

Amargosa toad

Anaxyrus nelsoni

WAP 2012 species because it is an endemic species with a very small range and relatively small population numbers.



Agency Status	
NV Natural Heritage	G2S2
USFWS	No Status
BLM-NV	Sensitive
State Prot	Protected Amphibians NAC 503.075.2
IUCN	Endangered
CCVI	Presumed Stable

TREND: Adult population at sites monitored annual by NDOW have fluctuated between 1,500 and 2,500 individuals between 1998 and 2009, with notable declines below 1,000 individuals in 2007 and 2008 (USFWS 2010a).

DISTRIBUTION: Amargosa toads are endemic to the Amargosa River drainage in southwestern Nevada. The total amount of known and potential Amargosa toad habitat delineated by the Amargosa Toad Working Group in 2007 is approximately 8,440 acres (USFWS 2010a).

GENERAL HABITAT AND LIFE HISTORY:

Habitat requirements for breeding and population recruitment include the presence of open, ponded, or flowing water, with riparian vegetative cover in an early-to-intermediate successional stage to form a partial canopy for shade with minimal emergent vegetation at the water's edges. Immature (metamorphs or toadlets) and adult Amargosa toads are dependent upon the areas described above, as well as areas they can use for shelter, including burrows, debris piles, spaces under logs or rocks, and areas of dense vegetation. Adult toads also require adjacent vegetated uplands for nocturnal foraging (USFWS 2010a).

The breeding season begins in mid-February and may extend into July, during which time adults congregate at breeding sites. Amargosa toad tadpoles require relatively open water that persists long enough for the completion of metamorphosis and development into toadlets, which occur over approximately 30 days. Predation and early desiccation of wetlands needed for breeding may destroy an entire breeding effort. Although Amargosa toads typically live 4 to 5 years, individual toads are known to live up to 17 years based on data from NDOW's population monitoring program (USFWS 2010a).

CONSERVATION CHALLENGES:

May be adversely affected by overgrowth of emergent vegetation. Some degree of disturbance may be important for toad persistence, particularly at small, isolated spring sites.

NEEDS:

Research Needs: Research should include developing methods for control of nonnative species, esp. crayfish and bullfrogs; obtaining life history information including migration and movements; researching habitat relationships including methods for maintaining habitat quality, and research on genetic relationship to other toads in lower Amargosa River drainage system.

Monitoring and Existing Plans: Annual monitoring program directed by NDOW, with assistance from partners including BLM, USFWS, NNHP, TNC, community volunteers and others. Conservation actions are directed by the cooperative Amargosa Toad Conservation Agreement and Strategy (NDOW 2000) and the multi-agency Amargosa Toad Working Group.

Approach: Majority of habitat is on private property, thus private-public-NGO partnerships are critical. The Town of Beatty is developing a community based conservation program which will protect toad habitat on surrounding public lands while accommodating public recreation in lieu of BLM Area of Critical Environmental Concern (ACEC) designation. TNC has purchased two ranches near Beatty for experimental habitat management (Burroughs 1999). Nye County is a cooperator with state and federal agencies in the conservation agreement (Burroughs 1999). Active management of occupied habitats to maintain intermediate seral stages and shallow water areas for breeding, and control of nonnative species, are key conservation actions.

WAP HABITAT LINKS: Marshes, Warm Desert Riparian, Wet Meadow, Springs and Springbrooks, Lakes and Reservoirs, Desert Playas and Ephemeral Pools.

Arizona toad

Anaxyrus microscaphus

WAP 2012 species because of declining trend and hybridization of this highly fragmented species.

Agency Status	
NV Natural Heritage	G3G4S2
USFWS	No Status
CCVI	Presumed Stable



TREND: Declining, but the rate of decline is unknown. Stebbins (2003) estimates that this species has disappeared from 75% of its historic range.

DISTRIBUTION: Restricted to Meadow Valley Wash and Virgin River areas. It was historically in Vegas Valley but it is now believed extirpated from this area. Globally, this species has a highly fragmented range.

GENERAL HABITAT AND LIFE HISTORY:

Information in NV is largely lacking, but in other areas, they are found in riparian areas from lowlands to high uplands, of which consist of pine-oak scrubland. They have been found in rocky stream courses in pine-oak zone in Arizona and New Mexico. In Utah, they occur along irrigation ditches and in flooded fields, as well as along streams bordered by willows and cottonwoods (Stebbins 1954). Irrigated cropland and reservoirs are increasingly being used in some areas (Price and Sullivan 1988). The Arizona toad lays eggs among gravel, leaves, or sticks, or on mud or clean sand, at bottom of flowing or shallow quiet waters of perennial or semipermanent streams (Dahl et al. 2000) or shallow ponds. Diet includes snails, crickets, beetles, and ants; sometimes cannibalizes newly metamorphosed individuals. Larvae probably eat algae, organic debris, and plant tissue.

