

## common chuckwalla

## *Sauromalus ater*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss and unsustainable levels of commercial exploitation.



Agency Status	
NV Natural Heritage	G5S3
USFWS	No Status
BLM-NV	Sensitive
CCVI	Moderately Vulnerable

**TREND:** Populations in more remote areas are presumed stable, but could be declining in parts of its range.

**DISTRIBUTION:** Occurs in the Mojave Desert region of the state.

### **GENERAL HABITAT AND LIFE HISTORY:**

Found in large boulder piles, lava flows and outcrops in the Mojave Desert.

Chuckwallas are strict herbivores, but may unintentionally ingest insects that are on their food plants. They appear to prefer flower heads or moist leaves; annuals are preferred over perennials (Brodie et al 2003) but they will consume both (Kwiatkowski et al 2009).

Active March through August, emerging from brumation in spring. Brodie et al (2003) found chuckwallas basking most often in positions that faced south within the greater southeastern hillside. To avoid predation, chuckwallas seek shelter in a rock crevice and inflate their lungs to wedge themselves tightly within the crevice. Genetic analyses determined the presence of two genetically distinct clades 1) Newberry Mountains and Goodsprings and 2) all other populations north of the Newberry Mountains. Chuckwalla populations are currently experiencing very little or no gene flow. They may be adapted to conditions particular to the mountain range they occupy and there is little evidence of migration among populations (Brodie et al 2003). Chuckwallas are long-lived lizards and take relatively longer to reach sexual maturity.

### **CONSERVATION CHALLENGES:**

Vulnerable to habitat loss/habitat destruction. Highly desirable species for commercial collection; vulnerable to overharvesting at easily accessible and well-known sites. This species is long-lived with a relatively low reproductive rate; therefore, it is difficult for a population to recover once numbers have declined substantially. Additionally, chuckwallas live in dense clusters in rock outcrops, so populations can be easily impacted by focused collection. The genetic analysis of Nevada chuckwalla populations found unique genetic and phenotypic traits and local population extinctions would represent a decline in the biodiversity even if populations persist elsewhere (Brodie et al. 2003).

### **NEEDS:**

**Research Needs:** Determine information on population numbers, abundance, and trends. Identify the extent and impacts of collecting, and possible impacts of habitat modification resulting from unethical collecting practices. Population studies are needed to determine the threshold below which rangewide declines would threaten the species existence.

**Monitoring and Existing Plans:** Establish a collaborative monitoring effort among willing reptile collectors, NDOW, University of Nevada, or NV Biodiversity Initiative. Continue on-going single-species focus monitoring. This species is a Covered species under the Clark County MSHCP.

**Approach:** Protect large, contiguous tracts of creosote scrub habitat with suitable rock outcrops for basking and protection. Implement research needs and adjust collection laws to ensure the long-term survival of the species. Partner with Partners in Amphibian and Reptile Conservation and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).

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**WAP HABITAT LINKS:** Mojave Warm Desert and Mixed Desert Scrub, Warm Desert Riparian, Sand Dunes and Badlands, Cliffs and Canyons.

## desert horned lizard

## *Phrynosoma platyrhinos*

WAP 2012 species because of commercial collection pressures.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Presumed Stable

**TREND:** Trend unknown.

**DISTRIBUTION:** Statewide.

### **GENERAL HABITAT AND LIFE HISTORY:**

Found on sandy flats, alluvial fans, along washes, and at the edges of dunes. Sometimes found on hardpan or among rocks, but patches of sand are generally present. Associated with creosote bush, saltbush, greasewood, cactus, and ocotillo in the Mojave Desert and with sagebrush, saltbush, and greasewood in the Great Basin.

This species is generally an ant specialist (Pianka 1991), and the bulk of their diet is made up primarily of large-bodied harvester ants (Jones and Lovich 2009). However, other items are also eaten including insects, spiders, and vegetative material.

This species is able to endure drought years by limiting above-ground activities, growth, and reproduction. The duration of its seasonal inactive period varies with local climate. In southern NV, it emerges from brumation in March; adults are less active after mid-July, but may be active on warm nights. In northern NV this species is generally inactive at night. This species buries itself in soil when inactive. Population density of 5/ha (5/2.5 acres) reported in NV (Tanner and Krogh 1973).

### **CONSERVATION CHALLENGES:**

Vulnerable to the introduction of non-native ant species, impacts of habitat transition to annual grasses and weeds and the concomitant impacts to ant species composition, habitat destruction by ORV use, and commercial collection. Horned lizards are in high demand in the pet trade around the world and Nevada is one of very few states still permitting collection. About 5,000 horned lizards are removed from the wild in Nevada for commercial purposes each year. Horned lizards have very specific husbandry needs, which are not typically met by the majority of pet owners, which ultimately results in the premature death of many horned lizards in captivity.

### **NEEDS:**

***Research Needs:*** Collect demographic data to assess population and trend status. Determine local impacts of collection pressure and population responses. Determine the impacts of invasive plant transitions on ant species composition, diversity, and overall abundance.

***Monitoring and Existing Plans:*** Not currently monitored. Southern subspecies (*P. p. calidarium*) is an Evaluation Species under the Clark County MSHCP.

***Approach:*** Establish population demographics for this species, focusing on distribution and density. Monitor collection rates and population responses to collecting at local scales. Adjust regulations based on need to maintain population viability. Partner with the Horned Lizard Conservation Society; Partners in Amphibian and Reptile Conservation; and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee, and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).

## desert iguana

## *Dipsosaurus dorsalis*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss as well as unsustainable commercial collection.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S3
<b>USFWS</b>	No Status
<b>CCVI</b>	Moderately Vulnerable

**TREND:** Trend is unknown but presumed stable.

**DISTRIBUTION:** In Nevada, restricted to the Mojave Desert and, in particular, to sandy habitats with low densities of creosote bushes.

### **GENERAL HABITAT AND LIFE HISTORY:**

This species inhabits creosote bush desert with hummocks of loose sand and patches of firm ground with scattered rocks. Its northern limit appears to coincide with that of creosote bush. It occurs from below sea level in desert sinks to about 1,500 m (5,000 ft) (Stebbins 2003).

Feeds mainly on vegetable matter (e.g., leaves, buds, flowers) but also eats insects and carrion.

This species is inactive during cold weather and more tolerant of high temperatures than other lizards. It is considered the most heat-tolerant reptile in North America (Jones and Lovich 2009). Desert iguanas are most active on hot, sunny days. Remains close to hatching site (usually within 40 m (130 ft) after 3 years) (Krekorian 1984).

### **CONSERVATION CHALLENGES:**

Vulnerable to habitat loss and overcollection in local areas. This species is closely tied to creosote bushes which are already thought to be heavily invaded by annual grasses. Loss of the shrub overstory and conversion to annual grasses is expected to reduce a desert iguana's ability to thermoregulate using natural features of the landscape (shade under bushes) despite the species' purported high tolerance to heat extremes.

### **NEEDS:**

**Research Needs:** Refine species-habitat relationships and develop predictive models to support adaptive management. Determine responses and tolerance thresholds for shrub reduction in habitats transitioning to annual grass/weeds.

