Great Basin Conservation Initiative

An Assessment of Conservation Opportunities
on Department of Defense Installations in the Great Basin
for the
Department of Defense
Legacy Resource Management Program

Report submitted by:

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The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

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EXECUTIVE SUMMARY

Effective conservation of rare and endangered species, wildlife habitats and representative ecosystems is better served by organizing biological information within the context of ecologically defined regions rather than using familiar geopolitical boundaries. While there are numerous ways of ecologically defining regions, The Nature Conservancy (TNC) adopted an ecoregion-based conservation planning approach in the 1990s. Ecoregions are large geographic areas delineated by ecological factors that support distinct groupings of plants, animals, and ecological communities. TNC uses ecoregion-based conservation planning to set conservation priorities and to provide a context for taking direct conservation action at specific places.

Ecoregional planning for the Great Basin was initiated in December 1999 by TNC and a first iteration of the conservation assessment was completed in 2001. Primary financial support to develop the assessment came from the Department of Defense (DoD) Legacy Resource Management Program and private sources. The DoD Legacy Resource Management Program funded this ecoregional assessment as part of the Great Basin Conservation Initiative. The Great Basin ecoregion covers over 72 million acres across California, Nevada, and Utah. It includes military installations for Air Force, Army, and Navy services, including Camp Williams Military Reserve, Dugway Proving Ground; Naval Air Station Fallon; Hawthorne Army Depot; Hill Air Force Base; Nellis Air Force Range; and Tooele Army Depot. These DoD installations in the Great Basin provide critical training and testing necessary for military readiness and national security. The land-based management responsibility of DoD in this ecoregion is nearly five million acres or an estimated 25 % of DoD's total land base in the United States. Military Operations Area (MOA) airspace adds substantial acreage beyond the land base footprint. Camp Williams is not addressed further in this report because it does not overlap with any conservation areas identified in the Great Basin ecoregional assessment.

The initial product from the first phase of the Great Basin Conservation Initiative was the Great Basin ecoregion-based conservation assessment (Nachlinger and others 2001). An additional assessment, this document, was completed in the second phase of the Great Basin Conservation Initiative to provide a specific assessment of priority conservation areas influenced by DoD land and airspace management in the Great Basin.

These two Great Basin assessment products include an inventory of all imperiled species, communities, and important habitats in the Great Basin; lists of species, rare plant communities, and ecological systems targeted for conservation action; a network of conservation areas that capture their best occurrences within the current landscape; a summary of major threats or actions that may destroy or degrade conservation targets; and opportunities for DoD and collaborating agencies and organizations to implement

conservation actions in the Great Basin. The ecoregion-based and DoD installation assessments are intended to serve as a basis for prioritizing the portfolio of conservation areas for conservation management and development of local conservation area plans to identify strategies for taking action. This document provides both a summary of the broad context of conservation needs for the Great Basin ecoregion and specific conservation attributes and priorities for individual DoD installations.

The currently ongoing second phase of the Great Basin Conservation Initiative also includes development of site-based conservation assessments for installations in the Great Basin and initiation of a pilot conservation project. Naval Air Station Fallon and Hawthorne Army Depot were the two Great Basin installations selected for subsequent planning to develop strategies for specific conservation areas in need of conservation action. These efforts involved installation staff, Pentagon-based staff, other agencies, and TNC. Hawthorne Army Depot was selected for initiation of a pilot project to implement a fire regime condition class assessment of montane vegetation in the Mount Grant watershed. The third phase of the Great Basin Conservation Initiative includes implementation of a site-based conservation assessment. Hawthorne Army Depot is interested in using results from the pilot Mount Grant fire regime condition class study to develop the fire management plan that will address actions needed to improve areas in poor condition class (Provencher 2004).

The resulting 358 conservation areas delineated for the Great Basin cover about 40 % of the ecoregion and include 75 % of the areas nominated by resource specialists during expert interviews(figure 9). If conserved, these 358 conservation areas would most efficiently capture the best viable occurrences of the Great Basin's biological diversity within the least acreage necessary to meet conservation goals. A total of 127 of the conservation areas in the Great Basin ecoregional portfolio overlap with DoD land or land overlaid by a MOA. Thus, 36 % of the identified portfolio for the Great Basin overlaps with lands managed solely or cooperatively by DoD. The 127 conservation areas in the DoD portfolio contain 325 conservation target species and ecological systems. These conservation areas range in size from 3,565 acres to over 2.5 million acres. The amount of DoD land that has been identified for conservation management is less than 5 % of the total amount of lands identified within conservation areas.

The Great Basin is a working landscape, and much of the Federal land in this ecoregion, including DoD land is managed under multiple-use principles. Because some land uses and land use practices are incompatible with the conservation of native species and their habitats, the Great Basin ecoregional assessment included an assessment of threats to conservation target species and systems, summarized below. Threats are actions that may destroy or significantly degrade a conservation target, its habitat, or the ecological processes that support it. By identifying those activities and land use practices that are

threats to conservation targets, the Great Basin ecoregional assessment provides land managers with a list of actions that could be altered by approach, timing or spatial location, to better conserve native species and their habitats. There are several widespread threats impacting ecological systems across the Great Basin including six worthy of special note: inappropriate grazing regimes (wrong place, wrong amount, or wrong timing); invasion by exotic species (both plants and animals); hydrologic alterations to groundwater and surface water; urban expansion and associated rural sprawl; inappropriate recreation; and altered fire regimes (frequency, intensity, or amount).

Throughout the Great Basin there are activities that also encroach upon the military's ability to carry out installation missions and maintain military readiness. Encroachment for the military is defined as any external influence that threatens, constrains, or impedes training and readiness of military forces and weapon systems. External influences that encroach upon the DoD's ability to sustain the military mission of one or more installations or MOA airspace include, but are not limited to, obligations to protect endangered species, critical habitat, wetlands, air quality and water quality, as well as restrictions on airborne noise, radio frequency use, and MOA airspace use. Encroachment on ranges and airspace is a serious and growing challenge for the military services, and is a challenge for biodiversity conservation as well.

Military installations faced with this challenge have an opportunity to develop and implement appropriate land use and management practices to balance the requirements of the military mission with good stewardship of natural resources. For instance, while encroachment pressure caused by changes in land use is commonly described as the result of urbanization of private lands surrounding military installations, in the Great Basin many DoD lands are bordered by public land. The U.S. Departments of Interior and Agriculture manage much of this public land under multiple-use principles. Changes in type, timing, and intensity of public land use also could pose the threat of encroachment, particularly on public lands that are overlaid by MOA airspace. DoD efforts to proactively collaborate with agencies and nongovernmental organizations to plan for sustainment of the military mission could include innovative strategies to manage anticipated encroachment issues.

In instances where the military mission is not compatible with biodiversity conservation, mitigation, minimization and avoidance measures are pursued to offset direct, indirect, and cumulative impacts. The conservation areas under the MOA airspace offer the DoD significant opportunities for mitigation of impacts to species, habitat and ecosystem processes. Mitigation in areas overlaid by the MOA airspaces may help to ameliorate or protect conservation targets of a higher priority and greater urgency to regulators, while allowing military mission needs to be met. The lands underneath MOA airspace offer a good opportunity for mitigation, as the feasibility of implementation is increased due to existing

cooperative relationships among land managers and the military. In particular, lands under MOA airspace that already enjoy some form of protection through state or federal land use designations offer superb opportunities for DoD to mitigate actions on DoD lands.

Developing and implementing strategies for biodiversity conservation are an integral part of responsible land stewardship. Conservation strategies should lead to direct abatement or minimization of threats on military land and water, but will need to be balanced with the requirements of the military mission for each installation. Proactive measures would demonstrate a commitment to biodiversity conservation by DoD, and reduce future encroachment issues. Conservation strategy options for DoD are described within six categories: land, water and species management and protection; law, policy and enforcement; science – research, inventory and monitoring; education and outreach; economic and other incentives; and capacity building.

The collaborative nature of both the ecoregional assessments and conservation area assessments serves as a foundation for cooperative efforts and shared responsibility to protect significant biological areas in the ecoregion. By identifying major conservation issues affecting the entire Great Basin, ecoregion-based planning allows land and resource managers to focus limited resources on common stressors that threaten the viability of biologically significant habitats. Such an approach, applied in concert by all land management agencies and stakeholders, could more efficiently identify lands to receive conservation protection and management.

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Great Basin Conservation Initiative
An Assessment of Conservation Opportunities On Department of Defense Installations in the Great Basin For the Department of Defense Legacy Resource Management Program

I. INTRODUCTION

Effective conservation of rare and endangered species, wildlife habitats, and representative ecosystems is better served by organizing biological information within the context of ecologically defined regions rather than using familiar geopolitical boundaries. While there are numerous ways of ecologically defining regions, The Nature Conservancy (TNC) adopted an ecoregion-based conservation planning approach in the 1990s. Ecoregions are large geographic areas delineated by several ecological factors (for example: climate, geology, physiography, soils and vegetation) that support distinct groupings of plants, animals and ecological communities. Ecoregion-based conservation planning is used by TNC to set conservation priorities and provide a context for protecting biological diversity by taking direct action at specific places (The Nature Conservancy 1997, 2000a). TNC recognizes 81 ecoregions in the United States (figure 1). Approximately three quarters of these ecoregions have completed conservation assessments as of February 2005.

Five ecoregions in the United States stand out in terms of their diversity of highly imperiled species—they each harbor over 150 imperiled species (figure 2). **Imperiled** species are at high risk of extinction due to very restricted range, very few populations, steep declines in population or other factors. Of these top five, the Great Basin ecoregion ranks second with 169 imperiled species (Stein and others 2000). One way to assess the significance of ecoregions for imperiled species is to compare the number of species that are **endemic** (wholly restricted) to a single ecoregion (figure 3). The Great Basin ranks second in such an analysis with 302 imperiled species endemic to the ecoregion (Stein and others 2000). Clearly, the Great Basin ecoregion is comparatively important due to its unique and imperiled biodiversity.

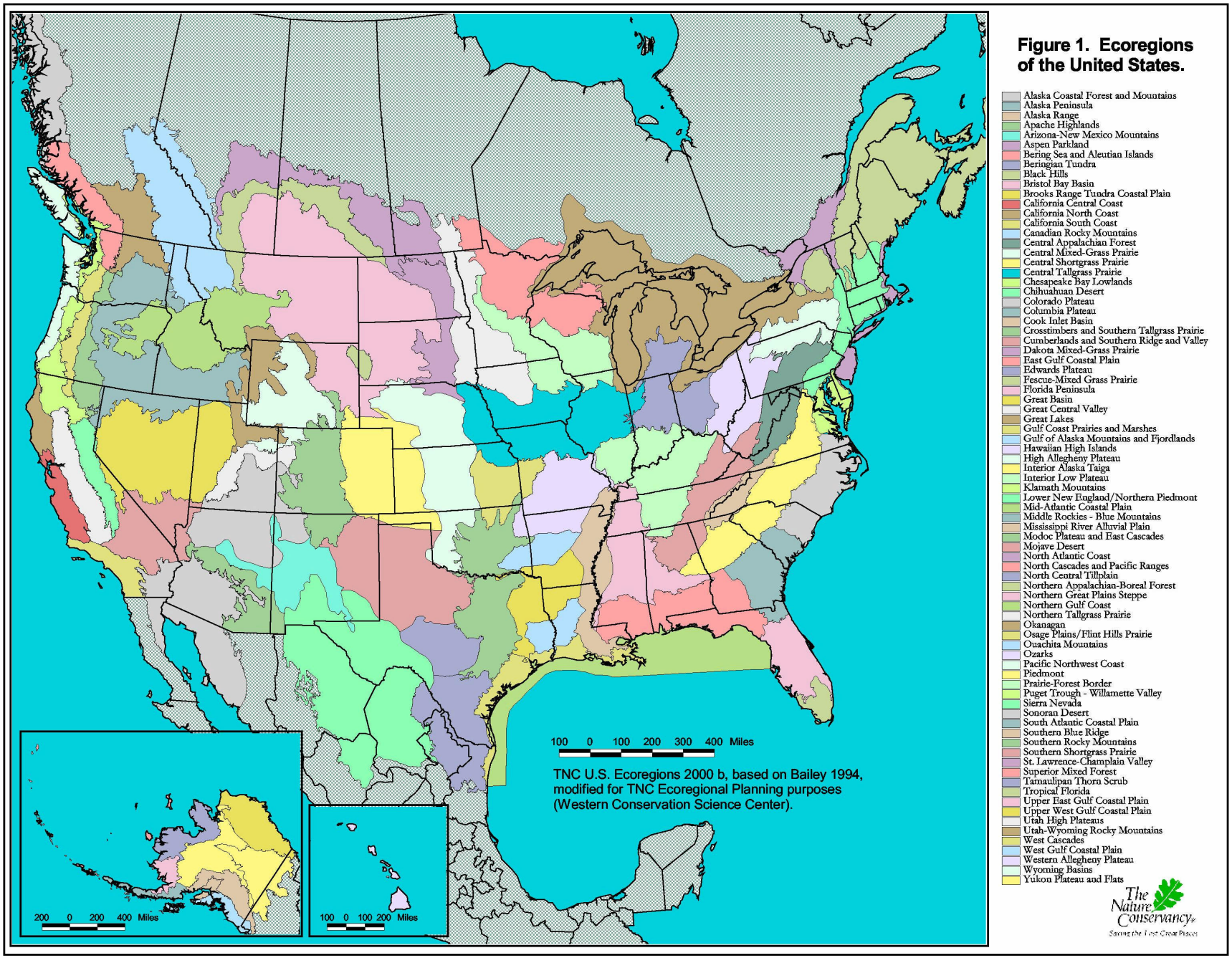
Figure 1. Ecoregions of the United States.
Alaska Coastal Forest and Mountains
Alaska Peninsula
Alaska Range
Apache Highlands
Arizona-New Mexico Mountains
Aspen Parkland
Bering Sea and Aleutian Islands
Beringian Tundra
Black Hills
Bristol Bay Basin
Brooks Range Tundra Coastal Plain
California Central Coast
California North Coast
California South Coast
Canadian Rocky Mountains
Central Appalachian Forest
Central Mixed-Grass Prairie
Central Shortgrass Prairie
Central Tallgrass Prairie
Chesapeake Bay Lowlands
Chihuahuan Desert
Colorado Plateau
Columbia Plateau
Cook Inlet Basin
Crosstimbers and Southern Tallgrass Prairie
Cumberlands and Southern Ridge and Valley
Dakota Mixed-Grass Prairie
East Gulf Coastal Plain
Edwards Plateau
Fescue-Mixed Grass Prairie
Florida Peninsula
Great Basin
Great Central Valley
Great Lakes
Gulf Coast Prairies and Marshes
Gulf of Alaska Mountains and Fjordlands
Hawaiian High Islands
High Allegheny Plateau
Interior Alaska Taiga
Interior Low Plateau
Klamath Mountains
Lower New England/Northern Piedmont
Mid-Atlantic Coastal Plain
Middle Rockies - Blue Mountains
Mississippi River Alluvial Plain
Modoc Plateau and East Cascades
Mojave Desert
North Atlantic Coast
North Cascades and Pacific Ranges
North Central Tillplain
Northern Appalachian-Boreal Forest
Northern Great Plains Steppe
Northern Gulf Coast
Northern Tallgrass Prairie
Okanagan
Osage Plains/Flint Hills Prairie
Ouachita Mountains
Ozarks
Pacific Northwest Coast
Piedmont
Prairie-Forest Border
Puget Trough - Willamette Valley
Sierra Nevada
Sonoran Desert
South Atlantic Coastal Plain
Southern Blue Ridge
Southern Rocky Mountains
Southern Shortgrass Prairie
St. Lawrence-Champlain Valley
Superior Mixed Forest
Tamaulipan Thorn Scrub
Tropical Florida
Upper East Gulf Coastal Plain
Upper West Gulf Coastal Plain
Utah High Plateaus
Utah-Wyoming Rocky Mountains
West Cascades
West Gulf Coastal Plain
Western Allegheny Plateau
Wyoming Basins
Yukon Plateau and Flats
100 0 100 200 300 400 Miles
TNC U.S. Ecoregions 2000 b, based on Bailey 1994, modified for TNC Ecoregional Planning purposes (Western Conservation Science Center).
200 0 200 400 Miles
100 0 100 200 Miles
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Figure 2. Imperiled species in the United States by ecoregion.

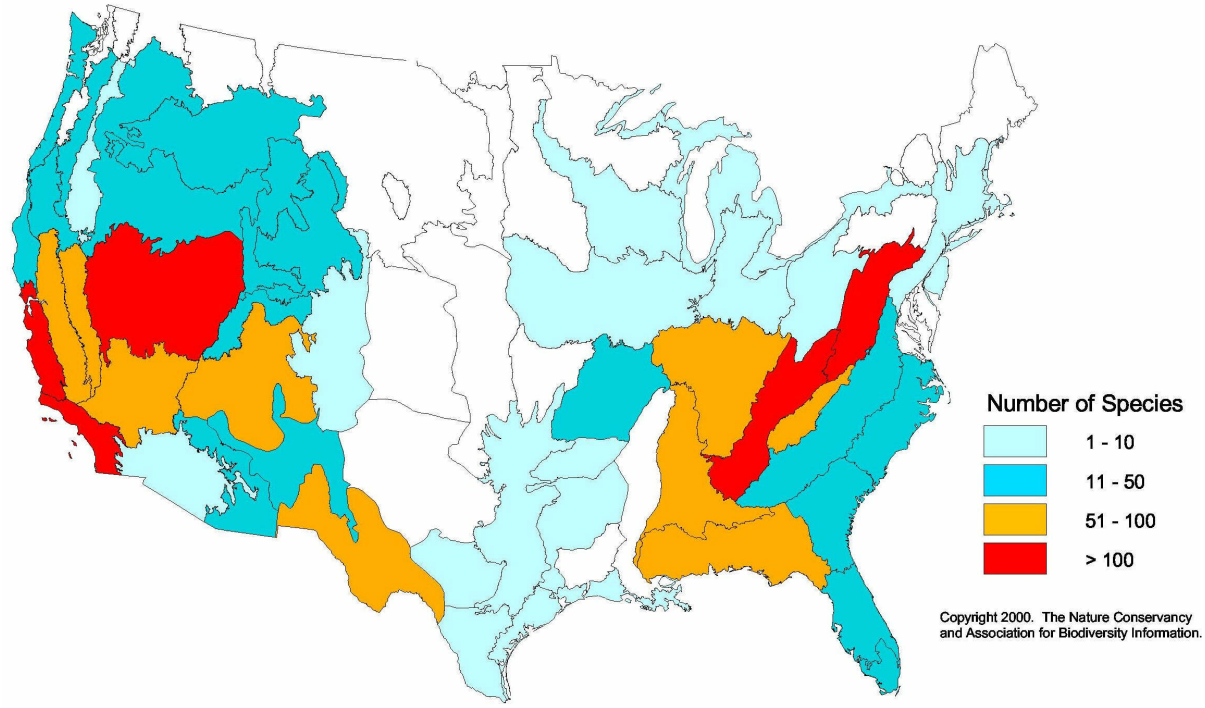
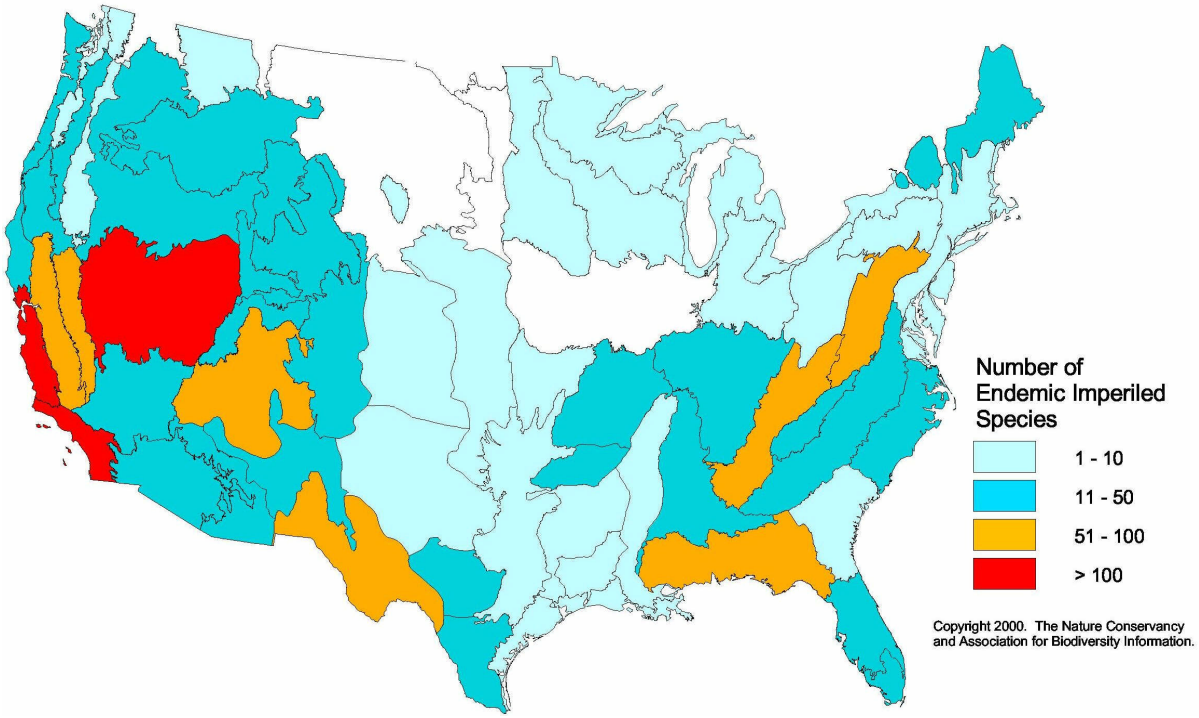


Figure 3. Endemic species in the United States by ecoregion.



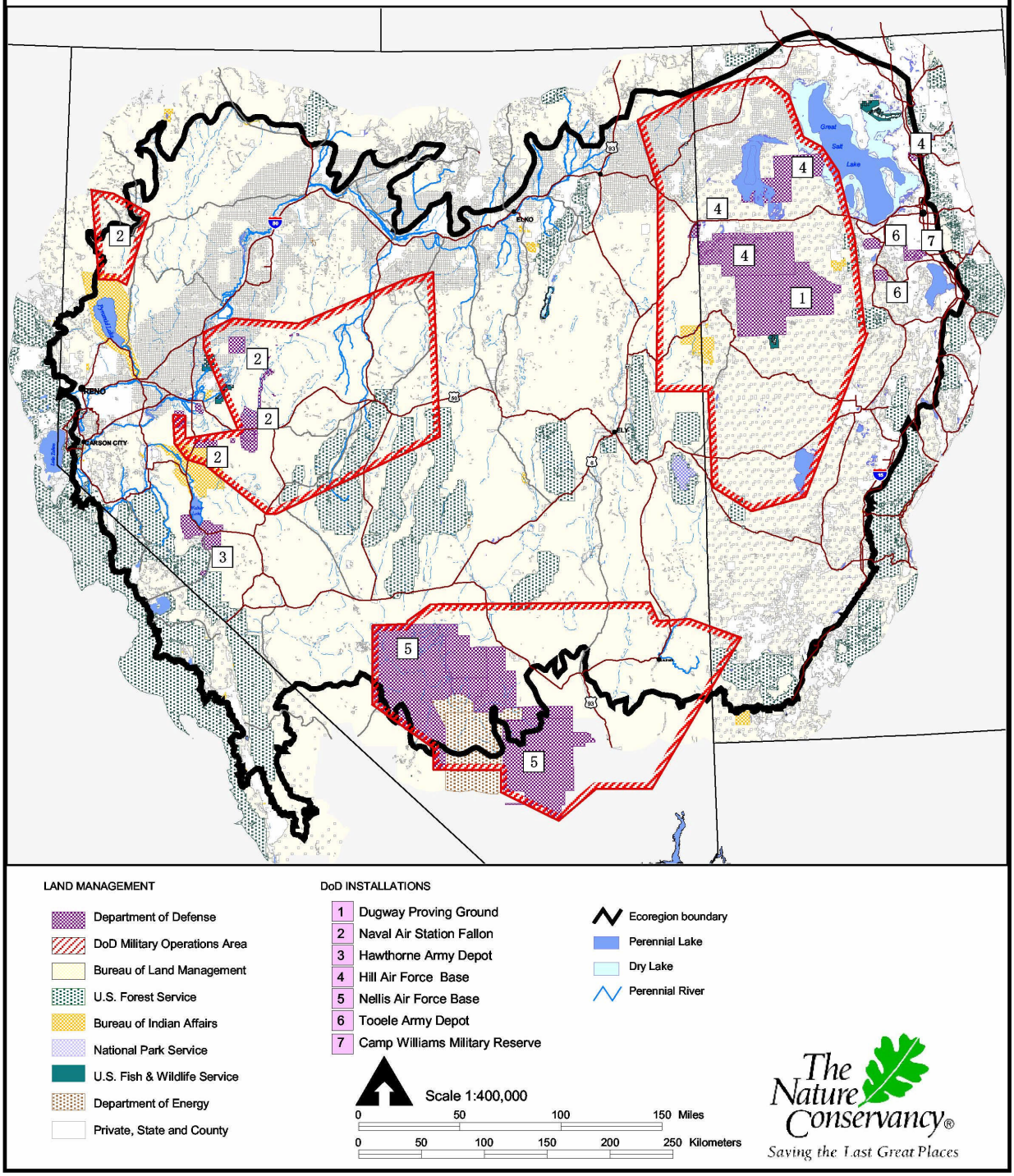
Ecoregional planning for the Great Basin was initiated in December 1999 by TNC and a first iteration of the conservation assessment was completed in 2001 (Nachlinger and others 2001). Primary financial support to develop the assessment came from the Department of Defense (DoD) Legacy Resource Management Program and private sources. In addition to DoD, other partners involved in the conservation assessment included university scientists, government science and land management experts, independent consultants, and private landowners. The ecoregional conservation planning process uses multiple data sources to synthesize biological and ecological information and to identify the major stressors affecting the ecoregion's biodiversity. This collaborative evaluation and identification process serves as a foundation for cooperative efforts and shared responsibility to protect significant biological areas in the ecoregion.

The Great Basin ecoregion covers over 72 million acres across California, Nevada and Utah. It includes military installations for Air Force, Army and Navy services (figure 4). These DoD installations in the Great Basin provide critical training and testing necessary for military readiness and national security. The land-based management responsibility of DoD in this ecoregion is nearly five million acres or an estimated 25 % of DoD's total land base in the United States.

Military Operations Area (MOA) airspace extends the aerial extent of DoD influence beyond the land base footprint . The MOA boundary (figure 4) for each Great Basin installation was simplified by TNC from military training routes and special use airspace map provided by the DoD Air and Space Operations office. Management of public land overlaid by MOA airspace is administered by several government agencies in cooperation with DoD. In the Great Basin, it is largely the Department of Interior's Bureau of Land Management (BLM) that cooperatively manages MOAs with DoD.

By identifying major conservation issues affecting the entire Great Basin, ecoregion-based planning allows land and resource managers to focus limited resources on common stressors that threaten the viability of biologically significant habitats. Such an approach, applied in concert with all land management agencies and stakeholders, would more efficiently identify lands to receive conservation protection and management. This approach also supports the strategy of applying ecosystem management to military land, which DoD has embraced (Lillie and Ripley 1998). Guidance for conserving biodiversity on military lands using ecosystem management concepts can be found in Leslie and others (1996).

Figure 4. Land Management in the Great Basin Ecoregion.



II. OBJECTIVES AND PRODUCTS

The objectives of the Great Basin Conservation Initiative are to:

- Build working relationships with key public and private partners to maintain and enhance significant lands and imperiled species in the Great Basin ecoregion;

- Establish a strong scientific foundation to guide collaborative stewardship efforts that maintain ecosystem integrity and sustain military testing and training opportunities in the Great Basin;

- Identify and prioritize specific areas crucial to maintaining the ecological integrity of the Great Basin ecoregion;

- Identify and prioritize specific actions needed to maintain the viability of the biodiversity of the Great Basin ecoregion, including restoration of degraded habitats;

- Develop cooperative management, research, and monitoring plans for crucial areas throughout the ecoregion, while acknowledging the need for sustainment of the military mission on DoD administered land and related air space, and;

- Implement conservation actions to achieve long-term stability of Great Basin ecosystems.

The initial product from the first phase of the Great Basin Conservation Initiative was a Great Basin ecoregion-based conservation assessment (Nachlinger and others 2001). An additional assessment, this document, provides a specific assessment of priority conservation areas influenced by DoD land and airspace management. It provides both a summary of the broad context of conservation needs for the Great Basin ecoregion and specific conservation attributes and priorities for individual DoD installations. These two Great Basin assessment products include: 1) an inventory of all imperiled species, communities, and important habitats in the Great Basin; 2) lists of species, rare plant communities, and ecological systems targeted for conservation action; and 3) a network of conservation areas that capture their best occurrences within the current landscape. The network of conservation areas identified for any given ecoregion are referred to here as a **portfolio of sites**. In addition, these documents identify the major threats affecting imperiled biota and assess opportunities for conservation in the Great Basin. The ecoregion-based and DoD installation assessments are intended to serve as a basis for prioritizing the portfolio of sites for conservation management and development of local conservation area plans to identify strategies for taking conservation action. This document highlights priority conservation areas overlapping DoD lands, identifies threats and opportunities for conservation, and highlights shared strategies to abate multi-site threats affecting Great Basin biodiversity. Since this DoD installation assessment is a companion document to the larger Great Basin ecoregional assessment, conservation planning methods, data sources, assumptions, and

ecoregional results that are not presented here can be found in Nachlinger and others (2001).

The currently ongoing second phase of the Great Basin Conservation Initiative includes development of site-based conservation assessments for two installations in the Great Basin and initiation of a pilot conservation project (The Nature Conservancy 2000c). These efforts involve installation staff, Pentagon-based staff, other agencies, and TNC. Naval Air Station Fallon and Hawthorne Army Depot were the two Great Basin installations selected for subsequent planning to develop strategies for specific conservation areas in need of conservation action. Conservation area planning was initiated in July 2001, and culminated in area assessments and strategy recommendations for Hawthorne Army Depot (Nachlinger 2003) and Naval Air Station Fallon (Wainscott 2004). A pilot project to assess the fire regime condition class (Hann and Brunnell, 2001, Hardy and others 2001, Schmidt and others 2002) of montane vegetation at Hawthorne Army Depot was then initiated in 2003 (Campbell 2003) to address the highest priority threats identified in the conservation area plan (Nachlinger 2003). Altered fire regimes threaten the health and proper functioning of terrestrial and aquatic ecological systems and the depot's surface water supply. This pilot project will provide fundamental information needed for Hawthorne Army Depot to develop a fire management plan for its natural resource areas on Mount Grant.

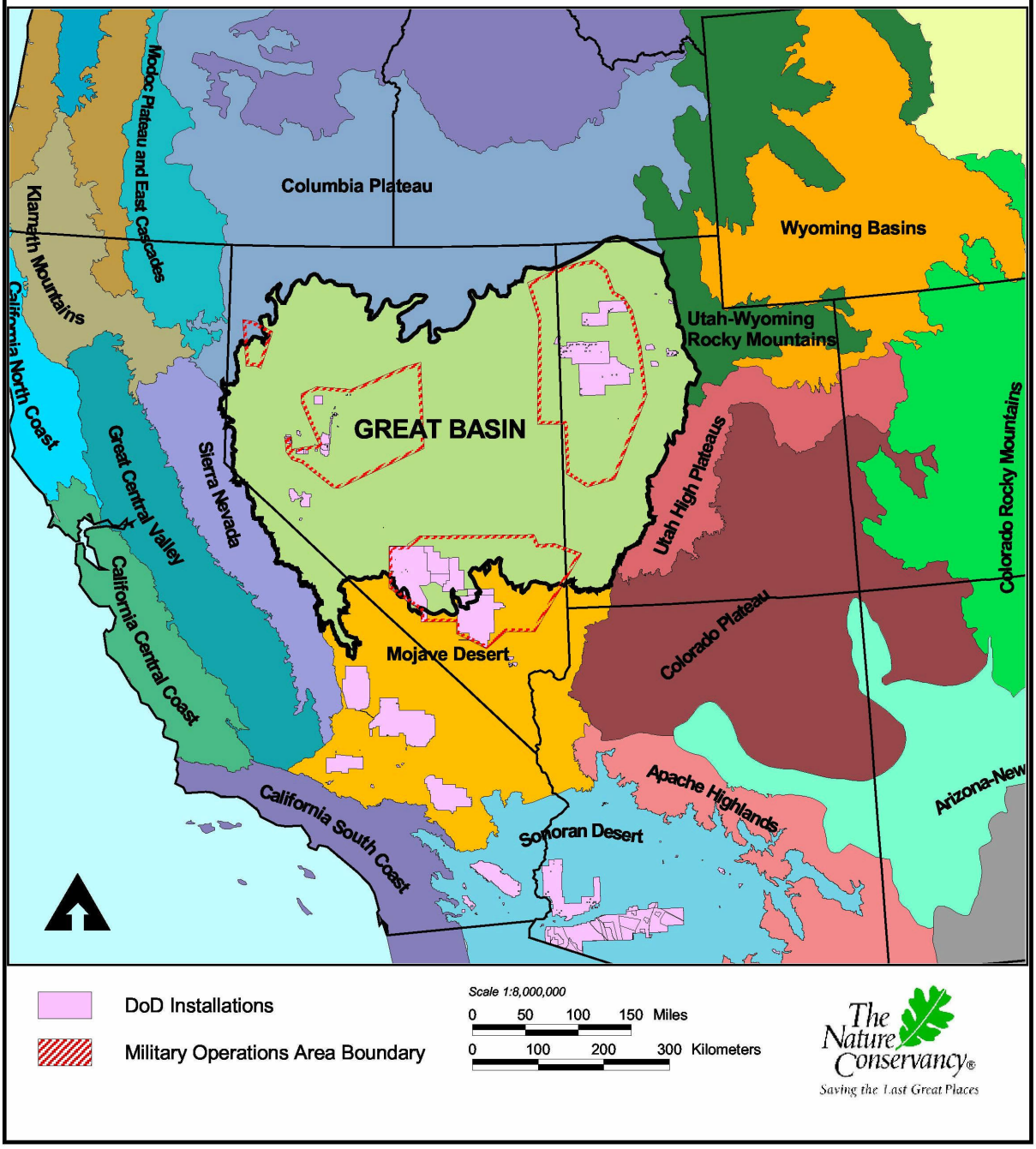
The next phase of the Great Basin Conservation Initiative includes implementation of a site-based conservation assessment. Hawthorne Army Depot is interested in using results from the pilot Mount Grant fire regime condition class mapping to develop the fire management plan that will address actions needed to improve areas in poor condition class (Provencher 2004). Additional implementation projects will be developed, as appropriate, in cooperation with the individual installations.

III. DEPARTMENT OF DEFENSE LAND AND AIRSPACE IN THE GREAT BASIN

The military presence in the western United States, as a landowner and land steward, is significant. Over 11 million acres of the Department of Defense land base occur in three western ecoregions: the Great Basin, Mojave Desert, and Sonoran Desert (figure 5). Approximately 3.75 million acres of DoD land occur in the Mojave Desert, representing 11.5 % of that ecoregion (The Nature Conservancy 2000b); while 3.1 million acres occur in the Sonoran Desert ecoregion, representing 5.8 % of that ecoregion (Marshall and others 2000). Based on the individual Mojave Desert and Sonoran Desert ecoregional assessments, 4.2 million acres of DoD land and water were identified for their potential value to biodiversity conservation.

In the Great Basin ecoregion, DoD manages 4,002,584 acres of land, which is about 5.5 % of the total land in the ecoregion. BLM, private landowners, and the U.S. Forest Service manage larger portions of the Great Basin, administering 63, 16, and 9 %, respectively, (figure 6). Approximately 26 million acres of the Great Basin are overlaid by MOA airspace, and are managed by various administrative land management agencies in cooperation with DoD. Seven DoD installations occur in the Great Basin. Four are Army installations: Camp Williams Military Reserve, Dugway Proving Ground, Hawthorne Army Depot, and Tooele Army Depot. Two are Air Force installations: Hill Air Force Base and Nellis Air Force Base. Naval Air Station Fallon is the one Navy installation. Table 1 shows acreage for each installation and land cooperatively managed under the MOAs. The Air Force manages the largest land base, while the Air Force and Navy use significant air space in the Great Basin.

Figure 5. DoD Installations in the Great Basin, Mojave Desert, and Sonoran Desert ecoregions.



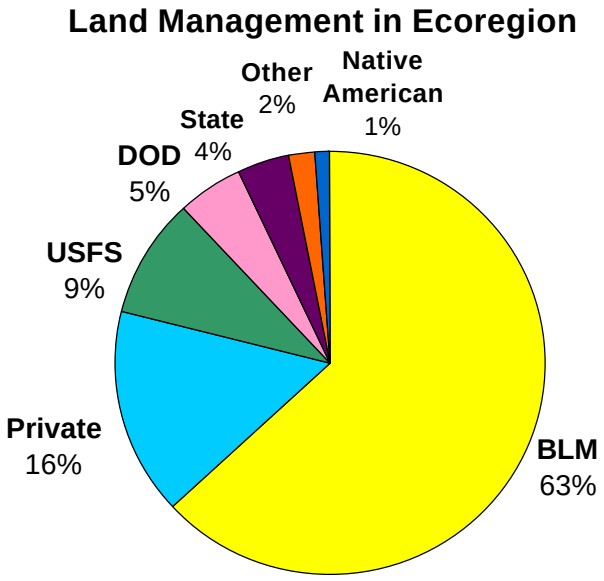


Figure 6. Percentage of major land management categories in the Great Basin ecoregion.

Table 1. Summary of acres managed in the Great Basin ecoregion by DoD installation**.** Military Operations Areas are cooperatively managed by DoD and other federal land agencies.

Installation	Land (acres)	Special Use Airspace (acres)
Fallon NAS	242,877.15	6,627,924.76
Camp Williams Military Reserve	32,708.08	
Hawthorne AD	148,191.27	
Hill AFR	956,712.47	9,868,717.66
Nellis AFB	1,765,975.10	5,479,364.08
Tooele AD	44,490.01	
Wendover/Dugway	811,630.40	
TOTAL:	***4,002,584.48***	***21,976,006.50***

IV. GREAT BASIN CONSERVATION TARGETS AND ECOREGIONAL PORTFOLIO

An ecoregional planning approach provides land managers with a framework for capturing ecological and genetic variation in biodiversity across a full range of environmental gradients. An ecoregional portfolio**,** the end product of ecoregional planning, is a selected set of places that represents the full distribution and diversity of native species, natural communities and ecosystems in an ecoregion. An appropriately managed ecoregional portfolio will ensure the long-term survival of all native life and natural communities, as well as imperiled species and communities. Selection of a representative array of biodiversity elements to drive the selection of places in which to take action is a crucial first step in the ecoregional planning approach.

1. Conservation Target Selection

As defined in TNC's ecoregional planning methodology, a **conservation target** is a biodiversity element, such as a species or ecological system, that together with other conservation targets represent the range of biological diversity found within an ecoregion. In the Great Basin ecoregional analysis, identification of conservation targets and their viable occurrences drove the site selection process. Data on conservation targets were assimilated from published and gray literature, as well as interviews with resource specialists from agencies, installations, and consultants. Not all installations were visited; however, written materials and verbal reports were obtained from all major installations. For details on conservation target selection, conservation goals, conservation area delineation, and portfolio analysis and assembly, the reader is referred to the larger, companion document entitled *Great Basin: An Ecoregion-based Conservation Blueprint* (Nachlinger and others 2001). The Great Basin ecoregional assessment methodology is summarized below.

Conservation of biodiversity can be approached by addressing different scales of biodiversity (genes, population, metapopulation, species, functional guilds) at different spatial scales (figure 7; small-patch, large-patch, matrix; Poiani and others 2000). TNC's approach to conservation focuses on species and ecosystems at multiple spatial scales (TNC 1997). Conservation targets are selected at different spatial scales and levels of biological organization to represent all biological diversity in a planning area. Ultimately, fro the Great Basin ecoregional assessment, imperiled, vulnerable, declining, Great Basin endemic, geographically limited, disjunct, and peripheral species as well as rare plant communities were included in the **fine-filter** conservation target assessment. **Coarse-filter** conservation targets included ecological systems, aquatic habitats and habitats for wide-ranging terrestrial species. (Nachlinger and others 2001).

