeter</i> )	G3/T3	Air Force: 178
Panamint Alligator Lizard ( <i>Elgaria panamintina</i> )	G3/T3	Navy: 363
Reticulate Collared Lizard ( <i>Crotaphytus reticulatus</i> )	G3/T3	Navy: 286
Short-tailed Kingsnake ( <i>Lampropeltis extenuata</i> )	G3/T3	Air Force: 162
Spot-tailed Earless Lizard ( <i>Holbrookia lacerata</i> )	G3/T3	Air Force: 209
Western Massasauga ( <i>Sistrurus catenatus tergeminus</i> )	G3/T3	Army: 196, 208; Air Force: 95, 108, 155
Western Pond Turtle ( <i>Actinemys marmorata</i> )	G3/T3	Army: 44, 45, 81, 119; Air Force: 165, 177, 244, 249; Navy: 320, 351, 355;

---

Western Spadefoot ( <i>Spea hammondi</i> )	G3/T3	Marine Corps: 407 Army: 44, 80, 81; Air Force: 249; Navy: 288, 320, 351; Marine Corps: 400, 402, 407
Wood Turtle ( <i>Glyptemys insculpta</i> )	G3/T3	Army: 32, 56, 65, 76, 82, 90, 99, 110, 130, 131, 154; Air Force: 226
Yuman Desert Fringe-toed Lizard ( <i>Uma rufopunctata</i> )	G3/T3	Air Force: 211; Marine Corps: 403

**Table 7.** Non-native and native transplant amphibian and reptile species confirmed and unconfirmed on DoD installations in the continental U.S. Species arranged alphabetically by common name. Confirmed and potential locations for native transplant species only include those installations where species were outside their natural range. Numbers in the second and third columns refer to installation names in Appendix I.

Common Name (Scientific Name)	Confirmed Location/s	Unconfirmed Location/s
African Clawed Frog ( <i>Xenopus laevis</i> )	<u>Air Force</u> : 177; <u>Marine Corps</u> : 402; <u>Navy</u> : 319, 336, 355, 356	<u>Air Force</u> : 174, 235; <u>Navy</u> : 338, 351
American Bullfrog ( <i>Lithobates catesbeianus</i> )	<u>Air Force</u> : 165, 177, 210, 244, 249; <u>Army</u> : 34, 40, 44, 45, 60, 70, 71, 80, 81, 106, 127, 128, 156; <u>Marine Corps</u> : 402, 407, 410; <u>Navy</u> : 259, 270, 272, 274, 288, 319, 320, 326, 336, 351, 353, 363	<u>Air Force</u> : 166, 171, 174, 182, 193, 194, 212, 215, 225, 231, 232, 235, 236, 246; <u>Army</u> : 16, 39, 51, 62, 67, 102, 119, 123, 126, 129, 134, 135, 143, 157; <u>Marine Corps</u> : 398, 400, 403; <u>Navy</u> : 258, 273, 275, 277, 302, 316, 317, 324, 325, 327, 328, 329, 330, 331, 338, 339, 349, 350, 352, 355, 370, 371
Argentine Giant Tegu ( <i>Tupinambis meriana</i> )	<u>Air Force</u> : 197	