**Monitoring and Existing Plans:** Not currently monitored. Covered species under the Clark County MSHCP.

**Approach:** Focus on research needs. Generate rough population estimates through a multi-species reptile monitoring program; monitor collection rate and population response to collecting at local scale. Adjust regulations based on need to maintain population viability. Partner with Partners in Amphibian and Reptile Conservation and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee, and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).

## desert night lizard

## *Xantusia vigilis*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss.



<b>Agency Status</b>	
NV Natural Heritage	G5S4
USFWS	No Status
CCVI	Moderately Vulnerable

**TREND:** Trend unknown.

**DISTRIBUTION:** Southern NV.

### **GENERAL HABITAT AND LIFE HISTORY:**

This species is found primarily in desert habitats, but may also range up into adjacent chaparral and lower pine woodland. It lives in and under decaying Joshua trees and various other species of Yucca, Nolina, prickly pear, and pine logs (Jones and Lovich 2009). Also found under rocks and in rock crevices, beneath cow chips, soil-matted dead brush and other debris, and woodrat nests (Stebbins 2003 and Jones and Lovich 2009).

Eats insects, spiders, and other arthropods (Stebbins 2003) found by burrowing under plant litter and desert debris.

Common night lizards are small in size and very secretive in nature, making them difficult to survey. They are seldom found in the open away from cover (Stebbins 2003) and they may live under the same cover for much of their life (Jones and Lovich 2009). In their microhabitat they have few predators and achieve population densities of at least 47 lizards per hectare (Jones and Lovich 2009). They are diurnal and crepuscular, but nocturnal during the warmest summer months. Night lizards have vertical pupils which help their sight in low light conditions.

### **CONSERVATION CHALLENGES:**

Vulnerable to habitat loss and conversion due to development, fire, and climate change impacts, particularly with respect to its association with Joshua tree and heavy desert floor litter.

### **NEEDS:**

**Research Needs:** Determine species status and trend; refine species-habitat relationships; develop predictive models with regard to responses to habitat transitions to annual grasses and weeds; determine management needs.

**Monitoring and Existing Plans:** Not currently monitored. Evaluation Species under the Clark County MSHCP.

**Approach:** Focus on research needs; generate rough occupancy rates.

## desert rosy boa

## *Lichanura trivirgata*

WAP 2012 species because it occurs in isolated populations that leave the species vulnerable to decline especially with respect to climate change and collection. Known from only one location in Nevada.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G4G5S1
<b>USFWS</b>	No Status
<b>State Prot</b>	Protected Reptiles NAC 503.080.1
<b>CCVI</b>	Presumed Stable

**TREND:** The status and trend of this species in Nevada is unknown although it is considered vulnerable in both CA and AZ. There is only one official record of the species in the Newberry Mountains (Mulkes 2011). It was listed as a Protected Reptile under NAC 503.080.1 in December 2011.

**DISTRIBUTION:** Distribution is not fully known in Nevada; however, rosy boas are often reported to be uncommon (Brennan and Holycross 2006, Stoops and Wright 2005, Endemic Species Committee 1982). One recently discovered as the first state record in the Newberry Mountains at Christmas Tree Pass on 30 May 2010 (Mulkes 2011). There were very few previous records reported (Grate 1981); none of which could be verified. Stebbins (2003) notes the rosy boa distribution is spotty, especially in lower arid parts of its range. The limited data suggest that isolated populations exist in NV that are not connected to the remaining portion of its range in CA and AZ.

### **GENERAL HABITAT AND LIFE HISTORY:**

The rosy boa is one of only two boa species native to the U.S. Rosy boas are associated with arid and semiarid scrublands, hillsides, rocky deserts, desert oases, canyons, talus, and other such rock-strewn regions. Often occurring near canyon and desertland streams, but they are by no means restricted to such locales. Capable of burrowing but often merely seek cover beneath surface debris, amidst rocks, or in the middens of burrowing rodents (Bartlett and Bartlett 2009b).

The rosy boa primarily feeds on small rodents (especially nestling mice), and occasionally shrews, nestlings of ground-dwelling birds, lizards, smaller snakes, salamanders, and anurans (Bartlett and Bartlett 2009b).

Rosy boas are largely crepuscular and nocturnal, but may be active by day during the breeding season. Rosy boas are live-bearing snakes (Bartlett and Bartlett 2009b).

### **CONSERVATION CHALLENGES:**

Other states have expressed concern that rosy boas are being collected in large numbers from the wild in an unsustainable fashion (Fisher 2011). Only one has been recently discovered in Nevada, and population connectivity to known inhabited areas is unknown. Vulnerability to climate change habitat transitions are difficult to predict. Conservation concern exists across the species' range relative to impacts from roads, habitat fragmentation, conversion and loss, increased fire frequency, urbanization, poaching, lack of knowledge, and regulatory protection (Fisher 2011).

### **NEEDS:**

***Research Needs:*** Research on distribution and status in Nevada is needed, along with vulnerability to climate change-induced habitat transition and loss.

***Monitoring and Existing Plans:*** Species is not currently monitored and does not occur within any other existing plans. Appropriate regulations should be in place to limit collection. Proactive steps need to be taken to ensure appropriate management of rosy boas and their habitat across their range.

***Approach:*** Determine population status and distribution in Nevada and vulnerability to climate change; partner with California and Arizona in the development of a rangewide assessment and conservation strategy.

## Gila monster

## *Heloderma suspectum*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss and poaching.



Agency Status	
NV Natural Heritage	G4S2
USFWS	No Status
BLM-NV	Sensitive
State Prot	Protected Reptiles NAC 503.080.1
CCVI	Highly Vulnerable

**TREND:** Trend is unknown.

**DISTRIBUTION:** Occurs within the Mojave Desert in southern Nevada.

### **GENERAL HABITAT AND LIFE HISTORY:**

Usually found in desert scrub habitats, semi-desert grassland and (more rarely) woodland communities along mountain foothills. Gila monsters frequent canyons or adjacent rocky slopes and occasionally open valleys. Their presence depends upon microhabitat features such as rock crevices, boulders, burrows, and packrat middens which this species uses for shelter. Gila monsters will also dig their own burrows, which are extremely important as Gila monsters spend most of their time in their burrows and show great site fidelity to familiar habitats and shelters (Beck 2009).

Gila monsters will forage long distances in search of eggs or young in vertebrate nests, primarily reptile and bird eggs and juvenile mammals including cottontails and mice (Beck 2009).

This is the only venomous lizard native to the U.S. It is most active from late April through June; activity rapidly declines in July. Although active, as much as 97% of its time is spent in shelters and less than 13% of its energy budget is spent on above-ground activities (Beck 2005). Water availability is critical and individuals are often active after summer rains. Gila monsters have fairly high rates of evaporative water loss for a desert lizard; however, water can be stored in the urinary bladder and later absorbed, which helps prevent dehydration during hot, dry periods. This species is long-lived with a low reproductive rate. It can survive long periods without food by storing extra fat in the tail. Gila monsters appear to be solitary but may use communal overwintering sites. They may migrate locally (usually < 1 km (0.6 mile)) between highland winter retreat and lowland summer habitat (Lowe et al. 1986). However, Gila monsters may travel distances in excess of one kilometer per day in search of food and mates (Beck 2009).