Initially, a list of over 650 rare plant communities, ecological systems, aquatic habitats, plants and animals were assembled as conservation targets to drive the conservation area selection process for the Great Basin. Several categories of species were chosen as potential conservation targets, including imperiled, vulnerable, declining, endemic, geographically limited, disjunct or peripheral, and wide-ranging. **Imperiled** species are those that received a G1 or G2 ranking by the Association for Biodiversity Information, now

known as NatureServe. Species ranked G1 are at high risk of extinction due to extreme rarity, very steep declines in population, or other factors. Species ranked G2 are at high risk of extinction due to very restricted range, very few populations (often fewer than 20 populations), steep declines in population, or other factors. **Vulnerable** species are those that have received a G3 ranking from NatureServe, and are those that are at moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors. **Declining** species are those that have received a higher ranking from NatureServe (G4 or G5), but have populations exhibiting a declining trend, suggesting that they are at risk of becoming imperiled in the future. **Great Basin endemic** species are those whose global distribution is limited to the Great Basin ecoregion. **Geographically limited** species are those whose global distribution is limited to the Great Basin and one or two other ecoregions. **Peripheral** or **disjunct** species are those whose global distribution is disjunct from the occurrences within the Great Basin. **Wide-ranging** species are those with large home-ranges or territory sizes. Eight wide-ranging species and their habitats also were selected as conservation targets to help identify functional linkages among the conservation areas that would comprise the Great Basin ecoregional portfolio.

For each conservation target, information was collected on locations, range distribution, abundance, population size, viability, habitat condition and vital ecological processes. While plant communities have been described for the Great Basin, few are mapped and even fewer have ecological data in the scientific literature. Lacking specific occurrence information on plant communities, we adopted 29 ecological systems in combination with physical models as a surrogate for vegetation diversity (appendix A). Gap Analysis Program (GAP) vegetation coverage data were used to represent the geographic extent of these ecological systems. Accurate boundary determinations of these ecological system conservation targets will require additional ground-truthing and mapping. All conservation target information was reviewed by experts with refinements and recommendations resulting in a final list of 675 Great Basin ecoregional conservation targets. Using these conservation targets, biological experts delineated and nominated 660 areas for potential conservation attention.

For each conservation target, conservation goals were established to provide a quantitative basis for identifying and prioritizing areas that contribute to a network of conservation areas. Conservation goals represent the end toward which land and resource managers may direct their conservation efforts. For each conservation target, conservation goals were based on global distribution, rarity and vulnerability.

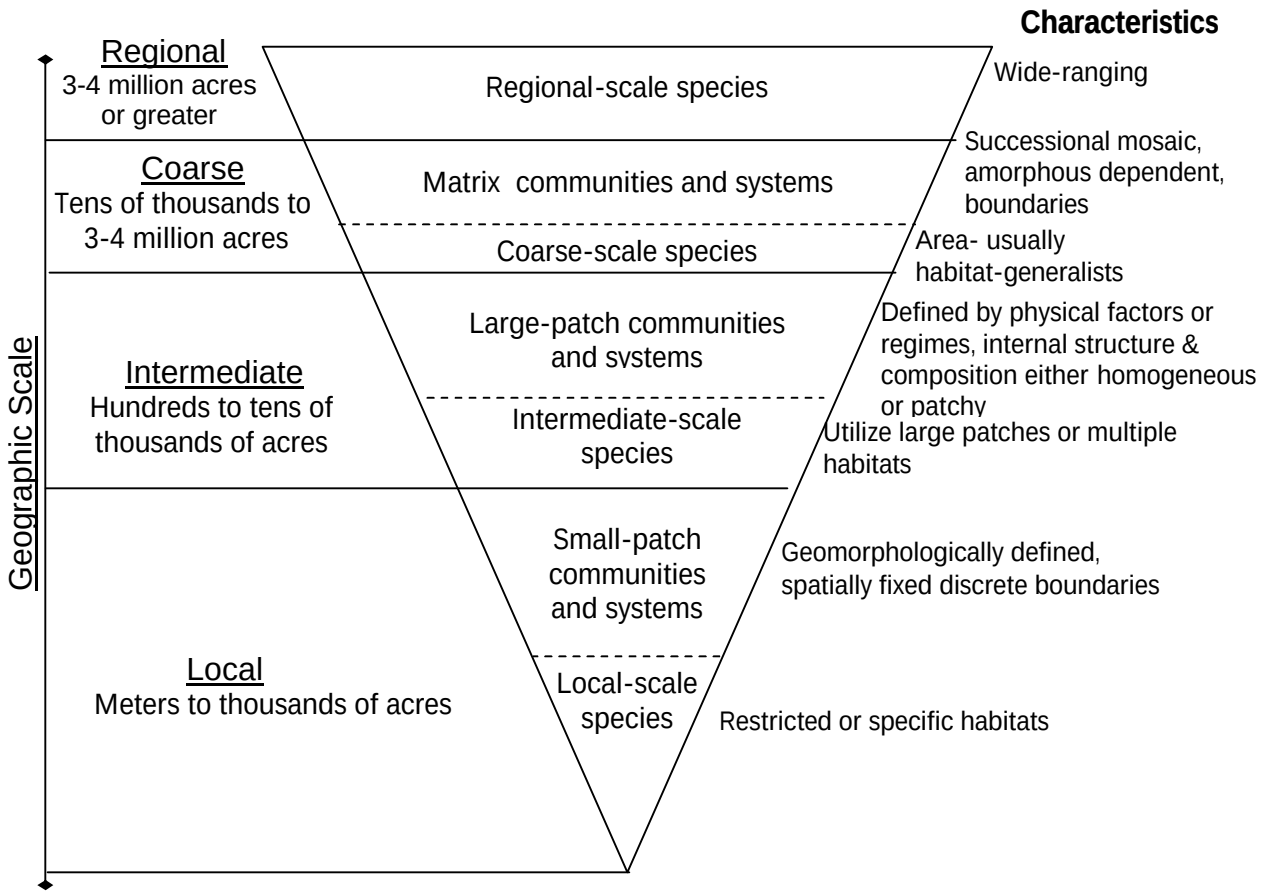


Figure 7. Geographic scales of potential conservation targets. (After Poiani and others 2000.)

Conservation goals for species emphasize genetic fitness and the functional roles of species in ecosystems, while coarse-filter ecological system goals focus on representation of ecological variability and environmental gradients across large spatial scales. All known viable and feasibly restorable occurrences of imperiled species, imperiled plant communities and all aquatic species were included in the analysis. The significance of Great Basin endemic and geographically limited species was taken into consideration for goal setting. For example, for Great Basin endemic species the Great Basin is the only place where conservation can occur. Therefore, goals for Great Basin endemic and geographically limited conservation targets were stringent (100 % and 75-100 % of known occurrences, respectively). Less rare species were assigned less robust goals that were based on their global distribution patterns.

Representative ecological systems were assigned goals based on overall extent and minimum size criteria to accommodate ecological processes necessary to maintain

developmental stages. The limited ecological information available to inform conservation goals for the Great Basin is acknowledged, and for this reason the team formed assumptions about viable ecological system occurrence or patch sizes and timeframes for ecological processes. Thus, the goals for ecological systems are defined as objectives to be tested and refined as information is later made available. The goals for each conservation target were used to define the selection criteria for conservation areas in the Great Basin ecoregional portfolio.

2. Conservation Portfolio Selection

Beginning with a foundation of areas already in protected status and managed primarily for biodiversity protection, the planning team developed a portfolio of sites to capture occurrences of the 675 conservation targets. The team employed a portfolio selection program – SITES – to design the most efficient portfolio of conservation areas in the Great Basin (Nachlinger and others 2001). Conservation of multiple examples of each conservation target, stratified across its geographic range (when possible) was required to represent natural variability and to provide acceptable levels of replication. The six sections of the ecoregion were modified and used to geographically stratify known conservation target occurrences to capture variation at multiple scales (figure 8; McNab and Avers 1994). The computer-generated draft portfolio was then reviewed and edited by the team. The resulting 358 conservation areas delineated for the Great Basin (figure 9) cover about 40 % of the ecoregion and include 75 % of the areas nominated by resource specialists during expert interviews. If conserved, these 358 conservation areas would most efficiently capture the best viable occurrences of the Great Basin's biological diversity within the least acreage necessary to meet conservation goals.

Figure 8. Six geographic sections of the Great Basin ecoregion.

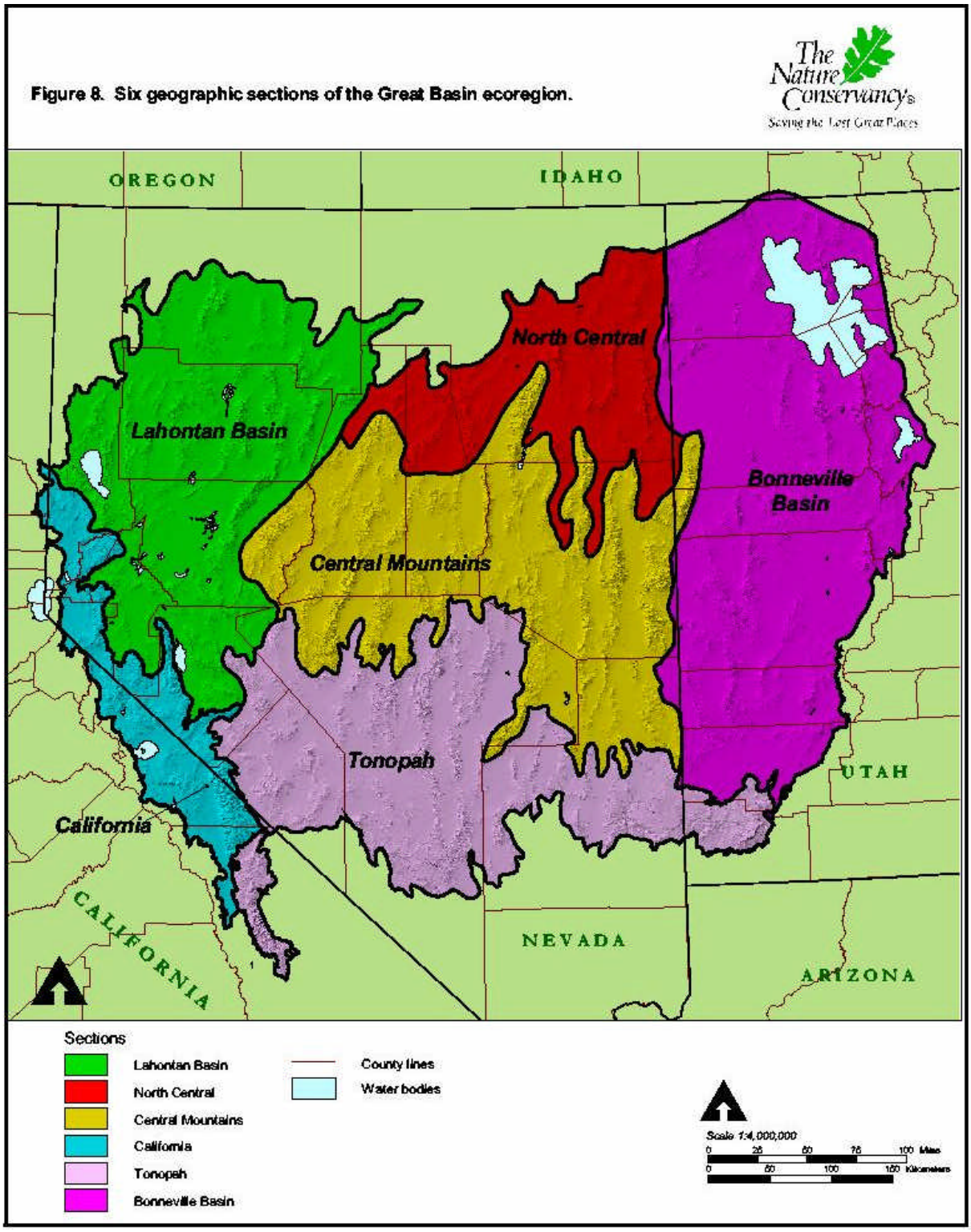


Figure 9.
Great Basin ecoregion portfolio sites

The long-term survival of Great Basin conservation targets requires functioning conservation areas with intact patterns and processes. A functional conservation area maintains focal species, plant communities, ecosystems, and their supporting ecological processes within their natural range of variation (Poiani and others 2000). Functional conservation areas have several essential aspects:

- The size and configuration of the area is dependent upon the conservation targets and their sustaining ecological processes,
- "Functional" refers to the ability of a conservation area to maintain healthy, viable conservation target occurences over 100 years or more, including the ability to respond to natural or human-caused environmental change,
- Functional conservation areas do not necessarily preclude human activities, but their ability to function naturally may be greatly influenced by humans, and,
- Functional conservation areas occur at all scales and may require management or restoration to maintain their functionality.

Two types of functional conservation areas were identified in the Great Basin: functional landscapes and functional sites. **Functional landscapes** are large, have many conservation targets at all geographic scales, and include at least four ecological system groups with aquatics among them (or if not, riparian and wetland terrestrial systems). Functional landscapes are relatively intact (i.e., unfragmented), and retain most (or all) of their essential ecological components, patterns and processes. Consequently, functional landscapes have more habitats, more diversity, and larger populations of known and unknown species. Because of the larger geographic scale required to capture intact ecological processes, few functional landscapes remain in the Great Basin. In contrast, **functional sites** are smaller, with fewer conservation targets at one or two geographic scales and include three or fewer ecological system groups. The Great Basin ecoregional portfolio includes 94 functional landscapes and 264 functional sites.

In early 2001, a team of TNC staff convened to set conservation priorities for the Great Basin ecoregion portfolio. While all conservation areas in the portfolio are important to the collective conservation in the Great Basin, a number of areas may need immediate attention. The first stratification in this assessment was to address large landscapes based upon the assumption that larger conservation areas would protect known as well as unknown conservation targets, offer the greatest range of variation of elements, and more likely have functioning ecological processes necessary to maintain larger systems. For the Great Basin, 94 functional landscapes and 264 smaller, functional sites were identified. Each of the functional landscapes was ranked initially for five criteria: conservation value, complementarity, threats, feasibility, and leverage. The five criteria are described below (TNC 2000a).

Conservation Value refers to the number, scale, and diversity, as well as the health of the conservation targets at each potential conservation area. Priority was given to conservation areas with conservation targets at multiple scales, with both aquatic and terrestrial types, the greatest number of conservation targets, and a high rank for biodiversity health based on size, condition and landscape context.

Complementarity was defined by selecting conservation areas that are most different from conservation areas that are already conserved, thereby adding to the diversity of existing conservation areas. A conservation area was considered "already conserved" if its conservation targets have high biodiversity health and low (or no) threats. They were often identified by their current management (protection) status. Priority was given to conservation areas having conservation targets that were under-represented in areas of current conservation management (high complementarity).

Threat is a measure of both urgency and degree of actions that may destroy or significantly degrade a conservation target occurence or the ecological processes that support it. Priority was given to conservation areas with the greatest severity and immediacy of threats.

Feasibility is a measure of staff capacity for both TNC as well as other land managers or partners to decrease or remove the threats, the likelihood of success, and the financial commitment of unrestricted funds necessary to successfully achieve actions. Priority was given to conservation areas where successful conservation was thought to be attainable.

Leverage is the ability to affect conservation at additional sites by acting at one area. Priority was given to conservation areas where opportunities for leverage were considered high.

In total, 145 conservation areas were evaluated for threats data as a part of a prioritization assessment that culminated in list of 20 high-priority **action sites** (figure 10). The top 20 action sites have highly varied ownership and management patterns. Three of these action sites overlap with DoD lands: Blue Lakes-Badlands, Carson Sink, and Great Salt Lake. Specific conservation strategies for the 20 action sites were not developed by the ecoregional team, because strategy development is likely to yield more tangible results when accomplished by multidisciplinary groups that include landowners, managers, biologists, and others. General strategies for conservation areas in the Great Basin portfolio that overlap with DoD and MOA lands are discussed in a later section.

TNC's conservation work in the Great Basin ecoregion will be coordinated by each State chapter (Nevada and Utah) based on their capacity. To prioritize potential actions within the Great Basin and other ecoregions, in June 2001 TNC's Nevada chapter undertook a state-wide assessment of priority conservation areas for action in those portions of the Great Basin, Mojave Desert, Columbia Plateau and Sierra Nevada ecoregions that overlap the state of Nevada. For this assessment, conservation areas were lumped into landscape aggregates within each ecoregion to ease comparisons among the four ecoregional portfolios. The NV Chapter chose ten high priority landscape aggregates for action by the year 2010. Of these ten Nevada priority aggregates, three overlap in part with DoD or MOA lands in the Great Basin. They are the Nellis Ranges Aggregate (Belted Range-Kawich Valley-Gold Flat/Timber Mountain/Emigrant Valley-Halfpint Range, South Groom Range, and West Groom Range conservation areas), the South Wassuk Range Aggregate (South Wassuk Range), and the Carson Sink Aggregate (Blowsand Mountain, Carson Sink, and Sand Mountain conservation areas).

Figure 10. Twenty priority actions areas in the Great Basin ecoregion portfolio.

V. RESULTS OF DEPARTMENT OF DEFENSE PORTFOLIO ASSESSMENT

A total of 358 conservation areas were ultimately identified for the Great Basin ecoregion (figure 9). For elaboration on methods and criteria for conservation area selection, please refer to Nachlinger and others (2001). A total of 127 of the conservation areas in the Great Basin ecoregional portfolio overlap with DoD land or occur on land overlaid by a MOA (appendix E). Thus, 36 % of the identified portfolio for the Great Basin overlaps with lands managed solely or cooperatively by DoD. The 127 conservation areas in the DoD portfolio contain 325 conservation target species and ecological systems (appendix B). Note that not all of the 325 conservation targets are known to occur on DoD and MOA lands; rather, they occur in conservation areas that overlap DoD and MOA lands. We include all conservation targets within overlapping conservation areas because effective long-term conservation of these areas will require cooperative management by DoD and other land managers.

Table 2 summarizes the types of conservation targets that occur in conservation areas overlapping DoD and MOA lands. Several conservation target ecological systems were contained within the 127 conservation areas in the DoD portfolio. Twenty-three terrestrial ecological systems, two imperiled terrestrial plant communities and three aquatic ecological systems occur in conservation areas that overlap DoD land. An additional five imperiled terrestrial plant communities occur in conservation areas that are overlaid by the MOA airspace. Conservation target ecological systems at all spatial scales, including those matrix-forming ecological systems found in the lower elevations such as greasewood shrubland, salt desert scrub and sagebrush semidesert, are integral to conservation of the Great Basin ecoregion. Matrix-forming ecological systems such as these were selected as coarse-filter conservation targets because they are representative of the Great Basin. These large-patch and relatively un-studied systems also were selected as coarse-filter conservation targets which are hypothesized to capture biodiversity currently unknown to science.

In the Great Basin ecoregional assessment (Nachlinger and others 2001), several categories of species were chosen as potential conservation targets including imperiled, vulnerable, declining, endemic, geographically limited, disjunct or peripheral, and wide-ranging. **Imperiled** species are those that received a G1 or G2 ranking by the Association for Biodiversity Information, now known as NatureServe. Species ranked G1 are at high risk of extinction due to extreme rarity, very steep declines in population, or other factors. Species ranked G2 are at high risk of extinction due to very restricted range, very few populations (often fewer than 20 populations), steep declines in population, or other factors. **Vulnerable** species are those that have received a G3 ranking from NatureServe, and are those that are at moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors. **Declining** species are those that have received a higher ranking from NatureServe (G4 or G5), but have populations that exhibit a declining trend, suggesting that they are at risk of becoming

imperiled in the future. **Great Basin endemic** species are those whose global distribution is limited to the Great Basin ecoregion. **Geographically limited** species are those whose global distribution is limited
to the Great Basin and one or two other ecoregions. **Peripheral** or **disjunct** species are those whose global distribution is disjunct from the occurrences within the Great Basin.

Table 2. Summary of conservation target groups found within conservation areas overlapping DoD and MOA lands in the Great Basin ecoregion portfolio.

Targets	# on DOD/MOA	# on DOD only
Terrestrial Ecological Systems	23	23
Imperiled Terrestrial Communities	7	2
Aquatic Ecological Systems	3	3
Imperiled Species (G1 & G2 ranked species)	159	57
Species of Special Concern (G3 & G5 ranked species)	95	71
Unranked Species	38	33

Type	**# on DOD/MOA**	**# on DOD only**
Federally listed Endangered, Threatened, and Candidate species	12	5
Declining Species	18	16
Endemic Species	138	45
Limited Species	85	57
Disjunct/Peripheral species	29	21
Widespread Species	41	36

Of the 292 conservation target species found in conservation areas that overlap the DoD land base, 57 are imperiled, and an additional 102 imperiled conservation target species are overlaid in whole or in part by MOA airspace. An additional 95 species of special concern also were captured by the DoD portfolio. Thirty-eight conservation target species in the DoD portfolio were unranked by NatureServe because too little information exists to rank them, but they were considered rare and significant to the diversity of the ecoregion (appendix B). Many of these unranked species are newly described invertebrates, with very incomplete distribution information.

In addition to the categories shown in table 2, the conservation target species captured in the DoD portfolio include species of management concern. These included all federal and state listed endangered, threatened and candidate species; endemic, limited, and disjunct species; and representative wide-ranging species. Twelve of the 292 conservation target species are listed as threatened or endangered under the Endangered Species Act (appendix B). Geographically limited species also are significant contributors to ecoregion diversity. Eighty-five of the conservation target species in the DoD portfolio have

distributions limited to the Great Basin and only one other ecoregion. Twenty-nine species occur in Great Basin populations that are peripheral to or disjunct from their main distribution. In addition, 18 species captured by the DoD portfolio exhibit population trends that are considered declining throughout their range. Nearly all of these declining species are terrestrial and many are birds (11 taxa). Fourteen wide-ranging conservation target species are included in the DoD portfolio. Declining and wide-ranging species conservation targets in the DoD portfolio are listed in appendix C.

Overall, endemism in the ecoregion is high, with 302 species of plants and animals wholly confined to the Great Basin (table 3). Forty-five species endemic to the Great Basin (4 % of all Great Basin endemics) occur within conservation areas overlapping DoD managed lands. A total of 138 Great Basin endemic species occur on conservation areas that overlap DoD land or lands overlaid by MOA airspace. The largest taxonomic groups contributing to Great Basin endemism are plants and invertebrates. Typically, the distribution of these endemic taxa are highly restricted by their edaphic environment. They may be on specialized soils such as volcanics, in unusual ecological systems such as sand dunes, or they may be restricted to their aquatic environment such as isolated hot springs. A list of Great Basin endemic conservation targets included in the portfolio of conservation areas overlapping DoD and MOA land is provided in appendix D.

Table 3. Conservation targets by taxonomic group, and number of endemics in the Great Basin ecoregion and in conservation areas overlapping DoD and MOA lands.

	Total Number of Targets	Number of Great Basin Endemics	Number of MOA Endemics	Number of DOD Endemics	Number of DOD/MOA Endemics
Plants	224	129	74	21	75
Aquatic Invertebrates	97	67	18	3	18
Terrestrial Invertebrates	139	66	26	18	28
Fishes	45	31	13	2	13
Herps	10	5	1	0	1
Mammals	27	4	2	1	3
Birds	36	0	0	0	0
Total	*578*	*302*	*134*	*45*	*138*

Of the 358 conservation areas identified for the Great Basin ecoregion (figure 9; Nachlinger and others 2001), 127 overlap DoD land or MOA airspace. These conservation areas range in size from 3,565 acres to over 2.5 million acres (figure 11). These areas and their biodiversity attributes are detailed in appendix E. The amount of DoD land that has been identified for conservation management is less than 5 % of total amount of lands identified within conservation areas (figure 12). Table 4 summarizes the conservation areas overlapping DoD and MOA lands, by installation.

Figure 11. Conservation areas overlapping DoD and MOA lands in the Great Basin ecoregion.

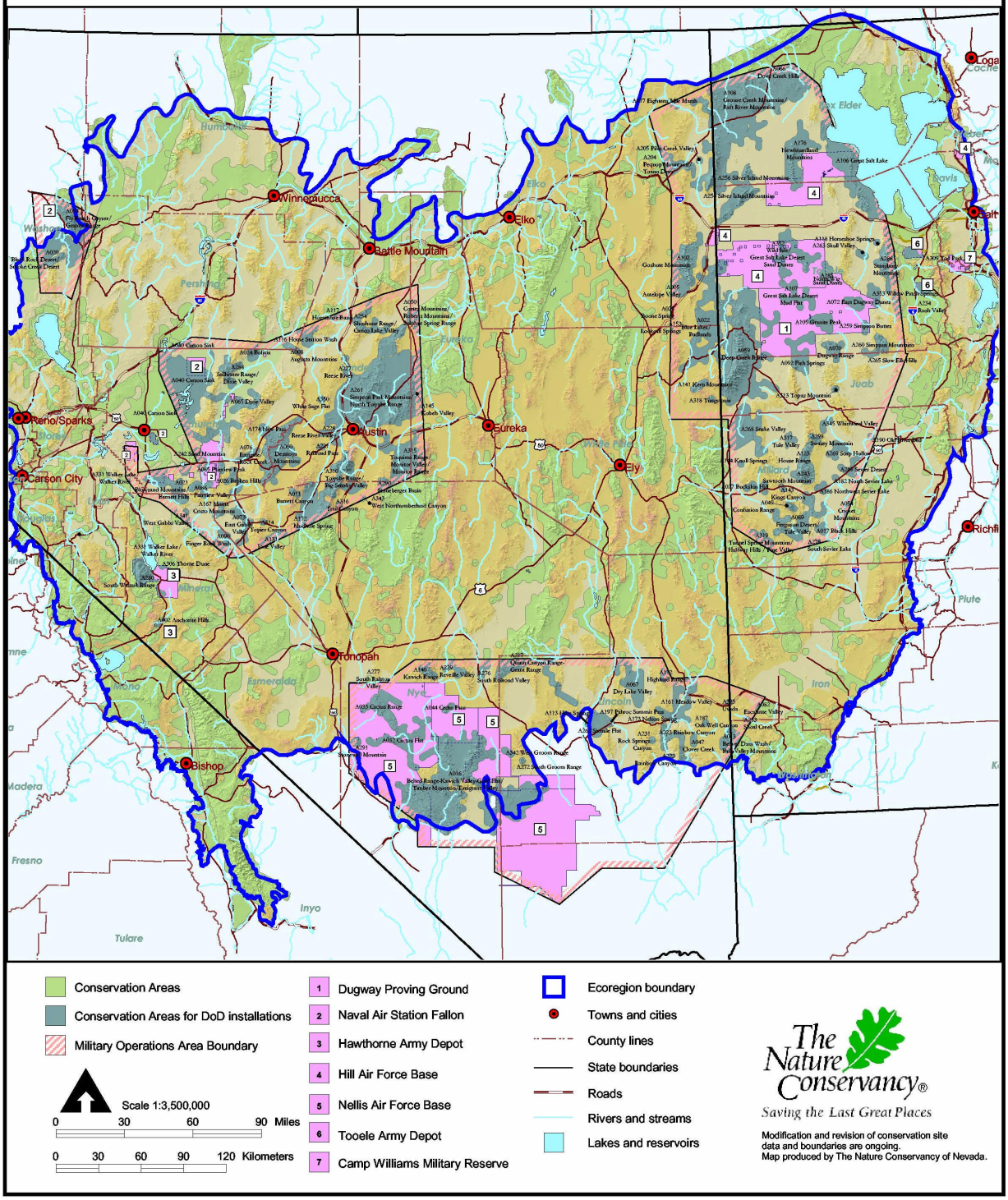


Table 4. Number, types, and acreage of conservation areas overlapping DoD and MOA lands.

Installation	DoD Lands # of sites (acres)	Air Space # of sites (acres)	# of Landscape sites	# of Functional Sites	Total # of Sites
Fallon NAS	8 (87,290.23)	40 (2,704,913.25)	14	26	40
Hawthorne AD	4 (62,815.53)		2	2	4
Hill AFR	7 (228,008.21)	56 (3,702,155.47)	14	42	56
Nellis AFB	7 (604,676.44)	27 (1,628,301.83)	6	21	27
Tooele AD	2 (38,856.56)		1	1	2
Wendover/Dugway	8 (214,511.95)		2	6	8

Of the 127 conservation areas, 33 overlap with DoD land, with the remaining 94 conservation areas extending beyond DoD land boundaries into other public and private lands overlaid by MOA airspace. Thirty-five of the 127 conservation areas in the DoD portfolio are functional landscapes, while the remaining 92 are smaller functional sites.

There are four irreplaceable conservation areas overlapping DoD lands. These **irreplaceable** conservation areas contain the total extent of known global populations for at least one Great Basin endemic species (appendix F). The four irreplaceable conservation areas contain 34 unique conservation target species. The irreplaceable conservation areas that overlap with DoD lands include: 1) a portion of the Deep Creek Range on Hill Air Force Base and Ranges and Dugway PG; 2) the Belted Range-Kawich Valley-Gold Flat/Timber Mountain/Emigrant Valley-Halfpint Range on Nellis Air Force Base and Ranges; and 3) Carson Sink, and 4) Sand Mountain, both in part overlapping NAS Fallon. Thirteen additional irreplaceable conservation areas overlap with MOA airspace in the Great Basin.

In the following sections, each conservation area that overlaps with DoD land or MOA airspace management is discussed in more detail by installation. Camp Williams Military Reserve does not overlap with any identified Great Basin ecoregional conservation area and is thus not included in the following section.

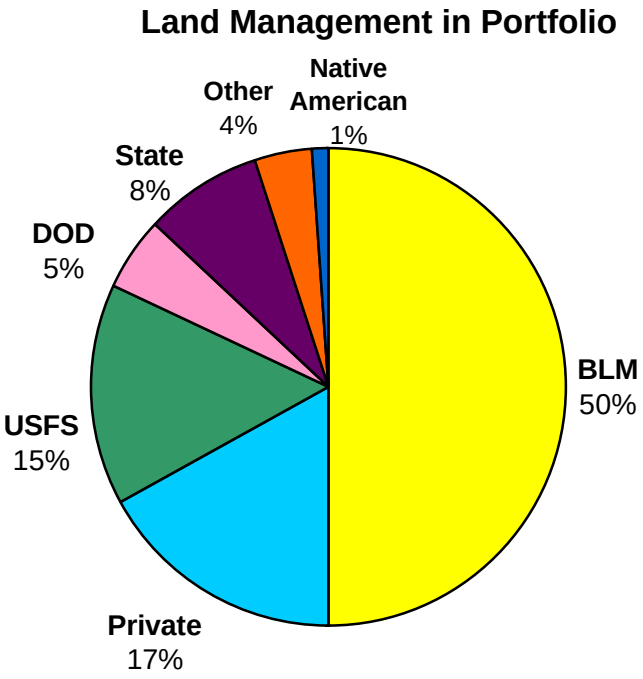


Figure 12. Percentage of major land management categories in the Great Basin ecoregion portfolio.

1. Dugway Proving Ground

A. Description

The U.S. Army administers 798,214 acres of land in Tooele County, Utah (figure 13) as Dugway Proving Ground (Dugway PG). This Army installation is part of the much larger Utah Test and Training Range that is jointly managed with the U.S. Air Force. Public access to Dugway PG, Hill Air Force Base and the Utah Test and Training Range is prohibited. Dugway PG lies under the 11.2 million acre MOA airspace of the Utah Test and Training Range. The primary military mission of Dugway PG includes research, development, and testing of chemical and biological defense measures and weapons systems. In addition, the proving ground provides technical and logistical support for munitions delivery and detection systems.

Located entirely in the basin of ancient Lake Bonneville, Dugway PG lies mostly in Dugway and Snake Valleys, surrounded by several mountain ranges. Deep Creek Mountains lie to the west, Fish Springs Range to the south, Onaqui Mountains to the east and the Cedar Mountains to the north. Soils in the valley are primarily lacustrine derived, with several sand dunes and sand fields on both the foothills of the ranges and in the valley floors.

Vegetation at Dugway PG is typical of cold northern desert shrub habitat with halomorphic soils, interspersed with islands of shrub steppe vegetation dominated by sagebrush, greasewood, saltbush and juniper woodlands. A number of exotic weeds occur throughout Dugway PG with cheatgrass, tumble mustard, peppercress, and Russian thistle prominently among them (Martin 2000).

B. The Conservation Portfolio for Dugway Proving Ground

Eight conservation areas were identified overlapping Dugway PG (figure 12). These areas capture the majority of natural features recommended in Dugway PG's Special Features Inventory (The Nature Conservancy 1993). One of these conservation areas, Deep Creek Range, has unique conservation target species that make it an irreplaceable site. Of the eight conservation areas, two are functional landscapes (Deep Creek Range and Fish Springs) and the remaining six are functional sites. A summary of these conservation areas is presented in table 5. Each conservation area in the Dugway PG portfolio is discussed below. Refer to Appendix E for a list of ecological system and species conservation targets in each conservation area.

The **Deep Creek Range** is a large, irreplaceable functional landscape that overlaps Dugway PG. The Deep Creek Range is diverse, capturing 18 terrestrial ecological system conservation targets, one aquatic ecological system conservation target and one rare plant association. This mountain range varies from alpine to the desert floor. Twenty-six conservation target species are captured by this conservation area, including five Great

Basin endemics in the Deep Creek Range: four plants (Kass rockcress, Deep Creek stickseed, low beardtongue, Dad's penstemon) and one fish (Bonneville cutthroat trout). Deep Creek stickseed and Kass rockcress are only known from the upper montane areas in this mountain range, making it an irreplaceable site. The portion of the Deep Creek Range conservation area that overlaps with Dugway PG does not contain the Deep Creek Range endemic plant species; however, this portion of the conservation area may contribute to the functionality of the low elevation shrublands conservation target.

East Dugway Dunes is a functional site that captures four terrestrial ecological system conservation targets representing high quality desert shrub types. The conservation area also contains two Great Basin endemic species: a bee (*Andrena* sp. nov.) and a plant (plains springparsley). *Andrena* sp. nov. is found in only two locations, both in the DoD portfolio: East Dugway Dunes and Blowsand Mountains-Barnett Hills (NAS Fallon and Fallon Range Training Complex MOA).

The **Fish Springs** conservation area is a functional landscape and contains 23 conservation targets within its boundaries. They include four aquatic and seven terrestrial ecological systems, and 12 species. The aquatic conservation targets occur outside Dugway PG boundaries on the adjacent Fish Springs National Wildlife Refuge.

Granite Peak is a functional site identified as a conservation area for six terrestrial ecological system conservation targets.

The **Great Salt Lake Desert Mud Flat** is a functional site included in the Great Basin portfolio for four terrestrial ecological system conservation targets.

North Wig Sand Dunes is a functional site that overlaps lands managed by three federal entities: the Army (Dugway), Air Force (Hill), and BLM. This conservation area captures examples of four terrestrial ecological system conservation targets and one species conservation target.

Simpson Buttes is a functional site that captures an historic record of the least chub in a valley drainage to the east of the buttes, as well as occurrences of two terrestrial ecological system conservation targets.

Willow Patch Spring, much of it under MOA airspace, is a functional site that captures six low-elevation terrestrial communities, including desert riparian shrubland. One Great Basin endemic plant (Pohl milk-vetch) is located in the Willow Patch Springs conservation area. This conservation area contains one of four locations for Pohl milk-vetch. Three of these locations are on DoD land (Rush Valley, Skull Valley and Willow Patch Springs conservation areas), and one (near Vernon, Utah) is wholly on BLM lands.

Since completion of the Great Basin ecoregional conservation assessment, there has been subsequent taxonomic work done on tiger beetles in Utah's West Desert. This work indicates that the Badlands tiger beetle, *Cicindela decemnotata vanescens*, although currently unofficially described and not yet published, is a local endemic subspecies to Dugway Proving Ground, Delle, and the Little Granite Mountains (Dr. Barry Knisley, personal communication). It occurs in scattered patches of sparsely vegetated grasslands, sagebrush, and other open areas, which are common on the installation. The occurrence of the Badlands tiger beetle at Dugway PG is of conservation significance and the installation is commended for collaborating with entomologists working there to expand biogeographic knowledge. It is not known whether this tiger beetle actually occurs within an already identified conservation area, so prior to additional ecoregional assessments, Dugway PG could take proactive stewardship measures for the Badlands tiger beetle and its habitat to ensure persistence of this local endemic.

Figure 13. Conservation areas overlapping Dugway Proving Ground.

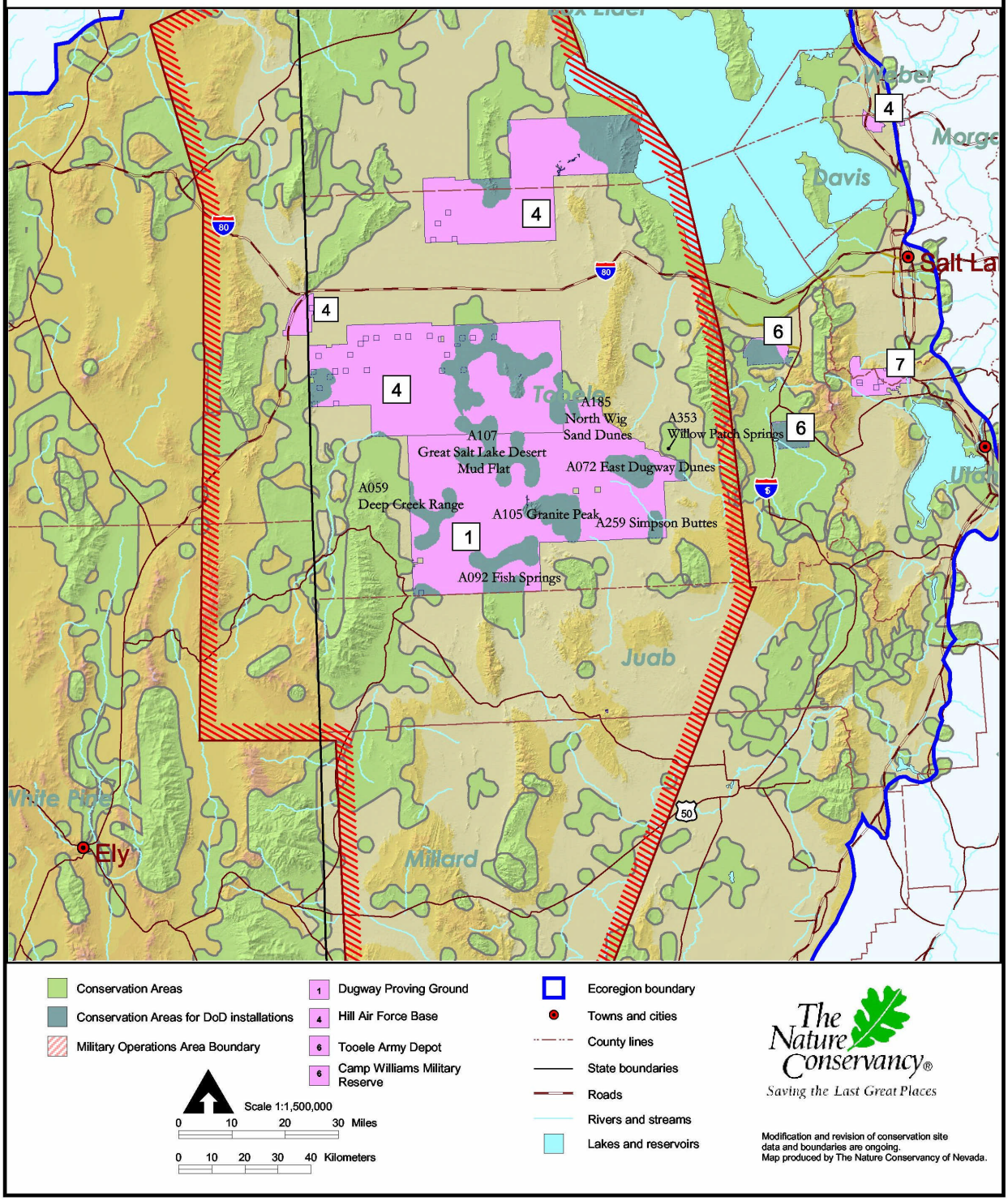


Table 5. Summary of Conservation areas and attributes overlapping Dugway Proving Ground.