---

Bark Anole ( <i>Anolis distichus</i> )	<u>Air Force: 197</u>	
Barred Tiger Salamander ( <i>Ambystoma mavortium</i> <i>mavortium</i> )	<u>Army: 81</u>	<u>Army: 134</u>
Boa Constrictor ( <i>Boa constrictor</i> )	<u>Marine Corps: 413</u> (pet release)	<u>Air Force: 168, 230</u>
Brahminy Blindsnake ( <i>Ramphotyphlops braminus</i> )	<u>Air Force: 197; Navy: 284</u>	<u>Marine Corps: 409; Navy: 299,</u> <u>300, 310</u>
Brown Anole ( <i>Anolis sagrei</i> )	<u>Air Force: 162, 168, 178, 197,</u> <u>230; Army: 21, 145; Marine</u> <u>Corps: 414; Navy: 279, 283,</u> <u>343, 344</u>	<u>Air Force: 198, 199, 203, 245;</u> <u>Army: 35, 50, 96; Marine</u> <u>Corps: 409; Navy: 280, 282,</u> <u>285, 342, 345, 346, 359, 386</u>
Brown Basilisk ( <i>Basiliscus vittatus</i> )	<u>Air Force: 197</u>	
Burmese Python ( <i>Python molurus bivittatus</i> )	<u>Air Force: 197</u>	
Cane Toad ( <i>Rhinella marina</i> )	<u>Air Force: 162, 197</u>	<u>Air Force: 245; Navy: 284;</u>
Coqui ( <i>Eleutherodactylus coqui</i> )		<u>Air Force: 197</u>
Cuban Treefrog ( <i>Osteopilus septentrionalis</i> )	<u>Air Force: 162, 168, 197, 213;</u> <u>Marine Corps: 414</u>	<u>Air Force: 199, 230, 245;</u> <u>Army: 21, 96; Navy: 279, 280,</u> <u>282, 284, 342, 343, 344, 345,</u> <u>346, 386</u>
Green Iguana ( <i>Iguana iguana</i> )	<u>Air Force: 197; Navy: 284</u>	
Greenhouse Frog ( <i>Eleutherodactylus</i> <i>planirostris</i> )	<u>Air Force: 162, 168, 178, 197,</u> <u>213, 230; Army: 21; Marine</u> <u>Corps: 414; Navy: 280, 283,</u> <u>284</u>	<u>Air Force: 198, 199, 245;</u> <u>Army: 50, 96; Marine Corps:</u> <u>399, 409, 415; Navy: 279, 282,</u> <u>312, 342, 343, 344, 345, 346,</u>

---

---

Indo-Pacific House Gecko ( <i>Hemidactylus garnotii</i> )	<u>Air Force</u> : 162, 197, 213	359, 386 <u>Air Force</u> : 199; <u>Marine Corps</u> : 414; <u>Navy</u> : 280, 282, 342, 343, 344, 345, 386
Knight Anole ( <i>Anolis equestris</i> )	<u>Air Force</u> : 197	<u>Air Force</u> : 168, 230
Mediterranean Gecko ( <i>Hemidactylus turcicus</i> )	<u>Air Force</u> : 168, 178, 197, 203, 225, 242, 243; <u>Army</u> : 36, 46, 49, 62, 79, 92, 155, 157; <u>Marine Corps</u> : 409, 413; <u>Navy</u> : 256, 279, 283, 286, 301, 344	<u>Air Force</u> : 162, 164, 174, 175, 176, 177, 188, 198, 199, 204, 209, 211, 216, 220; <u>Army</u> : 16, 20, 21, 22, 35, 63, 67, 96, 132, 138; <u>Marine Corps</u> : 403, 404, 405, 410, 414, 415; <u>Navy</u> : 266, 268, 269, 279, 280, 282, 285, 287, 298, 299, 300, 310, 312, 342, 343, 345, 346, 359, 374, 375
Mudpuppy ( <i>Necturus maculosus</i> )		<u>Army</u> : 100
Nile Monitor ( <i>Varanus niloticus</i> )	<u>Air Force</u> : 197	
Northern Leopard Frog ( <i>Lithobates pipiens</i> )		<u>Marine Corps</u> : 411
Puerto Rican Crested Anole ( <i>Anolis cristatellus cristatellus</i> )	<u>Air Force</u> : 197	
Red-eared Slider ( <i>Trachemys scripta elegans</i> )	<u>Air Force</u> : 165, 177, 197, 206, 249, 253; <u>Army</u> : 1, 65, 73, 81, 82, 87, 122, 154; <u>Marine Corps</u> : 402, 407; <u>Navy</u> : 256, 279, 296, 319, 351, 352, 353, 355, 356, 382, 385, 386, 388,	<u>Air Force</u> : 168, 169, 174, 190, 199, 201, 207, 208, 212, 227, 229, 230, 232, 233, 235, 238, 239, 240, 244, 245, 250, 251; <u>Army</u> : 2, 11, 17, 29, 39, 44, 45, 48, 56, 57, 67, 74, 77, 80,