### **CONSERVATION CHALLENGES:**

Vulnerable to habitat loss, fragmentation, and degradation, particularly along the edges of their distribution. Degradation may occur as a result of exotic species invasion of their habitat, OHVs, and other forms of recreation at heavy levels. This species is long-lived with a relatively low reproductive rate; therefore, it is difficult for a population to recover once numbers have declined substantially. Though it is illegal to collect without a permit, concerns over illegal take linger.

### **NEEDS:**

**Research Needs:** Comprehensive ecological/life history studies (e.g., distribution, habitat, population, life history) are needed in NV. Population studies are needed to determine the threshold below which rangewide declines would threaten the species existence.

**Monitoring and Existing Plans:** Currently there is a collaborative monitoring effort between NDOW, the University of Nevada, and Clark County MSHCP (Evaluation Species); single species-focus monitoring.

**Approach:** Identify and describe suitable habitat for this species in Nevada and develop management guidelines based on suitable habitat parameters. Maintain prohibitions against indiscriminate collection and unnecessary killing.

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**WAP HABITAT LINKS:** Mojave Warm Desert and Mixed Desert Scrub, Warm Desert Riparian, Cliffs and Canyons.

## Great Basin collared lizard

## *Crotaphytus bicinctores*

WAP 2012 species because of commercial collection pressures.

<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Presumed Stable



**TREND:** Trend is unknown.

**DISTRIBUTION:** Statewide with the exception of the Carson Range, and northwest and northeast corners of the state.

### **GENERAL HABITAT AND LIFE HISTORY:**

Occurs mainly in xeric, sparsely vegetated, rocky areas on alluvial fans, lava flows, hillsides, rocky plains, and in canyons (Jones and Lovich 2009). It perches atop rocks and hides under rocks or in rodent burrows (McGuire 1996). It can be found from sea level to about 2,280 m (7,500 ft) (Stebbins 2003).

This species eats a wide variety of insects, spiders, lizards, and some plant materials (Stebbins 2003).

Inactive during cold winter weather; duration of inactive period varies with local climate. Activity begins as early as March in AZ (McGuire 1996) while populations in northwest NV are active by mid-April (Jones and Lovich 2009).

### **CONSERVATION CHALLENGES:**

Vulnerable to local population decimation by excessive collection. This species is heavily collected for commercial purposes in some areas without much regulatory collection protections or monitoring.

### **NEEDS:**

**Research Needs:** Develop a responsive status and trend monitoring protocol; refine habitat relationships; develop predictive models; determine response to collection pressure.

**Monitoring and Existing Plans:** Covered species under the Clark County MSHCP.

**Approach:** Implement research needs. Generate rough population demographics, determine population trend and adjust allowable harvest based on demonstrated need. Partner with Partners in Amphibian and Reptile Conservation and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee, and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).

## greater short-horned lizard

## *Phrynosoma hernandesi*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S3S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Presumed Stable

**TREND:** Population size and trend are unknown.

**DISTRIBUTION:** Found in the northern and central part of the state, some isolated populations reported. The majority are found at higher elevations from the Toiyabe Range east to the Snake Range.

### **GENERAL HABITAT AND LIFE HISTORY:**

Ranges from semiarid plains to high mountains (600-3,200m). Greater short-horned lizards occupy a wide variety of habitats including sagebrush, and open pinyon-juniper, pine-spruce, and spruce-fir forests. Substrate may be stony, sandy, or firm, but some fine loose soil is usually present.

This species eats primarily ants, and beetles also contribute to a substantial portion of their diet.

More cold tolerant than other horned lizards. Because they live at higher elevations they have very short growing seasons and females are not sexually mature until the season after their second brumation (Jones and Lovich 2009).

### **CONSERVATION CHALLENGES:**

Although most populations are not threatened, this species is often not discerned from the desert horned lizard, one of the most commercially collected reptiles in the state.

### **NEEDS:**

***Research Needs:*** Refine species-habitat relationship; develop predictive model to inform adaptive management. Determine prey species composition (ants, etc). Identify response and tolerance thresholds to habitat transitions to annual grass/forb domination, particularly with respect to changes in ant species composition and abundance. Determine breeding/parturition/juvenile habitat ecology needs.

***Monitoring and Existing Plans:*** Not within any other existing plans.

***Approach:*** Through species-specific monitoring, generate rough population estimates and local trends; monitor collection rate and population response to collecting at local scale. Adjust regulations based on need to maintain population viability. Partner with Partners in Amphibian and Reptile Conservation and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee, and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).



## long-nosed leopard lizard

## *Gambelia wislizenii*

WAP 2012 species because of commercial collection pressures.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Presumed Stable

**TREND:** Trend is unknown.

**DISTRIBUTION:** Statewide.

### **GENERAL HABITAT AND LIFE HISTORY:**

This species is found in sandy and gravelly desert and semidesert areas with scattered shrubs or other low plants (e.g., bunch grass, alkali bush, sagebrush, creosote bush), especially areas with abundant rodent burrows. The long-nosed leopard lizard avoids densely vegetated areas that can interfere with running. Occurs from sea level to approximately 1,800 m.

The long-nosed leopard lizard eats insects, spiders, lizards, snakes, small rodents, and soft leaves, blossoms, and berries (Stebbins 2003).

This species is ground dwelling but sometimes climbs into bushes. When threatened, it typically runs to base of a shrub and remains motionless. When inactive, it occupies burrows (Hammerson 1982, Nussbaum et al. 1983). Territorial behavior apparently does not occur in long-nosed leopard lizards and, other than interactions associated with mating, adults appear to be rather oblivious of each other (McCoy 1967). Some individuals appear to be somewhat nomadic. Population density in NV was about 5/ha (5/2.5 acres) (Tanner and Krogh 1974). The long-nosed leopard lizard is not active in cold weather and is active mainly May-August in the north (Hammerson 1982), and late March or early April through late August-late October in the south (Mitchell 1984, McGuire 1996). Those individuals active in late summer are mainly hatchlings.

### **CONSERVATION CHALLENGES:**

Vulnerable to local population decimation by excessive collection.

### **NEEDS:**

**Research Needs:** Research is needed to determine response to collection pressure and determine sustainable harvest levels. Research is also needed to determine responses and tolerance thresholds to habitat transitions to uncharacteristic classes, particularly annual grass, weeds, and rabbitbrush.

**Monitoring and Existing Plans:** This species is a Covered Species under the Clark County MSHCP.

**Approach:** To help regulate harvest based on demonstrated need, research is needed to determine rough population demographics, generate a population trend, and determine sustainable harvest levels. Partner with Partners in Amphibian and Reptile Conservation and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee, and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).