					TOTAL CONSERVATION TARGETS											
Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	Total Targets
A059	DEEP CREEK RANGE	L	Y	5		1	18	1		12	2	3	2	2	7	48
A072	EAST DUGWAY DUNES	F	N	2			4					2			1	7
A092	FISH SPRINGS	L	N	0	1	3	7			8	1		1	2		23
A105	GRANITE PEAK	F	N	0			6									6
A107	GREAT SALT LAKE DESERT MUD FLAT	F	N	0			4									4
A185	NORTH WIG SAND DUNES	F	N	0			4					1				5
A259	SIMPSON BUTTES	F	N	0			2				1					3
A353	WILLOW PATCH SPRINGS	F	N	1			6								1	7

2. Naval Air Station Fallon and Fallon Range Training Complex

A. Description

Naval Air Station Fallon (NAS Fallon) lies in Churchill County, Nevada approximately 70 miles east of Reno (figure 14). NAS Fallon's primary mission is to provide training facilities for carrier air wings, Marine air groups, tenant commands and individual units participating in training events including joint and multinational exercises. NAS Fallon also houses the Naval Strike and Air Warfare Center. The installation operates and maintains a complete airfield facility to provide visiting squadrons and air wings with ordnance, fuel, air traffic control, berthing and messing, and all other aspects necessary for accomplishing the training mission.

NAS Fallon administers approximately 243,000 acres of land in several disjunct parcels associated with the air base and an additional 6,800,000 acres of non-contiguous MOA associated with the Fallon Range Training Complex (FRTC). The FRTC airspace overlies parts of Washoe, Lyon, Churchill, Pershing, Mineral, Nye, Lander, and Eureka counties in Nevada. The majority of lands under the FRTC MOA airspace are administered by BLM, with lesser acreage managed by DoD, U.S. Forest Service, U.S. Fish and Wildlife Service, State of Nevada, and private entities. There are several designated, protected areas on public lands under the FRTC MOA airspace: Stillwater National Wildlife Refuge, Black Rock Desert National Conservation Area, Arc Dome Wilderness, several Wilderness Study Areas (Augusta Mountains, Clan Alpine Mountains, Desatoya Mountains, Fox Range, Gabbs Valley Range, Job Peak, Pole Creek, Poodle Mountains, Selenite Mountains, Simpson Park and Stillwater Range), and two State of Nevada Wildlife Management Areas (Humboldt and Stillwater).

Most of NAS Fallon facilities are in the large, remnant drainage depression known as Lahontan Valley. Rocks exposed in the adjacent mountain ranges are mostly Tertiary sedimentary and volcanic rocks (Department of the Navy 2000). The valleys are underlain by unconsolidated alluvial and playa deposits. Widespread and active faulting has occurred on many of the mountains and valleys in recent time. A non-contiguous portion of the MOA lies over the Black Rock Desert. The MOA airspace occurs within four hydrographic basins, with the Carson Desert Basin receiving a substantial quantity of water from irrigation and return flows. Regional hydrologic features include the Lahontan, Sheckler, and Stillwater reservoirs, Carson Lake, various playa lakes, irrigation canals, ephemeral streams, and springs.

Vegetation on NAS Fallon land varies from barren alkali playas to greasewood-shadscale to pinyon-juniper woodlands. Much of the land in withdrawn areas has been disturbed by both military and civilian activities. Some areas are dominated by non-native species, such as saltcedar. Wildlife includes native and game fishes, birds and mammals. Shorebirds, waterfowl and marsh birds in the Lahontan Valley account for 70 % of the avifauna migrating through Nevada's wetlands. The Lahontan Valley (largely overlapped by

the FRTC MOA) provides important wetland and riparian habitat for these migratory species, and is a designated site in the Western Hemispheric Shorebird Reserve Network (Manomet Center for Conservation Sciences 2005).

B. The Conservation Portfolio for Naval Air Station Fallon and Fallon Range Training Complex

Within the NAS Fallon and FRTC portfolio, eight conservation areas overlap with land units administered by NAS Fallon, and another 32 conservation areas are overlaid by the FRTC MOA airspace (figure 14 and table 6). The two largest areas contributing to conservation value for NAS Fallon are the Carson Sink wetlands and the sand dune systems overlaid by the FRTC MOA. The sand dune systems include Carson Sink, Blowsand Mountain-Barnett Hills, and Sand Mountain. There are nine irreplaceable conservation areas in the NAS Fallon portfolio (table 6), including two that overlap Navy lands: Carson Sink and Sand Mountain. Additional irreplaceable conservation areas in the NAS Fallon and FRTC portfolio are Augusta Mountains, Fly Ranch Geyser-Granite Range, Reese River, Shoshone Range-Carico Lake Valley, Toiyabe Range-Big Smoky Valley, and Toquima Range-Monitor Valley-Monitor Range.

Of the 40 conservation areas in the NAS Fallon and FRTC portfolio, 13 are functional landscapes: Black Rock Desert-Smoke Creek Desert, Blowsand Mountains-Barnett Hills, Carson Sink, Cortez Mountains-Roberts Mountains-Sulpher Spring Range, Desatoya Mountains, Fly Ranch Geyser-Granite Range, New Pass, Reese River, Sand Mountain, Shoshone Range-Carico Lake Valley, Simpson Park Mountains-North Toiyabe Range, Toiyabe Range-Big Smoky Valley, Toquima Range-Monitor Valley-Monitor Range. The remaining 27 areas in the portfolio are functional sites. A summary of the conservation areas in the NAS Fallon and FRTC portfolio is provided in table 6, and each is discussed below. Refer to Appendix E for a list of ecological system and species conservation targets in each conservation area.

i.) The Conservation Portfolio for Naval Air Station Fallon and Fallon Range Training Complex lands

Blowsand Mountains – Barnett Hills is a functional landscape that captures three terrestrial ecological system conservation targets and 29 species conservation targets. This conservation area harbors ten Great Basin endemic species: two plants (Tonopah milk-vetch and Lahontan indigobush) and eight invertebrates. The Great Basin endemic invertebrates in this conservation area are Hardy's aegialian scarab, Sand Mountain pygmy scarab, dune honey ant, Sand Mountain serican scarab, a sand obligate cricket (*Stenopelmatus* ssp. nov., and three bees (*Andrena chrylismiae, Andrena* sp. nov., and *Anthophora* sp. nov.). *Andrena* sp. nov. is found in only two locations, both in the DoD portfolio: Blowsand Mountains-Barnett Hills and East Dugway Dunes (Dugway Proving Ground and Utah Test and Training Range lands). The sand dune system harbors an additional 15 sand-loving invertebrates that

are very limited in distribution. This area was further analyzed in a collaborative conservation area assessment (Wainscott 2004) as part of Phase II of the Great Basin Conservation Initiative.

Bolivia is a functional site selected for three terrestrial ecological system conservation targets and two Great Basin endemic plants: Candelaria blazing-star and scented beardtongue .

Carson Sink is an irreplaceable, large functional landscape that overlaps Navy land, extending beneath the MOA and beyond. A small portion (3.7 %) of the Carson Sink overlaps NAS Fallon land and approximately 45 % of this area is overlaid by the MOA. The Carson Sink conservation area has very high biological diversity, containing 10 terrestrial ecological system conservation targets, four aquatic ecological system conservation targets and 59 species conservation targets. It is an irreplaceable site for a sand obligate beetle (*Novelsis sabulorum*). Eleven other Great Basin endemic species are captured by this site: three invertebrate species (*Perdita haigi* (a bee), *Stenopelmatus* ssp. nov. (a cricket) and the Nevada alkali skipperling butterfly), six plants (Kennedy's milk-vetch, Lahontan Basin buckwheat, sand cholla, Nevada dune beardtongue, scented beardtongue, and Reese River phacelia), one fish (Dixie Valley tui chub) and one mammal (sagebrush vole). The wetland ecological system conservation targets support a diverse resident bird population, as well as unusually large concentrations of declining migratory birds. The sink is located within the Lahontan Valley, a designated site in the Western Hemispheric Shorebird Reserve Network (Manomet Center for Conservation Sciences 2005).

Dixie Valley is a functional site that captures five terrestrial ecological system conservation targets and one species conservation target.

Fairview Peak is a functional site that captures three terrestrial ecological system conservation targets and one species conservation target, the Great Basin endemic plant, pink egg milk-vetch.

Fairview Valley is a functional site that was selected for occurrences of two terrestrial ecological system conservation targets.

Sand Mountain is an irreplaceable, functional landscape conservation area. The only known occurrences of three invertebrates are found within this conservation area: the Sand Mountain blue butterfly, and two bees (*Hesperapis* sp. nov.2 and *Perdita* sp. nov.3). The area also captures eight additional Great Basin endemic species (Kennedy's milk-vetch, Hardy's aegialian scarab, *Anthophora* sp. nov. (a bee), *Cardiophorus* ssp. nov. (a click beetle), Sand Mountain pygmy scarab, dune honey ant, *Perdita haigi* (a bee), and Sand Mountain serican scarab) as well as 14 additional plant and animal species conservation targets of very limited distribution. Five terrestrial ecological system conservation targets are captured by this

conservation area. This area was further analyzed in a collaborative conservation area assessment (Wainscott 2004) as part of Phase II of the Great Basin Conservation Initiative.

Stillwater Range – Dixie Valley is a functional site that captures seven terrestrial ecological system conservation targets and an occurrence of the Great Basin endemic plant scented beardtongue. This site overlaps slightly (2%) with DoD lands, and is wholly overlaid by the FRTC MOA.

ii.) The Conservation Portfolio for lands overlaid by the Fallon Range Training Complex MOA airspace

August Mountains is an irreplaceable, functional site that harbors the only known populations of two freshwater mollusks: the elongate Cain Spring springsnail and the ovate Cain Spring springsnail. This conservation area also contains eight terrestrial ecological system conservation targets and an occurrence of one additional Great Basin endemic species, the Dixie Valley springsnail.

Barrett Canyon is a functional site that contains four terrestrial ecological system conservation targets and occurrences of two Great Basin endemic plants, Toiyabe buckwheat and Holmgren smelowskia.

Black Rock Desert – Smoke Creek Desert is a functional landscape that contains vast ephemeral playas, desert shrub vegetation and the processes that maintain their integrity. Five terrestrial ecological system conservation targets and four aquatic ecological system conservation targets are captured by this conservation area. Six species conservation targets also occur in this area, including two Great Basin endemic plants, Cordelia beardtongue and Holmgren smelowskia.

Broken Hills is a functional site selected for one terrestrial system conservation target.

Cortez Mountains – Roberts Mountains – Sulphur Spring Range is a functional landscape that captures occurrences of 13 terrestrial ecological system conservation targets and four aquatic ecological system conservation targets. Ten species conservation targets are captured by this conservation area including the Great Basin endemic plant, Goodrich bladderpod.

Desatoya Mountains is a large functional landscape that captures 11 terrestrial ecological system and three aquatic ecological systems. A total of seven conservation target species are captured in this conservation area.

East Gabbs Valley is a functional site that contains occurrences of two terrestrial ecological system conservation targets and two Great Basin endemic plant species, Eastwood milkweed and Tonopah milk-vetch.

Eastgate – Rock Creek is a functional site that captures three ecological system conservation targets and an occurrence of the Great Basin endemic plant, Candelaria blazing-star.

Finger Rock Wash is a functional site that captures four ecological system conservation targets. This conservation area also contains occurrences of five endemic plants, Eastwood milkweed, Callaway milk-vetch, Tonopah milk-vetch, Beatley buckwheat and sand cholla.

Fly Ranch Geyser – Granite Range is a large, irreplaceable, functional landscape that occurs mostly within the MOA, but extends beyond onto other public lands. Seven terrestrial ecological system conservation targets and two aquatic ecological system conservation targets are captured by this conservation area. This conservation area captures a total of ten conservation target species, and is an irreplaceable site because it contains the only known occurrence of Brue's springsnail.

Home Station Wash is a functional site that captures seven ecological system conservation targets and occurrences of two Great Basin endemic species conservation targets, Reese River phacelia and scented beardtongue.

Horseshoe Basin is a functional site that captures four ecological system conservation targets and an occurrence of the Great Basin endemic plant, windloving buckwheat.

Ione Valley is a functional site that captures occurrences of six terrestrial ecological system conservation targets and two conservation target species, including the Great Basin endemic plant squalid milk-vetch.

Kobeh Valley is a functional site selected for occurrences of five terrestrial ecological system conservation targets and two species conservation targets.

The **Monte Cristo Mountains** functional site was chosen for its two terrestrial ecological system conservation targets and one species conservation target.

Mudhole Spring is a functional site with occurrences of three terrestrial ecological system conservation targets and two species conservation targets, including the Great Basin endemic plant Toiyabe buckwheat.

New Pass is a functional landscape that captures occurrences of seven terrestrial ecological system conservation targets and three species conservation targets, the Great Basin endemic plant Beatley buckwheat.

Railroad Grade is a functional site with one terrestrial ecological system conservation target and two Great Basin endemic plant conservation targets, windloving buckwheat and Reese River phacelia.

Reese River is an irreplaceable, functional landscape that captures seven terrestrial ecological system conservation targets and three aquatic ecological system conservation targets. The site is irreplaceable because it captures the only known occurrences of two plant butterfly species, the pallid wood nymph and Reese River unca skipper. A total of nine species conservation targets are captured by this conservation area, including six Great Basin endemic species, pallid wood nymph, Reese River unca skipper, Nevada alkali skipperling Eastwood milkweed, windloving buckwheat, and Reese River phacelia.

Reese River Valley is a functional site that captures occurrences of three terrestrial ecological systems and three species conservation targets including the Great Basin endemic *Andrena chrylismiae* (a bee).

Shoshone Range-Carico Lake Valley is a large, irreplaceable, functional landscape. This conservation area is irreplaceable for capturing the only known occurrence of two freshwater mollusk species: the large gland Carico springsnail and small gland Carico springsnail. This functional landscape captures occurrences of eight terrestrial ecological system conservation targets, four aquatic ecological system conservation targets and four species conservation targets. In addition to the two unique springsnail species conservation targets, an occurrence of the Great Basin endemic Sada's springsnail also is captured by this site.

Simpson Park Mountains – North Toiyabe Range is a large functional landscape that captures occurrences of 12 terrestrial ecological system conservation targets, three aquatic ecological system conservation targets and six species conservation targets.

Stoneberger Basin is a functional site that captures occurrences of nine terrestrial ecological system conservation targets and two aquatic ecological system conservation targets. Four conservation target species also are found within this conservation area including two Great Basin endemics: Toiyabe buckwheat and sagebrush vole.

The **Toiyabe-Big Smoky Valley** conservation area is a large, irreplaceable, functional landscape that extends beyond the MOA airspace. This conservation area has occurrences of 18 terrestrial ecological system conservation targets, two aquatic ecological system conservation targets and two rare plant association conservation targets. The area is irreplaceable because it captures the only known occurrences of six Great Basin endemic species: Ophir rockcress, Rollins clover, Big Smoky wood nymph butterfly, Charnock Springs tui chub, Big Smoky Valley speckled dace, and Toiyabe spotted frog. In addition, twelve other Great Basin endemic species have occurrences within this conservation area: seven plants (Goodrich biscuitroot, desert whitlowgrass, Snake Range whitlowgrass, Toiyabe

buckwheat, heavenly buckwheat, Holmgren smelowskia, alpine tonestus), two butterflies (Koret's checkerspot, Nevada alkali skipperling), two fishes (Big Smoky Valley tui chub, Lahontan speckled dace) and one freshwater mollusk, the White Pine springsnail. Nineteen additional species conservation targets are captured by this conservation area.

Topier Canyon is a functional site that captures occurrences of four terrestrial ecological system conservation targets and three species conservation targets.

The **Toquima Range-Monitor Valley-Monitor Range** is a large, irreplaceable functional landscape. Eighteen terrestrial ecological system conservation targets and four aquatic ecological system conservation targets are captured by this area. A total of 52 conservation target species are within this conservation area, including 20 Great Basin endemic species. This conservation area is irreplaceable for capturing the only known occurrences of three Great Basin endemic species: the Monitor Valley tryonia snail, Little Fish Lake Valley tui chub and Monitor Valley speckled dace. Of the remaining 17 Great Basin endemic species in this area, 12 are plants (Eastwood milkweed, one-leaflet Torrey milk-vetch, squalid milk-vetch, Toquima milk-vetch, desert whitlowgrass, Toiyabe buckwheat, heavenly buckwheat, dwarf peppergrass, Candelaria blazing-star, Barneby's beardtongue, Holmgren smelowskia, and alpine tonestus), three are invertebrates (*Andrena chrylismiae*, *A. nevadae*, and dark sandhill skipper), one is a freshwater mollusk (Sterile Basin springsnail), and one is a fish (Railroad Valley springfish). A large portion (82%) of the conservation area is located outside of the MOA airspace.

Trail Canyon is a functional site with occurrences of five terrestrial ecological system conservation targets and one species conservation target, the Great Basin endemic fish, Big Smoky Valley tui chub.

West Gabbs Valley is a functional site that captures occurrences of two terrestrial ecological system conservation targets and one species conservation target.

West Northumberland Canyon is a functional site with occurrences of three terrestrial ecological system conservation targets and one species conservation target.

White Sage Flat is a functional site that captures occurrences of four terrestrial ecological system conservation targets and one species conservation target.

Figure 14. Conservation areas overlapping Naval Air Station Fallon and Fallon Range Training Complex.

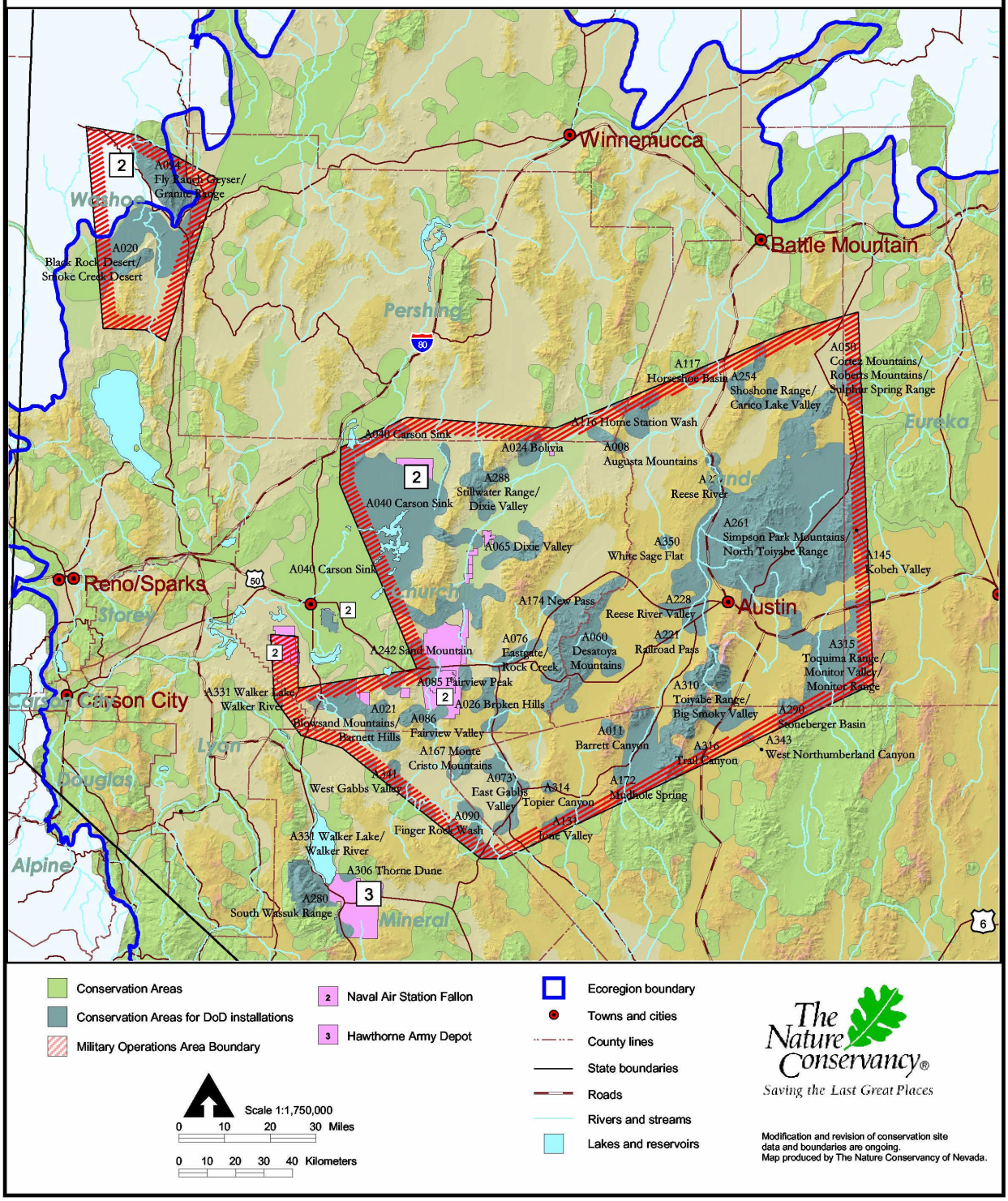


Table 6. Summary of Conservation areas and attributes overlapping Naval Air Station Fallon and Fallon Range Training Complex.

					TOTAL CONSERVATION TARGETS											
Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	Total Targets
A008	AUGUSTA MOUNTAINS	F	Y	3			8							3		11
A011	BARRETT CANYON	F	N	2			4								2	6
A020	BLACK ROCK DESERT-SMOKE CREEK DESERT	L	N	2	3	1	4			2			1		3	14
A021	BLOWSAND MOUNTAINS-BARNETT HILLS	L	N	10			3					25			3	31
A024	BOLIVIA	F	N	2			3								2	5
A026	BROKEN HILLS	F	N	0			1									1
A040	CARSON SINK	L	Y	12	2	2	10			24	1	18	9		8	74
A050	CORTEZ MOUNTAINS-ROBERTS MOUNTAINS-SULPHUR SPRING RANGE	L	N	1	2	2	13			7	1				2	27
A060	DESATOYA MOUNTAINS	L	N	0	2	1	11			3	1	2	1			21
A065	DIXIE VALLEY	F	N	0			5						1			6
A073	EAST GABBS VALLEY	F	N	2			2								2	4
A076	EASTGATE-ROCK CREEK	F	N	1			3								1	4
A085	FAIRVIEW PEAK	F	N	1			3								1	4
A086	FAIRVIEW VALLEY	F	N	0			2									2
A090	FINGER ROCK WASH	F	N	5			4								5	9
A094	FLY RANCH GEYSER-GRANITE RANGE	L	Y	1	1		7			5			1	2		16
A116	HOME STATION WASH	F	N	2			7								2	9
A117	HORSESHOE BASIN	F	N	1			4								1	5
A131	IONE VALLEY	F	N	1			6			1					1	8
A145	KOBEH VALLEY	F	N	0			5			2						7
A167	MONTE CRISTO MOUNTAINS	F	N	0			2								1	3
A172	MUDHOLE SPRING	F	N	1			3			1					1	5
A174	NEW PASS	L	N	1			7			1	1				1	10
A220	RAILROAD GRADE	F	N	2			1								2	3
A221	RAILROAD PASS	F	N	0			3					1				4
A227	REESE RIVER	L	Y	6	2	1	7			2		4			3	19
A228	REESE RIVER VALLEY	F	N	1			3					3				6
A242	SAND MOUNTAIN	L	Y	11			5					23			2	30
A254	SHOSHONE RANGE-CARICO LAKE VALLEY	L	Y	3	2	2	8			1				3		16
A261	SIMPSON PARK MOUNTAINS-NORTH TOIYABE RANGE	L	N	0	2	1	12			5		1				21
A288	STILLWATER RANGE -DIXIE VALLEY	F	N	1			7								1	8
A290	STONEBERGER BASIN	F	N	2		2	9			2			1		1	15
A310	TOIYABE RANGE-BIG SMOKY VALLEY	L	Y	18		2	18	2	1	11	5	6	3		11	59
A314	TOPIER CANYON	F	N	0			4						3			7
A315	TOQUIMA RANGE-MONITOR VALLEY-MONITOR RANGE	L	Y	20	2	2	18			20	4	7	5	2	14	74
A316	TRAIL CANYON	F	N	1			5				1					6
A341	WEST GABBS VALLEY	F	N	0			2								1	3

Table 6. Summary of Conservation areas and attributes overlapping Naval Air Station Fallon and Fallon Range Training Complex.

					TOTAL CONSERVATION TARGETS										
Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	Total Targets
A343	WEST NORTHUMBERLAND CANYON	F	N	0			3								1	4
A350	WHITE SAGE FLAT	F	N	0			4								1	5

3. Hawthorne Army Depot

A. Description

Hawthorne Army Depot (Hawthorne AD) covers 148,000 acres in Mineral County, Nevada (figure 15). The Depot stores, renovates and detonates conventional weapons, and is separated into four land use areas: 1) active ordnance storage and demilitarization areas, 2) administrative, industrial and housing areas, 3) Walker Lake, and 4) the 45,000 acre watershed of Mt. Grant in the Wassuk Range.

Hawthorne AD straddles two Great Basin Ecoregion subsections – the Lahontan Basin (lower watershed) and the California (upper watershed) subsections. Walker Lake, the most prominent hydrologic feature, is a Pleistocene remnant fed by the Walker River watershed.

In the lower elevations, Bailey greasewood-shadscale is the dominant shrub community. Sagebrush semidesert valleys and montane woodlands characterize much of the middle to upper elevations. The general plant communities and ecological systems have been described for the Wassuk Range (Nachlinger 1990). They include mixed desert shrub, Great Basin sagebrush, cottonwood forest, willow riparian shrub, aspen forest, mountain mahogany woodland, montane meadow, mountain sagebrush, low sagebrush, subalpine pine forest, and alpine. Elevations range from 4,330 feet at Walker Lake to 11,239 feet in the Wassuk Range.

B. The Conservation Portfolio for Hawthorne Army Depot

The Hawthorne AD portfolio contains four conservation areas. Two, South Wassuk Range and Walker Lake-Walker River, are functional landscapes while the remaining two are functional sites. A summary of the conservation areas in the Hawthorne AD portfolio is provided in table 7, and each is discussed below. Refer to Appendix E for a list of ecological system and species conservation targets in each conservation area.

Anchorite Hills is a functional site that captures six terrestrial ecological system conservation targets, and two conservation target species, including the geographically restricted Giuliani's unca skipper butterfly. This area overlaps the New Bomb satellite area of Hawthorne Army Depot, and this portion of the conservation area has little conservation value itself because of the ordnance detonation activity occurring there. Nevertheless, the restricted distribution of the Giuliani's unca skipper in this montane habitat is significant and any cooperation by DoD in the management of its habitat would be beneficial.

South Wassuk Range is a functional landscape, and approximately half of the conservation area overlaps with Hawthorne AD lands. This conservation area encompasses

the entire Mount Grant watershed, which is administered by DoD. Twelve terrestrial ecological system conservation targets and two aquatic ecological system conservation targets are captured by this area. Seventeen species conservation targets are captured within this conservation area, including four Great Basin endemics, sand cholla, Wassuk beardtongue, Apache silverspot butterfly and White Mountains cloudy wing butterfly. The importance of this area was previously documented (Nachlinger 1990). This area was analyzed further in a collaborative conservation area assessment (Nachlinger 2003) as part of Phase II of the Great Basin Conservation Initiative.

Thorne Dune is a functional site that occurs primarily on BLM lands. Four terrestrial ecological system conservation targets and twelve species conservation targets are captured by this conservation area. Readers will note that only three ecological system conservation targets (Greasewood Shrubland, Sagebrush Steppe and Salt Desert Scrub) are listed for this site in appendix E of this document, and in the Great Basin ecoregional assessment document (Nachlinger and others 2001). This is the result of a data entry error, and an occurrence of the Sand Dunes terrestrial ecological system conservation target also is captured by this site.

The **Walker Lake-Walker River** conservation area covers all portions of Walker Lake and its shoreline. This functional landscape was selected for occurrences of eight terrestrial ecological system conservation targets, one aquatic ecological system conservation targets and 12 species conservation targets. A Great Basin endemic bee (*Calliopsis filiorum*) occurs in this conservation area. Walker Lake-Walker River extends well beyond lands managed by Hawthorne AD.

Figure 15. Conservation areas overlapping Hawthorne Army Depot.

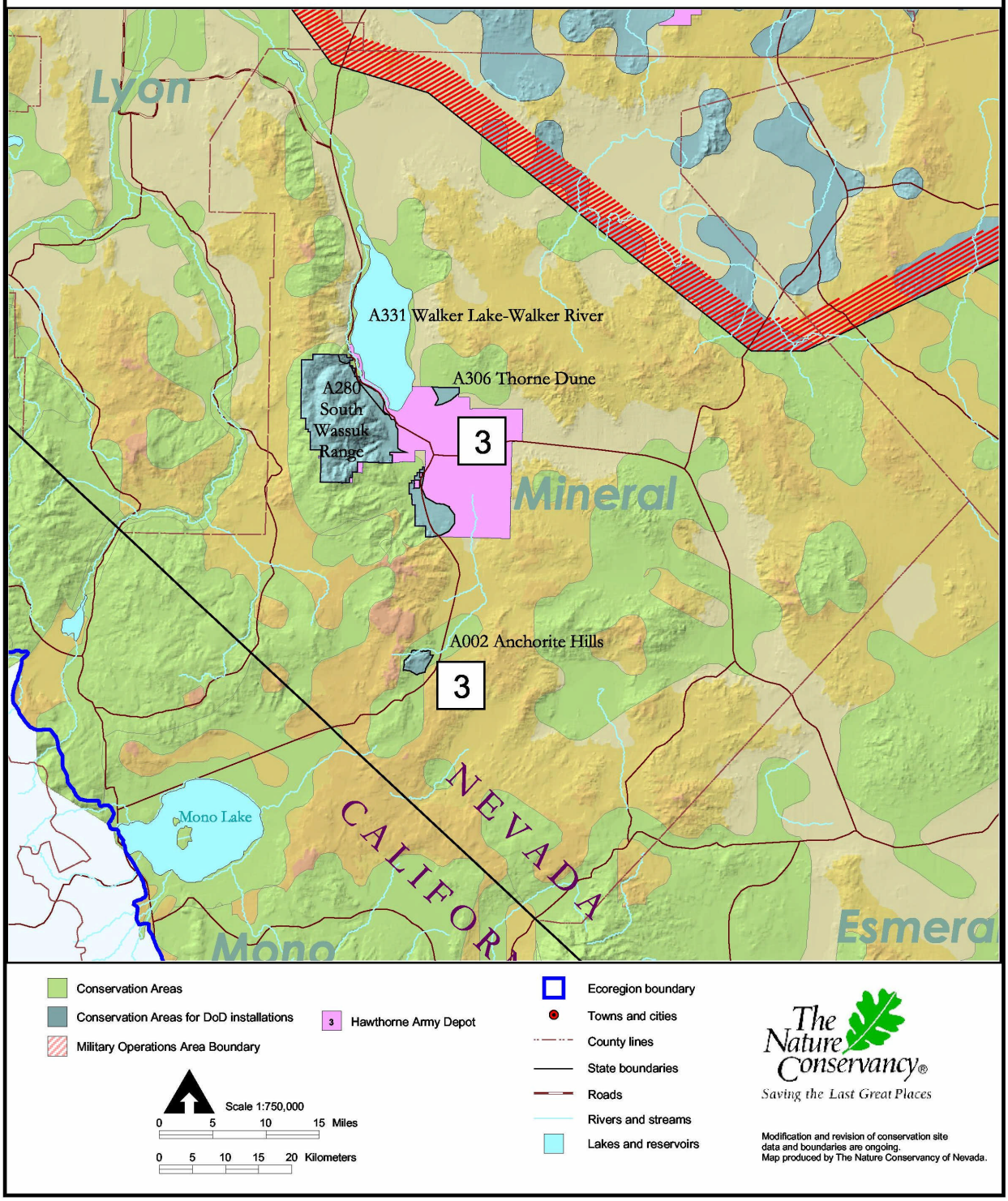


Table 7. Summary of Conservation areas and attributes overlapping Hawthorne Army Depot.

					TOTAL CONSERVATION TARGETS										
Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	Total Targets
A002	ANCHORITE HILLS	F	N	0			6					1			1	8
A280	SOUTH WASSUK RANGE	L	N	4		2	12			9		2	3		3	31
A306	THORNE DUNE	F	N	0			3					11			1	15
A331	WALKER LAKE-WALKER RIVER	L	N	1		1	8			8	1	1	2		1	22

4. Hill Air Force Base and Utah Test and Training Range

A. Description

Hill Air Force Base (Hill AFB) administers or influences the management of over 10.8 million acres of land (MOA airspace and land combined) in the West Desert of Utah and a small area in adjacent eastern Nevada. (figure 16). Hill AFB is located on approximately 6,600 acres of land on the east shores of the Great Salt Lake in Utah. This installation also administers the Utah Test and Training Range (UTTR). The UTTR MOA airspace overlays several classes of land use.

1. UTTR North Unit (Eagle Range) comprised of approximately 366,000 acres in Box Elder and Tooele counties, Utah;

2. UTTR South Unit (Wendover Range) comprised of approximately 576,000 acres in Tooele County, Utah and Elko County, Nevada; and

3. Dugway Proving Ground in Tooele County, Utah. Dugway Proving Ground also is described as a separate installation because the land is managed by the Army and has a mission distinct from that of Hill AFB.

The BLM manages 68 % (7.3 million acres) of the UTTR lands, followed by the military, private, and the states with approximately 14 %, 11 %, and 7 % ownership, respectively. Historical uses of the BLM portion of the UTTR lands were predominantly for livestock grazing and mining. Public lands with protective designations that overlap with the Hill AFB and UTTR portfolio are depicted in Appendix G and include Fish Springs National Wildlife Refuge, Deseret Peak Wilderness Area, 13 Wilderness Study Areas (Bluebell, Cedar Mountains, Conger Mountain, Deep Creek Mountains, Fish Springs, Goshute Peak, Howell Peak, King Top, North Stansbury Mountains, Notch Peak, Scott's Basin, Swasey Mountain and Wah Wah Mountains), three BLM Areas of Critical Environmental Concern (Bonneville Salt Flat; Donner and Bettridge; and Salt Lake), and two State of Utah Wildlife Management Areas (Blue Lakes and Timple Springs).

The UTTR occupies an area in the Bonneville Basin known as the “West Desert” of Utah; the lowest elevation and easternmost portion of the Great Basin Desert. The area has an arid to semi-arid climate with mean annual precipitation below 10 inches. Over 80 % of the land under the MOA airspace lies below 6,000 feet.

Because the climate is arid, the soils in the West Desert are weakly developed and vegetation development is modest. Most of the UTTR land is composed of former lakebed (Lake Bonneville) and Quaternary erosional deposits, is barren, or is covered with sagebrush, salt desert scrub and grassland vegetation. Lesser amounts of montane shrubland and forest occupy the higher slopes and ridges of mountains that alternate with expansive valleys. Aquatic features in the UTTR are primarily ephemeral springs and ponds, perennial

springs, mudflats, and wetlands concentrated in three geographic areas. Perennial streams that drain the major mountain ranges account for most of the riparian habitat (Sharik and others 2000).

B. The Conservation Portfolio for Hill Air Force Base and Utah Test and Training Range

A total of 56 conservation areas were identified overlapping the Hill AFB and UTTR portfolio (figure 12 and table 8). Twelve conservation areas overlap Hill AFB or UTTR lands (figure 16). Eight areas in the portfolio overlap with Dugway Proving Ground, and are included in this discussion because Dugway PG is a part of the UTTR. An additional 49 conservation areas are overlapped by the UTTR MOA airspace. Four of the conservation areas in the Hill AFB and UTTR portfolio are irreplaceable sites: Deep Creek Range, Grouse Creek Mountains/Raft River Mountains, Snake Range and Tunnel Spring Mountains-Halfway Hills-Pine Valley.

Of the total 56 conservation areas in the Hill AFB and UTTR portfolio, 14 are functional landscapes with relatively intact ecological processes: Blue Lakes Badlands, Deep Creek Range, Fish Springs, Goshute Mountains, Great Salt Lake, Grouse Creek Mountains – Raft River Mountains, Pequop Mountains – Toano Draw, Pilot Range, Rush Valley, Snake Range, Snake Valley, Stansbury Mountains, Tule Valley and Tunnel Springs Mountains-Halfway Hills-Pine Valley. The remaining 42 are functional sites. A summary of all conservation areas in the Hill AFB and UTTR portfolio is provided in table 8. Each conservation area also is discussed below. Refer to Appendix E for a list of ecological system and species conservation targets in each conservation area.

i.) The Conservation Portfolio for Hill AFB and UTTR lands

Blue Lakes-Badlands is a functional landscape that captures occurrences of 15 terrestrial ecological system conservation targets and three aquatic ecological system conservation targets. Fourteen species conservation targets occur in this conservation area, including two Great Basin endemics: the transverse gland springsnail and Bonneville cutthroat trout.

The **Deep Creek Range** is a large, irreplaceable functional landscape that overlaps Dugway PG in the UTTR. The Deep Creek Range is diverse, capturing 18 terrestrial ecological system conservation targets, one aquatic ecological system conservation target and one rare plant association. This mountain range varies from alpine to the desert floor. Twenty-six species conservation targets are captured by this conservation area, including five Great Basin endemics in the Deep Creek Range; four plants (Kass rockcress, Deep Creek stickseed, low beardtongue, dad's penstemon) and one fish (Bonneville cutthroat trout). Deep Creek stickseed and Kass rockcress are known only from the upper montane areas in this mountain range, making it an irreplaceable site. The portion of the Deep Creek

Range conservation area that overlaps with Dugway PG in the UTTR does not contain the Deep Creek Range endemic plant species; however, the portion of the conservation area that overlaps with Dugway PG may contribute to the functionality of the low elevation shrublands system conservation target.

East Dugway Dunes is a functional site and captures four terrestrial system conservation targets. The conservation area also contains two Great Basin endemic species: a bee (*Andrena* sp. nov.) and a plant (plains springparsley).. *Andrena* sp. nov. is found in only two locations, both in the DoD portfolio: East Dugway Dunes and Blowsand Mountains-Barnett Hills (NAS Fallon land).

The **Fish Springs** conservation area is a functional landscape and contains 23 conservation targets within its boundaries. They include seven terrestrial ecological system conservation targets, four aquatic ecological system conservation targets, and 12 species conservation targets. The aquatic conservation targets occur outside Dugway PG and UTTR boundaries on the adjacent Fish Springs National Wildlife Refuge.

Granite Peak is a functional site identified as a conservation area for six terrestrial ecological system conservation targets.

The **Great Salt Lake** is a functional landscape supporting 48 conservation target species and systems. The conservation area is over 2.4 million acres in size, with approximately 10 % occurring on UTTR land. This area is a critical link in the continental migratory bird flyway, and is a designated site in the Western Hemispheric Shorebird Reserve Network (Manomet Center for Conservation Sciences 2005). Thirteen terrestrial ecological system conservation targets and four aquatic ecological system conservation targets are found in this conservation area. In addition, 31 species conservation targets are captured by this area, including two Great Basin endemics, Passey's onion and fat-whorled pondsnail. However, these two species occur on the east side of the Great Salt Lake conservation area and are not contiguous with Hill AFB or UTTR lands.

The **Great Salt Lake Desert Mud Flat** is a functional site and was included in the Great Basin portfolio for occurrences of four terrestrial ecological system conservation targets.

North Wig Sand Dunes is a functional site that overlaps lands managed by three federal entities: the Army (Dugway PG), Air Force (UTTR), and BLM. This conservation area captures examples of four terrestrial ecological system conservation targets and one species conservation target.

A small portion of the **Newfoundland Mountains** conservation area occurs on UTTR land. This area was selected for occurrences of seven terrestrial ecological system

conservation targets, one aquatic ecological system conservation target and one species conservation target.

Simpson Buttes is a functional site that captures occurrences of two terrestrial ecological system conservation targets as well as an historic record of the least chub.

Wild Isle-Great Salt Lake Desert Sand Dunes is a functional site that captures occurrences of four terrestrial ecological system conservation targets.

Willow Patch Spring is a functional site that overlaps slightly with Dugway PG UTTR land and is completely overlaid by the UTTR MOA airspace. This conservation area captures six low-elevation terrestrial communities, including desert riparian shrubland. Willow Patch Springs also contains one of four locations for a Great Basin endemic plant, the Pohl milk-vetch. Three of these locations are on DoD land (Rush Valley, Skull Valley and Willow Patch Springs conservation areas), and one (near Vernon, Utah) is wholly on BLM lands.

ii.) The Conservation Portfolio for lands overlaid by the UTTR MOA airspace

Antelope Valley is a functional site that captures five terrestrial ecological system conservation targets. Four species conservation targets also occur on this conservation area, including the Great Basin endemic transverse gland springsnail.