---



---

	392, 393	106, 119, 120, 129, 131, 134, 141; <u>Marine Corps</u> : 400, 401, 406, 408; <u>Navy</u> : 255, 257, 258, 279, 280, 294, 295, 297, 315, 336, 346, 367, 368, 369, 375, 376, 387, 390
Reef Gecko ( <i>Sphaerodactylus notatus</i> )		<u>Air Force</u> : 160, 187, 225
Rio Grande Chirping Frog ( <i>Eleutherodactylus cystignathoides</i> )	<u>Army</u> : 49	<u>Army</u> : 22
Rio Grande Leopard Frog ( <i>Lithobates berlandieri</i> )		<u>Air Force</u> : 212; <u>Army</u> : 35, 49, 157; <u>Marine Corps</u> : 403, 404; <u>Navy</u> : 259, 260, 262
Rough-tailed Gecko ( <i>Cyrtopodion scabrum</i> )	<u>Air Force</u> : 211, 225	<u>Army</u> : 62; <u>Marine Corps</u> : 405
San Diego Alligator Lizard ( <i>Elgaria multicarinata webbii</i> )	<u>Navy</u> : 357	
Snapping Turtle ( <i>Chelydra serpentina</i> )	<u>Marine Corps</u> : 407	<u>Air Force</u> : 212; <u>Army</u> : 45
Spectacled Caiman ( <i>Caiman crocodilus</i> )	<u>Air Force</u> : 197	
Spiny Softshell ( <i>Apalone spinifera</i> )	<u>Air Force</u> : 165; <u>Marine Corps</u> : 407; <u>Navy</u> : 350	<u>Air Force</u> : 174, 207, 212, 249, 250; <u>Marine Corps</u> : 403; <u>Navy</u> : 259, 391
Texas Horned Lizard ( <i>Phrynosoma cornutum</i> )		<u>Air Force</u> : 178, 199; <u>Marine Corps</u> : 414; <u>Navy</u> : 279, 280, 282, 299, 300, 301, 310, 312, 342, 343, 344, 345
West African Rainbow	<u>Air Force</u> : 197	

---

---

Lizard ( <i>Agama agama africana</i> )		
Western Painted Turtle ( <i>Chrysemys picta bellii</i> )	<u>Air Force: 177</u>	<u>Marine Corps: 402, 407; Navy: 351</u>
Wood Slave ( <i>Hemidactylus mabouia</i> )	<u>Air Force: 197, 230</u>	
Yellow-bellied Slider ( <i>Trachemys scripta scripta</i> )	<u>Army: 82; Marine Corps: 407</u>	

---

**Table 8.** Venomous reptile species confirmed and unconfirmed on DoD installations in the continental U.S. Species arranged alphabetically by common name. Numbers in the second and third columns refer to installation names in Appendix I.

<b>Common Name (Scientific Name)</b>	<b>Confirmed Location/s</b>	<b>Unconfirmed Location/s</b>
Arizona Black Rattlesnake ( <i>Crotalus cerberus</i> )	<u>Navy: 340</u>	<u>Army: 40</u>
Banded Gila Monster ( <i>Heloderma suspectum cinctum</i> )	<u>Air Force: 174, 187, 211; Army: 62, 80, 157; Marine Corps: 403</u>	<u>Air Force: 212, 225; Army: 16, 63, 67; Marine Corps: 404</u>
Black-tailed Rattlesnake ( <i>Crotalus molossus</i> )	<u>Air Force: 208, 211; Army: 16, 67, 80, 155; Marine Corps: 403</u>	<u>Air Force: 187, 196, 202, 203, 209, 212; Army: 17, 40, 62, 157</u>
Copperhead ( <i>Agkistrodon contortrix</i> )	<u>Air Force: 161, 164, 172, 173, 200, 203, 204, 210, 234, 241, 242; Army: 1, 19, 20, 33, 36, 37, 46, 49, 50, 55, 64, 65, 66, 68, 69, 72, 78, 79, 82, 84, 85, 86, 87, 88, 89, 92, 93, 94, 95, 96, 97, 110, 114, 115, 117, 118, 131, 136, 137, 138, 139, 140, 151, 152, 154; Marine Corps: 399, 401, 406, 408; Navy: 255, 283, 289, 290, 291, 293, 294, 296, 297, 299, 300, 347, 348, 368, 374, 378, 379, 385, 388, 392, 393</u>	<u>Air Force: 175, 176, 178, 188, 198, 201, 209, 216, 218, 233, 239, 242, 251, 252; Army: 3, 11, 12, 22, 24, 25, 27, 35, 38, 47, 48, 57, 61, 77, 105, 120, 122, 132, 144; Marine Corps: 409, 415; Navy: 256, 267, 292, 295, 307, 310, 312, 360, 361, 362, 367, 369, 375, 376, 387, 394</u>