## long-tailed brush lizard

## *Urosaurus graciosus*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss.



<b>Agency Status</b>	
NV Natural Heritage	G5S4
USFWS	No Status
CCVI	Highly Vulnerable

**TREND:** The trend for this species is unknown.

**DISTRIBUTION:** Southern NV.

### **GENERAL HABITAT AND LIFE HISTORY:**

This species occurs in desert washes and drainages and flat areas with loose sand and gravel from near sea level to approximately 1,070 m. It is often found on the branches of shrubs and trees including creosote bush, desert willow, palo verde, smoke tree, salt bush, galleta grass, mesquite, and catclaw acacia. May also utilize introduced fan palms and tamarisk (Jones and Lovich 2009, Stebbins 2003).

The long-tailed brush lizard eats insects (beetles, ants, bees, hemipterans, etc.), spiders, and some plant material (Stebbins 2003).

The long-tailed brush lizard is usually found on branches of trees and shrubs, and may dig into sand or use a burrow at night. It is a heat-tolerant species, but may seek shelter in the sand or in burrows during the hottest part of the day (Jones and Lovich 2009).

### **CONSERVATION CHALLENGES:**

Vulnerable to decline due to large-scale habitat conversion and loss.

### **NEEDS:**

**Research Needs:** Research is needed to clarify basic distribution and status in NV and to refine a species-habitat relationship to aid in developing a predictive model. Also identify responses and tolerance thresholds to habitat transitions to uncharacteristic classes, particularly annual grass, exotic tree, and entrenched (both desert riparian classes).

**Monitoring and Existing Plans:** Not within any other existing plans.

**Approach:** Implement research focusing on status and distribution, and basic natural history. Monitor response to habitat transitions through occupancy modeling. Additional recommendations include developing management guidelines within the context of a multi-species reptile management plan.

## Mohave (or Mojave) shovel-nosed snake

## *Chionactis occipitalis*

WAP 2012 species because of current and increasing habitat development and fragmentation especially in consideration of alternative energy development and large-scale solar power plants.



Agency Status	
NV Natural Heritage	G5S4
USFWS	No Status
BLM-NV	Sensitive
CCVI	Moderately Vulnerable

**TREND:** Trend is unknown.

**DISTRIBUTION:** Flat areas with sandy soils in the Mojave Desert of southern Nevada.

### **GENERAL HABITAT AND LIFE HISTORY:**

Habitat of this burrowing snake consists of sparsely vegetated (mesquite-creosote bush, desert grasses, cactus) desert, including rocky slopes, dunes, washes, and sandy flats (Stebbins 2003). Prefers flat areas with sandy soils.

The western shovel-nosed snake feeds on various life stages of insects (larvae, pupae, and adults). Such insects include spiders, scorpions, and centipedes.

This snake is nocturnal. It has been observed on the surface during the day only a few times, usually coiled under a bush. Much of its activity is probably subterranean. It is active most of the year in the south and during the warmer months in the north and is non-migratory (Cowles 1941, Stebbins 1954). Snakes often lie just under the surface of the sand where they can be heated by the warmth of the sun without exposing themselves (Stebbins 1954). It breeds in the spring with an average of 2-4 eggs laid underground (Cowles 1941).

### **CONSERVATION CHALLENGES:**

Vulnerable to loss of habitat, fragmentation and loss of connectivity due to development (i.e., urban, suburban), especially in consideration of alternative energy development and large-scale solar power plants. Vulnerable to excessive OHV recreation in loose sandy soils.

### **NEEDS:**

**Research Needs:** Determine status and distribution, develop rough population indices, monitor habitat integrity and connectivity.

**Monitoring and Existing Plans:** This species is not currently monitored.

**Approach:** This is a secretive, diminutive snake about which very little is known. Obtaining better distribution information will help guide management decisions as they relate to development, OHV use, and climate change. Work with solar project proponents to develop appropriate mitigation actions as necessary.

## Mojave desert tortoise

## *Gopherus agassizii*

WAP 2012 species because it is listed as threatened under the Endangered Species Act and is declining due to habitat loss and fragmentation, disease, and direct mortality by humans.



Agency Status	
NV Natural Heritage	G3S2S3
USFWS	LT
BLM-NV	Sensitive
USFS-R4	Threatened
State Prot	Threatened Reptiles NAC 503.080.2
State Prot	Nevada State Emblems
IUCN	Vulnerable
CCVI	Presumed Stable

**TREND:** Likely declining long-term. Desert tortoises are long-lived, which requires longer monitoring periods to obtain accurate trend estimates. Rangewide monitoring reports suggest short-term fluctuations in Recovery Units in NV (USFWS 2006, 2009, 2010c, 2011b).

**DISTRIBUTION:** Found in the Mojave Desert, southern NV.

### **GENERAL HABITAT AND LIFE HISTORY:**

Occupies a variety of habitats from flats and slopes dominated by creosote bush scrub at lower elevations to rocky slopes in blackbrush and juniper woodland ecotones (transition zone) at higher elevations. Requires soils that are friable enough for digging burrows, but firm enough so that burrows do not collapse (USFWS 2008). Also uses caliche caves as shelters.

Eats a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants. They also forage on perennial grasses, woody perennials, cacti, and non-native species such as red brome and red-stem filaree (USFWS 2008).

Long-lived (70-100 yrs) and slow-growing, they reach sexual maturity at 13-20 years. Desert tortoises have low reproductive rates. Much of their life is spent in burrows. In late winter or early spring they emerge from their overwintering burrows and remain active through the fall (USFWS 2008).

### **CONSERVATION CHALLENGES:**

Vulnerable to habitat loss/fragmentation/conversion, disease, poaching, and direct mortality/losses caused by humans (e.g., road kills, OHVs). Releases of captives into wild populations may be detrimental. The recent taxonomic split places the formerly recognized Mojave population of desert tortoise into its own species, Mojave desert tortoise (*Gopherus agassizii*) while desert tortoises in the Sonoran Desert are now referred to as Morafka's desert tortoise (*G. morafkai*) (Murphy et al. 2011); therefore, the species' resiliency to change must be evaluated now at a significantly restricted scale.

### **NEEDS:**

**Research Needs:** Regular population monitoring is needed. Active management may be required to maintain the viability of relatively small populations. Fences and culverts may be important to reducing road mortalities (Ruby et al. 1994). Research should focus on minimum viable population sizes, nutritional forage requirements, microhabitats of suitable nesting areas as well as other life history needs. Impacts of unwanted pets to wild populations needs to be addressed.

**Monitoring and Existing Plans:** Monitoring is being implemented by the Bureau of Land Management, National Park Service, and affected Department of Defense military reservations as well as some state agencies under the auspices of the 1995 DoD/DOI Mojave Desert Ecosystem Initiative. Covered species under the LCR MSCP, Nye County HCP, Lincoln County HCP, and Clark County MSHCP. Managed under the Mojave Desert Tortoise Recovery Plan (USFWS 2011b).

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**WAP HABITAT LINKS:** Mojave Warm Desert and Mixed Desert Scrub, Warm Desert Riparian.