Black Hills is a functional site with one terrestrial ecological system conservation target, one aquatic ecological system conservation target and the Great Basin endemic plant, Currant milk-vetch.

Boone Spring is a functional site that captures two terrestrial ecological system conservation targets and the Great Basin endemic transverse gland springsnail.

Buckskin Hill is a functional site with three terrestrial ecological system conservation targets and three Great Basin endemic plant species: Callaway milk-vetch, desert wild buckwheat and Ibex buckwheat.

Confusion Range is a functional site with four terrestrial ecological system conservation targets and the Great Basin endemic plant, Ibex buckwheat.

Cricket Mountains is a functional site with three terrestrial ecological system conservation targets, one aquatic ecological system conservation target and the Great Basin endemic plant, son's wild buckwheat.

Dove Creek Hills is a functional site that captures occurrences of eight terrestrial ecological system conservation targets.

Dugway Range is a functional site with occurrences of four terrestrial system conservation targets.

Eighteen Mile Marsh is a functional site that captures occurrences of three terrestrial ecological system conservation targets and three species conservation targets, including the Great Basin endemic Twentyone Mile springsnail.

Ferguson Desert – Tule Valley is a functional site that captures occurrences of four terrestrial ecological system conservation targets and one aquatic ecological system conservation target. Eight species conservation targets occur in this conservation area, including seven Great Basin endemic plant species: Currant milk-vetch, mound cryptanth, dolomite spring-parsley, Coulter biscuitroot, desert wild buckwheat, Ibex buckwheat, and Desert Valley fishhook cactus.

Goshute Mountains is a functional landscape with 10 terrestrial ecological system conservation targets and one aquatic ecological system conservation target. This conservation area also captures occurrences of five species conservation targets.

Grouse Creek Mountains-Raft River Mountains is a large, irreplaceable functional landscape that captures occurrences of 15 terrestrial ecological system conservation targets and two aquatic ecological system conservation targets. The site is irreplaceable because it harbors the only known locations for the Crittenden springsnail. The area also harbors occurrences of 21 additional species conservation targets, including two other Great Basin endemic species: Passey's onion and June sucker. Approximately 50 % of this conservation area is overlaid by the UTTR MOA airspace. While this is a very large conservation area, its boundaries probably should extend farther west into Nevada. However, experts were unavailable to verify this western boundary because many were on fire fighting duty when the data were compiled.

Horseshoe Springs is a functional site with seven terrestrial ecological system conservation targets and three species conservation targets.

House Range is a functional site the captures five terrestrial ecological system conservation targets. This conservation area contains one of two known locations for the Great Basin endemic plants, House Range primula and Great Basin waxflower. Both of these plant species are found also in the Sawtooth Mountain conservation area, also overlaid by the UTTR MOA.

Kern Mountains is a functional site with occurrences of seven terrestrial ecological system conservation targets and the Great Basin endemic plant, Mount Moriah beardtongue.

Kings Canyon is a functional site that captures occurrences of three terrestrial ecological system conservation targets and one species conservation target.

Knoll Springs is a functional site that captures one terrestrial ecological system conservation target and two species conservation targets.

Lookout Springs is a functional site with two terrestrial ecological system conservation targets and a Great Basin endemic fish, the relict dace.

North Sevier Lake is a functional site with occurrences of one terrestrial ecological system conservation target and the Great Basin endemic plant, Currant milk-vetch.

Northwest Sevier Lake is a functional site that captures occurrences of two terrestrial ecological system conservation targets, one aquatic ecological system conservation targets and two Great Basin endemic plant species, the Currant milk-vetch and son's wild buckwheat.

Old River Bed is a functional site with occurrences of one terrestrial ecological system conservation target and the Great Basin endemic plant plains springparsley.

Onaqui Mountains is a functional site with eight terrestrial ecological system conservation targets and two species conservation targets.

Pequop Mountains – Toano Draw is a functional landscape with occurrences of 10 terrestrial ecological system conservation targets and one aquatic ecological system conservation targets. This conservation area captures nine species conservation targets, including two Great Basin endemic species: the relict dace and *Perdita exigua* (a bee).

Pilot Creek Valley is a functional site that captures occurrences of one terrestrial ecological system conservation target and one species conservation target.

The **Pilot Range** is a functional landscape that captures 15 terrestrial ecological system conservation targets and two aquatic ecological system conservation targets. Six species conservation targets occur within this conservation area, including two Great Basin endemic species: the rock violet and White Pine mountainsnail.

Rush Valley is a large functional landscape that captures 12 terrestrial system conservation targets and two aquatic ecological system conservation targets. The conservation area also captures occurrences of 14 conservation target species including three Great Basin endemics: Pohl milk-vetch, Kennedy's milk-vetch, and Southern Bonneville springsnail. The Southern Bonneville springsnail has three known occurrences: Rush Valley, Simpson Mountains and Slow Elk Hills. All three occurrences are under the UTTR MOA and are managed by BLM. The Rush Valley conservation area also contains one of four known locations for Pohl milk-vetch. Three of these locations are on DoD land (Rush Valley, Skull Valley and Willow Patch Springs conservation areas), and one (near Vernon, Utah) is wholly

on BLM lands. Less than 1% of this large conservation area overlaps with the UTTR MOA airspace. This conservation area also overlaps with Tooele Army Depot lands.

Sawtooth Mountain is a functional site with occurrences of six terrestrial ecological system conservation targets and four species conservation targets, including three Great Basin endemic plant species, House Range primula, Great Basin waxflower, and mound cryptanth. This conservation area contains one of two existing occurrences for the House Range primula and Great Basin waxflower. These two plant species also are found in the House Range conservation area, also overlaid by the UTTR MOA.

Sevier Desert is a functional site that captures two terrestrial ecological system conservation targets and three Great Basin endemic plant species conservation targets; Currant milk-vetch, son's wild buckwheat and low beardtongue.

Silver Island Mountains is a functional site that contains occurrences of six terrestrial ecological system and the Great Basin endemic plant, Ibex buckwheat.

Simpson Mountains is a functional site that captures five terrestrial ecological system conservation targets, one aquatic ecological system conservation target and the Great Basin endemic Southern Bonneville springsnail. The Southern Bonneville springsnail has three known occurrences: Simpson Mountains, Rush Valley and Slow Elk Hills. All three occurrences are under the UTTR MOA and are managed by BLM.

Skull Valley is a functional site with occurrences of three terrestrial ecological system conservation targets and one Great Basin endemic plant species conservation target, Pohl milk-vetch. Skull Valley contains one of four locations for Pohl milk-vetch. Three of these locations are on DoD land (Rush Valley, Skull Valley and Willow Patch Springs conservation areas), and one (near Vernon, Utah) is wholly on BLM lands.

Slow Elk Hills is a functional site that captures four terrestrial ecological system conservation targets and one Great Basin endemic species conservation target, Southern Bonneville springsnail. The Southern Bonneville springsnail has three known occurrences: Slow Elk Hills, Simpson Mountains and Rush Valley. All three occurrences are under the UTTR MOA and are managed by BLM.

The **Snake Range** conservation area is an irreplaceable, functional landscape that captures occurrences of 14 terrestrial ecological system conservation targets, five aquatic ecological system conservation targets, and one rare plant association conservation target. A very small portion (less than one percent) of this conservation area overlaps with the UTTR MOA airspace. A total of 48 conservation target species occur in this conservation area including 26 Great Basin endemic species conservation targets. This site is irreplaceable because it captures the only known occurrences of four Great Basin endemic species: Wheeler Peak sandwort, Holmgren buckwheat, Baking Powder Flat blue butterfly and sub-

globose Snake springsnail. The other 22 Great Basin endemic species are spiny-leaved milk-vetch, broad-pod freckled milk-vetch, White River catseye, dolomite spring-parsley, stalked Cusick whitlowgrass, Snake Range whitlowgrass, Pennell draba, Ibex buckwheat, basin jamesia, hanging bladderpod, Tunnel Spring beardtongue, Pennell beardtongue, Mount Moriah beardtongue, Nevada primrose, Nachlinger catchfly, Koret's checkerspot butterfly, White Pine mountainsnail, dark sandhill skipper butterfly, longitudinal gland springsnail, bifid duct springsnail, Bonneville cutthroat trout, and relict dace.

Snake Valley is a functional landscape that is almost entirely (98 %) overlapped by the MOA airspace. This conservation area captures occurrences of 11 terrestrial ecological system conservation targets and three aquatic ecological system conservation targets. Seven conservation target species occur within this conservation area, including the Great Basin endemic plant, mound cryptanth.

Soap Hollow is a functional site that captures three terrestrial ecological system conservation targets and the Great Basin endemic plant, Currant milk-vetch.

South Sevier Lake is a functional site with occurrences of three terrestrial ecological system conservation targets and two Great Basin endemic plant species, son's wild buckwheat and plains springparsley.

Stansbury Mountains is a functional landscape that captures occurrences of 14 terrestrial ecological system conservation targets, one aquatic ecological system conservation target and two rare plant associations. This conservation area has six conservation target species including the Great Basin endemic plant, plains springparsley.

Swasey Mountain is a functional site that captures two terrestrial ecological system conservation targets and two species conservation targets including the Great Basin endemic bifid duct springsnail.

Tooele Valley is a functional site that captures four terrestrial ecological system conservation targets and one species conservation target.

Topaz Mountain is a functional site that includes three terrestrial ecological system conservation targets and the Great Basin endemic plant, Desert Valley fishhook cactus.

Tule Valley is a functional landscape that captures occurrences of four terrestrial ecological system conservation targets and one aquatic ecological system conservation target. This site also has occurrences of four species conservation targets, including two Great Basin endemics: dad's penstemon and Bonneville cutthroat trout.

Tungstonia is a functional site with six terrestrial ecological system conservation targets and the Great Basin endemic plant, dolomite spring-parsley.

Tunnel Spring Mountains – Halfway Hills – Pine Valley is an irreplaceable functional landscape that captures occurrences of seven terrestrial ecological system conservation targets, one aquatic ecological system conservation target and 18 species conservation targets. Of these 18 species conservation targets, one is known only from this site (Bonneville saltbush) and 14 others are Great Basin endemics: mound cryptanth, dolomite spring-parsley, desert wild buckwheat, Ostler's ivesia, Goodrich bladderpod, sand cholla, Tunnel Spring beardtongue, desert beardtongue, low beardtongue, Jones globe-mallow, Frisco clover, longitudinal gland springsnail and bifid duct springsnail.

Whirlwind Valley is a functional site with occurrences of two terrestrial ecological system conservation targets and the Great Basin endemic plant, Desert Valley fishhook-cactus.

Figure 16. Conservation areas overlapping Hill Air Force Base and Utah Test and Training Range Complex.

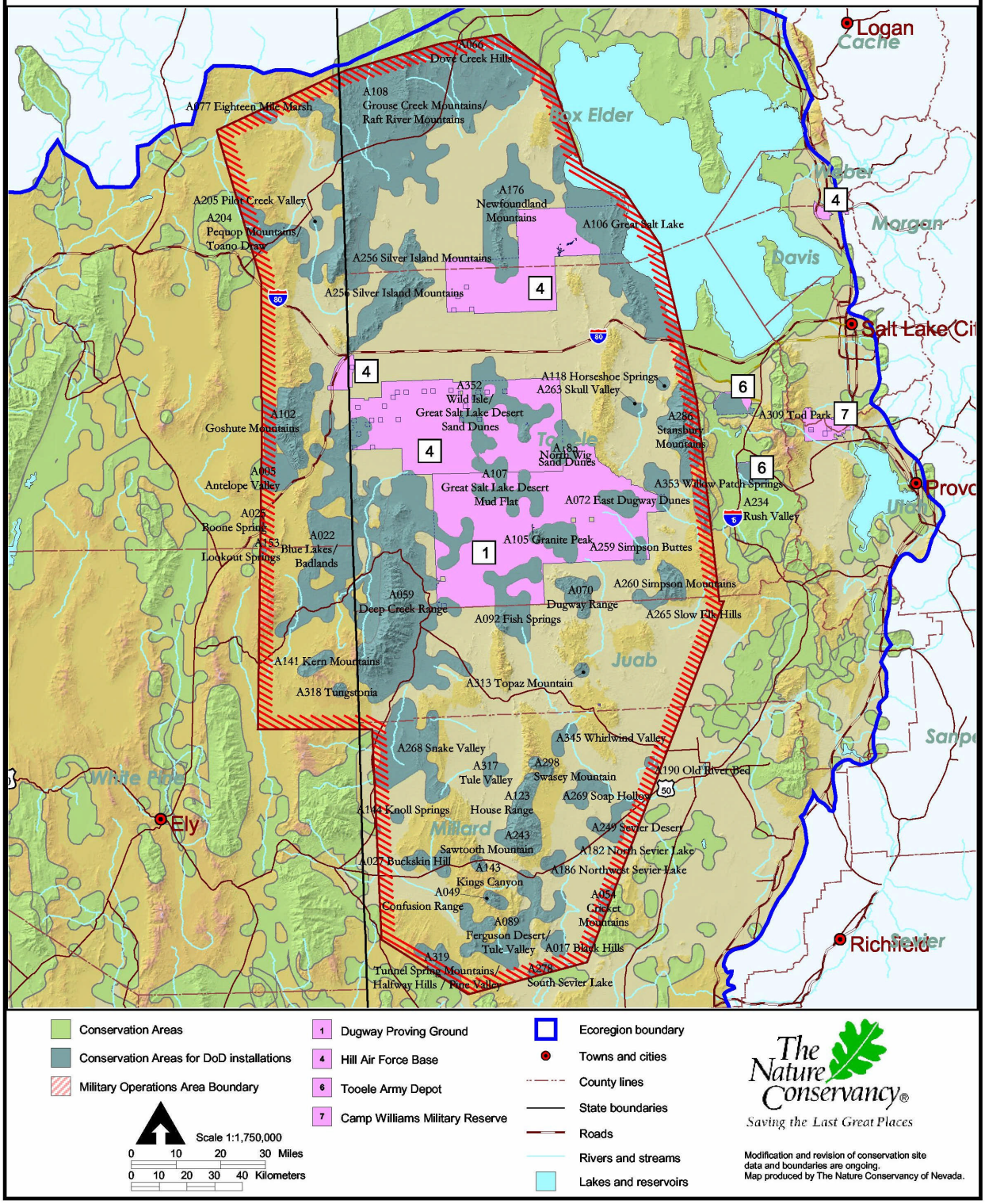


Table 8. Summary of Conservation areas and attributes overlapping Hill Air Force Base and Utah Test and Training Range Complex.

Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	TOTAL CONSERVATION TARGETS										Total Targets
					AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	
A005	ANTELOPE VALLEY	F	N	1			5			3				1		9
A017	BLACK HILLS	F	N	1		1	1								1	3
A022	BLUE LAKES-BADLANDS	L	N	2	2	1	15			7	1		3	3		32
A025	BOONE SPRING	F	N	1			2							1		3
A027	BUCKSKIN HILL	F	N	3			4								3	7
A049	CONFUSION RANGE	F	N	1			4								1	5
A054	CRICKET MOUNTAINS	F	N	1		1	3								1	5
A059	DEEP CREEK RANGE	L	Y	5		1	18	1		12	2	3	2	2	7	48
A066	DOVE CREEK HILLS	F	N	0			8									8
A070	DUGWAY RANGE	F	N	0			4									4
A072	EAST DUGWAY DUNES	F	N	2			4					2			1	7
A077	EIGHTEEN MILE MARSH	F	N	1			3			2				1		6
A089	FERGUSON DESERT-TULE VALLEY	F	N	7		1	4								8	13
A092	FISH SPRINGS	L	N	0	1	3	7			8	1		1	2		23
A102	GOSHUTE MOUNTAINS	L	N	0		1	10			5						16
A105	GRANITE PEAK	F	N	0			6									6
A106	GREAT SALT LAKE	L	N	2	2	2	13			24	1		2	4	2	50
A107	GREAT SALT LAKE DESERT MUD FLAT	F	N	0			4									4
A108	GROUSE CREEK MOUNTAINS-RAFT RIVER MOUNTAINS	L	Y	3	1	1	15			12	3	2		3	2	39
A118	HORSESHOE SPRINGS	F	N	0			7						1	2		10
A123	HOUSE RANGE	F	N	2			5					1			2	8
A141	KERN MOUNTAINS	F	N	1			7								1	8
A143	KINGS CANYON	F	N	0			3					1				4
A144	KNOLL SPRINGS	F	N	0			1				1			1		3
A153	LOOKOUT SPRINGS	F	N	1			2				1					3
A176	NEWFOUNDLAND MOUNTAINS	F	N	0		1	7						1			9
A182	NORTH SEVIER LAKE	F	N	1			1								1	2
A185	NORTH WIG SAND DUNES	F	N	0			4					1				5
A186	NORTHWEST SEVIER LAKE	F	N	2		1	2								2	5
A190	OLD RIVER BED	F	N	1			1								1	2
A191	ONAQUI MOUNTAINS	F	N	0			8					1			1	10
A204	PEQUOP MOUNTAINS-TOANO DRAW	L	N	2		1	10			4	1	2			2	20
A205	PILOT CREEK VALLEY	F	N	0			1					1				2
A207	PILOT RANGE	L	N	2		2	15				1	2		1	2	23
A234	RUSH VALLEY	L	N	3		2	11			9				2	3	27
A243	SAWTOOTH MOUNTAIN	F	N	3			6							1	3	10
A249	SEVIER DESERT	F	N	3			2								3	5
A256	SILVER ISLAND MOUNTAINS	F	N	1			6								1	7
A259	SIMPSON BUTTES	F	N	0			2				1					3
A260	SIMPSON MOUNTAINS	F	N	1		1	5							1		7

Table 8. Summary of Conservation areas and attributes overlapping Hill Air Force Base and Utah Test and Training Range Complex.

					TOTAL CONSERVATION TARGETS											
Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	Total Targets
A263	SKULL VALLEY	F	N	1			3								1	4
A265	SLOW ELK HILLS	F	N	1			4							1		5
A267	SNAKE RANGE	L	Y	26	2	3	14	1		6	4	7	7	3	21	68
A268	SNAKE VALLEY	L	N	1	1	2	11			3	1			2	1	21
A269	SOAP HOLLOW	F	N	1			3								1	4
A278	SOUTH SEVIER LAKE	F	N	2			3								2	5
A286	STANSBURY MOUNTAINS	L	N	1		1	14	2		2		1		1	2	23
A298	SWASEY MOUNTAIN	F	N	1			2							2		4
A312	TOOELE VALLEY	F	N	0			4			1						5
A313	TOPAZ MOUNTAIN	F	N	1			3								1	4
A317	TULE VALLEY	L	N	2	1		4			2	1	1			1	10
A318	TUNGSTONIA	F	N	1			6								1	7
A319	TUNNEL SPRING MOUNTAINS-HALFWAY HILLS-PINE VALLEY	L	Y	15		1	7				1			2	15	26
A345	WHIRLWIND VALLEY	F	N	1			2								1	3
A352	WILD ISLE-GREAT SALT LAKE DESERT SAND DUNES	F	N	0			4									4
A353	WILLOW PATCH SPRINGS	F	N	1			6								1	7

5. Nellis Air Force Base and Ranges

A. Description

Nellis Air Force Base (Nellis AFB) and Ranges were established in 1940 by President Roosevelt. Nellis AFB and Ranges land was reserved for 1) armament and high hazard testing, 2) training for aerial gunnery, rocketry, electronic warfare, tactical maneuvering, and air support, and 3) other defense-related purposes. Nellis AFB administers two disjunct land areas. Approximately 3,000 acres in North Las Vegas comprise the base, while the ranges are 70 miles to the northwest. Currently, approximately 2,209,000 acres are administered as the Nellis Ranges (figure 17). An overlapping 826,000 acres also are managed by the U.S. Fish and Wildlife Service as the Desert National Wildlife Range, which was designated by President Roosevelt in 1936, prior to the designation of Nellis AFB and Ranges in 1941.

The Nellis Ranges MOA airspace overlays over 8.5 million acres of land. Approximately 125 acres within the Ranges are private, occurring as patented mines. Other federal agencies having administrative concerns relative to the Nellis Ranges include the BLM and Department of Energy (DOE). Lands with protective designations are depicted in appendix G and include the Desert National Wildlife Range, Arrow Canyon Wilderness, 12 Wilderness Study Areas (Clover Mountains, Cougar Canyon, Delamar Mountains, Evergreen ABC, Kawich, Meadow Valley Range, Mormon Mountains, South Pahroc Range, South Reveille, Tunnel Spring, Weepah Spring and Worthington Mountains), and seven Areas of Critical Environmental Concern (Arrow Canyon, Coyote Springs Valley, Kane Springs, Mormon Mesa-Ely, Mormon Mesa-Las Vegas, Timber Mountain Caldera, and Upper Beaver Dam Wash).

The Nellis Ranges lie mostly in the Great Basin, with approximately 30 % occurring in the Mojave ecoregion (figure 17). Vegetation in this area is an unusual species mixture that reflects these two deserts (Knight and others 1997). Bases of mountains are roughly 3,000 to 4,000 feet with higher peaks reaching 9,400 feet. Perennial springs with very limited outflow streams occur in all of the mountains. The climate is arid, with a mean rainfall of 4.6 inches at low elevations to greater than 14 inches at elevations above 7,000 feet.

The region is divisible into two principal geologic areas, based on age and composition of the mountains (Beatley 1976). Mountains in the southern ranges are late Precambrian and Paleozoic sedimentary rocks. Northern ranges are mostly Tertiary volcanics. Sedimentary rocks are limestones and dolomites, along with shales, quartzite and conglomerates. The calcareous mountains have ridges and jagged peaks, weathering to sands, silts, and clays. Volcanic materials are predominantly ash-flow tuffs of rhyolitic composition. Nearly one dozen volcanic centers are located throughout the Ranges.

B. The Conservation Portfolio for Nellis Air Force Base and Ranges

Seven conservation areas occur on the Nellis Ranges, while another 27 occur below the MOA airspace (figure 17 and table 9). Of the 34 conservation areas in the Nellis AFB and Ranges portfolio, five are irreplaceable: Belted Range-Kawich Valley/Timber Mountain-Emigrant Valley-Halfpint Range, Highland Range, Hiko Springs, Kawich Range, and Meadow Valley. Six of the areas in the Nellis AFB and Ranges portfolio are functional landscapes: Beaver Dam Wash-Bull Valley Mountains, Belted Range-Kawich Valley/Timber Mountain-Emigrant Valley-Halfpint Range, Dry Lake Valley, Meadow Valley, Quinn Canyon Range-Grant Range and Rainbow Canyon.

A summary of the Nellis AFB and Ranges portfolio is provided in table 9. Refer to Appendix E for a list of ecological system and species conservation targets in each conservation area In the adjacent Mojave ecoregion, there are eight conservation areas on Nellis Ranges and ten conservation areas in the Nellis Ranges MOA (figure 17). The Mojave ecoregional conservation areas that overlap Nellis AFB and Ranges are discussed in the Mojave Desert ecoregion based assessment (TNC 2000b), and a companion document produced for Nellis AFB and Ranges (TNC 2000c).

i.) The Conservation Portfolio for Nellis AFB and Ranges lands

The **Belted Range-Kawich Valley/Timber Mountain-Emigrant Valley-Halfpint Range** is an irreplaceable functional landscape. This conservation area contains occurrences of 10 terrestrial ecological system conservation targets, two aquatic ecological system conservation targets and 20 species conservation targets. Three of these species are Great Basin endemic plants: Beatley milk-vetch, Cochrane gilia and Pahute green gentian. Pahute green gentian is only known from this conservation area. This conservation area and the Cactus Range contain the only known occurrences for Beatley milk-vetch. Because the area is withdrawn from most resource use, the habitat and species are in excellent condition. This conservation area extends well beyond the Nellis boundaries and includes portions of lands managed by the U.S. Department of Energy as the Nevada Test Site.

Cactus Flat is a functional site and captures occurrences of three terrestrial ecological system conservation targets.

Cactus Range is a functional site selected for occurrences of three terrestrial ecological systems, one rare plant association and two Great Basin endemic plants, Eastwood milkweed and Beatley milk-vetch. The Cactus Range and the Belted Range-Kawich Valley/Timber Mountain-Emigrant Valley-Halfpint Range conservation areas contain all of the known occurrences for Beatley milk-vetch.

Cedar Pass is a functional site that contains occurrences of three terrestrial ecological system conservation targets and one plant species conservation target, Clokey eggvetch. Clokey eggvetch was relatively recently located at Cedar Pass (Knight and others 1995, 1996), extending its range over 80 miles. It is now known from one location in the Great

Basin and one in the Mojave ecoregion. DoD and the U.S. Forest Service share stewardship of the two known populations of this plant.

South Ralston Valley is a functional site selected for occurrences of one terrestrial ecological system conservation target and the Great Basin endemic plant, Tonopah milk-vetch.

Stonewall Mountain is a functional site that captures two terrestrial ecological system conservation targets, one aquatic ecological system conservation target and two species conservation targets.

West Groom Range is a functional site selected for three terrestrial ecological system conservation targets and two species conservation targets.

ii.) The Conservation Portfolio for lands overlaid by the Nellis Ranges MOA airspace

Beaver Dam Wash – Bull Valley Mountains is a functional landscape that captures six terrestrial ecological system conservation targets and 11 species conservation targets.

Clover Creek is a functional site with occurrences of two terrestrial ecological system conservation targets and two species conservation targets, including the Great Basin endemic fish, Meadow Valley Wash desert sucker.

Dry Lake Valley is a functional landscape that captures four terrestrial ecological system conservation targets and four species conservation targets, including two Great Basin endemic species: Eastwood milkweed and the Desert Valley kangaroo mouse.

Escalante Valley is a functional site harboring occurrences of three terrestrial ecological system conservation targets and the Great Basin endemic plant, pink egg milk-vetch.

The **Highland Range** is an irreplaceable functional site that captures five terrestrial ecological system conservation targets and three species conservation targets. Two of these species are Great Basin endemics: basin jamesia and the intermediate Colorado hairstreak butterfly, which is known only from this conservation area.

Hiko Spring is an irreplaceable functional site that contains occurrences of three terrestrial ecological system conservation targets and three species conservation targets. Two of these species conservation targets are endemic to the Great Basin: Pahranagat pebblesnail and Hubbs springsnail, which is known only from the Hiko Spring conservation area.

Kawich Range is an irreplaceable functional site that contains four terrestrial ecological system conservation targets and three species conservation targets. This conservation area is irreplaceable because it captures the only known occurrence of an endemic plant, bashful beardtongue.

Meadow Valley is an irreplaceable functional landscape with occurrences of six terrestrial ecological system conservation targets and 14 species conservation targets. Of these, two species are unique to this conservation area (Schlesser pincushion cactus and Big Spring spinedace) while two other species are endemic to the Great Basin (White River catseye and Meadow Valley Wash desert sucker).

Nelson Spring is a functional site that captures three terrestrial ecological system conservation targets and the Great Basin endemic plant, lesser rushy milk-vetch.

Oak Well Canyon is a functional site with occurrences of one terrestrial ecological system conservation target and the Great Basin endemic plant, one-leaflet Torrey milk-vetch.

Pahroc Summit Pass is a functional site selected for occurrences of three terrestrial ecological system conservation targets and one species conservation target.

Quinn Canyon Range – Grant Range is a functional landscape that captures occurrences of 14 terrestrial ecological system conservation targets, two aquatic system conservation targets and 22 species conservation targets. Eight of these species conservation targets are plants endemic to the Great Basin: Currant milk-vetch, White River catseye, stalked Cusick whitlowgrass, basin jamesia, hanging bladderpod, Maguire bitterroot, Nevada primrose, and Nachlinger catchfly. Nearly 24% of this conservation area overlaps the Nellis Range MOA airspace.

Rainbow Canyon, is a functional landscape with occurrences of seven terrestrial ecological system conservation targets and 10 species conservation targets, including three Great Basin endemic species: lesser rushy milk-vetch, pink egg milk-vetch and Meadow Valley Wash Desert sucker.

Reveille Valley is a functional site that captures four terrestrial ecological system conservation targets and the Great Basin endemic plant, Tonopah fishhook cactus.

Rock Springs Canyon is a functional site that captures occurrences of one terrestrial ecological system conservation target and the Great Basin endemic plant, pink egg milk-vetch.

Shoal Creek is a functional site with occurrences of three terrestrial ecological system conservation targets and the Great Basin endemic plant, pink egg milk-vetch.

Sixmile Flat is a functional site that captures four terrestrial ecological system conservation targets and one species conservation target.

South Groom Range is a functional site that captures two terrestrial ecological system conservation targets and one species conservation target.

Uvada is a functional site with occurrences of three terrestrial ecological system conservation targets and two Great Basin endemic plant species: lesser rushy milk-vetch and pink egg milk-vetch.

Figure 17. Conservation areas overlapping Nellis Air Force Base and Ranges.

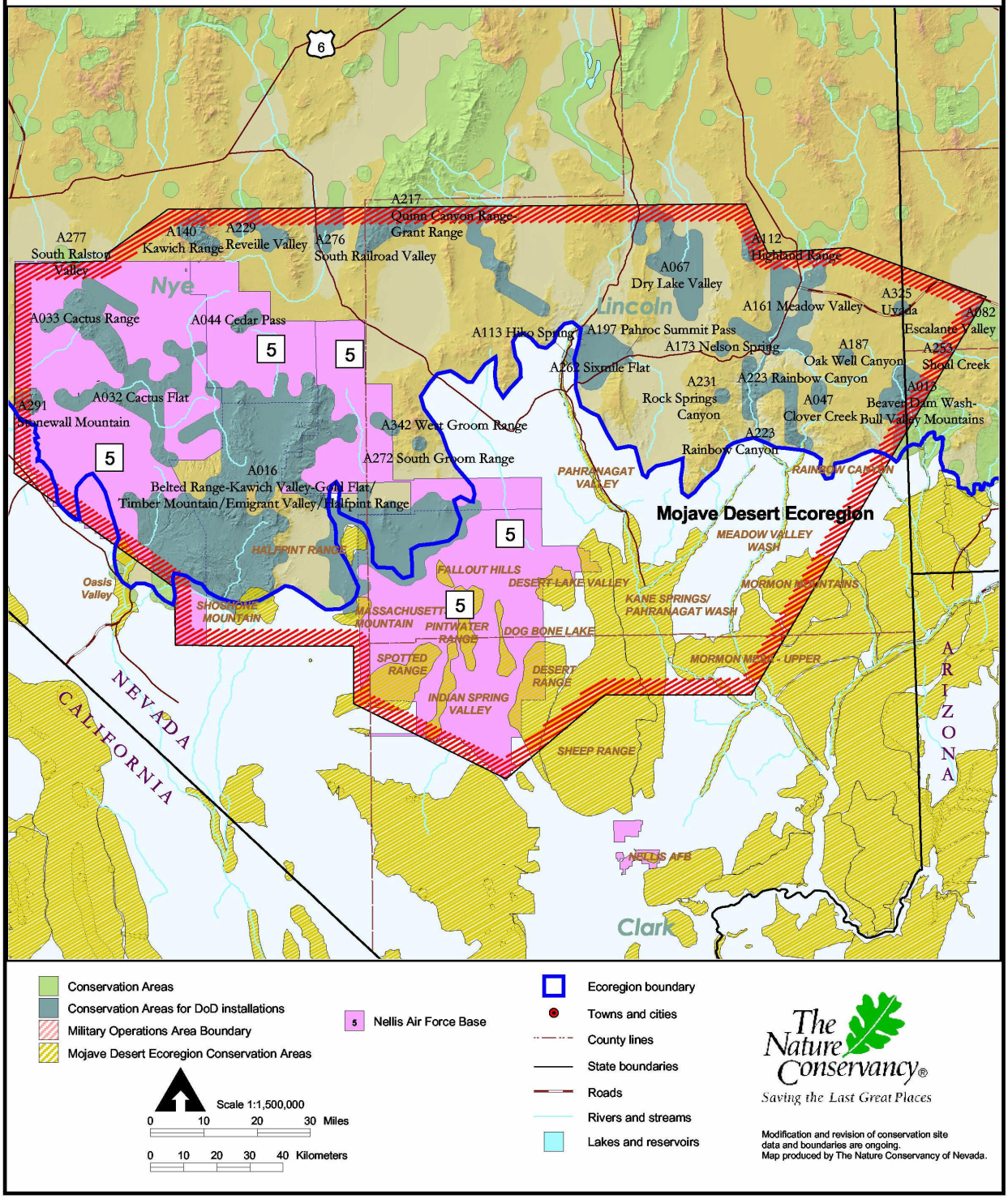


Table 9. Summary of Conservation areas and attributes overlapping Nellis Air Force Base Ranges.

Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	TOTAL CONSERVATION TARGETS											Total Targets
					AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	
A013	BEAVER DAM WASH-BULL VALLEY MOUNTAINS	L	N	0			6			8	2				1	17
A016	BELTED RANGE-KAWICH VALLEY-GOLD FLAT/TIMBER MOUNTAIN/EMIGRANT VALLEY-HALFPINT RANGE	L	Y	3	1	1	10						5		15	32
A032	CACTUS FLAT	F	N	0			3									3
A033	CACTUS RANGE	F	N	2			3	1							2	6
A044	CEDAR PASS	F	N	0			3								1	4
A047	CLOVER CREEK	F	N	1			2				2					4
A067	DRY LAKE VALLEY	L	N	2			4			2			1		1	8
A082	ESCALANTE VALLEY	F	N	1			3								1	4
A112	HIGHLAND RANGE	F	Y	2			5					2			1	8
A113	HIKO SPRING	F	Y	2			2				1			2		5
A140	KAWICH RANGE	F	Y	1	1		4								2	7
A161	MEADOW VALLEY	L	Y	4			6			7	3				4	20
A173	NELSON SPRING	F	N	1			3								1	4
A187	OAK WELL CANYON	F	N	1			1								1	2
A197	PAHROC SUMMIT PASS	F	N	0			3								1	4
A217	QUINN CANYON RANGE-GRANT RANGE	L	N	8	1	1	14			9			3		10	38
A223	RAINBOW CANYON	L	N	3			7			4	2				4	17
A229	REVEILLE VALLEY	F	N	1			4								1	5
A231	ROCK SPRINGS CANYON	F	N	1			1								1	2
A253	SHOAL CREEK	F	N	1			3								1	4
A262	SIXMILE FLAT	F	N	0			4								1	5
A272	SOUTH GROOM RANGE	F	N	0			2								1	3
A276	SOUTH RAILROAD VALLEY	F	N	0			2									2
A277	SOUTH RALSTON VALLEY	F	N	1			1								1	2
A291	STONEWALL MOUNTAIN	F	N	0	1		2						1		1	5
A325	UVADA	F	N	2			3								2	5
A342	WEST GROOM RANGE	F	N	0			3								2	5

6. Tooele Army Depot

A. Description

Tooele Army Depot (Tooele AD) was established in 1942 and consists of two non-contiguous facilities west of Salt Lake City and south of the Great Salt Lake (figure 18) comprising approximately 44,000 acres. Tooele Ordnance Depot is in Tooele Valley and served as a storage depot for World War II supplies, ammunition, and combat vehicles. Deseret Chemical Deport is located further south in Rush Valley. In 1962 the two areas were renamed the Tooele Army Depot. Tooele AD has equipment and vehicle maintenance responsibilities and is used for storage of conventional ammunition. Tooele AD lies in the valley basin and is surrounded by two large mountain ranges.

B. The Conservation Portfolio for Tooele Army Depot

Two conservation areas surround Tooele AD (table 10). One of the two, Rush Valley, is a functional landscape. Refer to Appendix E for a list of ecological system and species conservation targets in each conservation area.

Rush Valley is a large functional landscape that captures 12 terrestrial system conservation targets and two aquatic ecological system conservation targets. The conservation area captures occurrences of 14 conservation target species including three Great Basin endemics: Pohl milk-vetch, Kennedy's milk-vetch, and Southern Bonneville springsnail. The Southern Bonneville springsnail has three known occurrences: Rush Valley, Simpson Mountains and Slow Elk Hills. All three occurrences are under the UTTR MOA and are managed by BLM. The Rush Valley conservation area also contains one of four known locations for Pohl milk-vetch. Three of these locations are on DoD land (Rush Valley, Skull Valley and Willow Patch Springs conservation areas), and one (near Vernon, Utah) is wholly on BLM lands. Approximately 13 % of the southern unit of Tooele AD overlaps with this area. This conservation area also overlaps with UTTR MOA airspace. While none of the Rush Valley conservation target species occur on Tooele AD lands, they do occur on lands adjacent to Tooele AD.

Tod Park is a smaller, functional site that captures occurrences of six terrestrial ecological system conservation targets and one species conservation target.

Figure 18. Conservation areas overlapping Tooele Army Depot.

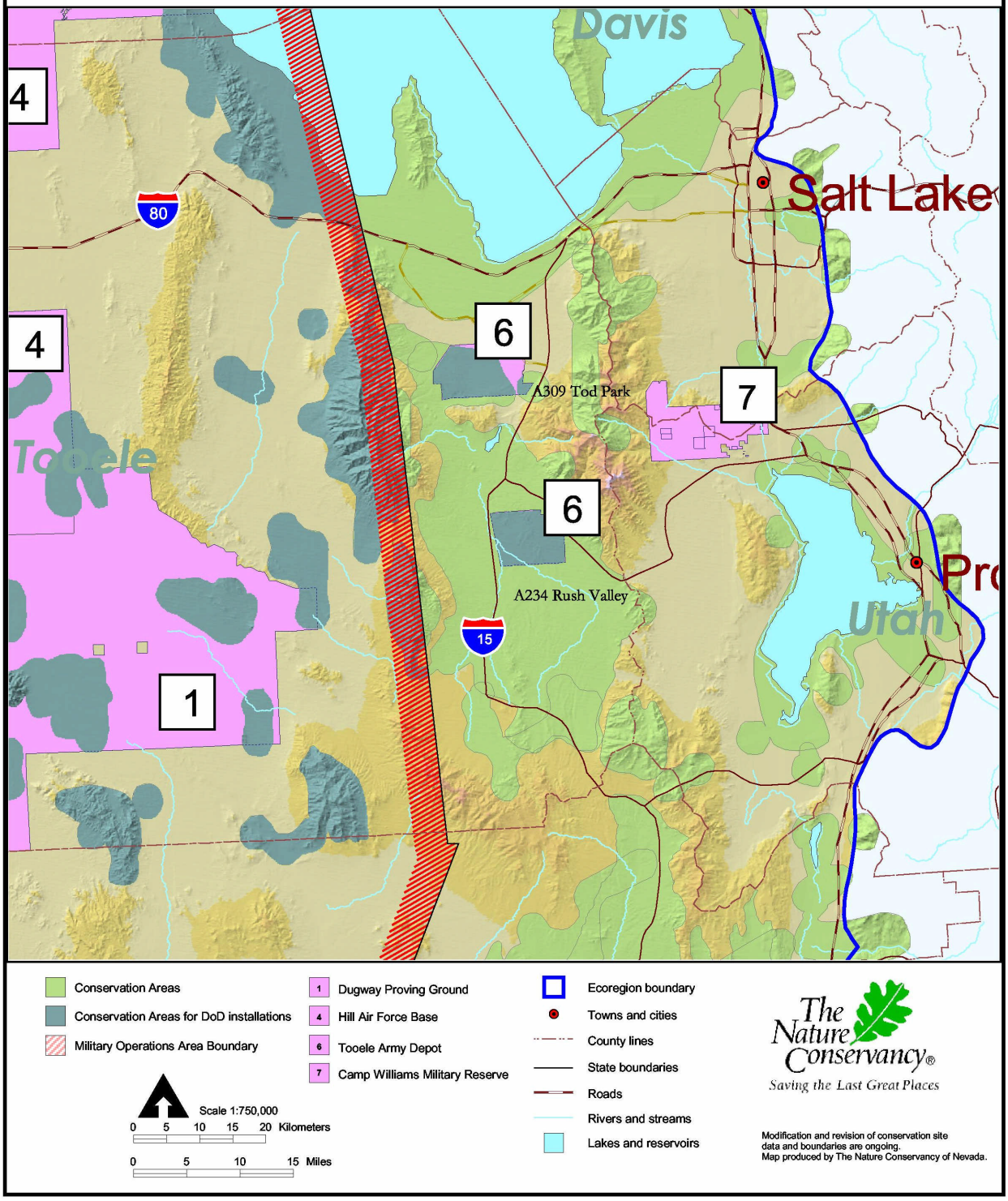


Table 10. Summary of Conservation areas and attributes overlapping Tooele Army Depot.