---

---

Cottonmouth ( <i>Agkistrodon piscivorus</i> )	<u>Air Force</u> : 162, 164, 168, 172, 173, 178, 197, 198, 204, 210, 220, 234, 241, 242; <u>Army</u> : 20, 21, 33, 36, 37, 46, 50, 66, 68, 72, 78, 84, 87, 88, 89, 92, 94, 95, 96, 97, 114, 115, 117, 120, 138, 139, 140; <u>Marine Corps</u> : 399, 401, 406, 409, 415; <u>Navy</u> : 255, 279, 283, 284, 289, 290, 291, 292, 293, 294, 299, 300, 301, 306, 346, 359, 364, 374, 379, 386	<u>Air Force</u> : 175, 188, 199, 203, 213, 216, 218, 230, 233, 239; <u>Army</u> : 3, 22, 35, 38, 49, 118, 132, 152; <u>Marine Corps</u> : 414; <u>Navy</u> : 256, 265, 266, 267, 268, 269, 280, 282, 307, 308, 309, 310, 311, 312, 313, 314, 342, 343, 344, 345, 375, 385, 392, 393
Eastern Diamond-backed Rattlesnake ( <i>Crotalus adamanteus</i> )	<u>Air Force</u> : 162, 168, 178, 198, 204, 213, 230; <u>Army</u> : 21, 46, 66, 94, 96; <u>Marine Corps</u> : 399, 406, 409, 413, 414, 415; <u>Navy</u> : 279, 281, 284, 299, 300, 301, 313, 344, 359	<u>Air Force</u> : 197, 199, 220, 239, 245; <u>Army</u> : 120; <u>Marine Corps</u> : 401; <u>Navy</u> : 279, 280, 282, 306, 307, 308, 309, 310, 311, 312, 313, 314, 342, 343, 345, 346, 386
Harlequin Coralsnake ( <i>Micrurus fulvius</i> )	<u>Air Force</u> : 162, 168, 197, 204, 220; <u>Army</u> : 21, 46, 66, 94, 96; <u>Marine Corps</u> : 406; <u>Navy</u> : 313	<u>Air Force</u> : 178, 198, 199, 213, 218, 230, 233, 239, 241, 245; <u>Army</u> : 3, 50, 68, 78, 84, 89, 115, 120; <u>Marine Corps</u> : 399, 409, 413, 414, 415; <u>Navy</u> : 279, 280, 282, 299, 300, 301, 306, 307, 308, 309, 310, 311, 312, 314, 342, 344, 345, 346
Massasauga ( <i>Sistrurus catenatus</i> )	<u>Air Force</u> : 196, 208; <u>Army</u> : 32, 95, 108, 155	<u>Air Force</u> : 171, 188, 217, 228, 231, 236, 238, 242, 246, 253; <u>Army</u> : 22, 67, 70, 73, 90, 93, 97, 105, 135; <u>Navy</u> : 267, 285
Mohave Rattlesnake ( <i>Crotalus scutulatus</i> )	<u>Air Force</u> : 174, 177, 211, 225; <u>Army</u> : 62, 67, 80, 83, 157; <u>Marine Corps</u> : 398, 403, 410; <u>Navy</u> : 363	<u>Air Force</u> : 187, 196, 212; <u>Army</u> : 16, 63; <u>Marine Corps</u> : 405
Panamint Rattlesnake ( <i>Crotalus stephensi</i> )	<u>Army</u> : 102; <u>Navy</u> : 363	<u>Air Force</u> : 225; <u>Army</u> : 63; <u>Navy</u> : 317
Prairie Rattlesnake ( <i>Crotalus viridis</i> )	<u>Air Force</u> : 167, 181, 185, 196, 208, 214, 231, 246; <u>Army</u> : 34, 67, 70, 71, 111, 112, 142, 155	<u>Air Force</u> : 166, 171, 176, 182, 186, 187, 188, 236, 242; <u>Army</u> : 17, 98, 109, 135, 153
Pygmy Rattlesnake ( <i>Sistrurus miliarius</i> )	<u>Air Force</u> : 162, 168, 178, 197, 198, 213; <u>Army</u> : 21, 33, 46, 50, 66, 68, 78, 84, 92, 96, 115;	<u>Air Force</u> : 242; <u>Army</u> : 3, 20, 38, 72, 89, 94, 105, 114, 120, 132, 139, 140; <u>Marine Corps</u> :