**Approach:** Protect large tracts of suitable habitat well dispersed throughout the range. Continue habitat restoration and improvements and continue implementing actions within the Recovery Plan. Investigate the need to modify regulations pertaining to pet desert tortoises.

## **northern rubber boa**

## ***Charina bottae***

WAP 2012 species because it requires mesic microhabitats within the Great Basin that are vulnerable to drying due to climate change and is reliant upon aspen riparian areas, a vulnerable habitat-type.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S3S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Presumed Stable

***TREND:*** Population size and trend are unknown.

***DISTRIBUTION:*** The rubber boa is closely associated with riparian areas in Nevada, although periodically found in sagebrush steppe.

### ***GENERAL HABITAT AND LIFE HISTORY:***

Rubber boa habitat includes woodlands, forest clearings, patchy chaparral, meadows, and grassy savannas, generally not far from water; also riparian zones in arid canyons and sagebrush in some areas (Nussbaum et al. 1983, Brown et al. 1995, St. John 2002, Stebbins 2003). Generally this snake is found in or under rotting logs or stumps, under rocks or in crevices, or under the bark of dead fallen trees.

The rubber boa diet includes mice, shrews, lizards, lizard eggs, snakes, and small birds. Kills prey by constriction.

Rubber boas are largely crepuscular and nocturnal, but may be active by day during the breeding season. Rubber boas are live-bearing (Bartlett and Bartlett 2009b).

### ***CONSERVATION CHALLENGES:***

Possibly vulnerable to excessive collection due to its market desirability and relatively high wholesale prices per specimen. May face additional pressure as it requires mesic microhabitats within the Great Basin that are vulnerable to drying due to climate change, particularly aspen riparian areas.

### ***NEEDS:***

***Research Needs:*** Research should focus on determining current population status and trend as well as response and tolerance thresholds to habitat transitions and loss, particularly aspen loss and riparian entrenchment.

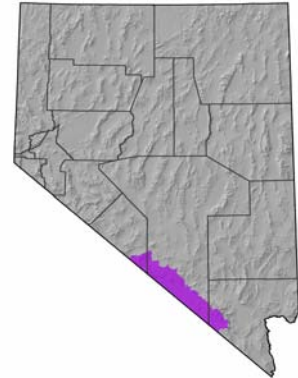
***Monitoring and Existing Plans:*** This species is not currently actively monitored for or included in any conservation plans.

***Approach:*** Protect and maintain quality habitat within riparian zones including moist soils, healthy meadows, and natural debris such as rotting logs, stumps, and fallen trees. Determine rough population status and trend through occupancy modeling.

## Panamint alligator lizard

## *Elgaria panamintina*

WAP 2012 species because it occurs in only a small portion of the state and its preferred habitat is vulnerable to degradation



Agency Status	
NV Natural Heritage	G2G3SNA
USFWS	No Status
IUCN	Vulnerable
CCVI	Presumed Stable

**TREND:** Population status and trend is unknown.

**DISTRIBUTION:** This species occurs in the Panamint Mtns., southwestern NV.

### **GENERAL HABITAT AND LIFE HISTORY:**

The Panamint alligator lizard has been observed in dry washes and on rocky slopes in creosote bush scrub, desert scrub, and lower pinyon-juniper woodland from 760 to 2,290m. It occurs most frequently in isolated canyons with riparian and permanent spring habitats where there is a thick layer of plant debris for refuge. Riparian habitats include willow species, wild grape, monkeyflower, and maidenhair fern. Xeric sites are dominated by creosote bush, sagebrush, shad scale, buckwheat, Encelia, and cacti (Jones and Lovich 2009).

This species eats insects, spiders, and other arthropods (Stebbins 2003).

Due to its secretive nature, not much is known about the ecology of the Panamint alligator lizard. It is secretive and spends much of its time in rockslides and dense plant growth. Activity peaks in June; individuals may be seen basking in late afternoon. It is primarily diurnal, but sometimes nocturnal (Stebbins 2003, Jones and Lovich 2009).

### **CONSERVATION CHALLENGES:**

This species' entire range is very limited and it occurs in only a small portion of Nevada. May be vulnerable to habitat degradation and conversion via mining, unsustainable grazing, and excessive OHV activities.

### **NEEDS:**

***Research Needs:*** Basic distribution and status in the state.

***Monitoring and Existing Plans:*** This species is not currently monitored and not within any other existing plans.

***Approach:*** Conduct surveys to determine distribution and status. Partner with California Department of Fish and Game to gather information to determine conservation vulnerability and management actions if necessary.

## pygmy short-horned lizard

## *Phrynosoma douglasii*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss.



Agency Status	
NV Natural Heritage	G5SNR
USFWS	No Status
CCVI	Moderately Vulnerable

**TREND:** The trend for this species is unknown.

**DISTRIBUTION:** Occurs in extreme northwestern portion of the state.

### **GENERAL HABITAT AND LIFE HISTORY:**

The pygmy short-horned lizard's habitat ranges from semiarid plains of sagebrush and bunch grass, to pinyon-juniper woodlands, to pine forests in high mountains. It is usually found in open, shrubby, or openly wooded areas with sparse vegetation at ground level. The soil may vary from rocky to sandy to hardpan, but pockets of fine loose soil or sand are typically present for burrowing. Occurs from 300 to 2,200 m.

This species primarily eats ants but also consumes many non-ant insects and arthropods including grasshoppers, beetles, spiders, and true bugs (Jones and Lovich 2009).

Population densities vary greatly, ranging from less than two up to 15 individuals/hectare (Jones and Lovich 2009). Though adapted to living in a colder environment than other species of horned lizard, the pygmy short-horned lizard is inactive during cold weather or extended periods of heat. When inactive it burrows into soil or occupies rodent burrows. This species is live bearing (Stebbins 2003).

### **CONSERVATION CHALLENGES:**

This species is poorly understood. Assumed to be vulnerable to large-scale habitat conversion and loss.

### **NEEDS:**

***Research Needs:*** Research is needed on the status and distribution of this species. Habitat relationships need to be better described. It is also necessary to determine species distribution as it relates to *P. hernandesi* and to develop predictive models.

***Monitoring and Existing Plans:*** Other than being an NDOW single species focus, this species is not within any other existing plans.

***Approach:*** Continue single-species investigations; develop rough population estimate and trend via occupancy modeling; identify response and tolerance threshold to habitat transitions to uncharacteristic classes, particularly annual grass and rabbitbrush, with an emphasis on noting changes in ant species composition and abundance.



## ring-necked snake

## *Diadophis punctatus*

WAP 2012 species because it requires mesic microhabitats in the Mojave Desert that are vulnerable to drying due to climate change.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S3
<b>USFWS</b>	No Status
<b>CCVI</b>	Moderately Vulnerable

**TREND:** Population size and trend are unknown.

**DISTRIBUTION:** Found in mesic and riparian habitats in the Mojave Desert; Snake and Schell Creek Ranges in eastern NV; purported to occur in the Sierra Nevada and extreme border of western NV from Honey Lake to Surprise Valley on most range maps.