Conservation Area #	Conservation Area Name	Size (L/F)	Unique (Y/N)	Total Endemic	TOTAL CONSERVATION TARGETS											Total Targets
					AQ Habitat	AQ comm.	Terr. System	G1G2 Assoc.	Amphib.	Bird	Fish	Invert.	Mammal	Mollusk	Plant	
A234	RUSH VALLEY	L	N	3		2	11			9				2	3	27
A309	TOD PARK	F	N	0			6					1				7

VI. THREATS

The Great Basin ecosystem is a working landscape, and much of the public land in this ecoregion is managed under multiple-use principles, including DoD lands (DOD Directive 4700.4, 1989). Because some land uses and land use practices are incompatible with the conservation of native species and their habitats, the Great Basin ecoregional assessment (Nachlinger and others 2001) included an assessment of threats to conservation target species and systems, summarized below. As previously described, **threats** are actions that may destroy or significantly degrade a conservation target or the ecological processes that support it. By identifying those activities and land use practices that are threats to conservation targets, the Great Basin ecoregional assessment provides land managers with a list of actions that could be altered in space, time or method to better conserve native species and their habitats.

Information on threats to conservation targets (provided by experts and other sources) for 145 of the 358 conservation areas was compiled and analyzed during the Great Basin ecoregional assessment. Major stresses to biodiversity in the Great Basin overall and for the DoD portfolio (conservation areas overlapping DoD or MOA lands), were very similar (table 11). There are several widespread threats impacting ecological systems across the Great Basin including six worthy of special note: 1) inappropriate grazing practices (wrong place, wrong amount, or wrong timing), 2) invasion by exotic species (both plants and animals), 3) hydrologic alterations to groundwater and surface water, 4) urban expansion and associated rural sprawl, 5) inappropriate recreation, and 6) altered fire regimes (frequency, intensity, or amount).

The threat from **inappropriate grazing practices** was found to be the most common threat to Great Basin conservation targets and areas. Inappropriate grazing includes over-grazing, grazing in inappropriate habitats, grazing at inappropriate times, or incompatible range management practices. The impacts to conservation targets from inappropriate grazing practices include trampling of vegetation, reduction of native plant cover, pollution from livestock wastes, introduction of diseases carried by domestic livestock, and the introduction of invasive, non-native plant species.

Competition for habitat and other resources posed by **non-native plants and animals** was identified as a major source of stress to all conservation target systems. In addition, some non-native animal species, such as bullfrog, prey upon native wildlife. Non-native plants such as cheatgrass, halogeton and Russian thistle have altered the function of ecological systems that characterize the Great Basin. These impacts to ecological systems include alteration of the soil chemistry, fire regimes, and geographic extent of some native species' habitats.

Table 11. Summary of threats identified for conservation areas in the Great Basin ecoregion portfolio.

Summary of major threats identified for 358 Portfolio Sites	
Stressor	Number of Sites
Grazing	98
Non-native species - plants	40
Recreation	37
Fire	33
Hydrologic regime alterations	30
Diversions	24
Roads	22
Mining	19
Non-native species - fishes	19
Recreation - OHV use/dune buggy	14

Summary of major threats identified for 123 MOA airspace Portfolio Sites	
Stressor	Number of Sites
Grazing	34
Non-native species - plants	19
Fire	16
Recreation	13
Roads	11
Diversions	10
Military training/weapons testing	9
Hydrologic regime alterations	8
Non-native species - fishes	7
Mining	6
Non-native species - mammals	6
Conversion of habitat	5
Management	5
Groundwater withdrawal	4
Non-native species	4
Target related bio/ecological threats	4

Summary of major threats identified for 33 DOD lands Portfolio Sites	
Stressor	Number of Sites
Military training/weapons testing	8
Grazing	6
Non-native species - plants	6
Diversions	4
Fire	4
Hydrologic regime alterations	3
Non-native species - mammals	3
Recreation	3
Roads	3
Groundwater withdrawal	2
Mining - historical	2
Recreation - OHV use/dune buggy	2
Target related bio/ecological threats	2
Non-native species - fishes	2

The extraction of water from both surface and groundwater flows has caused profound **hydrologic alterations** in some portions of this desert ecoregion. Hydrologic alterations include construction of dams and diversions, loss of springs and outflow channels, and over-appropriation of groundwater. In some areas, the use of extracted water for agriculture also has degraded water quality through siltation and pollution. Hydrologic alterations impact aquatic, riparian and wetland conservation targets.

Growth of urban centers, some of the highest rates in the nation, are impacting more and more of the landscape. The Great Basin is sparsely populated with the exception of two large urban centers, the Sierra Front (Reno, Sparks, Carson City and Gardnerville in Nevada) and the Wasatch Front (Brigham City, Salt Lake City, Provo and Spanish Fork in Utah). Direct impacts to conservation targets form urban growth include habitat fragmentation, and direct habitat loss. Indirect threats include exposure of conservation targets to domestic species and biocides.

As the human population grows, so does the demand for recreational opportunities away from crowded urban and suburban centers. Increasing demands for **recreational use of public lands** threaten conservation targets from both concentrated and dispersed inappropriate use. Impacts from recreational use of motorized vehicles, mountain bicycles and horses include soil compaction, habitat fragmentation and spread of non-native plant species.

Finally, **natural fire regimes** have been altered in the past 150 years through suppression and increased ignitions. Some conservation target systems such as sagebrush steppe likely did not evolve under the influence of wildfires, while other systems such as montane forests and adjacent bitterbrush shrublands appear to be adapted to occasional wildfires. The mosaic of vegetation communities across the Great Basin has been altered both by unnatural fire suppression and anthropogenic ignitions. The invasion of non-native plants, such as cheatgrass, also has altered the frequency, intensity and spread of wildfires.

Many of these threats are now interwoven and difficult to tease apart. For example, poorly managed grazing programs have contributed to shifts in species composition, with native plant communities being invaded or replaced with non-native, annual grasses like cheatgrass. Transitions to annual grass dominants are linked to changes in fire frequency and magnitude. Increased fires prevent the vegetation from returning to native composition and structural patterns. Scenarios such as this one can lead to new ecological systems that have little benefit to native species or commodity users. Solutions will likely include habitat restoration as well as changes to grazing, fire, or other management.

Grazing management, invasion of exotic species, hydrologic alterations, and altered fire regimes occur on many of the DoD portfolio conservation areas (table 11). Threats to conservation targets in the DoD portfolio thus largely reflect public land threats with one exception – there are additional threats related to military training exercises and weapons testing. The impacts to conservation targets from military activities tend to be quite localized and irreversible. For example, areas that are impacted through ordnance use are permanently lost from a biodiversity perspective. These direct impacts are further exacerbated by needs for infrastructure, and in particular, access to facilities. Road building, off-road travel, housing development, and other construction activities lead to fragmentation, introduction of invasive plants, disruption of ecosystem processes and loss of habitat. The challenge for military installations is to develop and implement appropriate land use and management practices to balance the requirements of the military mission with good stewardship of natural resources.

VII. CONSERVATION STRATEGIES AND OPPORTUNITIES

The mission of the Department of Defense is to "maintain and employ Armed Forces to: support and defend the Constitution of the United States against all enemies, foreign and domestic; ensure, by timely and effective military action, the security of the United States, its possessions, and areas vital to its interest; and uphold and advance the national policies and interests of the United States" (DoD 2002). **Sustainment** of this mission is of paramount importance to the security of our nation. In DoD directive 3200.15 (DoD 2003), the goal of long-term sustainment of military test and training ranges is expressed as DoD policy. In this directive, installation commands are encouraged to anticipate and plan responses to future impediments to sustainment of the military mission.

External influences that **encroach** upon the DoD's ability to sustain the military mission of one or more installations or MOA airspace include, but are not limited to: obligations to protect endangered species, critical habitat, wetlands, air quality and water quality, as well as restrictions on airborne noise, radio frequency use, and MOA airspace use (DoD 2003). DoD has developed a number of programs and implemented policy changes to address the threat of encroachment. One of these programs, the Sustainable Ranges Initiative, seeks to address encroachment issues through changes in DoD policy, organization, leadership, programming, outreach, legislative clarification and internal changes (DoD 2004). Among the outreach efforts recommended by this initiative is for DoD to work with other agencies and nongovernmental organizations to promote compatible land uses in areas that may conflict with sustainment of the military mission.

Encroachment pressure caused by changes in land use is commonly described as the result of urbanization of private lands surrounding military installations (DoD 2004). When most of the DoD installations were established in the Great Basin during the mid-1900s, they were in remote, rural areas of the desert lowlands. As the human population expanded in the western U.S., the relative remoteness of these bases has decreased or disappeared. With land use changes outside installation boundaries, these once isolated military facilities sometimes function as sanctuaries for rare species and declining habitats. This change in land use often results in the destruction of native species' habitats in the lands surrounding DoD lands, and increases the conservation importance of the habitat remaining on DoD lands. Many DoD facilities in the U.S. have become surrounded by expanding urban areas. However, in the Great Basin, many DoD lands are bordered by lands under federal management. Much of this land is managed under multiple-use principles by the U.S. Departments of Interior and Agriculture. Changes in type, timing, and intensity of land use could pose the threat of encroachment also, particularly on lands that are overlaid by MOA airspace. DoD efforts to proactively collaborate with agencies and nongovernmental organizations to plan for sustainment of the military mission should include federally-managed land encroachment issues.

DoD's obligations to protect endangered species, critical habitat, wetlands and other natural resources are codified in several federal laws including the National Environmental Policy Act, Endangered Species Act, Migratory Bird Treaty Act and Clean Water Act, as well as state and local laws and ordinances. DoD has applied a proactive approach to compliance with these laws and regulations, in keeping with DoD's commitment to sound stewardship of their lands and waters as well as natural and cultural resources. DoD's commitment to good land and water stewardship has resulted in development of a national model for biodiversity conservation (The Keystone Center 1996a). Developing and implementing strategies for biodiversity conservation are an integral part of responsible land stewardship. Conservation strategies should lead to direct abatement or minimization of threats on military land and water, but will need to be balanced with the requirements of the military mission for each installation. Voluntary conservation measures undertaken for any of the 34 unique species (appendix F) and their habitats could reduce the chances that these species would be "listed" under federal or state protected species laws. Such proactive measures would demonstrate a commitment to biodiversity conservation by DoD, and reduce future encroachment issues.

The 17 irreplaceable conservation areas in the DoD portfolio represent the only opportunities to protect unique resources as each conservation area harbors at least one species endemic to only that location. For other conservation areas in the DoD portfolio, where minimization of threats is inconsistent with the military mission, mitigation of impacts may be necessary. In instances where the military mission is not compatible with biodiversity conservation, mitigation, minimization and avoidance measures are pursued to offset direct, indirect, and cumulative impacts. In those instances, activities on DoD lands that impact conservation targets might be mitigated for on other lands that harbor the same species or ecological systems. The lands underneath MOA airspace offer a good opportunity for mitigation, as the feasibility of implementation is increased due to existing cooperative relationships among land managers and the military. In particular, lands under MOA airspace that already enjoy some form of protection through state or federal land use designations offer superb opportunities for DoD to mitigate actions on DoD lands.

Over 40 conservation areas overlapping DoD land and MOA airspace occur on land protected by federal and state designations (appendix G). Of the 127 DoD portfolio sites, approximately 11 % of the portfolio occurs on land categorized as "protected" (class 1 and 2 land). Class 1 land includes U.S. Forest Service Research Natural Areas and Botanical Special Interest Areas; class 2 land includes National Conservation Areas, National Wildlife Refuges, Areas of Critical Environmental Concern designated to protect biodiversity values, State Wildlife Management Areas, Wilderness Areas, and Wilderness Study Areas. It should be noted, however, that Wilderness Study Areas have not yet received permanent wilderness designations by the U.S. Congress and may change in status. About 57 % of the conservation area acreage is multiple-use, public land (class 3), and the remaining 32 % has no conservation management (class 4). Conservation of the "unprotected" 89 % of the lands in the DoD portfolio is fundamental to maintaining the integrity of ecosystem health

and securing the future of the Great Basin ecoregion's extraordinarily rich biological resources.

In developing strategies for conservation of ecological resources on or near DoD installations, we recommend consideration of the following priorities for conservation action:

1) Irreplaceable sites with unique plants and animals;
2) Conservation areas with endemic or geographically limited attributes;
3) Large landscapes with intact ecological processes; and,
4) Conservation areas identified for priority cooperation with partners addressing multi-site strategies.

Collectively, these areas can assist in conserving endemic species, unusual habitats, and representative ecological systems that maintain the viability of the Great Basin's unique biological wealth.

We have organized the strategy recommendations and options discussion into six categories: 1) land, water and species management and protection; 2) law, policy and enforcement; 3) science – research, inventory and monitoring; 4) education and outreach; 5) economic and other incentives; and 6) capacity building. We identified these categories by reviewing our conservation area planning methodology (TNC 2000d), an internal TNC process, to identify the types of strategies applicable to conservation areas and threats within the DoD portfolio. For many strategies, action on the conservation areas overlapping with MOA airspace may represent mitigation opportunities for actions on DoD lands where impacts cannot be minimized.

Land, water, and species management and protection include direct actions that benefit conservation target species and ecological systems, as well as changes in land use designation or ownership that reduce the likelihood of threats to those conservation targets. Direct actions include management of land, water and species, such as restoration of degraded habitats, as well as implementation of land use and management practices that reduce the impacts of human uses on species of concern and their habitats. Controlling the spread of invasive plant and animal species, changing fire management practices to include prescribed fires in areas where the vegetation communities require periodic disturbance by fire, and changing water management to include benefits to species are three examples of direct actions DoD could implement on DoD lands to benefit conservation targets and systems.

Protection of land, water and species includes changes in land use designation or ownership to ensure that military mission planning and implementation is compatible with the needs of conservation target species and systems. All Great Basin conservation targets, including matrix ecological systems such as greasewood shrubland, salt desert scrub and sagebrush steppe, should be considered for protective actions. Retaining lands of value to

conservation targets within military management, designation of natural areas in Integrated Natural Resource Management Plans (INRMP), and cooperation with adjacent federal lands managers to designate buffer areas around the habitats of conservation target species are three examples of land, water and species protection actions. Designation of buffer areas on adjacent public lands also may facilitate sustainment of the military mission. Designation of special conservation areas on DoD land can also demonstrate DoD's commitment to, and leadership in, conserving the nation's unique landscapes.

While there are many conservation areas identified within DoD boundaries, there are many more areas overlaid by MOA airspace. The BLM is the largest manager of land under the MOA airspace and represents an important partner for DoD in collaborative conservation efforts. Many of the conservation areas that overlap the MOA airspace contain federally protected species, as well as other conservation target species (table 3). However, the majority of these 292 species have little or no direct conservation management at present. Collaborative efforts with BLM to protect these species on the public lands presents a great mitigation opportunity for DoD. A focus on partnerships between DoD and other government agencies to protect species and habitats on non-DoD public lands has the potential to alleviate encroachment pressures for military installations and to conserve a large portion of the biological diversity of the Great Basin. Collaboration on protective designations for other conservation areas under the MOA airspace (appendix G) can demonstrate DoD's commitment to conserving the nation's natural resources.

Law, policy and enforcement actions include those taken to comply with Federal and State natural resource laws and regulations, and the actions that DoD may take within existing policy and directives to protect conservation target species and systems. Natural resource laws and regulations provide the basis for conservation management on DoD land. DoD mission related policies also can provide benefits to conservation target species and systems by managing public access, managing military staff and contractor activities and movements, preventing trail proliferation, reducing the spread of weeds, and providing other benefits to conservation targets. In particular, areas with special conservation management needs or formal conservation designation in an INRMP should have boundaries, management and monitoring plans, and designated base contacts so mission-related staff can more efficiently interact with natural resources staff. Mechanisms for enforcement of policies and procedures that benefit conservation target species and systems should be strong enough to deter non-compliance.

Science – research, inventory, monitoring includes research to address gaps in the literature that were identified in the Great Basin ecoregional assessment (Nachlinger and others 2001), surveys and inventories to better define the occurrences of species of concern on DoD land relative to their occurrence on other lands, and monitoring of management actions to ensure the effectiveness of those actions.

Gaps in our data collection during the ecoregional assessment were inevitable. Assisting with filling these data gaps may offer a mitigation option for DoD. Using Legacy or other funds to fill data gaps would further land and resource managers' understanding of Great Basin systems, habitats, and species. Scientific areas needing further work include, but are not limited to: species inventory; ecological studies related to conservation targets and habitats; quantification and mapping of Great Basin vegetation to a more detailed scale, such as the Alliance level; development of an aquatic classification system; and ecological studies related to exotic species invasions, as well as altered hydrologic and fire regimes in the Great Basin.

All conservation management requires monitoring to assure measurable success towards conservation goals. Adaptive management, with strong feedback loops between the results of monitoring efforts and planning efforts for future management actions, should be part of all monitoring protocols. Developing and implementing sound monitoring tools or adaptive management procedures for DoD conservation areas could serve as pilot projects for both public and private land managers.

Development of sound **education and outreach** programs for military personnel, staff and contractors working on base will ensure more effective implementation of natural resource management actions. For those portions of DoD lands that are available for public use, programs to convey rules for use of those lands should include mention of natural resource values the military is protecting on those lands, unless divulging this would increase risk of harm to those natural resources. Also, the results of monitoring the status of special conservation areas should be shared with the public and regulators to demonstrate the commitment of DoD to biodiversity conservation.

Development of **economic and other incentives** could include cooperation with local communities to promote economic activities on surrounding public lands that do not increase encroachment pressures. Because loss of habitat for species of concern on surrounding public lands may increase pressures on DoD to alter management practices on similar habitats, uses off-site may influence the military's ability to sustain the military mission.

Capacity building includes enhancement of DoD military personnel, staff and contractor capacity through traditional staffing and training mechanisms as well as collaborative opportunities to train with and learn from other agencies and non-governmental organizations. First and foremost, DoD should ensure appropriate levels of natural resource staffing for each installation to ensure that DoD can take advantage of proactive conservation strategies, while maintaining compliance with local, state and federal natural resource laws. Existing staff should be trained to keep abreast of effective restoration, land management and monitoring techniques, and encouraged to participate as trainers for other staff, as appropriate.

In addition, opportunities exist through the US Departments of Agriculture and Interior for training with staff from other agencies, both in local venues and at national and regional training centers, such as the US Fish and Wildlife Service's National Conservation Training Center in Shepherdstown, West Virginia. Local collaborative training opportunities offer additional benefits to DoD, as participation by DoD natural resource staff demonstrates to local agencies DoD's commitment to natural resource and biodiversity conservation.

For each of the installations, an evaluation of current conservation programs should be undertaken to incorporate the data and results from the Great Basin ecoregion assessment (Nachlinger and others 2001). The results of this evaluation could then be used to determine which of the conservation strategies recommended in this document are appropriate for the installation's mission. For instance, as part of Phase II of this Great Basin Conservation Initiative, four installations were selected for more detailed conservation planning efforts using TNC's 5-S conservation planning framework (TNC 2000d). This assessment process was funded through the DoD Legacy Resource Management Program, and has resulted in two conservation area assessments (Nachlinger 2003, Wainscott 2004). This type of effort also has been expanded to include an assessment of an entire installation, as was done for the Barry M. Goldwater Range in Arizona (Hall and others 2001).

In addition, TNC has developed five priority conservation initiatives to address the principal threats to conservation at the sites where we work. Through these initiatives, we are working with public agencies and private partners to advance conservation science, develop multi-site strategies, catalyze global partnerships and improve policies in each of these key conservation areas: fire, invasive species, climate change, marine conservation and freshwater conservation. The collaborative nature of these initiatives allows each partner to learn from and share the strengths and capacity of the other partners.

DoD participation in the TNC Invasives Network initiative would connect installation natural resource staff to other Great Basin entities working on weed issues including the management of cheatgrass. TNC has already begun working with the Fire Learning Network initiative and Hawthorne Army Depot to develop a map of fire regime condition classes (Hann and Brunnell 2001, Hardy and others 2001, and Schmidt and others 2002) for the vegetative communities on Mt. Grant (Provencher 2004). This project will benefit from the Fire Learning Network initiative, which includes fire science experts from TNC, US Departments of Interior and Agriculture, as well as academics. The lessons learned through this project also would be exported back to the participants in the Fire Learning Network, demonstrating to a national audience of resource managers and scientists DoD's commitment to natural resources and ecosystem management.

DoD participation in these programs would provide for training opportunities for DoD staff as well as opportunities for Great Basin installations to export lessons learned to neighboring land management agencies. Identifying management activities that could be implemented to address multi-site threats would enhance conservation across the

ecoregion. Exportation of successful conservation management programs on DoD land show a commitment to natural resources and ecosystem management.

Sustainment of the military mission will require the continuation of current practices (sound legal position, science and research, adaptive management, education and public engagement) along with new, creative conservation practices. It is our hope that this assessment of the Great Basin will be used as the building block for ecoregion-wide conservation. The Nature Conservancy is committed to collaborative work with all land owners and managers, including the Department of Defense, to achieve our shared goals of biodiversity conservation.

The collaborative nature of both the ecoregional assessments and conservation area assessments serves as a foundation for cooperative efforts and shared responsibility to protect significant biological areas in the ecoregion. By identifying major conservation issues affecting the entire Great Basin, ecoregion-based planning allows land and resource managers to focus limited resources on common stressors that threaten the viability of biologically significant habitats. Such an approach, applied in concert by all land management agencies and stakeholders, could more efficiently identify lands to receive conservation protection and management.

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APPENDIX A
ECOLOGICAL SYSTEMS IN THE GREAT BASIN ECOREGION

Appendix A. Ecological systems in the Great Basin ecoregion.

Ecological System	Patch Type	Total Cover (ha)	% of Ecoregion
Playa Lakes and Pickleweed Flats	Large Patch	1,039,404	3.55%
Greasewood Shrubland	Large Patch	870,623	2.97%
Salt Desert Scrub	Matrix Forming	7,695,151	26.25%
Blackbush - Hopsage Shrubland	Large Patch	267,327	0.91%
Semidesert Scrub Steppe	Large Patch	854,036	2.91%
Joshua Tree-Mixed Mojave Scrub	Matrix Forming	79,325	0.27%
Sagebrush Semidesert	Matrix Forming	7,209,291	24.59%
Sagebrush Steppe	Large Patch	2,502,700	8.54%
Bitterbrush Shrubland	Large Patch	3,489	0.01%
Low Montane Shrubland	Large Patch	227,198	0.78%
Mountain Mahogany Woodland	Large Patch	126,428	0.43%
Pinyon-Juniper Woodland	Large Patch	4,586,276	15.64%
Ponderosa Pine	Large Patch	4,761	0.02%
Montane Forest and Woodland	Large Patch	231,958	0.79%
Montane Meadow	Small Patch	4,127	0.01%
Mountain Sagebrush	Large Patch	683,090	2.33%
Subalpine Forest and Woodland	Large Patch	82,918	0.28%
Alpine Herbaceous	Small Patch	28,086	0.10%
Sand Dune Habitats	Large Patch	31,968	0.11%
Badland Habitats	Small Patch	550,758	1.88%
Cliffland Habitats	Small Patch	—	—
Altered Andesite Soil Habitats	Small Patch	—	—
Cave Habitats	Subterranean	—	—
Desert Riparian Shrubland and Woodland	Linear	39,945	0.14%
Montane Riparian Shrubland and Woodland	Linear	5,475	0.02%
Wet Meadow	Small Patch	6,424	0.02%
Freshwater Marsh	Small Patch	166,251	0.57%
Fen and Bog Habitats	Small Patch	—	—

APPENDIX B
CONSERVATION TARGETS ON DOD AND MOA LANDS IN THE GREAT BASIN ECOREGION PORTFOLIO

Appendix B. Conservation targets on DoD and MOA lands in the Great Basin ecoregion portfolio.

Scientific Name	Common Name	Grank	Distribution	ESA Status
AMPHIBIANS				
Rana luteiventris ssp.	Toiyabe spotted frog	G4T?	Endemic	C1
BIRDS				
Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining	
Accipiter gentilis	Northern Goshawk	G4	Widespread, declining	
Amphispiza belli	Sage Sparrow	G5	Widespread, declining	
Aythya americana	Redhead	G5	Widespread, migratory concentration	
Baeolophus griseus	Juniper Titmouse	G5	Widespread	
Buteo regalis	Ferruginous Hawk	G4	Widespread, declining	
Buteo swainsoni	Swainson's Hawk	G4	Widespread, declining	
Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining	
Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist	
Circus cyaneus	Northern Harrier	G5	Widespread, declining	
Coccyzus americanus occidentalis	Western Yellow-Billed Cuckoo	G5T2T3	Peripheral	
Empidonax traillii extimus	Southwestern Willow Flycatcher	G5T2	Peripheral	E
Empidonax wrightii	Gray Flycatcher	G5	Widespread	
Falco mexicanus	Prairie Falcon	G5	Widespread	
Falco peregrinus	Peregrine Falcon	G4,G3	Widespread	DM
Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration	
Guiraca caerulea	Blue Grosbeak	G5	Peripheral	
Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist	
Icteria virens	Yellow-Breasted Chat	G5	Peripheral	
Ixobrychus exilis	Least Bittern	G5	Peripheral	
Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining	
Larus californicus	California Gull	G5	Disjunct, colonial	
Larus pipixcan	Franklin's Gull	G4G5	Disjunct	
Melanerpes lewis	Lewis's Woodpecker	G5	Widespread, declining	
Numenius americanus	Long-Billed Curlew	G5	Widespread, declining	
Oreoscoptes montanus	Sage Thrasher	G5	Widespread	
Otus flammeolus	Flammulated Owl	G4	Widespread	
Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration	
Phalaropus tricolor	Wilson's Phalarope	G5	Widespread, migratory concentration	
Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration	
Podiceps auritus	Eared Grebe	G5	Widespread, migratory concentration	
Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration	
Spizella breweri	Brewer's Sparrow	G5	Widespread	
Stellula calliope	Calliope Hummingbird	G5	Widespread	
Vermivora virginiae	Virginia's Warbler	G5	Widespread	
FISHES				
Catostomus clarki	Desert sucker	G3G4	Widespread	
Catostomus clarki ssp. 2	Meadow Valley Wash Desert sucker	G3G4T2	Endemic	
Chasmistes liorus	June sucker	G1	Endemic	E
Crenichthys baileyi grandis	Hiko White River springfish	G2T1	Limited	E
Crenichthys nevadae	Railroad Valley springfish	G2	Endemic	T
Empetrichthys latos latos	Pahrump poolfish	G1T1	Introduced	AT, E
Gila bicolor ssp. 10	Charnock springs tui chub	G4TH	Endemic	
Gila bicolor ssp. 6	Little Fish Lake Valley tui chub	G4T1	Endemic?	
Gila bicolor ssp. 8	Big Smoky Valley tui chub	G4T1	Endemic	
Gila bicolor ssp. 9	Dixie Valley tui chub	G4T1	Endemic?	
Iotichthys phlegethontis	Least chub	G1	Limited	

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Appendix B. Conservation targets on DoD and MOA lands in the Great Basin ecoregion portfolio.

Scientific Name	Common Name	Grank	Distribution	ESA Status
Lepidomeda mollispinis	Virgin spinedace	G1	Limited	
Lepidomeda mollispinis pratensis	Big Spring spinedace	G1T1	Endemic	T
Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4T3	Limited	T
Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	Endemic?	
Relictus solitarius	Relict dace	G2G3	Endemic	
Rhinchthys osculus robustus	Lahontan speckled dace	?	Endemic	
Rhinichthys osculus	Monitor Valley speckled dace	G5T1	Endemic	
Rhinichthys osculus lariversi	Big Smoky Valley speckled dace	G5T1	Endemic	
Rhinichthys osculus ssp. 2 mv	Meadow Valley speckled dace	G5T2	Limited	
INVERTEBRATES (SEE ALSO MOLLUSKS)				
Aegialia hardyi	Hardy's aegialian scarab	G1	Endemic	
Aegialia spinosa	(Scarab beetle)	?	Limited	
Andrena chrylismiae	(Bee)	G1	Endemic	
Andrena nevadae	(Bee)	G1	Endemic	
Andrena raveni	(Bee)	G2	Limited	
Andrena sp. nov.	(Bee)	G1	Endemic	
Andrena taeniata	(Bee)	G2	Disjunct	
Anthidium rodecki	(Bee)	?	Limited	
Anthophora affabilis	(Bee)	?	Limited	
Anthophora sp. nov.	(Bee)	G1	Endemic	
Aphodius parapyriformis ssp. nov.	(Bee)	?	Limited	
Atoposmia rufifemur	Red-legged beardtongue bee	?	Limited	
Calliopsis filiorum	(Bee)	G1	Endemic	
Calliopsis phaceliae	(Bee)	?	Limited	
Calliopsis sp. nov	(Bee)	?	Limited	
Cardiophorus ssp. nov.	(Click beetle)	?	Endemic	
Cercyonis oetus alkalorum	Big Smoky wood nymph	G5T1	Endemic	
Cercyonis oetus pallescens	Pallid wood nymph	G5T1	Endemic	
Chilometopon pallidium	(Sand obligate beetle)	?	Limited	
Coenonycha pygmaea	Sand Mountain pygmy scarab	G1	Endemic	
Colletes sp. nov. 1	(Bee)	G1	Limited	
Colletes stepheni	(Bee)	?	Disjunct	
Colletes tectiventris	(Bee)	?	Disjunct	
Edrotes ventricosus	(Sand obligate beetle)	?	Limited	
Euphilotes bernardino minuta	Baking Powder Flat Blue	G5T1	Endemic	
Euphilotes pallescens arenamontana	Sand Mountain blue	G4T1	Endemic	
Euphilotes pallescens mattoni	Mattoni's blue	G4T1	Limited	
Euphydryas editha koreti	Koret's checkerspot	G5T1Q	Endemic	
Eusattus muricatus	(Sand obligate beetle)	?	Widespread, specialist	
Hesperapis kayella	(Bee)	G1	Limited	
Hesperapis sp. nov.2	(Bee)	G1	Endemic	
Hesperia uncas giulianii	Giuliani's unca skipper	G4G5T1	Unknown	
Hesperia uncas reesorum	Reese River unca skipper	G4G5T1	Endemic	
Hypaurotis crysalus intermedia	Intermediate Colorado hairstreak	G5T1	Endemic	
Lariversius tibalis	(Sand obligate beetle)	?	Limited	
Mecynotarsus delicatulus	(Sand obligate beetle)	?	Limited	
Melecta alexanderi	Parasitic bee	G1	Limited	
Myrmecocystus arenarius	Dune honey ant	G2?	Endemic?	
Niptus ventriculus	(Sand obligate beetle)	?	Limited	
Novelsis sabulorum	(Sand obligate beetle)	?	Endemic	
Ochlodes yuma lutea	Great Basin yuma skipper	G3T2T3	Limited	
Oreohelix eurekensis	Eureka mountainsnail	G1	Unknown	

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Appendix B. Conservation targets on DoD and MOA lands in the Great Basin ecoregion portfolio.

Scientific Name	Common Name	Grank	Distribution	ESA Status
Oreohelix haydeni	Lyrate mountainsnail	G2G3	Peripheral or Limited	
Oreohelix hemphilii	White Pine mountainsnail	?	Endemic	
Osmia alpestris	(Bee)	?	Limited	
Osmia tanneri	(Bee)	G1	Limited	
Perdita aridella	(Bee)	?	Limited	
Perdita bohartorum	(Bee)	?	Limited	
Perdita chloris	(Bee)	?	Limited	
Perdita cleomellae	(Bee)	?	Disjunct	
Perdita eucnides eucnides	(Bee)	G2	Disjunct	
Perdita exigua	(Bee)	G1	Endemic	
Perdita haigi	(Bee)	G1	Endemic	
Perdita hirticeps apicata	(Bee)	?	Limited	
Perdita leucostoma	(Bee)	?	Limited	
Perdita mormonica	(Bee)	?	Limited	
Perdita sp. nov. 3	(Bee)	G1	Endemic	
Perdita vesca	(Bee)	?	Limited	
Philothris ssp. nov.	(Predatory beetle)	?	Limited	
Polites sabuleti basinensis	Pallid skipper	G5T2	Unknown	
Polites sabuleti nigrescens	Dark sandhill skipper	G5T2	Endemic	
Pseudocopaeodes eunus flavus	Nevada alkali skipperling	G3T2	Endemic	
Pteronarcys princeps	Giant stonefly	G4	Peripheral, specialist	
Rhadine myrmecodes	(Sand obligate beetle)	?	Limited	
Satyrium saepium latilinea	Broadlined saepium hairstreak	G5T1	Limited	
Serica psammobunus	Sand Mountain serican scarab	G1	Endemic	
Speyeria nokomis apacheana	Apache silverspot	G4T3	Endemic	
Stenopelmatus ssp. nov	(Sand obligate cricket)	?	Endemic	
Tetragonoderus pallidus	(Sand obligate beetle)	?	Limited	
Thorybes mexicana blanca	White Mountains cloudy wing	G5T2	Endemic	
Trogloderus costatus		?	Limited	
MAMMALS				
Antrozous pallidus	Pallid bat	G5	Widespread, declining	
Brachylagus idahoensis	Pygmy rabbit	G5	Limited	
Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining	
Dipodomys deserti	Desert kangaroo rat	G5	Limited	
Dipodomys microps	Chisel-toothed kangaroo rat	G5	Limited	
Euderma maculatum	Spotted bat	G4	Unknown	
Lagurus curtatus	Sagebrush vole	G5	Endemic or Limited	
Lasionycteris noctivagans	Silver-haired bat	G5	Widespread, declining	
Lasiurus cinereus	Hoary bat	G5	Widespread, declining	
Lepus townsendii	White-tailed jack rabbit	?	Widespread	
Microdipodops megacephalus albiventer	Desert Valley kangaroo mouse	G5T1	Endemic	
Microdipodops megacephalus	Dark kanagaroo mouse	G5	Unknown	
Myotis thysanodes	Fringed myotis	G5	Widespread, declining	
Ochotona princeps sspp.	Pika	G5T?	Limited?	
Ovis canadensis californiana	California bighorn sheep	G4T1	Limited	E
Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited	
Sorex preblei	Preble's shrew	G4	Unknown	
Sorex tenellus	Inyo shrew	G3G4	Limited	
Tadarida brasiliensis	Brazilian free-tailed bat	G5	Unknown	
Ursus americanus	Black bear	G5	Peripheral	SAT
MOLLUSKS				
Anodonta californiensis	California floater	G3G4	Widespread, declining	

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Scientific Name	Common Name	Grank	Distribution	ESA Status
Physa megalochlamys		G3	Unknown	
Physella utahensis	Utah physa	G1	Limited	
Pyrgulopsis anguina	Longitudinal gland springsnail	G1	Endemic	
Pyrgulopsis augustae	Elongate Cain Spring springsnail	G1	Endemic	
Pyrgulopsis basiglans	Large gland Carico springsnail	G1	Endemic	
Pyrgulopsis bifurcata	Small gland Carico springsnail	G1	Endemic	
Pyrgulopsis bruesi	Brue's springsnail	G1	Endemic	
Pyrgulopsis cruciglans	Transverse gland springsnail	G1	Endemic	
Pyrgulopsis dixiensis	Dixie Valley springsnail	G1	Endemic	
Pyrgulopsis hubbsi	Hubbs springsnail	G1	Endemic	
Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited	
Pyrgulopsis lentiglans	Crittenden springsnail	G1	Endemic	
Pyrgulopsis merriami	Pahranagat pebblesnail	G1	Endemic	
Pyrgulopsis millenaria	Twentyone Mile springsnail	G1	Endemic	
Pyrgulopsis peculiaris	Bifid duct springsnail	G?,G2?	Endemic	
Pyrgulopsis pictilis	Ovate Cain Spring springsnail	G1	Endemic	
Pyrgulopsis sadai	Sada's springsnail	G1G2	Endemic	
Pyrgulopsis saxatilis	Sub-globose Snake springsnail	G1	Endemic	
Pyrgulopsis sterilis	Sterile Basin springsnail	G1	Endemic	
Pyrgulopsis transversa	Southern Bonneville springsnail	G?	Endemic or Limited	
Pyrgulopsis variegata	Northwest Bonneville springsnail	G2	Limited	
Stagnicola bonnevillensis	Fat-whorled pondsnail	G1	Endemic	C1
Tryonia monitorae	Monitor Valley tryonia	G1	Endemic	
Tryonia protea	Desert tryonia	G3G4	Widespread, specialist	
PLANTS				
Agastache cusickii	Cusick hyssop	G3	Peripheral	
Allium passeyi	Passey's onion	G1	Endemic	
Arabis bodiensis	Bodie Hills rock cress	G1,G2	Limited	
Arabis dispar	Pinyon rock cress	G3	Limited	
Arabis falcifructa	Elko rockcress	G1G2	Peripheral	
Arabis ophira	Ophir rockcress	G1G2	Endemic	
Arenaria congesta var. wheelerensis	Wheeler peak sandwort	G5T1?	Endemic	
Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic	
Astragalus beatleyae	Beatley milkvetch	G3	Endemic	
Astragalus callithrix	Callaway milkvetch	G3	Endemic	
Astragalus calycosus var. monophyllidius	One-leaflet torrey milkvetch	G5T2	Endemic	
Astragalus convallarius var. finitimus	Lesser rushy milkvetch	G5T3	Endemic	
Astragalus diversifolius	Mesic milkvetch, meadow milkvetch	G3	Limited	
Astragalus eurylobus	Needle Mountains milkvetch	G2	Limited	
Astragalus funereus	Black milk-vetch, black woollypod	G2	Peripheral	
Astragalus gilmanii	Gilman milkvetch	G3?	Limited	
Astragalus kentrophyta var. elatus	Spiny-leaved milk-vetch	G5T4	Endemic	
Astragalus lentiginosus var kennedyi		G5T3T4	Endemic	
Astragalus lentiginosus var. latus	Broad-pod freckled milkvetch	G5T1	Endemic	
Astragalus lentiginosus var. pohlii	Pohl milkvetch	G5T1	Endemic	
Astragalus lentiginosus var. sesquimetralis	Sodaville milk-vetch	G5T1	Limited	
Astragalus oophorus var. clokeyanus	Clokey eggvetch	G4T2	Peripheral	
Astragalus oophorus var. lonchocalyx	Pink egg milkvetch, long-calyx eggvetch	G4T2	Endemic	
Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic	
Astragalus pterocarpus	Winged milkvetch	G3	Limited	
Astragalus serenoi var. sordescens	Squalid milkvetch	G4T2	Endemic	
Astragalus toquimanus	Toquima milkvetch	G2	Endemic	
Astragalus uncialis	Currant milkvetch	G2	Endemic	

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Appendix B. Conservation targets on DoD and MOA lands in the Great Basin ecoregion portfolio.