---

---

	<u>Marine Corps: 401, 406, 415;</u>	<u>399, 409, 414; Navy: 280,</u>
	<u>Navy: 299, 300, 301, 343, 359,</u>	<u>282, 283, 289, 290, 291, 306,</u>
	<u>386</u>	<u>307, 308, 309, 310, 311, 312,</u>
		<u>313, 314, 342, 343, 344, 346</u>
Red Diamond Rattlesnake ( <i>Crotalus ruber</i> )	<u>Air Force: 215; Marine Corps:</u> <u>400, 402, 407; Navy: 317, 320,</u> <u>336, 351</u>	<u>Navy: 316</u>
Ridge-nosed Rattlesnake ( <i>Crotalus willardi</i> )	<u>Army: 80</u>	
Rock Rattlesnake ( <i>Crotalus lepidus</i> )	<u>Army: 67, 80, 155</u>	<u>Air Force: 196, 209</u>
Sidewinder ( <i>Crotalus cerastes</i> )	<u>Air Force: 177, 211, 225;</u> <u>Army: 16, 62, 83, 157; Marine</u> <u>Corps: 398, 403, 404, 410;</u> <u>Navy: 260, 261, 262, 263, 264</u>	<u>Air Force: 187, 212; Army: 63;</u> <u>Marine Corps: 405; Navy: 259</u>
Sonoran Coralsnake ( <i>Micruroides euryxanthus</i> )	<u>Air Force: 187, 211; Army: 62,</u> <u>80, 157</u>	<u>Air Force: 174, 212; Army: 16;</u> <u>Marine Corps: 403, 405</u>
Speckled Rattlesnake ( <i>Crotalus mitchellii</i> )	<u>Air Force: 211; Army: 16, 83,</u> <u>157; Marine Corps: 398, 400,</u> <u>402, 403, 407, 410; Navy: 316,</u> <u>320, 351</u>	<u>Air Force: 177, 212, 225;</u> <u>Army: 63, 102; Marine Corps:</u> <u>404; Navy: 261</u>
Texas Coralsnake ( <i>Micrurus tener</i> )	<u>Air Force: 202, 203, 209;</u> <u>Army: 20, 79, 92; Navy: 265,</u> <u>285</u>	<u>Air Force: 164; Army: 36, 38,</u> <u>49, 97; Navy: 266, 267, 268,</u> <u>269, 285, 286, 287</u>
Tiger Rattlesnake ( <i>Crotalus tigris</i> )	<u>Air Force: 211; Army: 62</u>	<u>Air Force: 187, 212; Army: 16</u>
Timber Rattlesnake ( <i>Crotalus horridus</i> )	<u>Air Force: 172, 173, 207, 220,</u> <u>234, 241, 250; Army: 33, 66,</u> <u>68, 69, 78, 82, 84, 85, 86, 89,</u> <u>92, 93, 94, 96, 110, 115, 131,</u> <u>139, 154; Marine Corps: 399,</u> <u>406, 408, 415; Navy: 283, 289,</u> <u>290, 291, 294, 359, 378, 385</u>	<u>Air Force: 164, 175, 178, 199,</u> <u>203, 204, 210, 216, 218, 233,</u> <u>239, 252; Army: 3, 20, 21, 23,</u> <u>36, 37, 38, 46, 48, 49, 72, 75,</u> <u>79, 88, 90, 114, 120, 122, 132,</u> <u>140, 150; Marine Corps: 401,</u> <u>409; Navy: 267, 279, 280, 281,</u> <u>307, 312, 342, 343, 344, 345,</u> <u>394</u>
Twin-spotted Rattlesnake ( <i>Crotalus pricei</i> )	<u>Army: 80</u>	
Western Diamond-backed Rattlesnake ( <i>Crotalus atrox</i> )	<u>Air Force: 160, 174, 176, 188,</u> <u>196, 203, 208, 209, 211, 242;</u> <u>Army: 16, 22, 33, 35, 49, 62,</u> <u>67, 79, 80, 95, 97, 114, 155,</u>	<u>Air Force: 187; Army: 17, 72;</u> <u>Marine Corps: 405; Navy: 260,</u> <u>261, 262, 266, 267, 268</u>