### **GENERAL HABITAT AND LIFE HISTORY:**

This snake occurs in forests, woodlands, grassland, chaparral, and riparian corridors in arid regions (Stebbins 2003). Habitats are moist, at least seasonally. One or multiple individuals often are found near abandoned buildings and in junk piles in wooded areas.

The ring-necked snake eats earthworms, slugs, small salamanders, frogs, lizards, snakes and various other small invertebrates.

Ring-necked snakes are primarily nocturnal or highly crepuscular, though some diurnal activity has been observed.

### **CONSERVATION CHALLENGES:**

Vulnerable to the drying effects of climate change on mesic microhabitats, including desertification of riparian habitats.

### **NEEDS:**

**Research Needs:** Research is needed to determine status and distribution, particularly along the NV-CA border; describe habitat relationships; and determine population viability. Analysis of habitat integrity and connectivity is also needed to manage for possible movement responses to climate change.

**Monitoring and Existing Plans:** This species is a Clark County MSHCP Evaluation species (Regal ring-necked snake subspecies).

**Approach:** Status, distribution, ecology, and taxonomic status investigations need to be performed to determine subspecies diversity, metapopulation connectivity, and responses to climate change-induced habitat transition and loss.

## Shasta alligator lizard

## *Elgaria coerulea shastensis*

WAP 2012 species because it requires mesic microhabitats in the Great Basin that are vulnerable to drying due to climate change.



Agency Status	
NV Natural Heritage	G5T4S1
USFWS	No Status
BLM-NV	Sensitive
State Prot	Protected Reptiles NAC 503.080.1
CCVI	Moderately Vulnerable

**TREND:** Trend is unknown.

**DISTRIBUTION:** Small, probably disjunct populations of this subspecies occur in the northwest corner of the state.

### **GENERAL HABITAT AND LIFE HISTORY:**

Generally found in cooler, damper places in a variety of forested habitats and montane chaparral. Also found in grassy grown-over areas at margins of woodlands, in clearcuts, near streams, rock outcrops, and talus. Cover is provided by surface objects such as rocks, logs, dense vegetation, and human debris. Refuge may also be taken in crevices, rock fissures, and mammal burrows.

This subspecies is known to eat a variety of small invertebrates, including insects, spiders, millipedes, slugs, snails, and worms. It will also eat small lizards and small mammals and will occasionally feed on bird eggs and young birds.

Alligator lizards are generally secretive, tending to hide in brush or under rocks, although they are often seen foraging out in the open or on roads in the morning and evening.

### **CONSERVATION CHALLENGES:**

Small populations vulnerable to habitat loss and fragmentation.

### **NEEDS:**

**Research Needs:** Research is needed on population size, distribution, and viability.

**Monitoring and Existing Plans:** This subspecies is not currently monitored and does not occur within any other existing plans.

**Approach:** Develop a single-species discovery survey project, determine degree of conservation risk and develop conservation strategy based on need. Monitor responses to climate change-induced habitat transitions.

## **sidewinder**

## ***Crotalus cerastes***

WAP 2012 species because of current and increasing habitat development and fragmentation especially in consideration of alternative energy development and large-scale solar power plants.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>BLM-NV</b>	Sensitive
<b>CCVI</b>	Moderately Vulnerable

**TREND:** The trend for this species is unknown.

**DISTRIBUTION:** Sandy soils of the Mojave Desert in southern Nevada.

### **GENERAL HABITAT AND LIFE HISTORY:**

This venomous snake generally inhabits open desert terrain with fine windblown sand, desert flats with sandy washes, or sand dunes sparsely vegetated with creosote bush or mesquite. Sometimes it occurs in rocky or gravelly sites (Lowe et al. 1986, Ernst and Ernst 2003, Stebbins 2003, Campbell and Lamar 2004). In the Mojave Desert, snakes concentrated near washes and areas of relatively dense vegetation where mammal burrows are common (Brown and Lillywhite 1992), though in other areas this snake has been found to be more common where vegetation is sparse.

The sidewinder preys mainly on lizards, pocket mice, kangaroo rats, and other small mammals. In many areas lizards are most important. Occasionally, it takes small birds and snakes. It is an active forager, but it also waits under bushes for prey, partially buried in sand.

This snake is primarily nocturnal, but in the early spring it is active at dusk and even occasionally during the day. It is active from early to mid-spring until late summer or early fall. Populations of southerly or warmer areas become active earlier. It sometimes ceases activity in mid-summer, when temperatures are highest (Stebbins 1954, Klauber 1972). It is not known to migrate.

### **CONSERVATION CHALLENGES:**

No specific threats have been identified. Potential concern may exist with habitat loss or fragmentation, especially in consideration of alternative energy development and large-scale solar power plants, or other land development.

### **NEEDS:**

***Research Needs:*** Information on the status, trend and distribution of this species is needed. Habitat integrity and connectivity analysis is also needed.

***Monitoring and Existing Plans:*** The sidewinder is a Clark County MSHCP covered species.

***Approach:*** Determine population status, distribution, ecology, taxonomic status, and conservation risk. Develop conservation strategy as needed. Work with solar energy project proponents to develop and implement appropriate mitigation actions.

## Sierra alligator lizard

## *Elgaria coerulea palmeri*

WAP 2012 species because it requires mesic microhabitats in the Sierras that are vulnerable to drying due to climate change.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5T4S2S3
<b>USFWS</b>	No Status
<b>State Prot</b>	Protected Reptiles NAC 503.080.1
<b>CCVI</b>	Presumed Stable

**TREND:** Trend is unknown.

**DISTRIBUTION:** Found only in the Sierra Nevada and immediately adjacent ranges in the western part of the state.

### **GENERAL HABITAT AND LIFE HISTORY:**

Generally found in cooler, damper places in a variety of forested habitats and montane chaparral. Also found in grassy grown-over areas at margins of woodlands, in clearcuts, near streams, rock outcrops, and talus. Cover is provided by surface objects such as rocks, logs, dense vegetation, and human debris. Refuge may also be taken in crevices, rock fissures, and mammal burrows.

This subspecies is known to eat a variety of small invertebrates, including insects, spiders, millipedes, slugs, snails, and worms. It will also eat small lizards and small mammals and will occasionally feed on bird eggs and young birds.

Alligator lizards are generally secretive, tending to hide in brush or under rocks, although they are often seen foraging out in the open or on roads in the morning and evening.

### **CONSERVATION CHALLENGES:**

Restricted range and habitat pressures due to increased urbanization.

### **NEEDS:**

**Research Needs:** Research needs include status and distribution studies and a predictive model to guide adaptive management.

**Monitoring and Existing Plans:** NDOW partnership with Forest Service - Lake Tahoe Basin Management Unit; single species focus. Not within any other existing plans.

**Approach:** Investigate population distribution, status, and conservation risk. Develop conservation strategy as needed. Monitor responses to climate change-induced habitat transitions, particularly those that desiccate microhabitats.

## Smith's black-headed snake

## *Tantilla hobartsmithi*

WAP 2012 species because it has fragmented populations and its habitat is vulnerable to deterioration, especially with respect to climate change.