Scientific Name	Common Name	Grank	Distribution	ESA Status
Atriplex bonnevillensis		G2G3Q	Endemic	
Camissonia megalantha	Cane Spring suncup	G3	Limited	
Castilleja martinii var. clokeyi	Clokey paintbrush	G3QT3	Peripheral	
Castilleja scabrida var. barnebyana	Barneby's paintbrush	G4T?	Endemic	
Collomia renacta	Barren Valley collomia	G1Q	Limited	
Cryptantha compacta	Mound cryptanth	G1	Endemic	
Cryptantha welshii	White River catseye	G3	Endemic	
Cymopterus acaulis var. parvus		G5T2T3	Endemic	
Cymopterus basalticus	Dolomite spring-parsley, intermountain wavewing	G2,G2G3	Endemic	
Cymopterus coulteri	Coulter biscuitroot	G3	Limited	
Cymopterus goodrichii	Goodrich biscuitroot	G1	Endemic	
Draba arida	Desert whitlowgrass	G2	Endemic	
Draba cusickii var. pedicellata	Stalked cusick whitlowgrass	G4T3?	Endemic	
Draba kassii	Kass rockcress	G1	Endemic	
Draba oreibata var. serpentina	Snake Range whitlowgrass	G4T1	Endemic	
Draba pennellii	Pennell draba	G2	Endemic	
Draba sphaeroides	Mountain draba	G2?	Limited	
Epilobium nevadense	Nevada willowherb	G2	Limited	
Ericameria cervina	Antelope goldenbush	G3?	Limited	
Erigeron ovinus	Sheep fleabane	G2	Limited	
Eriogonum anemophilum	Windloving buckwheat	G2G3	Endemic	
Eriogonum batemanii var. eremicum	Desert wild buckwheat	G4?T2T3	Endemic	
Eriogonum beatleyae	Beatley buckwheat	G2Q	Endemic	
Eriogonum concinnum	Darin buckwheat	G2	Limited	
Eriogonum darrovii	Darrow buckwheat	G2G3	Limited	
Eriogonum esmeraldense var. toiyabense	Toiyabe buckwheat	G4T2	Endemic	
Eriogonum holmgrenii	Holmgren buckwheat	G1	Endemic	
Eriogonum microthecum var. panamintense	Panamint Mountains buckwheat	G5T2	Limited	
Eriogonum nummulare var. ammophilum	Ibex buckwheat	G4T1	Endemic	
Eriogonum ovalifolium var. caelestinum	Heavenly buckwheat	G5T2T3	Endemic	
Eriogonum rubricaule	Lahontan Basin buckwheat	G3	Endemic	
Eriogonum spathulatum var. natum	Son's wild buckwheat	G3T2	Endemic	
Frasera pahutensis	Pahute green gentian	G3Q	Endemic	
Galium hilendiae ssp. kingstonense	Kingston Mountains bedstraw	G4QT2?	Limited	
Gilia heterostyla	Cochrane gilia	?	Endemic	
Hackelia ibapensis	Deep Creek stickseed	G1	Endemic	
Helianthus deserticola	Desert sunflower	G2Q	Limited	
Ivesia arizonica var. saxosa	Rock purpusia	G4T1	Limited	
Ivesia kingii var. kingii	Alkali ivesia	G3T2	Limited	
Ivesia shockleyi var. ostleri	Ostler's ivesia	G3G4T1	Endemic	
Jamesia americana var. macrocalyx	Wasatch jamesia	G5T2	Limited	
Jamesia tetrapetala	Basin jamesia, waxflower	G2	Endemic	
Lepidium nanum	Dwarf peppergrass	G3	Endemic	
Lesquerella goodrichii	Goodrich bladderpod	G2G4	Endemic	
Lesquerella hitchcockii	Hitchcock bladderpod	G3	Peripheral or Limited	
Lesquerella pendula	Hanging bladderpod	G2?	Endemic	
Lewisia maguirei	Maguire bitterroot	G1	Endemic	
Machaeranthera grindelioides var. depressa		G5T3T4	Limited	
Mentzelia candelariae	Candelaria blazing-star	G3?Q	Endemic	
Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining	
Oryctes nevadensis	Nevada oryctes	G2,G2G3	Limited	
Oxytheca watsonii	Watson's oxytheca	G2	Peripheral or Limited	
Penstemon arenarius	Nevada dune beardtongue	G2G3	Endemic	

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Scientific Name	Common Name	Grank	Distribution	ESA Status
Penstemon barnebyi	Barneby's beardtongue	G3	Endemic	
Penstemon concinnus	Tunnel spring beardtongue	G3	Endemic	
Penstemon floribundus	Cordelia beardtongue	G1	Endemic	
Penstemon humilis var. deserticus	Desert beardtongue	G5T2?	Endemic	
Penstemon leiophyllus var. francisci-pennellii	Pennell beardtongue	G3T2	Endemic	
Penstemon moriahensis	Mount Moriah beardtongue	G1G2	Endemic	
Penstemon nanus	Low beardtongue	G3	Endemic	
Penstemon pahutensis	Pahute Mesa beardtongue	G3	Limited	
Penstemon palmeri var. macranthus		G5T2?	Endemic	
Penstemon patricus	Dad's penstemon	G2Q	Endemic	
Penstemon platyphyllus	Broadleaf penstemon	G2G3	Peripheral	
Penstemon pudicus	Bashful beardtongue	G1	Endemic	
Penstemon rubicundus	Wassuk Beardtongue	G2G3	Endemic	
Perityle intricata		G3	Peripheral or Limited	
Phacelia beatleyae	Beatley scorpion plant	G3	Peripheral	
Phacelia glaberrima	Reese River phacelia	G3?	Endemic	
Phacelia minutissima	Least phacelia	G2	Peripheral	
Phacelia mustelina	Death Valley round-leaved phacelia, weasel phacelia	G2,G2G3	Limited	
Phacelia parishii	Parish phacelia	G2G3	Limited	
Polyctenium williamsiae	Williams combleaf	G2	Limited	
Polygala heterorhyncha	Notch-beak milkwort	G3Q	Limited	
Potentilla cottamii	Cottam's cinquefoil	G1	Limited	
Potentilla pensylvanica var. paucijuga		G5T1T2Q	Limited	
Primula domensis	House Range primrose	G1	Endemic	
Primula nevadensis	Nevada primrose	G1	Endemic	
Psorothamnus kingii	Lahontan indigobush	G3	Endemic	
Sclerocactus nyensis	Tonopah fishhook cactus	G1Q	Endemic	
Sclerocactus schlesseri	Schlesser pincushion	G1Q	Endemic	
Sclerocactus spinosior	Desert Valley fishhook-cactus	G2G3	Endemic	
Silene nachlingerae	Nachlinger catchfly	G2	Endemic	
Smelowskia holmgrenii	Holmgren smelowskia	G2	Endemic	
Sphaeralcea caespitosa	Jones globe-mallow	G3	Endemic	
Spiranthes diluvialis	Ute ladies' tresses	G2	Disjunct, declining	
Tonestus alpinus	Alpine tonestus	G2	Endemic	
Trifolium friscanum	Frisco clover	G1	Endemic	
Trifolium rollinsii	Rollins clover	G2G3Q	Endemic	
Viola lithion	Rock violet	G1	Endemic	

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APPENDIX C
DECLINING AND WIDE-RANGING CONSERVATION TARGETS ON DOD AND MOA LANDS IN THE GREAT BASIN ECOREGION PORTFOLIO

Appendix C. Declining and wide-ranging conservation targets on DoD and MOA lands in the Great Basin ecoregion portfolio.

Scientific Name	Common Name	Grank	Distribution	ESA Status
BIRDS				
Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining	
Accipiter gentilis	Northern Goshawk	G4	Widespread, declining	
Amphispiza belli	Sage Sparrow	G5	Widespread, declining	
Buteo regalis	Ferruginous Hawk	G4	Widespread, declining	
Buteo swainsoni	Swainson's Hawk	G4	Widespread, declining	
Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining	
Circus cyaneus	Northern Harrier	G5	Widespread, declining	
Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining	
Larus californicus	California Gull	G5	Disjunct, colonial	
Melanerpes lewis	Lewis's Woodpecker	G5	Widespread, declining	
Numenius americanus	Long-Billed Curlew	G5	Widespread, declining	
MAMMALS				
Antrozous pallidus	Pallid bat	G5	Widespread, declining	
Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining	
Myotis thysanodes	Fringed myotis	G5	Widespread, declining	
MOLLUSKS				
Anodonta californiensis	California floater	G3G4	Widespread, declining	
PLANTS				
Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining	

APPENDIX D
GREAT BASIN ENDEMIC CONSERVATION TARGETS ON DOD AND MOA LANDS IN THE GREAT BASIN ECOREGION PORTFOLIO

Appendix D. Great Basin endemic conservation targets on DoD and MOA lands in the Great Basin ecoregion portfolio

Scientific Name	Common Name	Grank	Distribution	ESA Status
FISHES				
Gila bicolor ssp. 9	Dixie Valley tui chub	G4T1	Endemic?	
Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	Endemic?	
INVERTEBRATES (SEE ALSO MOLLUSKS)				
Aegialia hardyi	Hardy's aegialian scarab	G1	Endemic	
Andrena chrylismiae	(Bee)	G1	Endemic	
Andrena sp. nov.	(Bee)	G1	Endemic	
Anthophora sp. nov.	(Bee)	G1	Endemic	
Calliopsis filiorum	(Bee)	G1	Endemic	
Cardiophorus ssp. nov.	(Click beetle)	?	Endemic	
Coenonycha pygmaea	Sand Mountain pygmy scarab	G1	Endemic	
Euphilotes pallescens arenamontana	Sand Mountain blue	G4T1	Endemic	
Hesperapis sp. nov.2	(Bee)	G1	Endemic	
Myrmecocystus arenarius	Dune honey ant	G2?	Endemic?	
Novelsis sabulorum	(Sand obligate beetle)	?	Endemic	
Perdita haigi	(Bee)	G1	Endemic	
Perdita sp. nov. 3	(Bee)	G1	Endemic	
Pseudocopaeodes eunus flavus	Nevada alkali skipperling	G3T2	Endemic	
Serica psammobunus	Sand Mountain serican scarab	G1	Endemic	
Speyeria nokomis apacheana	Apache silverspot	G4T3	Endemic	
Stenopelmatus ssp. nov	(Sand obligate cricket)	?	Endemic	
Thorybes mexicana blanca	White Mountains cloudy wing	G5T2	Endemic	
MAMMALS				
Lagurus curtatus	Sagebrush vole	G5	Endemic or Limited	
MOLLUSKS				
Pyrgulopsis cruciglans	Transverse gland springsnail	G1	Endemic	
Pyrgulopsis transversa	Southern Bonneville springsnail	G?	Endemic or Limited	
Stagnicola bonnevillensis	Fat-whorled pondsnail	G1	Endemic	C1
PLANTS				
Allium passeyi	Passey's onion	G1	Endemic	
Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic	
Astragalus beatleyae	Beatley milkvetch	G3	Endemic	
Astragalus lentiginosus var kennedyi		G5T3T4	Endemic	
Astragalus lentiginosus var. pohlii	Pohl milkvetch	G5T1	Endemic	
Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic	
Cymopterus acaulis var. parvus		G5T2T3	Endemic	
Draba kassii	Kass rockcress	G1	Endemic	
Eriogonum rubricaule	Lahontan Basin buckwheat	G3	Endemic	
Frasera pahutensis	Pahute green gentian	G3Q	Endemic	
Gilia heterostyla	Cochrane gilia	?	Endemic	
Hackelia ibapensis	Deep Creek stickseed	G1	Endemic	
Mentzelia candelariae	Candelaria blazing-star	G3?Q	Endemic	
Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining	
Penstemon arenarius	Nevada dune beardtongue	G2G3	Endemic	
Penstemon nanus	Low beardtongue	G3	Endemic	
Penstemon palmeri var. macranthus		G5T2?	Endemic	
Penstemon patricus	Dad's penstemon	G2Q	Endemic	
Penstemon rubicundus	Wassuk Beardtongue	G2G3	Endemic	
Phacelia glaberrima	Reese River phacelia	G3?	Endemic	
Psorothamnus kingii	Lahontan indigobush	G3	Endemic	

ESA Status Codes: E - Endangered; T - Threatened; C1 - Candidate Taxon, Ready for Proposal; AT - Proposed Reclassification to Threatend; DM - Delisted Taxon, Recovered, Being Monitored First Five Years; SAT - Similarity of Appearance to a Threatened Taxon

APPENDIX E
DOD GREAT BASIN ECOREGION PORTFOLIO CONSERVATION AREAS AND THEIR CONSERVATION TARGETS

Appendix E. DoD Great Basin ecoregion portfolio conservation areas and their conservation targets

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
A002	**ANCHORITE HILLS**		**Site Type:**	FUNCTIONAL SITE
			Section:	California
Size Ha:	13,684.7 % on DoD: 8.22%	System Groups (2)	**State:**	NV
Acres:	33,815.0 % in MOA::	BD SS LM MA	**County:**	Mineral
	% in BLM: 20.78%		**Installation:**	***Hawthorne AD***
TERR SYSTEMS	Greasewood shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
PLANTS	Polyctenium williamsiae	Williams combleaf	G2	Limited
INVERTEBRATES	Hesperia uncas giulianii	Giuliani's unca skipper	G4G5T1	Unknown
A005	**ANTELOPE VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	North Central
Size Ha:	18,434.5 % on DoD:	System Groups (2)	**State:**	NV
Acres:	45,551.7 % in MOA:: 81.97%	BD SS LM MA SD RW A	**County:**	Elko
	% in BLM: 98.73%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Greasewood shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
MOLLUSKS	Pyrgulopsis cruciglans	Transverse gland springsnail	G1	Endemic
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
A008	**AUGUSTA MOUNTAINS** UNIQUE SITE (1)		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	6,236.2 % on DoD:	System Groups (2)	**State:**	NV
Acres:	15,409.7 % in MOA:: 100.00%	BD SS LM MA RW A	**County:**	Pershing, Churchill, Lander
	% in BLM: 95.72%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	Sagebrush steppe			
	+ Salt desert scrub			
	Semi-desert shrub steppe			
MOLLUSKS	Pyrgulopsis augustae	Elongate Cain Spring springsnail	G1	Endemic
	Pyrgulopsis dixiensis	Dixie Valley springsnail	G1	Endemic
	Pyrgulopsis pictilis	Ovate Cain Spring springsnail	G1	Endemic

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
A011	**BARRETT CANYON**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size	Ha: 3,505.2 % on DoD:	System Groups (2)	**State:**	NV
	Acres: 8,661.4 % in MOA:: 100.00%	SS LM MA RW	**County:**	Nye
	% in BLM: 0.00%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Montane riparian shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush steppe			
PLANTS	Eriogonum esmeraldense var. toiyabense	Toiyabe buckwheat	G4T2	Endemic
	Smelowskia holmgrenii	Holmgren smelowskia	G2	Endemic
A013	**BEAVER DAM WASH-BULL VALLEY MOUNTAINS**		**Site Type:**	LANDSCAPE SITE
			Section:	Tonopah
Size	Ha: 49,221.5 % on DoD:	System Groups (2)	**State:**	NV
	Acres: 121,626.3 % in MOA:: 44.38%	BD SS LM SD RW A	**County:**	Washington, Lincoln
	% in BLM: 78.54%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Desert riparian shrubland and woodland			
	Low montane shrublands			
	Montane riparian shrubland			
	Pinyon-juniper woodland			
	Sagebrush steppe			
PLANTS	Epilobium nevadense	Nevada willowherb	G2	Limited
FISHES	Catostomus clarki	Desert sucker	G3G4	Widespread
	Lepidomeda mollispinis	Virgin spinedace	G1	Limited
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Coccyzus americanus occidentalis	Western Yellow-Billed Cuckoo	G5T2T3	Peripheral
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
	Guiraca caerulea	Blue Grosbeak	G5	Peripheral
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
	Icteria virens	Yellow-Breasted Chat	G5	Peripheral
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
	Vermivora virginiae	Virginia's Warbler	G5	Widespread
A016	**BELTED RANGE-KAWICH VALLEY-GOLD FLAT/TIMBER MOUNTAIN/EMIGRANT VALLEY-HALFPINT RANGE**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Tonopah
Size	Ha: 337,833.8 % on DoD: 46.73%	System Groups (2)	**State:**	NV
	Acres: 834,787.3 % in MOA:: 98.35%	BD SS LM MA SD RW A	**County:**	Nye, Lincoln
	% in BLM: 2.06%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Joshua tree-mixed mojave scrub			
	Low montane shrublands			
	Montane forest and woodland			
	Montane riparian shrubland			
	Pinyon-juniper woodland			
	Sagebrush semidesert			

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
AQ SYSTEMS	Permanent flowing waters			
	Spring pool			
PLANTS	Arabis dispar	Pinyon rock cress	G3	Limited
	Astragalus beatleyae	Beatley milkvetch	G3	Endemic
	Astragalus funereus	Black milk-vetch, black woollypod	G2	Peripheral
	Astragalus oophorus var. clokeyanus	Clokey eggvetch	G4T2	Peripheral
	Camissonia megalantha	Cane Spring suncup	G3	Limited
	Castilleja martinii var. clokeyi	Clokey paintbrush	G3QT3	Peripheral
	Eriogonum concinnum	Darin buckwheat	G2	Limited
	Frasera pahutensis	Pahute green gentian	G3Q	Endemic
	Galium hilendiae ssp. kingstonense	Kingston Mountains bedstraw	G4QT2?	Limited
	Gilia heterostyla	Cochrane gilia	?	Endemic
	Ivesia arizonica var. saxosa	Rock purpusia	G4T1	Limited
	Penstemon pahutensis	Pahute Mesa beardtongue	G3	Limited
	Perityle intricata		G3	Peripheral or Limited
	Phacelia beatleyae	Beatley scorpion plant	G3	Peripheral
	Phacelia mustelina	Death Valley round-leaved phacelia, weasel phacelia	G2,G2G3	Limited
MAMMALS	Antrozous pallidus	Pallid bat	G5	Widespread, declining
	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Euderma maculatum	Spotted bat	G4	Unknown
	Myotis thysanodes	Fringed myotis	G5	Widespread, declining
	Sorex tenellus	Inyo shrew	G3G4	Limited

A017 BLACK HILLS

Site Type: FUNCTIONAL SITE
Section: Bonneville Basin
State: UT
County: Millard
Installation: ***Hill AFB***

Size Ha: 5,610.8 % on DoD:
Acres: 13,864.4 % in MOA:: 100.00%
% in BLM: 88.39%

System Groups (2): BD SS A

Type		Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	+	Salt desert scrub			
AQ SYSTEMS		Lakes			
PLANTS		Astragalus uncialis	Currant milkvetch	G2	Endemic

A020 BLACK ROCK DESERT-SMOKE CREEK DESERT

Site Type: LANDSCAPE SITE
Section: Lahontan Basin
State: NV
County: Humboldt, Washoe, Pershing
Installation: ***NAS Fallon***

Size Ha: 265,947.7 % on DoD:
Acres: 657,156.8 % in MOA:: 23.71%
% in BLM: 98.41%

System Groups (2): BD SS LM MA SD RW A

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Greasewood shrubland			
	Sagebrush steppe			
	Salt desert scrub			
AQ SYSTEMS	Ephemeral alkaline playa lake, chloride waters			
	Ephemeral standing waters			

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
AQ SYSTEMS	Small-size runoff-fed stream			
	Small-size spring and outflow springbrook			
PLANTS	Astragalus pterocarpus	Winged milkvetch	G3	Limited
	Penstemon floribundus	Cordelia beardtongue	G1	Endemic
	Smelowskia holmgrenii	Holmgren smelowskia	G2	Endemic
BIRDS	Falco mexicanus	Prairie Falcon	G5	Widespread
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
MAMMALS	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited

A021 BLOWSAND MOUNTAINS-BARNETT HILLS

Site Type: LANDSCAPE SITE
Section: Lahontan Basin
State: NV
County: Churchill, Mineral
Installation: ***NAS Fallon***

Size Ha: 27,957.9 % on DoD: 33.00%
Acres: 69,084.0 % in MOA:: 100.00%
% in BLM: 36.04%

System Groups (2)
BD SS SD

TERR SYSTEMS	Greasewood shrubland			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic
	Oxytheca watsonii	Watson's oxytheca	G2	Peripheral or Limited
	Psorothamnus kingii	Lahontan indigobush	G3	Endemic
INVERTEBRATES	Aegialia hardyi	Hardy's aegialian scarab	G1	Endemic
	Aegialia spinosa	(Scarab beetle)	?	Limited
	Andrena chrylismiae	(Bee)	G1	Endemic
	Andrena sp. nov.	(Bee)	G1	Endemic
	Andrena taeniata	(Bee)	G2	Disjunct
	Anthidium rodecki	(Bee)	?	Limited
	Anthophora sp. nov.	(Bee)	G1	Endemic
	Atoposmia rufifemur	Red-legged beardtongue bee	?	Limited
	Chilometopon pallidium	(Sand obligate beetle)	?	Limited
	Coenonycha pygmaea	Sand Mountain pygmy scarab	G1	Endemic
	Colletes sp. nov. 1	(Bee)	G1	Limited
	Edrotes ventricosus	(Sand obligate beetle)	?	Limited
	Eusattus muricatus	(Sand obligate beetle)	?	Widespread, specialist
	Hesperapis kayella	(Bee)	G1	Limited
	Lariversius tibalis	(Sand obligate beetle)	?	Limited
	Mecynotarsus delicatulus	(Sand obligate beetle)	?	Limited
	Myrmecocystus arenarius	Dune honey ant	G2?	Endemic?
	Niptus ventriculus	(Sand obligate beetle)	?	Limited
	Perdita hirticeps apicata	(Bee)	?	Limited
	Philothris ssp. nov.	(Predatory beetle)	?	Limited
	Rhadine myrmecodes	(Sand obligate beetle)	?	Limited
	Serica psammobunus	Sand Mountain serican scarab	G1	Endemic
	Stenopelmatus ssp. nov	(Sand obligate cricket)	?	Endemic
	Tetragonoderus pallidus	(Sand obligate beetle)	?	Limited
	Trogloderus costatus		?	Limited

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+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
A022	**BLUE LAKES-BADLANDS**		**Site Type:**	LANDSCAPE SITE
			Section:	North Central
Size Ha:	141,257.7 % on DoD: 4.66%	System Groups (2)	**State:**	NV, UT
Acres:	349,047.7 % in MOA:: 100.00%	BD SS LM MA SD RW A	**County:**	Elko, White Pine, Tooele
	% in BLM: 75.18%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Montane forest and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Small-size runoff-fed stream			
	Small-size spring and outflow springbrook			
MOLLUSKS	Pyrgulopsis cruciglans	Transverse gland springsnail	G1	Endemic
	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Tryonia protea	Desert tryonia	G3G4	Widespread, specialist
FISHES	Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	Endemic?
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Spizella breweri	Brewer's Sparrow	G5	Widespread
MAMMALS	Antrozous pallidus	Pallid bat	G5	Widespread, declining
	Ovis canadensis californiana	California bighorn sheep	G4T1	Limited
	Tadarida brasiliensis	Brazilian free-tailed bat	G5	Unknown
A024	**BOLIVIA**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	8,013.2 % on DoD: 3.30%	System Groups (2)	**State:**	NV
Acres:	19,800.7 % in MOA:: 100.00%	BD SS LM MA RW	**County:**	Churchill, Pershing
	% in BLM: 93.00%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	+ Salt desert scrub			
PLANTS	Mentzelia candelariae	Candelaria blazing-star	G3?Q	Endemic
	Penstemon palmeri var. macranthus		G5T2?	Endemic

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A025	**BOONE SPRING**		**Site Type:**	FUNCTIONAL SITE
			Section:	North Central
Size Ha:	1,780.3 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,399.1 % in MOA:: 34.68%	SS LM A	**County:**	Elko
	% in BLM: 89.22%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
MOLLUSKS	Pyrgulopsis cruciglans	Transverse gland springsnail	G1	Endemic
A026	**BROKEN HILLS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	12,519.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	30,936.6 % in MOA:: 100.00%	BD	**County:**	Churchill
	% in BLM: 100.00%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Salt desert scrub			
A027	**BUCKSKIN HILL**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	10,304.5 % on DoD:	System Groups (2)	**State:**	UT
Acres:	25,462.4 % in MOA:: 100.00%	BD SS LM MA	**County:**	Millard
	% in BLM: 84.45%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Mountain sagebrush			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Astragalus callithrix	Callaway milkvetch	G3	Endemic
	Eriogonum batemanii var. eremicum	Desert wild buckwheat	G4?T2T3	Endemic
	Eriogonum nummulare var. ammophilum	Ibex buckwheat	G4T1	Endemic
A032	**CACTUS FLAT**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	43,492.5 % on DoD: 98.96%	System Groups (2)	**State:**	NV
Acres:	107,469.9 % in MOA:: 100.00%	BD SS	**County:**	Nye
	% in BLM: 0.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush semidesert			
	Salt desert scrub			
A033	**CACTUS RANGE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	33,176.3 % on DoD: 99.96%	System Groups (2)	**State:**	NV
Acres:	81,978.8 % in MOA:: 100.00%	BD SS LM	**County:**	Nye
	% in BLM: 0.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush semidesert			
	Salt desert scrub			
G1G2 ASSOCATIONS	Artemisia tridentata - Yucca brevifolia - Juniperus osteosperma shrubland		G2G3	Limited

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
PLANTS	Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic
	Astragalus beatleyae	Beatley milkvetch	G3	Endemic
A040	**CARSON SINK**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Lahontan Basin
Size Ha:	379,147.0 % on DoD: 5.10%	System Groups (2)	**State:**	NV
Acres:	936,872.2 % in MOA:: 45.03%	BD SS LM MA SD RW A	**County:**	Churchill, Pershing
	% in BLM: 46.75%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Sand dunes			
	Semi-desert shrub steppe			
	Wet meadow			
AQ SYSTEMS	Ephemeral alkaline playa lake, carbonate waters			
	Ephemeral standing waters			
	Highly alkaline playa lake, carbonate waters			
	Lakes			
PLANTS	Astragalus lentiginosus var kennedyi		G5T3T4	Endemic
	Eriogonum rubricaule	Lahontan Basin buckwheat	G3	Endemic
	Helianthus deserticola	Desert sunflower	G2Q	Limited
	Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining
	Oryctes nevadensis	Nevada oryctes	G2,G2G3	Limited
	Penstemon arenarius	Nevada dune beardtongue	G2G3	Endemic
	Penstemon palmeri var. macranthus		G5T2?	Endemic
	Phacelia glaberrima	Reese River phacelia	G3?	Endemic
INVERTEBRATES	Aegialia spinosa	(Scarab beetle)	?	Limited
	Aphodius parapyriformis ssp. nov.	(Bee)	?	Limited
	Chilometopon pallidium	(Sand obligate beetle)	?	Limited
	Colletes sp. nov. 1	(Bee)	G1	Limited
	Colletes tectiventris	(Bee)	?	Disjunct
	Edrotes ventricosus	(Sand obligate beetle)	?	Limited
	Eusattus muricatus	(Sand obligate beetle)	?	Widespread, specialist
	Lariversius tibalis	(Sand obligate beetle)	?	Limited
	Mecynotarsus delicatulus	(Sand obligate beetle)	?	Limited
	Niptus ventriculus	(Sand obligate beetle)	?	Limited
	Novelsis sabulorum	(Sand obligate beetle)	?	Endemic
	Perdita haigi	(Bee)	G1	Endemic
	Philothris ssp. nov.	(Predatory beetle)	?	Limited
	Pseudocopaeodes eunus flavus	Nevada alkali skipperling	G3T2	Endemic
	Rhadine myrmecodes	(Sand obligate beetle)	?	Limited
	Stenopelmatus ssp. nov	(Sand obligate cricket)	?	Endemic
	Tetragonoderus pallidus	(Sand obligate beetle)	?	Limited
	Trogloderus costatus		?	Limited

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
FISHES	Gila bicolor ssp. 9	Dixie Valley tui chub	G4T1	Endemic?
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Aythya americana	Redhead	G5	Widespread, migratory concentration
	Buteo swainsoni	Swainson's Hawk	G4	Widespread, declining
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Coccyzus americanus occidentalis	Western Yellow-Billed Cuckoo	G5T2T3	Peripheral
	Empidonax wrightii	Gray Flycatcher	G5	Widespread
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
	Guiraca caerulea	Blue Grosbeak	G5	Peripheral
	Icteria virens	Yellow-Breasted Chat	G5	Peripheral
	Ixobrychus exilis	Least Bittern	G5	Peripheral
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
	Larus californicus	California Gull	G5	Disjunct, colonial
	Larus pipixcan	Franklin's Gull	G4G5	Disjunct
	Melanerpes lewis	Lewis's Woodpecker	G5	Widespread, declining
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration
	Phalaropus tricolor	Wilson's Phalarope	G5	Widespread, migratory concentration
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration
	Podiceps auritus	Eared Grebe	G5	Widespread, migratory concentration
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
	Stellula calliope	Calliope Hummingbird	G5	Widespread
MAMMALS	Antrozous pallidus	Pallid bat	G5	Widespread, declining
	Brachylagus idahoensis	Pygmy rabbit	G5	Limited
	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Dipodomys deserti	Desert kangaroo rat	G5	Limited
	Dipodomys microps	Chisel-toothed kangaroo rat	G5	Limited
	Lagurus curtatus	Sagebrush vole	G5	Endemic or Limited
	Microdipodops megacephalus	Dark kanagaroo mouse	G5	Unknown
	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited
	Tadarida brasiliensis	Brazilian free-tailed bat	G5	Unknown
A044	**CEDAR PASS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	4,041.9 % on DoD: 100.00%	System Groups (2)	**State:**	NV
Acres:	9,987.4 % in MOA:: 100.00%	SS LM MA	**County:**	Nye
	% in BLM: 0.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Mountain mahogany woodlands			
	Pinyon-juniper woodland			
	+ Sagebrush semidesert			
PLANTS	Astragalus oophorus var. clokeyanus	Clokey eggvetch	G4T2	Peripheral

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A047	**CLOVER CREEK**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	3,974.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	9,821.9 % in MOA:: 100.00%	SS LM A	**County:**	Lincoln
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush steppe			
FISHES	Catostomus clarki ssp. 2	Meadow Valley Wash Desert sucker	G3G4T2	Endemic
	Rhinichthys osculus ssp. 2 mv	Meadow Valley speckled dace	G5T2	Limited
A049	**CONFUSION RANGE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	3,825.4 % on DoD:	System Groups (2)	**State:**	UT
Acres:	9,452.7 % in MOA:: 100.00%	BD SS LM MA	**County:**	Millard
	% in BLM: 87.29%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Mountain sagebrush			
	Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	Semi-desert shrub steppe			
PLANTS	Eriogonum nummulare var. ammophilum	Ibex buckwheat	G4T1	Endemic
A050	**CORTEZ MOUNTAINS-ROBERTS MOUNTAINS-SULPHUR SPRING RANGE**		**Site Type:**	LANDSCAPE SITE
			Section:	North Central
Size Ha:	222,673.1 % on DoD:	System Groups (2)	**State:**	NV
Acres:	550,225.3 % in MOA:: 5.44%	BD SS LM MA RW A	**County:**	Eureka, Elko
	% in BLM: 91.78%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Bitterbrush shrubland			
	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Low montane shrublands			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Subalpine forest and woodland			
AQ SYSTEMS	Ephemeral standing waters			
	Permanent flowing waters			
	Small-size runoff-fed stream			
	Small-size spring and outflow springbrook			
PLANTS	Lesquerella goodrichii	Goodrich bladderpod	G2G4	Endemic
	Phacelia minutissima	Least phacelia	G2	Peripheral
FISHES	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4 T3	Limited
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining

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Appendix E. DoD Great Basin ecoregion portfolio conservation areas and their conservation targets

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Baeolophus griseus	Juniper Titmouse	G5	Widespread
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
A054	**CRICKET MOUNTAINS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size	Ha: 28,913.6 % on DoD:	System Groups (2)	**State:**	UT
	Acres: 71,445.6 % in MOA:: 18.44%	BD SS LM SD A	**County:**	Millard
	% in BLM: 84.61%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
AQ SYSTEMS	Lakes			
PLANTS	Eriogonum spathulatum var. natum	Son's wild buckwheat	G3T2	Endemic
A059	**DEEP CREEK RANGE**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size	Ha: 171,555.4 % on DoD: 8.83%	System Groups (2)	**State:**	UT
	Acres: 423,913.4 % in MOA:: 100.00%	BD SS LM MA SD RW A	**County:**	Tooele, Juab
	% in BLM: 72.53%		**Installation:**	***Dugway/Hill***
TERR SYSTEMS	Alpine herbaceous			
	Bitterbrush shrubland			
	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Low montane shrublands			
	Montane forest and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Permanent flowing waters			
G1G2 ASSOCATIONS	Populus angustifolia - Rhus trilobata forest		G2G3	Widespread
PLANTS	Draba kassii	Kass rockcress	G1	Endemic
	Hackelia ibapensis	Deep Creek stickseed	G1	Endemic
	Jamesia americana var. macrocalyx	Wasatch jamesia	G5T2	Limited
	Penstemon nanus	Low beardtongue	G3	Endemic
	Penstemon patricus	Dad's penstemon	G2Q	Endemic
	Potentilla cottamii	Cottam's cinquefoil	G1	Limited

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
PLANTS	Potentilla pensylvanica var. paucijuga		G5T1T2Q	Limited
INVERTEBRATES	Oreohelix eurekensis	Eureka mountainsnail	G1	Unknown
	Pteronarcys princeps	Giant stonefly	G4	Peripheral, specialist
MOLLUSKS	Anodonta californiensis	California floater	G3G4	Widespread, declining
	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
FISHES	Iotichthys phlegethontis	Least chub	G1	Limited
	Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	Endemic?
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Baeolophus griseus	Juniper Titmouse	G5	Widespread
	Buteo swainsoni	Swainson's Hawk	G4	Widespread, declining
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Empidonax wrightii	Gray Flycatcher	G5	Widespread
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Otus flammeolus	Flammulated Owl	G4	Widespread
	Spizella breweri	Brewer's Sparrow	G5	Widespread
	Vermivora virginiae	Virginia's Warbler	G5	Widespread
MAMMALS	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Ovis canadensis californiana	California bighorn sheep	G4T1	Limited
A060	**DESATOYA MOUNTAINS**		**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha:	66,722.3 % on DoD:	System Groups (2)	**State:**	NV
Acres:	164,870.9 % in MOA:: 100.00%	BD SS LM MA SD RW A	**County:**	Lander, Churchill
	% in BLM: 98.07%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Montane forest and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
AQ SYSTEMS	Permanent flowing waters			
	Small-size runoff-fed stream			
	Small-size spring and outflow springbrook			
INVERTEBRATES	Melecta alexanderi	Parasitic bee	G1	Limited
	Osmia tanneri	(Bee)	G1	Limited
FISHES	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4T3	Limited
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
MAMMALS	Ochotona princeps sspp.	Pika	G5T?	Limited?

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A065	**DIXIE VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	16,365.8 % on DoD: 5.00%	System Groups (2)	**State:**	NV
Acres:	40,440.0 % in MOA:: 100.00%	BD SS LM RW	**County:**	Churchill
	% in BLM: 98.70%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
MAMMALS	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited
A066	**DOVE CREEK HILLS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	31,364.0 % on DoD:	System Groups (2)	**State:**	UT
Acres:	77,500.3 % in MOA:: 80.64%	BD SS LM MA RW	**County:**	Box Elder
	% in BLM: 45.80%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
A067	**DRY LAKE VALLEY**		**Site Type:**	LANDSCAPE SITE
			Section:	Tonopah
Size Ha:	38,716.4 % on DoD:	System Groups (2)	**State:**	NV
Acres:	95,668.3 % in MOA:: 95.39%	BD SS LM SD	**County:**	Lincoln
	% in BLM: 99.91%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
PLANTS	Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic
BIRDS	Falco mexicanus	Prairie Falcon	G5	Widespread
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
MAMMALS	Microdipodops megacephalus albiventer	Desert Valley kangaroo mouse	G5T1	Endemic
A070	**DUGWAY RANGE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	13,322.4 % on DoD:	System Groups (2)	**State:**	UT
Acres:	32,919.6 % in MOA:: 100.00%	BD SS LM	**County:**	Tooele, Juab
	% in BLM: 88.42%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Semi-desert shrub steppe			
A072	**EAST DUGWAY DUNES**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha: 10,656.9	% on DoD: 100.00%	System Groups (2)	**State:**	UT
Acres: 26,333.3	% in MOA:: 100.00%	BD SS SD	**County:**	Tooele
	% in BLM: 0.00%		**Installation:**	***Dugway/Hill***
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Cymopterus acaulis var. parvus		G5T2T3	Endemic
INVERTEBRATES	Andrena sp. nov.	(Bee)	G1	Endemic
	Melecta alexanderi	Parasitic bee	G1	Limited
A073	**EAST GABBS VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha: 16,948.2	% on DoD:	System Groups (2)	**State:**	NV
Acres: 41,879.1	% in MOA:: 100.00%	BD SS SD	**County:**	Nye
	% in BLM: 91.96%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Greasewood shrubland			
	Salt desert scrub			
PLANTS	Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic
	Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic
A076	**EASTGATE-ROCK CREEK**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha: 7,880.3	% on DoD:	System Groups (2)	**State:**	NV
Acres: 19,472.3	% in MOA:: 100.00%	BD SS	**County:**	Churchill
	% in BLM: 98.80%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	+ Sagebrush semidesert			
	Sagebrush steppe			
	+ Salt desert scrub			
PLANTS	Mentzelia candelariae	Candelaria blazing-star	G3?Q	Endemic
A077	**EIGHTEEN MILE MARSH**		**Site Type:**	FUNCTIONAL SITE
			Section:	North Central
Size Ha: 4,135.0	% on DoD:	System Groups (2)	**State:**	NV
Acres: 10,217.6	% in MOA:: 72.94%	SS RW A	**County:**	Elko
	% in BLM: 74.40%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Freshwater marsh			
	+ Sagebrush semidesert			
	Sagebrush steppe			
MOLLUSKS	Pyrgulopsis millenaria	Twentyone Mile springsnail	G1	Endemic
BIRDS	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A082	**ESCALANTE VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	10,465.7 % on DoD:	System Groups (2)	**State:**	UT
Acres:	25,860.8 % in MOA:: 18.97%	BD SS LM	**County:**	Iron
	% in BLM: 77.38%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Semi-desert shrub steppe			
PLANTS	Astragalus oophorus var. lonchocalyx	Pink egg milkvetch, long-calyx eggvetch	G4T2	Endemic
A085	**FAIRVIEW PEAK**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	3,769.1 % on DoD: 20.10%	System Groups (2)	**State:**	NV
Acres:	9,313.5 % in MOA:: 100.00%	BD SS LM SD	**County:**	Churchill
	% in BLM: 75.73%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush steppe			
	+ Salt desert scrub			
PLANTS	Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic
A086	**FAIRVIEW VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	10,860.1 % on DoD: 14.50%	System Groups (2)	**State:**	NV
Acres:	26,835.3 % in MOA:: 100.00%	BD SS	**County:**	Churchill, Mineral
	% in BLM: 85.50%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Sagebrush steppe			
	Salt desert scrub			
A089	**FERGUSON DESERT-TULE VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	46,874.0 % on DoD:	System Groups (2)	**State:**	UT
Acres:	115,825.7 % in MOA:: 100.00%	BD SS LM SD A	**County:**	Millard
	% in BLM: 89.16%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
AQ SYSTEMS	Lakes			
PLANTS	Astragalus uncialis	Currant milkvetch	G2	Endemic
	Cryptantha compacta	Mound cryptanth	G1	Endemic
	Cymopterus acaulis var. parvus		G5T2T3	Endemic
	Cymopterus basalticus	Dolomite spring-parsley, intermountain wavewing	G2,G2G3	Endemic
	Cymopterus coulteri	Coulter biscuitroot	G3	Limited
	Eriogonum batemanii var. eremicum	Desert wild buckwheat	G4?T2T3	Endemic
	Eriogonum nummulare var. ammophilum	Ibex buckwheat	G4T1	Endemic
	Sclerocactus spinosior	Desert Valley fishhook-cactus	G2G3	Endemic

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A090	**FINGER ROCK WASH**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size	Ha: 42,917.0 % on DoD:	System Groups (2)	**State:**	NV
	Acres: 106,048.0 % in MOA:: 39.43%	BD SS LM SD	**County:**	Mineral, Nye
	% in BLM: 99.58%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic
	Astragalus callithrix	Callaway milkvetch	G3	Endemic
	Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic
	Eriogonum beatleyae	Beatley buckwheat	G2Q	Endemic
	Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining
A092	**FISH SPRINGS**		**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size	Ha: 31,537.3 % on DoD: 56.52%	System Groups (2)	**State:**	UT
	Acres: 77,928.8 % in MOA:: 100.00%	BD SS LM SD RW A	**County:**	Tooele, Juab
	% in BLM: 18.34%		**Installation:**	***Dugway/Hill***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Freshwater marsh			
	Greasewood shrubland			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
AQ SYSTEMS	Ephemeral standing waters			
	Lakes			
	Permanent standing waters			
	Small-size spring and outflow springbrook			
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Tryonia protea	Desert tryonia	G3G4	Widespread, specialist
FISHES	Iotichthys phlegethontis	Least chub	G1	Limited
BIRDS	Aythya americana	Redhead	G5	Widespread, migratory concentration
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration
	Icteria virens	Yellow-Breasted Chat	G5	Peripheral
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Phalaropus tricolor	Wilson's Phalarope	G5	Widespread, migratory concentration
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
MAMMALS	Myotis thysanodes	Fringed myotis	G5	Widespread, declining