---

---

Western Rattlesnake ( <i>Crotalus oreganus</i> )	<p>157; <u>Marine Corps</u>: 403, 404;  <u>Navy</u>: 259, 263, 264, 265, 269,  285, 286, 287</p> <p><u>Air Force</u>: 165, 193, 215, 221,  222, 223, 224, 225, 235, 244,  249; <u>Army</u>: 10, 44, 51, 60, 81,  102, 126, 148, 149, 156;  <u>Marine Corps</u>: 400, 402, 407;  <u>Navy</u>: 271, 272, 273, 275, 277,  278, 288, 316, 317, 319, 320,  332, 336, 337, 351, 354, 355,  363, 383</p>	<p><u>Air Force</u>: 194; <u>Army</u>: 45, 63,  119, 123, 129, 134, 143;  <u>Marine Corps</u>: 411; <u>Navy</u>: 270,  274, 276 338, 370</p>
---	---	--

---

**Table 9.** Federally listed species (endangered, threatened, candidate) unconfirmed on DoD installations in the continental U.S. Species arranged alphabetically by common name. Numbers in second column refer to installation names in Appendix I.

Common Name (Scientific Name)	DoD Installations Unconfirmed
Alameda Striped Racer ( <i>Coluber lateralis euryxanthus</i> )	Army: 129
Atlantic Saltmarsh Watersnake ( <i>Nerodia clarkii taeniata</i> )	Air Force: 168
Austin Blind Salamander ( <i>Eurycea waterlooensis</i> )	Army: 35
Chiricahua Leopard Frog ( <i>Lithobates chiricahuensis</i> )	Army: 80
Copper-bellied Watersnake ( <i>Nerodia erythrogaster neglecta</i> )	Army: 122
Florida Sand Skink ( <i>Plestiodon reynoldsi</i> )	Air Force: 162; Navy: 346
Giant Gartersnake ( <i>Thamnophis gigas</i> )	Air Force: 165
Hawksbill Sea Turtle ( <i>Eretmochelys imbricate</i> )	Army: 120; Air Force: 168, 230; Navy: 265, 266, 279, 283, 284, 299, 300, 301, 322, 332, 342, 343, 344, 345,

---

---

Houston Toad ( <i>Anaxyrus houstonensis</i> )	358, 374, 375; Marine Corps: 399, 406, 414 Army: 49
San Francisco Gartersnake ( <i>Thamnophis sirtalis tetrataenia</i> )	Air Force: 232

---

**Table 10.** State-listed endangered and threatened species unconfirmed on DoD installations in the continental U.S. DoD installations reported are those only where a species/subspecies is confirmed present and State-endangered or –threatened. Species arranged alphabetically by common name. Numbers in second column refer to installation names in Appendix I.

<b>Common Name (Scientific Name)</b>	<b>DoD Installations Unconfirmed</b>
Alameda Striped Racer ( <i>Coluber lateralis eurysanthus</i> )	Army: 129
Atlantic Saltmarsh Watersnake ( <i>Nerodia clarkii taeniata</i> )	Air Force: 168
Austin Blind Salamander ( <i>Eurycea waterlooensis</i> )	Army: 35
Barking Treefrog ( <i>Hyla gratiosa</i> )	Army: 87; Navy: 255, 256, 292, 293
Black-knobbed Map Turtle ( <i>Graptemys nigrinoda</i> )	Air Force: 172
Blue-spotted Salamander ( <i>Ambystoma laterale</i> )	Army: 131; Navy: 360, 361, 362
Brazos River Watersnake ( <i>Nerodia harteri</i> )	Army: 97
Cat-eyed Snake ( <i>Leptodeira septentrionalis</i> )	Navy: 268
Comal Blind Salamander ( <i>Eurycea tridentifera</i> )	Air Force: 203
Cope’s Gray Treefrog	Air Force: 207, 250