<b>Agency Status</b>	
NV Natural Heritage	G5S4
USFWS	No Status
CCVI	Presumed Stable

**TREND:** Population size and trend are unknown.

**DISTRIBUTION:** Southern NV.

### **GENERAL HABITAT AND LIFE HISTORY:**

Smith's black-headed snake habitat includes pinyon-juniper woodland, chaparral-woodland, riparian woodland, mesquite-yucca grassland, sagebrush-greasewood, cedar-ocotillo, persimmon-shin oak, mesquite-creosote bush, and cedar-savanna (Cole and Hardy 1983, Werler and Dixon 2000, Stebbins 2003).

Eats insect larvae (beetles, caterpillars, etc.), centipedes, and millipedes (Cole and Hardy 1981).

Smith's black-headed snakes are nocturnal and are active throughout the year. Although a secretive, semifossorial species, it may travel in the open at night. They may experience brief periods of inactivity in extreme weather conditions. Lays up to three eggs per season (Stebbins 2003).

### **CONSERVATION CHALLENGES:**

Apparently fragmented populations are vulnerable to habitat transitions to uncharacteristic classes, particularly annual grasses with no shrub layer. Population connectivity could be impacted by large-scale solar energy field development if no attention is paid to strategic placement.

### **NEEDS:**

***Research Needs:*** Determine status and distribution of this species in Nevada. Identify response and tolerance thresholds to habitat transitions into uncharacteristic classes (annual grasses with no shrub layer).

***Monitoring and Existing Plans:*** Species is not currently monitored and does not occur within any other existing plans.

***Approach:*** Investigate population distribution, status, and conservation risk. Develop conservation strategy as needed. Monitor responses to climate change-induced habitat transitions, particularly those that desiccate microhabitats.

## Sonoran mountain kingsnake

## *Lampropeltis pyromelana*

WAP 2012 species because it occurs in isolated populations that leave the species vulnerable to decline especially with respect to climate change, groundwater withdrawals, and poaching.



Agency Status	
NV Natural Heritage	G4G5S2
USFWS	No Status
BLM-NV	Sensitive
State Prot	Protected Reptiles NAC 503.080.1
CCVI	Highly Vulnerable

**TREND:** This species is rare and localized. Its population size and trend are unknown, though there is some evidence of increased collection pressures.

**DISTRIBUTION:** This species exists in isolated populations in east-central NV mountain ranges in White Pine and Lincoln counties. One voucher specimen was collected from the Virgin Range in Clark County.

### **GENERAL HABITAT AND LIFE HISTORY:**

Sonoran mountain kingsnake habitats are primarily rocky, montane, and often near streams or springs, but also include lower elevations in mesic canyons (Degenhardt et al. 1996, Tanner 1983, Ernst and Ernst 2003, Stebbins 2003). Appears to be most abundant where surface water and riparian vegetation occur; however, does not necessarily require surface water (nafha.org). Vegetation may include pinyon-juniper woodland, oak-juniper woodland, pine-oak woodland, pine-Douglas-fir woodland, or chaparral (Stebbins 2003). During daylight hours, this snake may be found among rocks, logs, or dense clumps of vegetation, under objects, or exposed.

This snake eats lizards, frogs, snakes, and small mammals.

The Sonoran mountain kingsnake is primarily diurnal and is active from late spring to early fall, but is inactive during the cold winter months. Prefers cloudy or shady conditions for surface activity (nafha.org). Females lay a clutch of two to nine eggs during June-July (Stebbins 2003).

### **CONSERVATION CHALLENGES:**

Isolated populations in montane riparian habitats make this species vulnerable to extinction in NV, especially with respect to climate change. Vulnerable to landscape level disturbances such as wildfire, habitat fragmentation, and groundwater withdrawals. Also, its unique coloration makes it a highly desirable species for collectors and fanciers despite prohibition of collection.

### **NEEDS:**

**Research Needs:** Connectivity of NV populations to more robust populations located in other portions of its range have not been documented. Research is needed to determine status and distribution, movement patterns and home ranges, describe habitat relationships, determine population abundance and viability, and to build a predictive model to guide management. Also needed is genetic analysis to clarify population relationships.

**Monitoring and Existing Plans:** This species is part of Clark County's MSHCP. NDOW and Great Basin National Park conduct annual surveys for this species.

**Approach:** Investigate population distribution, status, and conservation risk. Develop conservation strategy as needed. Monitor responses to climate change-induced habitat transitions.

## spotted leaf-nosed snake

## *Phyllorhynchus decurtatus*

WAP 2012 species because of current and increasing habitat fragmentation, especially in consideration of alternative energy development and large-scale solar power plants.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Presumed Stable

**TREND:** This species status and trend is unknown.

**DISTRIBUTION:** Mojave Desert of southern Nevada.

### **GENERAL HABITAT AND LIFE HISTORY:**

Habitat of the spotted leaf-nosed snake generally consists of rocky, gravelly, or sandy desert plains or dunes with creosote bush (Stebbins 2003). This snake may burrow into loose soil or sand, and it hides under rocks or surface debris or in abandoned rodent burrows (Stebbins 1954, Ernst and Ernst 2003).

The spotted leaf-nosed snake eats squamate eggs and small lizards (e.g., banded geckos, or just the tail) (Gardner and Mendelson 2003). It may occasionally eat lizards (Brennan discoverlife.org).

This snake is nocturnal. It is active in the early evening during mild to warm weather. Greatest activity occurs from April to July (Stebbins 1954). It uses its enlarged rostral scale for burrowing and spends the majority of its time under the soil. It hibernates during the cold months of late fall and winter and is commonly encountered on the surface at night in June (Brennan discoverlife.org).

### **CONSERVATION CHALLENGES:**

Vulnerable to loss or fragmentation of habitat due to development (i.e., urban), especially in consideration of alternative energy development and large-scale solar power plants.

### **NEEDS:**

***Research Needs:*** Research is needed to determine status and distribution, describe habitat relationships, and determine population viability. Analysis of habitat integrity and connectivity is also needed.

***Monitoring and Existing Plans:*** This is a Clark County MSHCP Covered Species.

***Approach:*** Investigate population distribution, status, and conservation risk. Develop conservation strategy as needed. Monitor responses to climate change-induced habitat transitions.

## western banded gecko

## *Coleonyx variegatus*

WAP 2012 species because it is vulnerable to decline due to large-scale habitat conversion and loss.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Moderately Vulnerable

**TREND:** Trend unknown.

**DISTRIBUTION:** In southern NV, from below sea level in desert sinks to about 1,500 m (5,000 ft). Conrad and Bradley (2009) suggest that this species is extending its range from the Mojave Desert into the Great Basin.

### **GENERAL HABITAT AND LIFE HISTORY:**

Creosote bush and sagebrush desert, pinyon-juniper belt, catclaw-cedar-grama grass association in the eastern part of range, chaparral areas in west (Stebbins 2003). In rocky areas and in barren dunes. They occur from from below sea level in desert sinks to about 1,500 m.