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A094	**FLY RANCH GEYSER-GRANITE RANGE**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Lahontan Basin
Size Ha:	48,680.5 % on DoD:	System Groups (2)	**State:**	NV
Acres:	120,289.6 % in MOA:: 75.75%	BD SS LM SD RW A	**County:**	Washoe
	% in BLM: 84.35%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Wet meadow			
AQ SYSTEMS	Small-size spring and outflow stream, thermal spring and springbrook			
MOLLUSKS	Pyrgulopsis bruesi	Brue's springsnail	G1	Endemic
	Tryonia protea	Desert tryonia	G3G4	Widespread, specialist
BIRDS	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
MAMMALS	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited
A102	**GOSHUTE MOUNTAINS**		**Site Type:**	LANDSCAPE SITE
			Section:	North Central
Size Ha:	44,372.7 % on DoD:	System Groups (2)	**State:**	NV
Acres:	109,644.9 % in MOA:: 96.73%	BD SS LM MA SD RW A	**County:**	Elko
	% in BLM: 100.00%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Freshwater marsh			
	Greasewood shrubland			
	Montane forest and woodland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Subalpine forest and woodland			
AQ SYSTEMS	Permanent flowing waters			
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A105 GRANITE PEAK			**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha: 16,784.5	% on DoD: 99.76%	System Groups (2)	**State:**	UT
Acres: 41,474.5	% in MOA:: 100.00%	BD SS LM	**County:**	Tooele
	% in BLM: 0.11%		**Installation:**	***Dugway/Hill***
TERR SYSTEMS	Greasewood shrubland			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
A106 GREAT SALT LAKE			**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size Ha: 1,011,283.5	% on DoD: 3.30%	System Groups (2)	**State:**	UT
Acres: 2,498,881.6	% in MOA:: 14.65%	BD SS LM MA SD RW A	**County:**	Box Elder, Tooele, Davis
	% in BLM: 10.11%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Low montane shrublands			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Highly alkaline playa lake, chloride waters			
	Lakes			
	River and major tributary			
PLANTS	Allium passeyi	Passey's onion	G1	Endemic
	Penstemon platyphyllus	Broadleaf penstemon	G2G3	Peripheral
MOLLUSKS	Physella utahensis	Utah physa	G1	Limited
	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Stagnicola bonnevillensis	Fat-whorled pondsnail	G1	Endemic
	Tryonia protea	Desert tryonia	G3G4	Widespread, specialist
FISHES	Iotichthys phlegethontis	Least chub	G1	Limited
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Aythya americana	Redhead	G5	Widespread, migratory concentration
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Circus cyaneus	Northern Harrier	G5	Widespread, declining

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
BIRDS	Coccyzus americanus occidentalis	Western Yellow-Billed Cuckoo	G5T2T3	Peripheral
	Empidonax wrightii	Gray Flycatcher	G5	Widespread
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
	Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration
	Larus californicus	California Gull	G5	Disjunct, colonial
	Larus pipixcan	Franklin's Gull	G4G5	Disjunct
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration
	Phalaropus tricolor	Wilson's Phalarope	G5	Widespread, migratory concentration
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration
	Podiceps auritus	Eared Grebe	G5	Widespread, migratory concentration
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
	Spizella breweri	Brewer's Sparrow	G5	Widespread
MAMMALS	Antrozous pallidus	Pallid bat	G5	Widespread, declining
	Sorex preblei	Preble's shrew	G4	Unknown

A107 GREAT SALT LAKE DESERT MUD FLAT

Site Type: FUNCTIONAL SITE
Section: Bonneville Basin
State: UT
County: Tooele
Installation: ***Dugway/Hill***

Size Ha: 25,633.5 % on DoD: 100.00%
Acres: 63,340.3 % in MOA:: 100.00%
% in BLM: 0.00%

System Groups (2)
BD

TERR SYSTEMS	Greasewood shrubland
	Pickleweed flats
	Salt desert scrub
	Semi-desert shrub steppe

A108 GROUSE CREEK MOUNTAINS-RAFT RIVER MOUNTAINS UNIQUE SITE (1)

Site Type: LANDSCAPE SITE
Section: Bonneville Basin
State: UT
County: Box Elder
Installation: ***Hill AFB***

Size Ha: 545,563.9 % on DoD:
Acres: 1,348,088.3 % in MOA:: 53.30%
% in BLM: 39.01%

System Groups (2)
BD SS LM MA SD RW A

TERR SYSTEMS	Desert riparian shrubland and woodland
	Greasewood shrubland
	Low montane shrublands
	Montane forest and woodland
	Montane meadow
	Montane riparian shrubland
	Mountain sagebrush
	Pickleweed flats
	Pinyon-juniper woodland
	Sagebrush semidesert
	Sagebrush steppe
	Salt desert scrub
	Semi-desert shrub steppe
	Subalpine forest and woodland
	Wet meadow
AQ SYSTEMS	Permanent flowing waters

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
AQ SYSTEMS	Small-size spring and outflow springbrook			
PLANTS	Allium passeyi	Passey's onion	G1	Endemic
	Potentilla cottamii	Cottam's cinquefoil	G1	Limited
INVERTEBRATES	Colletes sp. nov. 1	(Bee)	G1	Limited
	Perdita vesca	(Bee)	?	Limited
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Pyrgulopsis lentiglans	Crittenden springsnail	G1	Endemic
	Pyrgulopsis variegata	Northwest Bonneville springsnail	G2	Limited
FISHES	Chasmistes liorus	June sucker	G1	Endemic
	Iotichthys phlegethontis	Least chub	G1	Limited
	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4T3	Limited
BIRDS	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Empidonax wrightii	Gray Flycatcher	G5	Widespread
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration
	Spizella breweri	Brewer's Sparrow	G5	Widespread

A112 HIGHLAND RANGE — UNIQUE SITE (1) — **Site Type:** FUNCTIONAL SITE

Section: Central Mountains

Size Ha: 4,300.3 % on DoD:

Acres: 10,626.0 % in MOA:: 100.00%

% in BLM: 96.08%

System Groups (2): LM MA

State: NV

County: Lincoln

Installation: ***Nellis AFB***

TERR SYSTEMS	Low montane shrublands			
	Montane forest and woodland			
	Mountain mahogany woodlands			
	Pinyon-juniper woodland			
	Subalpine forest and woodland			
PLANTS	Jamesia tetrapetala	Basin jamesia, waxflower	G2	Endemic
INVERTEBRATES	Hypaurotis crysalus intermedia	Intermediate Colorado hairstreak	G5T1	Endemic
	Satyrium saepium latilinea	Broadlined saepium hairstreak	G5T1	Limited

A113 HIKO SPRING — UNIQUE SITE (1) — **Site Type:** FUNCTIONAL SITE

Section: Tonopah

Size Ha: 1,933.6 % on DoD:

Acres: 4,777.9 % in MOA:: 100.00%

% in BLM: 87.05%

System Groups (2): BD A

State: NV

County: Lincoln

Installation: ***Nellis AFB***

TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	+ Salt desert scrub			
MOLLUSKS	Pyrgulopsis hubbsi	Hubbs springsnail	G1	Endemic
	Pyrgulopsis merriami	Pahranagat pebblesnail	G1	Endemic
FISHES	Crenichthys baileyi grandis	Hiko White River springfish	G2T1	Limited

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A116	**HOME STATION WASH**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	17,847.3 % on DoD:	System Groups (2)	**State:**	NV
Acres:	44,100.6 % in MOA:: 74.87%	BD SS LM MA SD	**County:**	Lander, Pershing
	% in BLM: 99.22%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Greasewood shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Penstemon palmeri var. macranthus		G5T2?	Endemic
	Phacelia glaberrima	Reese River phacelia	G3?	Endemic
A117	**HORSESHOE BASIN**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	12,301.6 % on DoD:	System Groups (2)	**State:**	NV
Acres:	30,397.3 % in MOA:: 28.99%	BD SS LM MA RW	**County:**	Lander
	% in BLM: 100.00%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Montane riparian shrubland			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
PLANTS	Eriogonum anemophilum	Windloving buckwheat	G2G3	Endemic
A118	**HORSESHOE SPRINGS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	1,721.5 % on DoD:	System Groups (2)	**State:**	UT
Acres:	4,253.9 % in MOA:: 100.00%	BD SS LM RW A	**County:**	Tooele
	% in BLM: 51.07%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	+ Greasewood shrubland			
	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Salt desert scrub			
	Semi-desert shrub steppe			
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Tryonia protea	Desert tryonia	G3G4	Widespread, specialist
MAMMALS	Sorex preblei	Preble's shrew	G4	Unknown
A123	**HOUSE RANGE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	26,154.5 % on DoD:	System Groups (2)	**State:**	UT
Acres:	64,627.8 % in MOA:: 100.00%	BD SS LM MA	**County:**	Millard
	% in BLM: 88.17%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Mountain sagebrush			

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Jamesia tetrapetala	Basin jamesia, waxflower	G2	Endemic
	Primula domensis	House Range primrose	G1	Endemic
INVERTEBRATES	Oreohelix eurekensis	Eureka mountainsnail	G1	Unknown

A131 IONE VALLEY — **Site Type:** FUNCTIONAL SITE; **Section:** Tonopah; **State:** NV; **County:** Nye; **Installation:** ***NAS Fallon***

Size Ha: 34,234.0 % on DoD:
Acres: 84,592.3 % in MOA:: 31.30%
% in BLM: 89.96%
System Groups (2): BD SS LM SD

TERR SYSTEMS	Greasewood shrubland	
	Pinyon-juniper woodland	
	Sagebrush semidesert	
	Sagebrush steppe	
	Salt desert scrub	
	Semi-desert shrub steppe	
PLANTS	Astragalus serenoi var. sordescens	Squalid milkvetch
BIRDS	Falco mexicanus	Prairie Falcon

A140 KAWICH RANGE — UNIQUE SITE (1) — **Site Type:** FUNCTIONAL SITE; **Section:** Tonopah; **State:** NV; **County:** Nye; **Installation:** ***Nellis AFB***

Size Ha: 8,517.7 % on DoD:
Acres: 21,047.1 % in MOA:: 100.00%
% in BLM: 97.25%
System Groups (2): SS LM MA A

TERR SYSTEMS	Mountain mahogany woodlands	
	Mountain sagebrush	
	Pinyon-juniper woodland	
	+ Sagebrush semidesert	
AQ SYSTEMS	Ephemeral desert scrub pool	
PLANTS	Penstemon pudicus	Bashful beardtongue
	Polyctenium williamsiae	Williams combleaf

A141 KERN MOUNTAINS — **Site Type:** FUNCTIONAL SITE; **Section:** Central Mountains; **State:** NV; **County:** White Pine; **Installation:** ***Hill AFB***

Size Ha: 6,452.1 % on DoD:
Acres: 15,943.1 % in MOA:: 100.00%
% in BLM: 93.47%
System Groups (2): SS LM MA

TERR SYSTEMS	Low montane shrublands	
	Montane forest and woodland	
	Mountain mahogany woodlands	
	Mountain sagebrush	
	Pinyon-juniper woodland	
	+ Sagebrush semidesert	
	Sagebrush steppe	
PLANTS	Penstemon moriahensis	Mount Moriah beardtongue

Global Rank	Ecoregional Distribution
G2	Endemic
G1	Endemic
G1	Unknown
G4T2	Endemic
G5	Widespread
G1	Endemic
G2	Limited
G1G2	Endemic

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A143	**KINGS CANYON**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	2,473.3 % on DoD:	System Groups (2)	**State:**	UT
Acres:	6,111.5 % in MOA:: 100.00%	BD SS LM MA	**County:**	Millard
	% in BLM: 94.54%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Salt desert scrub			
INVERTEBRATES	Oreohelix eurekensis	Eureka mountainsnail	G1	Unknown
A144	**KNOLL SPRINGS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	1,764.7 % on DoD:	System Groups (2)	**State:**	UT
Acres:	4,360.6 % in MOA:: 100.00%	BD A	**County:**	Millard
	% in BLM: 92.15%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Salt desert scrub			
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
FISHES	Iotichthys phlegethontis	Least chub	G1	Limited
A145	**KOBEH VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	30,829.2 % on DoD:	System Groups (2)	**State:**	NV
Acres:	76,179.0 % in MOA:: 46.77%	BD SS LM MA RW	**County:**	Eureka
	% in BLM: 96.78%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Semi-desert shrub steppe			
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
A153	**LOOKOUT SPRINGS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	1,929.1 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,766.9 % in MOA:: 37.55%	SS LM A	**County:**	White Pine, Elko
	% in BLM: 99.14%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Pinyon-juniper woodland			
	+ Sagebrush steppe			
FISHES	Relictus solitarius	Relict dace	G2G3	Endemic
A161	**MEADOW VALLEY**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Tonopah
Size Ha:	43,682.6 % on DoD:	System Groups (2)	**State:**	NV
Acres:	107,939.8 % in MOA:: 85.44%	BD SS LM SD RW A	**County:**	Lincoln
	% in BLM: 88.26%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Pinyon-juniper woodland			

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Wet meadow			
PLANTS	Astragalus eurylobus	Needle Mountains milkvetch	G2	Limited
	Cryptantha welshii	White River catseye	G3	Endemic
	Sclerocactus schlesseri	Schlesser pincushion	G1Q	Endemic
	Spiranthes diluvialis	Ute ladies' tresses	G2	Disjunct, declining
FISHES	Catostomus clarki ssp. 2	Meadow Valley Wash Desert sucker	G3G4T2	Endemic
	Lepidomeda mollispinis pratensis	Big Spring spinedace	G1T1	Endemic
	Rhinichthys osculus ssp. 2 mv	Meadow Valley speckled dace	G5T2	Limited
BIRDS	Aythya americana	Redhead	G5	Widespread, migratory concentration
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration
	Podiceps auritus	Eared Grebe	G5	Widespread, migratory concentration
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
A167	**MONTE CRISTO MOUNTAINS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	5,931.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	14,657.8 % in MOA:: 100.00%	BD SD	**County:**	Nye, Mineral
	% in BLM: 98.88%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Greasewood shrubland			
	+ Salt desert scrub			
PLANTS	Astragalus lentiginosus var. sesquimetralis	Sodaville milk-vetch	G5T1	Limited
A172	**MUDHOLE SPRING**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	1,442.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	3,565.4 % in MOA:: 100.00%	SS LM MA RW	**County:**	Nye
	% in BLM: 23.02%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Sagebrush steppe			
PLANTS	Eriogonum esmeraldense var. toiyabense	Toiyabe buckwheat	G4T2	Endemic
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
A173	**NELSON SPRING**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	1,773.2 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,381.7 % in MOA:: 100.00%	SS LM	**County:**	Lincoln
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Sagebrush steppe			
PLANTS	Astragalus convallarius var. finitimus	Lesser rushy milkvetch	G5T3	Endemic

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A174	**NEW PASS**		**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha:	19,707.4 % on DoD:	System Groups (2)	**State:**	NV
Acres:	48,697.0 % in MOA:: 100.00%	BD SS LM MA RW A	**County:**	Churchill
	% in BLM: 97.47%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
PLANTS	Eriogonum beatleyae	Beatley buckwheat	G2Q	Endemic
FISHES	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4T3	Limited
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
A176	**NEWFOUNDLAND MOUNTAINS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	54,069.1 % on DoD: 12.88%	System Groups (2)	**State:**	UT
Acres:	133,604.6 % in MOA:: 100.00%	BD SS LM RW A	**County:**	Box Elder
	% in BLM: 66.03%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Freshwater marsh			
	Greasewood shrubland			
	Low montane shrublands			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
AQ SYSTEMS	Lakes			
MAMMALS	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited
A182	**NORTH SEVIER LAKE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	1,815.6 % on DoD:	System Groups (2)	**State:**	UT
Acres:	4,486.3 % in MOA:: 100.00%	BD SS	**County:**	Millard
	% in BLM: 77.11%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Salt desert scrub			
PLANTS	Astragalus uncialis	Currant milkvetch	G2	Endemic
A185	**NORTH WIG SAND DUNES**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	10,527.6 % on DoD: 69.04%	System Groups (2)	**State:**	UT
Acres:	26,013.7 % in MOA:: 100.00%	BD SD	**County:**	Tooele
	% in BLM: 28.88%		**Installation:**	***Dugway/Hill***
TERR SYSTEMS	Greasewood shrubland			
	Pickleweed flats			
	Salt desert scrub			
	Semi-desert shrub steppe			

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
INVERTEBRATES	Melecta alexanderi	Parasitic bee	G1	Limited
A186	**NORTHWEST SEVIER LAKE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	5,829.3 % on DoD:	System Groups (2)	**State:**	UT
Acres:	14,404.2 % in MOA:: 100.00%	BD SS SD A	**County:**	Millard
	% in BLM: 92.43%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Sagebrush semidesert			
	+ Salt desert scrub			
AQ SYSTEMS	Lakes			
PLANTS	Astragalus uncialis	Currant milkvetch	G2	Endemic
	Eriogonum spathulatum var. natum	Son's wild buckwheat	G3T2	Endemic
A187	**OAK WELL CANYON**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	1,843.6 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,555.6 % in MOA:: 100.00%	SS LM	**County:**	Lincoln
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	+ Pinyon-juniper woodland			
PLANTS	Astragalus calycosus var. monophyllidius	One-leaflet torrey milkvetch	G5T2	Endemic
A190	**OLD RIVER BED**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	1,745.1 % on DoD:	System Groups (2)	**State:**	UT
Acres:	4,312.2 % in MOA:: 100.00%	BD SD	**County:**	Millard
	% in BLM: 82.26%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Salt desert scrub			
PLANTS	Cymopterus acaulis var. parvus		G5T2T3	Endemic
A191	**ONAQUI MOUNTAINS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	10,136.1 % on DoD:	System Groups (2)	**State:**	UT
Acres:	25,046.3 % in MOA:: 78.47%	BD SS LM MA SD	**County:**	Tooele
	% in BLM: 79.99%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Bitterbrush shrubland			
	Low montane shrublands			
	Montane forest and woodland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Semi-desert shrub steppe			
PLANTS	Potentilla cottamii	Cottam's cinquefoil	G1	Limited
INVERTEBRATES	Perdita mormonica	(Bee)	?	Limited

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A197	**PAHROC SUMMIT PASS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	1,887.6 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,664.4 % in MOA:: 100.00%	BD SS SD	**County:**	Lincoln
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	+ Sagebrush semidesert			
	+ Salt desert scrub			
PLANTS	Ivesia arizonica var. saxosa	Rock purpusia	G4T1	Limited
A204	**PEQUOP MOUNTAINS-TOANO DRAW**		**Site Type:**	LANDSCAPE SITE
			Section:	North Central
Size Ha:	68,669.7 % on DoD:	System Groups (2)	**State:**	NV
Acres:	169,682.8 % in MOA:: 34.20%	BD SS LM MA SD RW A	**County:**	Elko
	% in BLM: 47.57%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Clifflands			
	Low montane shrublands			
	Montane forest and woodland			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
AQ SYSTEMS	Permanent flowing waters			
PLANTS	Collomia renacta	Barren Valley collomia	G1Q	Limited
	Eriogonum microthecum var. panamintense	Panamint Mountains buckwheat	G5T2	Limited
INVERTEBRATES	Euphilotes pallescens mattoni	Mattoni's blue	G4T1	Limited
	Perdita exigua	(Bee)	G1	Endemic
FISHES	Relictus solitarius	Relict dace	G2G3	Endemic
BIRDS	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Spizella breweri	Brewer's Sparrow	G5	Widespread
A205	**PILOT CREEK VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	North Central
Size Ha:	1,859.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,595.9 % in MOA:: 100.00%	BD SS	**County:**	Elko
	% in BLM: 51.72%		**Installation:**	***Hill AFB***
TERR SYSTEMS	+ Salt desert scrub			
INVERTEBRATES	Euphilotes pallescens mattoni	Mattoni's blue	G4T1	Limited

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A207	**PILOT RANGE**		**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size Ha:	46,710.7	% on DoD:	System Groups (2)	**State:**	UT, NV
Acres:	115,422.0	% in MOA:: 100.00%	BD SS LM MA SD RW A	**County:**	Box Elder, Elko, Tooele
		% in BLM: 63.70%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Alpine herbaceous				
	Desert riparian shrubland and woodland				
	Freshwater marsh				
	Greasewood shrubland				
	Montane forest and woodland				
	Montane riparian shrubland				
	Mountain mahogany woodlands				
	Mountain sagebrush				
	Pickleweed flats				
	Pinyon-juniper woodland				
	Sagebrush semidesert				
	Sagebrush steppe				
	Salt desert scrub				
	Semi-desert shrub steppe				
	Subalpine forest and woodland				
AQ SYSTEMS	Lakes				
	Permanent flowing waters				
PLANTS	Potentilla cottamii	Cottam's cinquefoil	G1	Limited
	Viola lithion	Rock violet	G1	Endemic
INVERTEBRATES	Oreohelix haydeni	Lyrate mountainsnail	G2G3	Peripheral or Limited
	Oreohelix hemphilii	White Pine mountainsnail	?	Endemic
MOLLUSKS	Pyrgulopsis variegata	Northwest Bonneville springsnail	G2	Limited
FISHES	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4 T3	Limited
A217	**QUINN CANYON RANGE-GRANT RANGE**		**Site Type:**	LANDSCAPE SITE
			Section:	Tonopah
Size Ha:	182,940.0	% on DoD:	System Groups (2)	**State:**	NV
Acres:	452,044.6	% in MOA:: 23.57%	BD SS LM MA SD RW A	**County:**	Nye, Lincoln
		% in BLM: 51.23%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Alpine herbaceous				
	Bitterbrush shrubland				
	Blackbrush-hopsage desert shrubland				
	Greasewood shrubland				
	Low montane shrublands				
	Montane forest and woodland				
	Montane riparian shrubland				
	Mountain mahogany woodlands				
	Mountain sagebrush				
	Pinyon-juniper woodland				
	Sagebrush semidesert				
	Sagebrush steppe				
	Salt desert scrub				
	Subalpine forest and woodland				

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
AQ SYSTEMS	Permanent flowing waters			
	Small-size runoff-fed stream			
PLANTS	Astragalus uncialis	Currant milkvetch	G2	Endemic
	Castilleja martinii var. clokeyi	Clokey paintbrush	G3QT3	Peripheral
	Cryptantha welshii	White River catseye	G3	Endemic
	Draba cusickii var. pedicellata	Stalked cusick whitlowgrass	G4T3?	Endemic
	Jamesia tetrapetala	Basin jamesia, waxflower	G2	Endemic
	Lesquerella hitchcockii	Hitchcock bladderpod	G3	Peripheral or Limited
	Lesquerella pendula	Hanging bladderpod	G2?	Endemic
	Lewisia maguirei	Maguire bitterroot	G1	Endemic
	Primula nevadensis	Nevada primrose	G1	Endemic
	Silene nachlingerae	Nachlinger catchfly	G2	Endemic
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Baeolophus griseus	Juniper Titmouse	G5	Widespread
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
	Icteria virens	Yellow-Breasted Chat	G5	Peripheral
	Otus flammeolus	Flammulated Owl	G4	Widespread
	Vermivora virginiae	Virginia's Warbler	G5	Widespread
MAMMALS	Brachylagus idahoensis	Pygmy rabbit	G5	Limited
	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited

A220 RAILROAD GRADE

Site Type: FUNCTIONAL SITE
Section: Central Mountains
State: NV
County: Lander
Installation: ***NAS Fallon***

Size Ha: 2,103.7 % on DoD:
Acres: 5,198.4 % in MOA:: 100.00%
% in BLM: 100.00%

System Groups (2): SS MA SD

TERR SYSTEMS	+	Sagebrush semidesert	
PLANTS		Eriogonum anemophilum	Windloving buckwheat
		Phacelia glaberrima	Reese River phacelia

A221 RAILROAD PASS

Site Type: FUNCTIONAL SITE
Section: Central Mountains
State: NV
County: Lander
Installation: ***NAS Fallon***

Size Ha: 1,977.9 % on DoD:
Acres: 4,887.4 % in MOA:: 100.00%
% in BLM: 70.80%

System Groups (2): BD SS

TERR SYSTEMS	+	Sagebrush semidesert	
	+	Sagebrush steppe	
	+	Salt desert scrub	
INVERTEBRATES		Andrena raveni	(Bee)

Global Rank	Ecoregional Distribution
G2G3	Endemic
G3?	Endemic
G2	Limited

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A223 RAINBOW CANYON			**Site Type:**	LANDSCAPE SITE
			Section:	Tonopah
Size Ha: 24,737.6	% on DoD:	System Groups (2)	**State:**	NV
Acres: 61,126.5	% in MOA:: 100.00%	BD SS LM SD RW A	**County:**	Lincoln
	% in BLM: 94.56%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Low montane shrublands			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
PLANTS	Astragalus convallarius var. finitimus	Lesser rushy milkvetch	G5T3	Endemic
	Astragalus oophorus var. lonchocalyx	Pink egg milkvetch, long-calyx eggvetch	G4T2	Endemic
	Epilobium nevadense	Nevada willowherb	G2	Limited
	Ivesia arizonica var. saxosa	Rock purpusia	G4T1	Limited
FISHES	Catostomus clarki ssp. 2	Meadow Valley Wash Desert sucker	G3G4T2	Endemic
	Rhinichthys osculus ssp. 2 mv	Meadow Valley speckled dace	G5T2	Limited
BIRDS	Empidonax traillii extimus	Southwestern Willow Flycatcher	G5T2	Peripheral
	Guiraca caerulea	Blue Grosbeak	G5	Peripheral
	Icteria virens	Yellow-Breasted Chat	G5	Peripheral
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
A227 REESE RIVER		UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha: 45,308.6	% on DoD:	System Groups (2)	**State:**	NV
Acres: 111,957.6	% in MOA:: 100.00%	BD SS LM MA SD RW A	**County:**	Lander
	% in BLM: 89.10%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Greasewood shrubland			
	Montane riparian shrubland			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
AQ SYSTEMS	Ephemeral standing waters			
	Small-size runoff-fed stream			
	Small-size spring and outflow stream, hot spring and springbrook			
PLANTS	Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic
	Eriogonum anemophilum	Windloving buckwheat	G2G3	Endemic
	Phacelia glaberrima	Reese River phacelia	G3?	Endemic
INVERTEBRATES	Cercyonis oetus pallescens	Pallid wood nymph	G5T1	Endemic
	Hesperia uncas reesorum	Reese River unca skipper	G4G5T1	Endemic
	Polites sabuleti basinensis	Pallid skipper	G5T2	Unknown
	Pseudocopaeodes eunus flavus	Nevada alkali skipperling	G3T2	Endemic
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A228	**REESE RIVER VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	3,596.7 % on DoD:	System Groups (2)	**State:**	NV
Acres:	8,887.5 % in MOA:: 100.00%	BD SS SD	**County:**	Lander
	% in BLM: 100.00%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	+ Sagebrush semidesert			
	Sagebrush steppe			
	+ Salt desert scrub			
INVERTEBRATES	Andrena chrylismiae	(Bee)	G1	Endemic
	Andrena raveni	(Bee)	G2	Limited
	Anthophora affabilis	(Bee)	?	Limited
A229	**REVEILLE VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	13,499.0 % on DoD:	System Groups (2)	**State:**	NV
Acres:	33,355.9 % in MOA:: 74.03%	BD SS LM	**County:**	Nye
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
PLANTS	Sclerocactus nyensis	Tonopah fishhook cactus	G1Q	Endemic
A231	**ROCK SPRINGS CANYON**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	1,729.0 % on DoD:	System Groups (2)	**State:**	NV
Acres:	4,272.5 % in MOA:: 100.00%	SS LM	**County:**	Lincoln
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	+ Pinyon-juniper woodland			
PLANTS	Astragalus oophorus var. lonchocalyx	Pink egg milkvetch, long-calyx eggvetch	G4T2	Endemic
A234	**RUSH VALLEY**		**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size Ha:	120,330.6 % on DoD: 12.74%	System Groups (2)	**State:**	UT
Acres:	297,336.9 % in MOA:: 0.24%	BD SS LM MA SD RW A	**County:**	Tooele
	% in BLM: 47.97%		**Installation:**	***Tooele AD***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Montane forest and woodland			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	+ Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Semi-desert shrub steppe			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Lakes			
PLANTS	Astragalus lentiginosus var kennedyi		G5T3T4	Endemic
	Astragalus lentiginosus var. pohlii	Pohl milkvetch	G5T1	Endemic
	Cymopterus coulteri	Coulter biscuitroot	G3	Limited
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Pyrgulopsis transversa	Southern Bonneville springsnail	G?	Endemic or Limited
BIRDS	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Empidonax wrightii	Gray Flycatcher	G5	Widespread
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Spizella breweri	Brewer's Sparrow	G5	Widespread

A242 SAND MOUNTAIN — UNIQUE SITE (1) — **Site Type:** LANDSCAPE SITE

Section: Lahontan Basin

Size Ha: 23,720.6 % on DoD: 16.30%

Acres: 58,613.6 % in MOA:: 53.10%

% in BLM: 83.14%

System Groups (2): BD SS SD

State: NV

County: Churchill

Installation: ***NAS Fallon***

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush steppe			
	Salt desert scrub			
	Sand dunes			
	Semi-desert shrub steppe			
PLANTS	Astragalus lentiginosus var kennedyi		G5T3T4	Endemic
	Helianthus deserticola	Desert sunflower	G2Q	Limited
INVERTEBRATES	Aegialia hardyi	Hardy's aegialian scarab	G1	Endemic
	Anthidium rodecki	(Bee)	?	Limited
	Anthophora affabilis	(Bee)	?	Limited
	Anthophora sp. nov.	(Bee)	G1	Endemic
	Calliopsis phaceliae	(Bee)	?	Limited
	Calliopsis sp. nov	(Bee)	?	Limited
	Cardiophorus ssp. nov.	(Click beetle)	?	Endemic
	Coenonycha pygmaea	Sand Mountain pygmy scarab	G1	Endemic
	Colletes sp. nov. 1	(Bee)	G1	Limited
	Colletes stepheni	(Bee)	?	Disjunct
	Colletes tectiventris	(Bee)	?	Disjunct
	Euphilotes pallescens arenamontana	Sand Mountain blue	G4T1	Endemic
	Hesperapis sp. nov.2	(Bee)	G1	Endemic
	Myrmecocystus arenarius	Dune honey ant	G2?	Endemic?
	Perdita aridella	(Bee)	?	Limited
	Perdita chloris	(Bee)	?	Limited
	Perdita cleomellae	(Bee)	?	Disjunct
	Perdita eucnides eucnides	(Bee)	G2	Disjunct

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+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
INVERTEBRATES	Perdita haigi	(Bee)	G1	Endemic
	Perdita hirticeps apicata	(Bee)	?	Limited
	Perdita sp. nov. 3	(Bee)	G1	Endemic
	Perdita vesca	(Bee)	?	Limited
	Serica psammobunus	Sand Mountain serican scarab	G1	Endemic

A243 SAWTOOTH MOUNTAIN

Site Type: FUNCTIONAL SITE
Section: Bonneville Basin
State: UT
County: Millard
Installation: ***Hill AFB***

Size Ha: 10,182.0 % on DoD:
Acres: 25,159.7 % in MOA:: 100.00%
% in BLM: 90.65%

System Groups (2): BD SS LM MA SD A

TERR SYSTEMS	Greasewood shrubland		
	Mountain sagebrush		
	Pinyon-juniper woodland		
	Sagebrush semidesert		
	Salt desert scrub		
	Subalpine forest and woodland		
PLANTS	Cryptantha compacta	Mound cryptanth	G1 Endemic
	Jamesia tetrapetala	Basin jamesia, waxflower	G2 Endemic
	Primula domensis	House Range primrose	G1 Endemic
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G? Limited

A249 SEVIER DESERT

Site Type: FUNCTIONAL SITE
Section: Bonneville Basin
State: UT
County: Millard
Installation: ***Hill AFB***

Size Ha: 11,595.4 % on DoD:
Acres: 28,652.1 % in MOA:: 100.00%
% in BLM: 92.38%

System Groups (2): BD SS LM SD

TERR SYSTEMS	Sagebrush semidesert		
	Salt desert scrub		
PLANTS	Astragalus uncialis	Currant milkvetch	G2 Endemic
	Eriogonum spathulatum var. natum	Son's wild buckwheat	G3T2 Endemic
	Penstemon nanus	Low beardtongue	G3 Endemic

A253 SHOAL CREEK

Site Type: FUNCTIONAL SITE
Section: Tonopah
State: UT
County: Washington, Iron
Installation: ***Nellis AFB***

Size Ha: 3,883.6 % on DoD:
Acres: 9,596.4 % in MOA:: 61.00%
% in BLM: 0.00%

System Groups (2): SS LM RW

TERR SYSTEMS	Montane riparian shrubland		
	Pinyon-juniper woodland		
	+ Sagebrush semidesert		
PLANTS	Astragalus oophorus var. lonchocalyx	Pink egg milkvetch, long-calyx eggvetch	G4T2 Endemic

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A254	**SHOSHONE RANGE-CARICO LAKE VALLEY**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha:	21,295.5 % on DoD:	System Groups (2)	**State:**	NV
Acres:	52,621.2 % in MOA:: 99.94%	BD SS LM MA RW A	**County:**	Lander
	% in BLM: 92.98%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Greasewood shrubland			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
AQ SYSTEMS	Ephemeral alkaline playa lake, chloride waters			
	Ephemeral standing waters			
	Permanent flowing waters			
	Small-size spring and outflow springbrook			
MOLLUSKS	Pyrgulopsis basiglans	Large gland Carico springsnail	G1	Endemic
	Pyrgulopsis bifurcata	Small gland Carico springsnail	G1	Endemic
	Pyrgulopsis sadai	Sada's springsnail	G1G2	Endemic
BIRDS	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
A256	**SILVER ISLAND MOUNTAINS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	42,383.4 % on DoD:	System Groups (2)	**State:**	UT
Acres:	104,729.3 % in MOA:: 100.00%	BD SS LM RW	**County:**	Tooele, Box Elder
	% in BLM: 84.95%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Greasewood shrubland			
	Pickleweed flats			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
	Wet meadow			
PLANTS	Eriogonum nummulare var. ammophilum	Ibex buckwheat	G4T1	Endemic
A259	**SIMPSON BUTTES**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	4,103.6 % on DoD: 85.82%	System Groups (2)	**State:**	UT
Acres:	10,140.0 % in MOA:: 100.00%	BD A	**County:**	Tooele
	% in BLM: 14.37%		**Installation:**	***Dugway/Hill***
TERR SYSTEMS	+ Salt desert scrub			
	Semi-desert shrub steppe			
FISHES	Iotichthys phlegethontis	Least chub	G1	Limited

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A260	**SIMPSON MOUNTAINS**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	10,014.9 % on DoD:	System Groups (2)	**State:**	UT
Acres:	24,746.8 % in MOA:: 100.00%	SS LM MA RW A	**County:**	Tooele
	% in BLM: 82.27%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Bitterbrush shrubland			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
AQ SYSTEMS	Permanent flowing waters			
MOLLUSKS	Pyrgulopsis transversa	Southern Bonneville springsnail	G?	Endemic or Limited
A261	**SIMPSON PARK MOUNTAINS-NORTH TOIYABE RANGE**		**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha:	269,858.6 % on DoD:	System Groups (2)	**State:**	NV
Acres:	666,820.6 % in MOA:: 93.00%	BD SS LM MA RW A	**County:**	Lander, Eureka
	% in BLM: 91.25%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Bitterbrush shrubland			
	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Montane forest and woodland			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
AQ SYSTEMS	Permanent flowing waters			
	Small-size runoff-fed stream			
	Small-size spring and outflow springbrook			
INVERTEBRATES	Andrena raveni	(Bee)	G2	Limited
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration
	Melanerpes lewis	Lewis's Woodpecker	G5	Widespread, declining
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration
A262	**SIXMILE FLAT**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	21,767.6 % on DoD:	System Groups (2)	**State:**	NV
Acres:	53,787.8 % in MOA:: 100.00%	BD SS SD	**County:**	Lincoln
	% in BLM: 98.80%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Sagebrush semidesert			
	Salt desert scrub			

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Semi-desert shrub steppe			
PLANTS	Ivesia arizonica var. saxosa	Rock purpusia	G4T1	Limited

A263 SKULL VALLEY — **Site Type:** FUNCTIONAL SITE; **Section:** Bonneville Basin; **State:** UT; **County:** Tooele; **Installation:** ***Hill AFB***

Size Ha: 4,274.7 % on DoD:
Acres: 10,562.8 % in MOA:: 100.00%
% in BLM: 59.01%
System Groups (2): BD SS

TERR SYSTEMS	Greasewood shrubland	
	+ Salt desert scrub	
	Semi-desert shrub steppe	
PLANTS	Astragalus lentiginosus var. pohlii	Pohl milkvetch

A265 SLOW ELK HILLS — **Site Type:** FUNCTIONAL SITE; **Section:** Bonneville Basin; **State:** UT; **County:** Tooele, Juab; **Installation:** ***Hill AFB***

Size Ha: 5,985.5 % on DoD:
Acres: 14,790.1 % in MOA:: 100.00%
% in BLM: 83.48%
System Groups (2): BD SS LM A

TERR SYSTEMS	Pinyon-juniper woodland	
	+ Sagebrush semidesert	
	+ Salt desert scrub	
	Semi-desert shrub steppe	
MOLLUSKS	Pyrgulopsis transversa	Southern Bonneville springsnail

A267 SNAKE RANGE — UNIQUE SITE (1) — **Site Type:** LANDSCAPE SITE; **Section:** Central Mountains; **State:** NV, UT; **County:** White Pine, Millard; **Installation:** ***Hill AFB***

Size Ha: 225,821.8 % on DoD:
Acres: 558,005.8 % in MOA:: 0.74%
% in BLM: 50.96%
System Groups (2): BD SS LM MA SD RW A

TERR SYSTEMS	Alpine herbaceous	
	Desert riparian shrubland and woodland	
	Greasewood shrubland	
	Low montane shrublands	
	Montane forest and woodland	
	Montane riparian shrubland	
	Mountain mahogany woodlands	
	Mountain sagebrush	
	Pinyon-juniper woodland	
	Sagebrush semidesert	
	Sagebrush steppe	
	Salt desert scrub	
	Semi-desert shrub steppe	
	Subalpine forest and woodland	
AQ SYSTEMS	Ephemeral standing waters	
	Lakes	
	Permanent flowing waters	
	Small-size runoff-fed stream	
	Subalpine or alpine lake	

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Appendix E. DoD Great Basin ecoregion portfolio conservation areas and their conservation targets

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
G1G2 ASSOCATIONS	Cercocarpus ledifolius- Symphoricarpos oreophilus woodland		G2	Limited
PLANTS	Arenaria congesta var. wheelerensis	Wheeler peak sandwort	G5T1?	Endemic
	Astragalus diversifolius	Mesic milkvetch, meadow milkvetch	G3	Limited
	Astragalus kentrophyta var. elatus	Spiny-leaved milk-vetch	G5T4	Endemic
	Astragalus lentiginosus var. latus	Broad-pod freckled milkvetch	G5T1	Endemic
	Cryptantha welshii	White River catseye	G3	Endemic
	Cymopterus basalticus	Dolomite spring-parsley, intermountain wavewing	G2,G2G3	Endemic
	Draba cusickii var. pedicellata	Stalked cusick whitlowgrass	G4T3?	Endemic
	Draba oreibata var. serpentina	Snake Range whitlowgrass	G4T1	Endemic
	Draba pennellii	Pennell draba	G2	Endemic
	Draba sphaeroides	Mountain draba	G2?	Limited
	Eriogonum darrovii	Darrow buckwheat	G2G3	Limited
	Eriogonum holmgrenii	Holmgren buckwheat	G1	Endemic
	Eriogonum nummulare var. ammophilum	Ibex buckwheat	G4T1	Endemic
	Jamesia tetrapetala	Basin jamesia, waxflower	G2	Endemic
	Lesquerella pendula	Hanging bladderpod	G2?	Endemic
	Penstemon concinnus	Tunnel spring beardtongue	G3	Endemic
	Penstemon leiophyllus var. francisci-pennellii	Pennell beardtongue	G3T2	Endemic
	Penstemon moriahensis	Mount Moriah beardtongue	G1G2	Endemic
	Phacelia parishii	Parish phacelia	G2G3	Limited
	Primula nevadensis	Nevada primrose	G1	Endemic
	Silene nachlingerae	Nachlinger catchfly	G2	Endemic
INVERTEBRATES	Euphilotes bernardino minuta	Baking Powder Flat Blue	G5T1	Endemic
	Euphydryas editha koreti	Koret's checkerspot	G5T1Q	Endemic
	Oreohelix eurekensis	Eureka mountainsnail	G1	Unknown
	Oreohelix hemphilii	White Pine mountainsnail	?	Endemic
	Osmia alpestris	(Bee)	?	Limited
	Osmia tanneri	(Bee)	G1	Limited
	Polites sabuleti nigrescens	Dark sandhill skipper	G5T2	Endemic
MOLLUSKS	Pyrgulopsis anguina	Longitudinal gland springsnail	G1	Endemic
	Pyrgulopsis peculiaris	Bifid duct springsnail	G?,G2?	Endemic
	Pyrgulopsis saxatilis	Sub-globose Snake springsnail	G1	Endemic
FISHES	Empetrichthys latos latos	Pahrump poolfish	G1T1	Introduced
	Iotichthys phlegethontis	Least chub	G1	Limited
	Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	Endemic?
	Relictus solitarius	Relict dace	G2G3	Endemic
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
	Grus canadensis	Greater Sandhill Crane	G5	Widespread, migratory concentration
	Otus flammeolus	Flammulated Owl	G4	Widespread
MAMMALS	Antrozous pallidus	Pallid bat	G5	Widespread, declining
	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Lasionycteris noctivagans	Silver-haired bat	G5	Widespread, declining
	Lasiurus cinereus	Hoary bat	G5	Widespread, declining
	Myotis thysanodes	Fringed myotis	G5	Widespread, declining