---

---

<i>(Hyla chrysoscelis)</i>	
Copperhead	Army: 105; Air Force: 251
<i>(Agkistrodon contortrix)</i>	
Diamond-backed Watersnake	Army: 105
<i>(Nerodia rhombifer)</i>	
Eastern Glass Lizard	Navy: 255, 256, 292, 293
<i>(Ophisaurus ventralis)</i>	
False Map Turtle	Army: 6
<i>(Graptemys pseudogeographica)</i>	
Four-toed Salamander	Army: 113
<i>(Hemidactylium scutatum)</i>	
Gila Monster	Army: 67
<i>(Heloderma suspectum)</i>	
Greater Short-horned Lizard	Army: 67
<i>(Phrynosoma hernandesi)</i>	
Hawksbill Sea Turtle	Army: 120; Air Force: 168, 230; Navy: 265,
<i>(Eretmochelys imbricata)</i>	266, 279, 283, 284, 299, 300, 301, 342, 343,
	344, 345, 358, 374, 375; Marine Corps: 399,
	406, 414
Houston Toad	Army: 49
<i>(Anaxyrus houstonensis)</i>	
Key Ring-necked Snake	Navy: 284
<i>(Diadophis punctatus acricus)</i>	
Lined Snake	Army: 6
<i>(Tropidoclonion lineatum)</i>	
Long-tailed Salamander	Army: 131
<i>(Eurycea longicauda)</i>	
Marbled Salamander	Army: 26, 29, 56; Air Force: 169, 226, 229, 251
<i>(Ambystoma opacum)</i>	
Massasauga	Army: 90, 105; Air Force: 253
<i>(Sistrurus catenatus)</i>	

---

---

Mud Salamander ( <i>Pseudotriton montanus</i> )	Army: 110; Air Force: 207, 250
Mudpuppy ( <i>Necturus maculosus</i> )	Army: 105; Navy: 373
North American Racer ( <i>Coluber constrictor</i> )	Army: 5, 13, 15, 103, 125, 130
Northern Dwarf Siren ( <i>Pseudobranchius striatus</i> )	Air Force: 204
Northern Map Turtle ( <i>Graptemys geographica</i> )	Army: 1, 86
One-toed Amphiuma ( <i>Amphiuma pholeter</i> )	Army: 46
Plain-bellied Watersnake ( <i>Nerodia erythrogaster</i> )	Army: 105
Plains Hog-nosed Snake ( <i>Heterodon nasicus</i> )	Army: 105
Regal Black-striped Snake ( <i>Coniophanes imperialis</i> )	Navy: 268
Rough Greensnake ( <i>Opheodrys aestivus</i> )	Army: 82
San Francisco Gartersnake ( <i>Thamnophis sirtalis tetrataenia</i> )	Air Force: 232
Scarletsnake ( <i>Cemophora coccinea</i> )	Army: 36; Navy: 265, 266, 268, 269
Sheep Frog ( <i>Hypopachus variolosus</i> )	Navy: 265, 266, 267, 285, 287
Speckled Racer ( <i>Drymobius margaritiferus</i> )	Navy: 266
Spiny Softshell ( <i>Apalone spinifera</i> )	Army: 84, 115; Air Force: 181, 218, 241; Marine Corps: 399, 413
Tennessee Cave Salamander	Army: 139, 144

---



---

<i>(Gyrinophilus palleucus)</i>		
Trans-Pecos Black-headed Snake	Air Force:	209
<i>(Tantilla cucullata)</i>		
Western Pond Turtle	Army: 39, 106; Navy: 258, 302, 305, 325, 326,	
<i>(Actinemys marmorata)</i>	327, 328, 329, 330, 331	
Western Wormsnake	Army: 105	
<i>(Carphophis vermis)</i>		
Yellow Mud Turtle	Navy: 373	
<i>(Kinosternon flavescens)</i>		

---

**Table 11.** At-risk species/subspecies unconfirmed on DoD installations in the continental U.S. Species arranged by NatureServe status and alphabetically by common name. Numbers in third column refer to installation names in Appendix I.

---

<b>Common Name (Scientific Name)</b>	<b>NatureServe Status</b>	<b>DoD Installations Unconfirmed</b>
Atlantic Saltmarsh Watersnake <i>(Nerodia clarkii taeniata)</i>	G1/T1	Air Force: 168
Austin Blind Salamander <i>(Eurycea waterlooensis)</i>	G1/T1	Army: 35
Comal Blind Salamander <i>(Eurycea tridentifera)</i>	G1/T1	Air Force: 203
Houston Toad <i>(Anaxyrus houstonensis)</i>	G1/T1	Army: 49
Key Ring-necked Snake <i>(Diadophis punctatus acricus)</i>	G1/T1	Navy: 284
Lesser Slender Salamander <i>(Batrachoseps minor)</i>	G1/T1	Army: 45
Rim Rock Crowned Snake <i>(Tantilla oolitica)</i>	G1/T1	Air Force: 197
Alameda Striped Racer <i>(Coluber lateralis euryxanthus)</i>	G2/T2	Army: 129