Opportunistic foragers on insects and other arthropods including beetles, termites, spiders, grasshoppers, sowbugs, and insect larvae (Zeiner et al 1988-90 [updated 2000]).

Under cover or underground when inactive. Take cover under rocks, rock caps, boards, fallen yucca stems, cow dung, or other litter, or may seek refuge in mammal burrows. This species is nocturnal due to its preference for lower body-temperatures and its high rates of evaporative water loss (Jones and Lovich 2009). It is most active just after dark, with activity declining gradually until ceasing at dawn (Zeiner et al 1988-90 [updated 2000]).

### **CONSERVATION CHALLENGES:**

Vulnerable to transition and loss of habitat, potential localized pressure from commercial collection.

### **NEEDS:**

**Research Needs:** Determine status and trend and response to climate change-induced habitat transitions.

**Monitoring and Existing Plans:** This species is a Covered Species under the Clark County MSHCP.

**Approach:** Determine population status via responsive multi-species monitoring project, monitor trend, and adjust allowable harvest according to demonstrated need to maintain population numbers. Partner with Partners in Amphibian and Reptile Conservation and the Association of Fish and Wildlife Agencies' Amphibian and Reptile Subcommittee, Law Enforcement Committee, and Sustainable Use Committee to develop recommendations for collection regulations (Nanjappa and Conrad 2011).



## western pond turtle

## *Actinemys marmorata*

WAP 2012 species because it has limited distribution and habitat availability.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G3G4S3
<b>USFWS</b>	No Status
<b>USFS-R5</b>	Sensitive
<b>CCVI</b>	Presumed Stable

**TREND:** The trend for this species is unknown.

**DISTRIBUTION:** This species has limited range in western NV in Truckee and Carson Rivers and nearby ponds.

### **GENERAL HABITAT AND LIFE HISTORY:**

This species is found in permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, irrigation ditches, and reservoirs. It is sometimes found in brackish water. The western pond turtle often uses basking sites (e.g., logs, vegetation mats, rocks). It commonly basks on land, near or away from water (Rathbun et al. 2002). When disturbed, the western pond turtle seeks cover underwater. It nests on sandy banks near water or in fields or sunny spots up to a few hundred meters from water (Nussbaum et al. 1983, Storer 1930).

This species is a scavenger and opportunistic predator with preference for live prey. Adults are partially herbivorous and food items are mostly aquatic (Bury 1986). Diet often includes adult and larval insects, worms, crustaceans, carrion, and algae. Pond turtles in a northwestern study did not forage on land (Rathbun et al. 2002).

The western pond turtle is most active when water temperatures are above 15°C (59°F) (Bury and Germano 2008). It is active February through mid-November in northern part of range (Stebbins 2003). By switching to absorbing oxygen through the skin pond turtles hibernate underwater, often in the muddy bottom of a pool, but may be active during warm periods in winter (californiaherps.com). It is active diurnally and on warm nights. The age of first reproduction in females is about 7-9 years in the south and 10-14 years in the north (Bury 1979). It is subject to predation by various carnivores and introduced bullfrogs and fishes.

### **CONSERVATION CHALLENGES:**

This species has limited distribution and habitat availability. Populations in Nevada are confined to the Truckee and Carson Rivers. The very isolated nature of the Nevada populations in relation to populations in the rest of its range raises the question of whether or not this species is native to Nevada - a question that has never been decisively answered. Elsewhere populations have declined due to habitat loss and degradation, disease, and introduced species, including the bullfrog

### **NEEDS:**

**Research Needs:** Research is needed to determine current status, distribution, population viability, and subspecies status.

**Monitoring and Existing Plans:** This species is not currently monitored and does not occur within any other existing plans.

**Approach:** Develop a single-species investigation project to determine exact distribution, rough population estimate and trend, genetic diversity, origin, and metapopulation connectivity. Monitor response to climate change-induced habitat transitions, particularly changes in water temperature and flow. Determine relative conservation risk and develop conservation strategy with partners and stakeholders as necessary.

**western red-tailed skink**

***Plestiodon gilberti rubricaudatus***

WAP 2012 species because it requires mesic microhabitats in the Mojave desert that are vulnerable to drying due to climate change.



<b>Agency Status</b>	
NV Natural Heritage	G5T4QS2S3
USFWS	No Status
CCVI	Presumed Stable

**TREND:** Trend is unknown.

**DISTRIBUTION:** Southern NV.

**GENERAL HABITAT AND LIFE HISTORY:**

Habitat associations in NV appear to deviate from those described elsewhere (e.g., Stebbins 1985) in the species range. Specimens in NV have been encountered in sagebrush with widely scattered junipers, the blackbrush/sagebrush ecotone, and creosote bush; all have been encountered far from permanent water.

Eats insects and spiders.

**CONSERVATION CHALLENGES:**

Vulnerable to climate change-induced habitat transitions and loss.

**NEEDS:**

**Research Needs:** Refine species-habitat relationships; develop predictive model to inform adaptive management.

**Monitoring and Existing Plans:** Collaborative monitoring effort between NDOW, NV Biodiversity Initiative, and Clark County MSHCP; single species-focus monitoring. Covered Species under the Clark County MSHCP.

**Approach:** Focus on research needs; generate rough population estimates and trends via occupancy modeling. Develop conservation strategy as needed.

## western threadsnake

## *Rena humilis*

WAP 2012 species because it requires mesic microhabitats within the Mojave Desert that are vulnerable to drying due to climate change.



<b>Agency Status</b>	
<b>NV Natural Heritage</b>	G5S4
<b>USFWS</b>	No Status
<b>CCVI</b>	Moderately Vulnerable

**TREND:** This species status and trend are unknown.

**DISTRIBUTION:** Mojave Desert of southern Nevada.

### **GENERAL HABITAT AND LIFE HISTORY:**

This species habitats range from deserts and desert-grasslands to brush-covered mountain slopes, including rocky hillsides, canyon bottoms or washes near stream courses, riparian zones, areas near springs, and sometimes gardens and farmland (Werler and Dixon 2000, Stebbins 2003). This secretive, fossorial snake sometimes can be found under rocks, wood, or debris, among plant roots, or in crevices, often in loose damp soil.

The western blind snake eats small insects and their larvae and eggs (especially ants and termites), spiders, centipedes, and millipedes (Stebbins 2003). When searching for food, a western blind snake will hunt until it finds an ant pheromone trail and follow it back to the nest to consume the residents.

This snake appears on the surface at night but may be active underground at other times. Greatest seasonal activity occurs from April to August (Stebbins 1954). The western blind snake mates in the spring. Females tend to the eggs and may use communal nests.

### **CONSERVATION CHALLENGES:**

Vulnerable to habitat transition and loss due to climate change, alternative energy development, and large-scale solar power plants.

### **NEEDS:**

***Research Needs:*** Determine status, trend, and distribution of the species.

***Monitoring and Existing Plans:*** This species is not currently monitored and does not occur within any other existing plans.

***Approach:*** Investigate population distribution, status, and conservation risk. Develop conservation strategy as needed. Monitor responses to climate change-induced habitat transitions.