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Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
MAMMALS	Ovis canadensis californiana	California bighorn sheep	G4T1	Limited
	Tadarida brasiliensis	Brazilian free-tailed bat	G5	Unknown
A268	**SNAKE VALLEY**		**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size Ha:	55,720.5 % on DoD:	System Groups (2)	**State:**	UT
Acres:	137,685.5 % in MOA:: 98.24%	BD SS MA SD RW A	**County:**	Millard, Juab
	% in BLM: 87.18%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Montane riparian shrubland			
	Mountain sagebrush			
	Pickleweed flats			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Lakes			
	Small-size spring and outflow springbrook			
PLANTS	Cryptantha compacta	Mound cryptanth	G1	Endemic
MOLLUSKS	Physa megalochlamys		G3	Unknown
	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
FISHES	Iotichthys phlegethontis	Least chub	G1	Limited
BIRDS	Buteo swainsoni	Swainson's Hawk	G4	Widespread, declining
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Falco peregrinus	Peregrine Falcon	G4,G3	Widespread
A269	**SOAP HOLLOW**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	11,464.3 % on DoD:	System Groups (2)	**State:**	UT
Acres:	28,328.2 % in MOA:: 100.00%	BD SS	**County:**	Millard
	% in BLM: 87.68%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Astragalus uncialis	Currant milkvetch	G2	Endemic
A272	**SOUTH GROOM RANGE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	1,536.8 % on DoD:	System Groups (2)	**State:**	NV
Acres:	3,797.4 % in MOA:: 100.00%	SS LM MA	**County:**	Lincoln
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
PLANTS	Erigeron ovinus	Sheep fleabane	G2	Limited

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A276	**SOUTH RAILROAD VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	10,856.0 % on DoD:	System Groups (2)	**State:**	NV
Acres:	26,825.3 % in MOA:: 66.26%	BD	**County:**	Nye
	% in BLM: 100.00%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Blackbrush-hopsage desert shrubland			
	Salt desert scrub			
A277	**SOUTH RALSTON VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	3,762.4 % on DoD: 22.48%	System Groups (2)	**State:**	NV
Acres:	9,296.9 % in MOA:: 19.96%	BD SD	**County:**	Nye
	% in BLM: 77.52%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	+ Salt desert scrub			
PLANTS	Astragalus pseudiodanthus	Tonopah milk-vetch	G2	Endemic
A278	**SOUTH SEVIER LAKE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	10,352.1 % on DoD:	System Groups (2)	**State:**	UT
Acres:	25,580.2 % in MOA:: 28.58%	BD SS SD	**County:**	Millard
	% in BLM: 84.47%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush semidesert			
	Salt desert scrub			
PLANTS	Cymopterus acaulis var. parvus		G5T2T3	Endemic
	Eriogonum spathulatum var. natum	Son's wild buckwheat	G3T2	Endemic
A280	**SOUTH WASSUK RANGE**		**Site Type:**	LANDSCAPE SITE
			Section:	California
Size Ha:	49,189.4 % on DoD: 46.42%	System Groups (2)	**State:**	NV
Acres:	121,547.0 % in MOA::	BD SS LM MA SD RW A	**County:**	Mineral
	% in BLM: 31.46%		**Installation:**	***Hawthorne AD***
TERR SYSTEMS	Alpine herbaceous			
	Altered andesite soils			
	Desert riparian shrubland and woodland			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Lakes			
	Permanent flowing waters			
PLANTS	Arabis bodiensis	Bodie Hills rock cress	G1,G2	Limited
	Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
PLANTS	Penstemon rubicundus	Wassuk Beardtongue	G2G3	Endemic
INVERTEBRATES	Speyeria nokomis apacheana	Apache silverspot	G4T3	Endemic
	Thorybes mexicana blanca	White Mountains cloudy wing	G5T2	Endemic
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Baeolophus griseus	Juniper Titmouse	G5	Widespread
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
	Melanerpes lewis	Lewis's Woodpecker	G5	Widespread, declining
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration
MAMMALS	Lepus townsendii	White-tailed jack rabbit	?	Widespread
	Ochotona princeps sspp.	Pika	G5T?	Limited?
	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited

A286 STANSBURY MOUNTAINS

Site Type: LANDSCAPE SITE
Section: Bonneville Basin
State: UT
County: Tooele
Installation: ***Hill AFB***

Size Ha: 38,246.0 % on DoD:
Acres: 94,505.9 % in MOA:: 93.71%
% in BLM: 45.88%

System Groups (2)
BD SS LM MA SD RW A

TERR SYSTEMS	Bitterbrush shrubland			
	Desert riparian shrubland and woodland			
	Low montane shrublands			
	Montane forest and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Permanent flowing waters			
G1G2 ASSOCATIONS	Amelanchier utahensis - Cercocarpus montanus shrubland		G2	Widespread
	Populus fremontii - Acer negundo forest		G2Q	Peripheral
PLANTS	Cymopterus acaulis var. parvus		G5T2T3	Endemic
	Potentilla cottamii	Cottam's cinquefoil	G1	Limited
INVERTEBRATES	Oreohelix eurekensis	Eureka mountainsnail	G1	Unknown
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Otus flammeolus	Flammulated Owl	G4	Widespread

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A288	**STILLWATER RANGE -DIXIE VALLEY**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	17,441.2 % on DoD: 2.20%	System Groups (2)	**State:**	NV
Acres:	43,097.1 % in MOA:: 100.00%	BD LM MA RW	**County:**	Churchill
	% in BLM: 97.22%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Low montane shrublands			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Salt desert scrub			
	Wet meadow			
PLANTS	Penstemon palmeri var. macranthus		G5T2?	Endemic
A290	**STONEBERGER BASIN**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size Ha:	13,204.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	32,629.3 % in MOA:: 57.36%	SS LM MA RW A	**County:**	Nye, Lander
	% in BLM: 0.00%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush steppe			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Permanent flowing waters			
PLANTS	Eriogonum esmeraldense var. toiyabense	Toiyabe buckwheat	G4T2	Endemic
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
MAMMALS	Lagurus curtatus	Sagebrush vole	G5	Endemic or Limited
A291	**STONEWALL MOUNTAIN**		**Site Type:**	FUNCTIONAL SITE
			Section:	Tonopah
Size Ha:	4,810.1 % on DoD: 55.57%	System Groups (2)	**State:**	NV
Acres:	11,885.7 % in MOA:: 99.31%	BD SS LM A	**County:**	Nye
	% in BLM: 43.76%		**Installation:**	***Nellis AFB***
TERR SYSTEMS	Pinyon-juniper woodland			
	+ Sagebrush semidesert			
AQ SYSTEMS	Small-size spring and outflow stream, cold spring and springbrook			
PLANTS	Penstemon pahutensis	Pahute Mesa beardtongue	G3	Limited
MAMMALS	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A298	**SWASEY MOUNTAIN**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	3,713.2 % on DoD:	System Groups (2)	**State:**	UT
Acres:	9,175.3 % in MOA:: 100.00%	LM MA A	**County:**	Millard
	% in BLM: 85.86%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Montane forest and woodland			
	Pinyon-juniper woodland			
MOLLUSKS	Pyrgulopsis kolobensis	Toquerville springsnail	G?	Limited
	Pyrgulopsis peculiaris	Bifid duct springsnail	G?,G2?	Endemic
A306	**THORNE DUNE**		**Site Type:**	FUNCTIONAL SITE
			Section:	Lahontan Basin
Size Ha:	10,059.9 % on DoD: 7.16%	System Groups (2)	**State:**	NV
Acres:	24,857.9 % in MOA::	BD SS SD	**County:**	Mineral
	% in BLM: 92.64%		**Installation:**	***Hawthorne AD***
TERR SYSTEMS	Greasewood shrubland			
	Sagebrush steppe			
	Salt desert scrub			
PLANTS	Oryctes nevadensis	Nevada oryctes	G2,G2G3	Limited
INVERTEBRATES	Aegialia spinosa	(Scarab beetle)	?	Limited
	Chilometopon pallidium	(Sand obligate beetle)	?	Limited
	Edrotes ventricosus	(Sand obligate beetle)	?	Limited
	Eusattus muricatus	(Sand obligate beetle)	?	Widespread, specialist
	Lariversius tibalis	(Sand obligate beetle)	?	Limited
	Mecynotarsus delicatulus	(Sand obligate beetle)	?	Limited
	Niptus ventriculus	(Sand obligate beetle)	?	Limited
	Philothris ssp. nov.	(Predatory beetle)	?	Limited
	Rhadine myrmecodes	(Sand obligate beetle)	?	Limited
	Tetragonoderus pallidus	(Sand obligate beetle)	?	Limited
	Trogloderus costatus		?	Limited
A309	**TOD PARK**		**Site Type:**	FUNCTIONAL SITE
			Section:	Bonneville Basin
Size Ha:	1,798.9 % on DoD: 21.98%	System Groups (2)	**State:**	UT
Acres:	4,445.1 % in MOA::	BD SS LM RW	**County:**	Tooele
	% in BLM: 0.01%		**Installation:**	***Tooele AD***
TERR SYSTEMS	Desert riparian shrubland and woodland			
	Montane riparian shrubland			
	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Salt desert scrub			
	Semi-desert shrub steppe			
INVERTEBRATES	Andrena raveni	(Bee)	G2	Limited

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A310	**TOIYABE RANGE-BIG SMOKY VALLEY**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha:	205,734.1 % on DoD:	System Groups (2)	**State:**	NV
Acres:	508,369.1 % in MOA:: 44.02%	BD SS LM MA SD RW A	**County:**	Nye, Lander
	% in BLM: 25.91%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Alpine herbaceous			
	Bitterbrush shrubland			
	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Low montane shrublands			
	Montane forest and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Permanent flowing waters			
G1G2 ASSOCATIONS	Betula occidentalis - Cornus sericea shrubland		G2G3	Widespread
	Salix geyeriana - Mesic graminoids shrubland		G2G3	Widespread
PLANTS	Agastache cusickii	Cusick hyssop	G3	Peripheral
	Arabis ophira	Ophir rockcress	G1G2	Endemic
	Cymopterus goodrichii	Goodrich biscuitroot	G1	Endemic
	Draba arida	Desert whitlowgrass	G2	Endemic
	Draba oreibata var. serpentina	Snake Range whitlowgrass	G4T1	Endemic
	Eriogonum esmeraldense var. toiyabense	Toiyabe buckwheat	G4T2	Endemic
	Eriogonum ovalifolium var. caelestinum	Heavenly buckwheat	G5T2T3	Endemic
	Oxytheca watsonii	Watson's oxytheca	G2	Peripheral or Limited
	Smelowskia holmgrenii	Holmgren smelowskia	G2	Endemic
	Tonestus alpinus	Alpine tonestus	G2	Endemic
	Trifolium rollinsii	Rollins clover	G2G3Q	Endemic
INVERTEBRATES	Cercyonis oetus alkalorum	Big Smoky wood nymph	G5T1	Endemic
	Euphydryas editha koreti	Koret's checkerspot	G5T1Q	Endemic
	Ochlodes yuma lutea	Great Basin yuma skipper	G3T2T3	Limited
	Oreohelix hemphilii	White Pine mountainsnail	?	Endemic
	Polites sabuleti basinensis	Pallid skipper	G5T2	Unknown
	Pseudocopaeodes eunus flavus	Nevada alkali skipperling	G3T2	Endemic
FISHES	Gila bicolor ssp. 10	Charnock springs tui chub	G4TH	Endemic
	Gila bicolor ssp. 8	Big Smoky Valley tui chub	G4T1	Endemic

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Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
FISHES	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4 T3	Limited
	Rhinchthys osculus robustus	Lahontan speckled dace	?	Endemic
	Rhinichthys osculus lariversi	Big Smoky Valley speckled dace	G5T1	Endemic
AMPHIBIANS	Rana luteiventris ssp.	Toiyabe spotted frog	G4T?	Endemic
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
	Melanerpes lewis	Lewis's Woodpecker	G5	Widespread, declining
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
	Spizella breweri	Brewer's Sparrow	G5	Widespread
MAMMALS	Brachylagus idahoensis	Pygmy rabbit	G5	Limited
	Ochotona princeps sspp.	Pika	G5T?	Limited?
	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited

A312 TOOELE VALLEY — **Site Type:** FUNCTIONAL SITE; **Section:** Bonneville Basin; **State:** UT; **County:** Tooele; **Installation:** ***Hill AFB***

Size Ha: 3,979.6 — Acres: 9,833.6 — % on DoD: — % in MOA:: 8.31% — % in BLM: 12.08%

System Groups (2): BD SS LM MA RW

TERR SYSTEMS		Mountain sagebrush
		Pinyon-juniper woodland
	+	Sagebrush semidesert
		Semi-desert shrub steppe
BIRDS		Accipiter gentilis — Northern Goshawk — G4 — Widespread, declining

A313 TOPAZ MOUNTAIN — **Site Type:** FUNCTIONAL SITE; **Section:** Bonneville Basin; **State:** UT; **County:** Juab; **Installation:** ***Hill AFB***

Size Ha: 2,098.4 — Acres: 5,185.3 — % on DoD: — % in MOA:: 100.00% — % in BLM: 87.59%

System Groups (2): BD SS LM

TERR SYSTEMS		Pinyon-juniper woodland
	+	Sagebrush semidesert
	+	Salt desert scrub
PLANTS		Sclerocactus spinosior — Desert Valley fishhook-cactus — G2G3 — Endemic

A314 TOPIER CANYON — **Site Type:** FUNCTIONAL SITE; **Section:** Tonopah; **State:** NV; **County:** Nye; **Installation:** ***NAS Fallon***

Size Ha: 1,709.0 — Acres: 4,223.0 — % on DoD: — % in MOA:: 100.00% — % in BLM: 0.00%

System Groups (2): BD SS LM SD RW

TERR SYSTEMS		Desert riparian shrubland and woodland
	+	Pinyon-juniper woodland
	+	Sagebrush semidesert
	+	Salt desert scrub

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
MAMMALS	Antrozous pallidus	Pallid bat	G5	Widespread, declining
	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Lasiurus cinereus	Hoary bat	G5	Widespread, declining
A315	**TOQUIMA RANGE-MONITOR VALLEY-MONITOR RANGE**	UNIQUE SITE (1)	**Site Type:**	LANDSCAPE SITE
			Section:	Central Mountains
Size Ha:	396,229.9 % on DoD:	System Groups (2)	**State:**	NV
Acres:	979,084.1 % in MOA:: 17.45%	BD SS LM MA SD RW A	**County:**	Nye, Lander, Eureka
	% in BLM: 40.70%		**Installation:**	***NAS Fallon***
TERR SYSTEMS	Alpine herbaceous			
	Blackbrush-hopsage desert shrubland			
	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Low montane shrublands			
	Montane forest and woodland			
	Montane meadow			
	Montane riparian shrubland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
	Subalpine forest and woodland			
	Wet meadow			
AQ SYSTEMS	Ephemeral standing waters			
	Permanent flowing waters			
	Small-size spring and outflow springbrook			
	Small-size spring and outflow stream, hot spring and springbrook			
PLANTS	Asclepias eastwoodiana	Eastwood milkweed	G2Q	Endemic
	Astragalus calycosus var. monophyllidius	One-leaflet torrey milkvetch	G5T2	Endemic
	Astragalus serenoi var. sordescens	Squalid milkvetch	G4T2	Endemic
	Astragalus toquimanus	Toquima milkvetch	G2	Endemic
	Draba arida	Desert whitlowgrass	G2	Endemic
	Eriogonum esmeraldense var. toiyabense	Toiyabe buckwheat	G4T2	Endemic
	Eriogonum ovalifolium var. caelestinum	Heavenly buckwheat	G5T2T3	Endemic
	Ivesia kingii var. kingii	Alkali ivesia	G3T2	Limited
	Lepidium nanum	Dwarf peppergrass	G3	Endemic
	Mentzelia candelariae	Candelaria blazing-star	G3?Q	Endemic
	Oxytheca watsonii	Watson's oxytheca	G2	Peripheral or Limited
	Penstemon barnebyi	Barneby's beardtongue	G3	Endemic
	Smelowskia holmgrenii	Holmgren smelowskia	G2	Endemic
	Tonestus alpinus	Alpine tonestus	G2	Endemic
INVERTEBRATES	Andrena chrylismiae	(Bee)	G1	Endemic
	Andrena nevadae	(Bee)	G1	Endemic
	Andrena raveni	(Bee)	G2	Limited

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

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Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
INVERTEBRATES	Perdita bohartorum	(Bee)	?	Limited
	Perdita leucostoma	(Bee)	?	Limited
	Polites sabuleti basinensis	Pallid skipper	G5T2	Unknown
	Polites sabuleti nigrescens	Dark sandhill skipper	G5T2	Endemic
MOLLUSKS	Pyrgulopsis sterilis	Sterile Basin springsnail	G1	Endemic
	Tryonia monitorae	Monitor Valley tryonia	G1	Endemic
FISHES	Crenichthys nevadae	Railroad Valley springfish	G2	Endemic
	Gila bicolor ssp. 6	Little Fish Lake Valley tui chub	G4T1	Endemic?
	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4T3	Limited
	Rhinichthys osculus	Monitor Valley speckled dace	G5T1	Endemic
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Amphispiza belli	Sage Sparrow	G5	Widespread, declining
	Aythya americana	Redhead	G5	Widespread, migratory concentration
	Buteo regalis	Ferruginous Hawk	G4	Widespread, declining
	Centrocercus urophasianus	Sage Grouse	G5	Widespread, declining
	Circus cyaneus	Northern Harrier	G5	Widespread, declining
	Empidonax wrightii	Gray Flycatcher	G5	Widespread
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Gymnorhinus cyanocephalus	Pinyon Jay	G5	Widespread, specialist
	Lanius ludovicianus	Loggerhead Shrike	G5	Widespread, declining
	Larus californicus	California Gull	G5	Disjunct, colonial
	Numenius americanus	Long-Billed Curlew	G5	Widespread, declining
	Oreoscoptes montanus	Sage Thrasher	G5	Widespread
	Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration
	Podiceps auritus	Eared Grebe	G5	Widespread, migratory concentration
	Recurvirostra americana	American Avocet	G5	Widespread, migratory concentration
	Spizella breweri	Brewer's Sparrow	G5	Widespread
	Vermivora virginiae	Virginia's Warbler	G5	Widespread
MAMMALS	Corynorhinus townsendii	Townsend's big-eared bat	G4	Widespread, declining
	Lasionycteris noctivagans	Silver-haired bat	G5	Widespread, declining
	Myotis thysanodes	Fringed myotis	G5	Widespread, declining
	Ochotona princeps sspp.	Pika	G5T?	Limited?
	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited

A316 TRAIL CANYON

Site Type: FUNCTIONAL SITE
Section: Central Mountains
State: NV
County: Nye
Installation: ***NAS Fallon***

Size Ha: 1,743.5 % on DoD:
Acres: 4,308.1 % in MOA:: 100.00%
% in BLM: 92.78%

System Groups (2)
BD SS RW A

TERR SYSTEMS		Freshwater marsh		
	+	Greasewood shrubland		
	+	Sagebrush semidesert		
	+	Sagebrush steppe		
	+	Salt desert scrub		
FISHES		Gila bicolor ssp. 8	Big Smoky Valley tui chub	G4T1 Endemic

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
A317	**TULE VALLEY**		**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size	Ha: 5,992.5 % on DoD:	System Groups (2)	**State:**	UT
	Acres: 14,807.5 % in MOA:: 100.00%	BD LM MA RW A	**County:**	Millard
	% in BLM: 90.67%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Freshwater marsh			
	Greasewood shrubland			
	+ Salt desert scrub			
	Wet meadow			
AQ SYSTEMS	Small-size spring and outflow springbrook			
PLANTS	Penstemon patricus	Dad's penstemon	G2Q	Endemic
FISHES	Oncorhynchus clarki utah	Bonneville cutthroat trout	G4T2	Endemic?
BIRDS	Accipiter gentilis	Northern Goshawk	G4	Widespread, declining
	Otus flammeolus	Flammulated Owl	G4	Widespread
A318	**TUNGSTONIA**		**Site Type:**	FUNCTIONAL SITE
			Section:	Central Mountains
Size	Ha: 1,924.8 % on DoD:	System Groups (2)	**State:**	NV
	Acres: 4,756.3 % in MOA:: 100.00%	BD SS LM MA	**County:**	White Pine
	% in BLM: 100.00%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Low montane shrublands			
	Montane forest and woodland			
	Mountain mahogany woodlands			
	Mountain sagebrush			
	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
PLANTS	Cymopterus basalticus	Dolomite spring-parsley, intermountain wavewing	G2,G2G3	Endemic
A319	**TUNNEL SPRING MOUNTAINS-HALFWAY HILLS-PINE VALLEY** UNIQUE SITE (1)		**Site Type:**	LANDSCAPE SITE
			Section:	Bonneville Basin
Size	Ha: 64,307.6 % on DoD:	System Groups (2)	**State:**	UT
	Acres: 158,904.1 % in MOA:: 20.44%	BD SS LM MA SD A	**County:**	Millard, Beaver, White Pine
	% in BLM: 60.05%		**Installation:**	***Hill AFB***
TERR SYSTEMS	Greasewood shrubland			
	Mountain sagebrush			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
AQ SYSTEMS	Ephemeral standing waters			
PLANTS	Atriplex bonnevillensis		G2G3Q	Endemic
	Castilleja scabrida var. barnebyana	Barneby's paintbrush	G4T?	Endemic
	Cryptantha compacta	Mound cryptanth	G1	Endemic
	Cymopterus basalticus	Dolomite spring-parsley, intermountain wavewing	G2,G2G3	Endemic
	Ericameria cervina	Antelope goldenbush	G3?	Limited

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Appendix E. DoD Great Basin ecoregion portfolio conservation areas and their conservation targets

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
PLANTS	Eriogonum batemanii var. eremicum	Desert wild buckwheat	G4?T2T3	Endemic
	Ivesia shockleyi var. ostleri	Ostler's ivesia	G3G4T1	Endemic
	Lesquerella goodrichii	Goodrich bladderpod	G2G4	Endemic
	Machaeranthera grindelioides var. depressa		G5T3T4	Limited
	Opuntia pulchella	Beautiful cholla, sand cholla	G4	Endemic, declining
	Penstemon concinnus	Tunnel spring beardtongue	G3	Endemic
	Penstemon humilis var. deserticus	Desert beardtongue	G5T2?	Endemic
	Penstemon nanus	Low beardtongue	G3	Endemic
	Sphaeralcea caespitosa	Jones globe-mallow	G3	Endemic
	Trifolium friscanum	Frisco clover	G1	Endemic
MOLLUSKS	Pyrgulopsis anguina	Longitudinal gland springsnail	G1	Endemic
	Pyrgulopsis peculiaris	Bifid duct springsnail	G?,G2?	Endemic
FISHES	Catostomus clarki	Desert sucker	G3G4	Widespread

A325 UVADA — **Site Type:** FUNCTIONAL SITE; **Section:** Bonneville Basin; **State:** NV, UT; **County:** Lincoln, Iron; **Installation:** ***Nellis AFB***

Size — Ha: 1,746.1; Acres: 4,314.7; % on DoD:; % in MOA:: 100.00%; % in BLM: 81.39%

System Groups (2): SS LM

TERR SYSTEMS	+ Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Sagebrush steppe			
PLANTS	Astragalus convallarius var. finitimus	Lesser rushy milkvetch	G5T3	Endemic
	Astragalus oophorus var. lonchocalyx	Pink egg milkvetch, long-calyx eggvetch	G4T2	Endemic

A331 WALKER LAKE-WALKER RIVER — **Site Type:** LANDSCAPE SITE; **Section:** Lahontan Basin; **State:** NV, CA; **County:** Lyon, Mineral, Mono; **Installation:** ***Hawthorne AD***

Size — Ha: 94,459.8; Acres: 233,410.2; % on DoD: 0.79%; % in MOA:: 1.21%; % in BLM: 24.98%

System Groups (2): BD SS LM MA SD RW A

TERR SYSTEMS	Desert riparian shrubland and woodland			
	Freshwater marsh			
	Greasewood shrubland			
	Low montane shrublands			
	Pinyon-juniper woodland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
AQ SYSTEMS	Lakes			
PLANTS	Oryctes nevadensis	Nevada oryctes	G2,G2G3	Limited
INVERTEBRATES	Calliopsis filiorum	(Bee)	G1	Endemic
FISHES	Oncorhynchus clarki henshawi	Lahontan cutthroat trout	G4T2,T3,G4T3	Limited
BIRDS	Accipiter cooperii	Cooper's Hawk	G4	Widespread, declining
	Aythya americana	Redhead	G5	Widespread, migratory concentration
	Charadrius alexandrinus nivosus	Western Snowy Plover	G4T2, G4T3, G4	Widespread, specialist
	Falco mexicanus	Prairie Falcon	G5	Widespread
	Pelecanus erythrorhynchos	American White Pelican	G3	Widespread, migratory concentration
	Plegadis chihi	White-Faced Ibis	G5	Widespread, migratory concentration

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
BIRDS	Podiceps auritus	Eared Grebe	G5	Widespread, migratory concentration
MAMMALS	Ovis canadensis nelsoni	Desert bighorn sheep	G4T3	Limited
	Ursus americanus	Black bear	G5	Peripheral

A341 WEST GABBS VALLEY — **Site Type:** FUNCTIONAL SITE; **Section:** Lahontan Basin; **State:** NV; **County:** Mineral; **Installation:** ***NAS Fallon***

Size Ha: 21,053.0 % on DoD: | Acres: 52,021.9 % in MOA:: 49.12% % in BLM: 73.20% | System Groups (2): BD SD

TERR SYSTEMS	Greasewood shrubland		
	Salt desert scrub		
PLANTS	Oxytheca watsonii	Watson's oxytheca	G2 Peripheral or Limited

A342 WEST GROOM RANGE — **Site Type:** FUNCTIONAL SITE; **Section:** Tonopah; **State:** NV; **County:** Lincoln; **Installation:** ***Nellis AFB***

Size Ha: 3,861.5 % on DoD: 79.84% | Acres: 9,541.8 % in MOA:: 100.00% % in BLM: 20.16% | System Groups (2): BD SS LM

TERR SYSTEMS	Blackbrush-hopsage desert shrubland		
	Pinyon-juniper woodland		
	+ Sagebrush semidesert		
PLANTS	Astragalus gilmanii	Gilman milkvetch	G3? Limited
	Polygala heterorhyncha	Notch-beak milkwort	G3Q Limited

A343 WEST NORTHUMBERLAND CANYON — **Site Type:** FUNCTIONAL SITE; **Section:** Central Mountains; **State:** NV; **County:** Nye; **Installation:** ***NAS Fallon***

Size Ha: 1,727.0 % on DoD: | Acres: 4,267.5 % in MOA:: 81.63% % in BLM: 100.00% | System Groups (2): BD SS SD

TERR SYSTEMS	+ Greasewood shrubland		
	+ Sagebrush semidesert		
	+ Salt desert scrub		
PLANTS	Oxytheca watsonii	Watson's oxytheca	G2 Peripheral or Limited

A345 WHIRLWIND VALLEY — **Site Type:** FUNCTIONAL SITE; **Section:** Bonneville Basin; **State:** UT; **County:** Millard; **Installation:** ***Hill AFB***

Size Ha: 5,698.0 % on DoD: | Acres: 14,079.8 % in MOA:: 100.00% % in BLM: 90.01% | System Groups (2): BD SS LM

TERR SYSTEMS	+ Sagebrush semidesert		
	+ Salt desert scrub		
PLANTS	Sclerocactus spinosior	Desert Valley fishhook-cactus	G2G3 Endemic

A350 WHITE SAGE FLAT — **Site Type:** FUNCTIONAL SITE; **Section:** Central Mountains; **State:** NV; **County:** Lander; **Installation:** ***NAS Fallon***

Size Ha: 2,045.9 % on DoD: | Acres: 5,055.4 % in MOA:: 100.00% % in BLM: 100.00% | System Groups (2): BD SS LM

TERR SYSTEMS	Greasewood shrubland		

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(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

Type	Scientific Name	Common Name	Global Rank	Ecoregional Distribution
TERR SYSTEMS	Pinyon-juniper woodland			
	+ Sagebrush semidesert			
	+ Salt desert scrub			
PLANTS	Arabis falcifructa	Elko rockcress	G1G2	Peripheral

A352 WILD ISLE-GREAT SALT LAKE DESERT SAND DUNES

Site Type: FUNCTIONAL SITE
Section: Bonneville Basin
State: UT
County: Tooele
Installation: ***Hill AFB***

Size Ha: 41,012.6 % on DoD: 83.86%
Acres: 101,342.2 % in MOA:: 100.00%
% in BLM: 12.55%

System Groups (2): BD LM

TERR SYSTEMS	Pickleweed flats
	Pinyon-juniper woodland
	Salt desert scrub
	Semi-desert shrub steppe

A353 WILLOW PATCH SPRINGS

Site Type: FUNCTIONAL SITE
Section: Bonneville Basin
State: UT
County: Tooele
Installation: ***Dugway/Hill***

Size Ha: 10,848.6 % on DoD: 15.87%
Acres: 26,806.9 % in MOA:: 100.00%
% in BLM: 61.08%

System Groups (2): BD SS RW

TERR SYSTEMS	Desert riparian shrubland and woodland			
	Greasewood shrubland			
	Sagebrush semidesert			
	Sagebrush steppe			
	Salt desert scrub			
	Semi-desert shrub steppe			
PLANTS	Astragalus lentiginosus var. pohlii	Pohl milkvetch	G5T1	Endemic

(1) Unique sites are irreplaceable. They harbor the one and only occurrence of at least one globally restricted conservation target.

(2) System Designations: (BD) Basins and Desert Scrub; (SS) Sagebrush Semidesert; (LM) Lower Montane; (MA) Montane to Alpine; (SD) Sand Dunes and Badlands; (RW)Riparian and Wetlands; and (A) Aquatics.

+ Indicates that the terrestrial system present would need a greater extent beyond the site to be a viable patch size.

APPENDIX F
IRREPLACEABLE CONSERVATION AREAS ON DOD AND MOA LANDS IN THE GREAT BASIN ECOREGION PORTFOLIO

Appendix F. Irreplaceable conservation areas on DoD and MOA lands in the Great Basin ecoregion portfolio.

They are irreplaceable because they harbor the one and only occurrence of at least one globally restricted conservation target.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
A008	**AUGUSTA MOUNTAINS**			
MOLLUSKS	Pyrgulopsis augustae	Elongate Cain Spring springsnail	G1	Endemic
	Pyrgulopsis pictilis	Ovate Cain Spring springsnail	G1	Endemic
A016	**BELTED RANGE-KAWICH VALLEY-GOLD FLAT/TIMBER MOUNTAIN/EMIGRANT VALLEY-HALFPINT RANGE**			
PLANTS	Frasera pahutensis	Pahute green gentian	G3Q	Endemic
A040	**CARSON SINK**			
INVERTEBRATES	Novelsis sabulorum	(Sand obligate beetle)	?	Endemic
A059	**DEEP CREEK RANGE**			
PLANTS	Draba kassii	Kass rockcress	G1	Endemic
	Hackelia ibapensis	Deep Creek stickseed	G1	Endemic
A094	**FLY RANCH GEYSER-GRANITE RANGE**			
MOLLUSKS	Pyrgulopsis bruesi	Brue's springsnail	G1	Endemic
A108	**GROUSE CREEK MOUNTAINS-RAFT RIVER MOUNTAINS**			
MOLLUSKS	Pyrgulopsis lentiglans	Crittenden springsnail	G1	Endemic
A112	**HIGHLAND RANGE**			
INVERTEBRATES	Hypaurotis crysalus intermedia	Intermediate Colorado hairstreak	G5T1	Endemic
A113	**HIKO SPRING**			
MOLLUSKS	Pyrgulopsis hubbsi	Hubbs springsnail	G1	Endemic
A140	**KAWICH RANGE**			
PLANTS	Penstemon pudicus	Bashful beardtongue	G1	Endemic
A161	**MEADOW VALLEY**			
FISHES	Lepidomeda mollispinis pratensis	Big Spring spinedace	G1T1	Endemic
PLANTS	Sclerocactus schlesseri	Schlesser pincushion	G1Q	Endemic
A227	**REESE RIVER**			
INVERTEBRATES	Cercyonis oetus pallescens	Pallid wood nymph	G5T1	Endemic
	Hesperia uncas reesorum	Reese River unca skipper	G4G5T1	Endemic

Appendix F. Irreplaceable conservation areas on DoD and MOA lands in the Great Basin ecoregion portfolio.

They are irreplaceable because they harbor the one and only occurrence of at least one globally restricted conservation target.

Type	*Scientific Name*	*Common Name*	*Global Rank*	*Ecoregional Distribution*
A242	**SAND MOUNTAIN**			
INVERTEBRATES	Euphilotes pallescens arenamontana	Sand Mountain blue	G4T1	Endemic
	Hesperapis sp. nov.2	(Bee)	G1	Endemic
	Perdita sp. nov. 3	(Bee)	G1	Endemic
A254	**SHOSHONE RANGE-CARICO LAKE VALLEY**			
MOLLUSKS	Pyrgulopsis basiglans	Large gland Carico springsnail	G1	Endemic
	Pyrgulopsis bifurcata	Small gland Carico springsnail	G1	Endemic
A267	**SNAKE RANGE**			
INVERTEBRATES	Euphilotes bernardino minuta	Baking Powder Flat Blue	G5T1	Endemic
MOLLUSKS	Pyrgulopsis saxatilis	Sub-globose Snake springsnail	G1	Endemic
PLANTS	Arenaria congesta var. wheelerensis	Wheeler peak sandwort	G5T1?	Endemic
	Eriogonum holmgrenii	Holmgren buckwheat	G1	Endemic
A310	**TOIYABE RANGE-BIG SMOKY VALLEY**			
AMPHIBIANS	Rana luteiventris ssp.	Toiyabe spotted frog	G4T?	Endemic
FISHES	Gila bicolor ssp. 10	Charnock springs tui chub	G4TH	Endemic
	Rhinichthys osculus lariversi	Big Smoky Valley speckled dace	G5T1	Endemic
INVERTEBRATES	Cercyonis oetus alkalorum	Big Smoky wood nymph	G5T1	Endemic
PLANTS	Arabis ophira	Ophir rockcress	G1G2	Endemic
	Trifolium rollinsii	Rollins clover	G2G3Q	Endemic
A315	**TOQUIMA RANGE-MONITOR VALLEY-MONITOR RANGE**			
FISHES	Gila bicolor ssp. 6	Little Fish Lake Valley tui chub	G4T1	Endemic?
	Rhinichthys osculus	Monitor Valley speckled dace	G5T1	Endemic
MOLLUSKS	Tryonia monitorae	Monitor Valley tryonia	G1	Endemic
A319	**TUNNEL SPRING MOUNTAINS-HALFWAY HILLS-PINE VALLEY**			
PLANTS	Atriplex bonnevillensis		G2G3Q	Endemic

APPENDIX G
PROTECTED DOD AND MOA LANDS IN THE GREAT BASIN ECOREGION PORTFOLIO

Appendix G. Protected DoD and MOA lands in the Great Basin ecoregion portfolio.

Protected Area Type	*Area Name*	*Manager*	*Unit*	*State*
Fallon NAS				
National Wildlife Refuge	Stillwater	USFWS	Region 1	NV
NCA	Black Rock Desert	BLM	Winnimucca and Eagle Lake Field Offi	NV
Wilderness	Arc Dome	USFS	Humboldt-Toiyabe National Forest	NV
Wilderness Study Area	Augusta Mountains	BLM	Winnemucca Field Office	NV
Wilderness Study Area	Clan Alpine Mountains	BLM	Carson City Field Office	NV
Wilderness Study Area	Desatoya Mountains	BLM	Carson City Field Office	NV
Wilderness Study Area	Fox Range	BLM	Winnemucca Field Office	NV
Wilderness Study Area	Gabbs Valley Range	BLM	Carson City Field Office	NV
Wilderness Study Area	Job Peak	BLM	Carson City Field Office	NV
Wilderness Study Area	Pole Creek	BLM	Winnemucca Field Office	NV
Wilderness Study Area	Poodle Mountains	BLM	Winnemucca Field Office	NV
Wilderness Study Area	Selenite Mountains	BLM	Winnemucca Field Office	NV
Wilderness Study Area	Simpson Park	BLM	Battle Mountain Field Office	NV
Wilderness Study Area	Stillwater Range	BLM	Carson City Field Office	NV
Wildlife Management Area	Humboldt	State of Nevada	Division of Wildlife	NV
Wildlife Management Area	Stillwater	State of Nevada	Division of Wildlife	NV
Hill AFB				
ACEC	Bonneville Salt Flat	BLM	Salt Lake City Field Office	UT
ACEC	Donner and Bettridge	BLM	Salt Lake City Field Office	UT
ACEC	Salt Lake	BLM	Elko Field Office	NV
National Wildlife Refuge	Fish Springs	USFWS	Region 6	UT

Appendix G. Protected DoD and MOA lands in the Great Basin ecoregion portfolio.

Protected Area Type	*Area Name*	*Manager*	*Unit*	*State*
Wilderness	Deseret Peak	USFS	Wasatch-Cache National Forest	UT
Wilderness Study Area	Bluebell	BLM	Elko Field Office	NV
Wilderness Study Area	Cedar Mountains	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Conger Mountain	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Deep Creek Mountains	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Fish Springs	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Goshute Peak	BLM	Elko Field Office	NV
Wilderness Study Area	Howell Peak	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	King Top	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	North Stansbury Mountains	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Notch Peak	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Scott's Basin	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Swasey Mountain	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Wah Wah Mountains	BLM	Utah State Office Wilderness Team	UT
Wildlife Management Area	Blue Lake	State of Utah	Division of Wildlife Resources	UT
Wildlife Management Area	Timple Springs	State of Utah	Division of Wildlife Resources	UT
Nellis AFR				
ACEC	Arrow Canyon	BLM	Las Vegas Field Office	NV
ACEC	Coyote Springs Valley	BLM	Las Vegas Field Office	NV
ACEC	Kane Springs	BLM	Ely Field Office	NV
ACEC	Mormon Mesa - Ely	BLM	Ely Field Office	NV
ACEC	Mormon Mesa - LV	BLM	Las Vegas Field Office	NV
ACEC	Timber Mountain Caldera	Nellis Air Force Base and Nevada BLM	Las Vegas Field Office	NV

Appendix G. Protected DoD and MOA lands in the Great Basin ecoregion portfolio.

Protected Area Type	*Area Name*	*Manager*	*Unit*	*State*
National Wildlife Refuge	Desert	USFWS	Region 1	NV
Potential ACEC	Upper Beaver Dam Wash	BLM	St. George Field Office	UT
Wilderness	Arrow Canyon	BLM	Las Vegas Field Office	NV
Wilderness Study Area	Clover Mountains	BLM	Ely Field Office	NV
Wilderness Study Area	Cougar Canyon	BLM	Utah State Office Wilderness Team	UT
Wilderness Study Area	Delamar Mountains	BLM	Ely Field Office	NV
Wilderness Study Area	Evergreen ABC	BLM	Ely Field Office	NV
Wilderness Study Area	Kawich	BLM	Battle Mountain Field Office	NV
Wilderness Study Area	Meadow Valley Range	BLM	Ely Field Office	NV
Wilderness Study Area	Mormon Mountains	BLM	Ely Field Office	NV
Wilderness Study Area	South Pahroc Range	BLM	Las Vegas Field Office	NV
Wilderness Study Area	South Reveille	BLM	Battle Mountain Field Office	NV
Wilderness Study Area	Tunnel Spring	BLM	Las Vegas Field Office	NV
Wilderness Study Area	Weepah Spring	BLM	Ely Field Office	NV
Wilderness Study Area	Worthington Mountains	BLM	Ely Field Office	NV