---

---

Amargosa Toad ( <i>Anaxyrus nelsoni</i> )	G2/T2	Air Force: 225
Bezy's Night Lizard ( <i>Xantusia bezyi</i> )	G2/T2	Air Force: 187
Brazos River Watersnake ( <i>Nerodia harteri</i> )	G2/T2	Army: 97
Broad-striped Dwarf Siren ( <i>Pseudobranchius striatus striatus</i> )	G2/T2	Navy: 359; Marine Corps: 409, 415
Chiricahua Leopard Frog ( <i>Lithobates chiricahuensis</i> )	G2/T2	Army: 80
Concho Watersnake ( <i>Nerodia paucimaculata</i> )	G2/T2	Air Force: 188
Florida Sand Skink ( <i>Plestiodon reynoldsi</i> )	G2/T2	Air Force: 162 197; Navy: 346
Giant Gartersnake ( <i>Thamnophis gigas</i> )	G2/T2	Air Force: 165
Mount Lyell Salamander ( <i>Hydromantes platycephalus</i> )	G2/T2	Marine Corps: 411
Pascagoula Map Turtle ( <i>Graptemys gibbonsi</i> )	G2/T2	Army: 46
San Francisco Gartersnake ( <i>Thamnophis sirtalis tetrataenia</i> )	G2/T2	Air Force: 232
San Simeon Slender Salamander ( <i>Batrachoseps incognitus</i> )	G2/T2	Army: 81
Santa Lucia Mountains Slender Salamander ( <i>Batrachoseps luciae</i> )	G2/T2	Army: 44, 45, 81, 134
Savannah Slimy Salamander ( <i>Plethodon savannah</i> )	G2/T2	Army: 78
Shenandoah Mountain Salamander ( <i>Plethodon virginia</i> )	G2/T2	Navy: 394
Tennessee Cave Salamander	G2/T2	Army: 139, 144

---

---

<i>(Gyrinophilus palleucus)</i>		
Texas Scarletsnake	G2/T2	Navy: 265, 266, 268, 269
<i>(Cemophora coccinea lineri)</i>		
Black-knobbed Map Turtle	G3/T3	Air Force: 172, 216
<i>(Graptemys nigrinoda)</i>		
Blue Spiny Lizard	G3/T3	Navy: 285, 286, 287
<i>(Sceloporus cyanogenys)</i>		
Brown-backed Salamander	G3/T3	Army: 55
<i>(Eurycea aquatica)</i>		
Cow Knob Salamander	G3/T3	Navy: 394
<i>(Plethodon punctatus)</i>		
Dusty Hog-nosed Snake	G3/T3	Air Force: 176
<i>(Heterodon gloydi)</i>		
Hawksbill Sea Turtle	G3/T3	Army: 120; Air Force: 168, 230; Navy:
<i>(Eretmochelys imbricata)</i>		265, 266, 279, 283, 284, 299, 300, 301,
		322, 332, 342, 343, 344, 345, 358, 374,
		375; Marine Corps: 399, 406, 414
Kern Plateau Salamander	G3/T3	Navy: 363
<i>(Batrachoseps robustus)</i>		
Mississippi Diamond-backed	G3/T3	Navy: 283
Terrapin ( <i>Malaclemys terrapin</i>		
<i>pileata</i> )		
Oklahoma Salamander	G3/T3	Army: 33, 88
<i>(Eurycea tynerensis)</i>		
Rio Grande Cooter	G3/T3	Air Force: 209
<i>(Pseudemys gorzugi)</i>		
Seepage Salamander	G3/T3	Army: 3, 66, 89
<i>(Desmognathus aeneus)</i>		
Trans-Pecos Black-headed Snake	G3/T3	Air Force: 209
<i>(Tantilla cucullata)</i>		
Tucson Shovel-nosed Snake	G3/T3	Air Force: 174

---

---

*(Chionactis occipitalis klauberi)*

Webster's Salamander

G3/T3

Army: 3, 89; Air Force: 216

*(Plethodon websteri)*

---