Breeding is not dependent upon rainfall, but on warming temperatures and water levels. Spring flooding delays breeding. Breeding may occur for 10-12 days at a location, then stop due to rain and floods, and continue again following warmer, drier weather. Eggs hatch in 3-6 days and tadpoles metamorphose in 3-4 months depending on varying environmental conditions.

CONSERVATION CHALLENGES:

Threatened by loss and degradation of habitat from exotic predators, OHV use, and construction of water impoundments and groundwater pumping activities that lead to declines in seeps and springs. It readily hybridizes with Woodhouse's toad (*Anaxyrus woodhousii*), which is expanding its range into traditionally *A. microscaphus* habitats. Water impoundments seem to favor *A. woodhousii* over *A. microscaphus*.

NEEDS:

Research Needs: Basic life history information is needed for this species in NV. Extent of interbreeding with *B. woodhouseii* and current distribution of un-hybridized populations should be studied.

Monitoring and Existing Plans: Limited distribution assessment through Clark County MSHCP, no ongoing monitoring program. Evaluation Species in the Clark County MSHCP and Covered in the Partners in Amphibian and Reptile Conservation Amphibian and Reptile Habitat Management Guidelines.

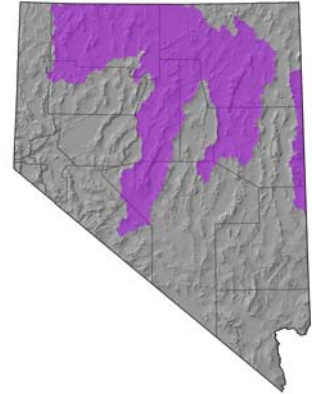
Approach: Conduct investigations into life history, including basic population demography, status and trends. Develop conservation plan as demonstrated by need.

WAP HABITAT LINKS: Warm Desert Riparian, Lakes and Reservoirs, Springs and Springbrooks.

Columbia spotted frog (Great Basin pop)

Rana luteiventris pop. 3

WAP 2012 species because this species has a highly fragmented and limited range in Nevada and has demonstrated declines from historic numbers. It is also a Candidate Endangered Species Act species.



Agency Status	
NV Natural Heritage	G4T2T3QS2S3
USFWS	C
BLM-NV	Sensitive
USFS-R4	Sensitive
State Prot	Protected Amphibians NAC 503.075.2
CCVI	Highly Vulnerable

TREND: Populations seem to be stable but local declines have been demonstrated.

DISTRIBUTION: Columbia spotted frogs occur in three geographically separated subpopulations in the Jarvis and Independence Mountains, the Ruby Mountains, and in the Toiyabe Mountains.

GENERAL HABITAT AND LIFE HISTORY:

Columbia spotted frogs are closely associated with clear, slow-moving or ponded surface waters, with little shade, and relatively constant water temperatures. Breeding and egg-laying occurs in waters with floating vegetation and larger ponds such as oxbows, lakes, stock ponds, and beaver-created ponds. Females usually lay egg masses in the warmest areas of the pond, typically in shallow water. In some areas, spotted frogs are critically tied to beaver-created ponds; without these ponds, spotted frogs are typically not found. For overwintering, spotted frogs use areas that do not freeze, such as spring heads and deep undercuts with overhanging vegetation. However, they have all been observed overwintering underneath ice-covered deep ponds.

Adults feed on invertebrates, generally within one-half meter of shore on dry days. During and after rain, they may move away from permanent water to feed in wet vegetation or ephemeral puddles. Adults also feed upon mollusks, crustaceans, and arachnids. They are thought to be opportunistic feeders and feed underwater to some extent. Green algae, most often *Spirogyra*, provides a food source and refuge for developing tadpoles. Tadpoles consume decomposed plant material, and live green algae.

Abundance may be tied to beaver ponds; when beavers decrease, it seems that frogs decrease as well (Spotted Frog Mtg, Reno 2002, USFWS 1997a). See the Candidate Notice of Review (USFWS 2011c) for more comprehensive information.

CONSERVATION CHALLENGES:

Potential anthropogenic impacts to spotted frog populations and their habitats include: capping of springs, extraction of water for stock and mineral exploration, livestock grazing (fecal contamination, reduced wetland plant cover, direct mortality to frogs), non-native vertebrate introductions and herbicide applications to wetlands.

NEEDS:

Research Needs: Life history information especially hibernacula requirements for overwinter survival, methods for effective habitat maintenance and restoration, and effects of livestock grazing should be a focus of research.

Monitoring and Existing Plans: Conservation Agreement and Strategies has been written and implemented for all subpopulations of this species. One covers the Toiyabe subpopulation and the other covers the Jarvis, Independence and Ruby mountain populations (collectively referred to as the NE subpopulation). A long-term monitoring plan was completed and implemented in 2004 for the Toiyabe sub-population and a monitoring plan was recently drafted for the NE subpopulation in 2011. The Toiyabe subpopulation is surveyed annually and has a long-term mark/recapture study implemented. Sites within the NE subpopulation are monitored annually, but not comprehensively due to the extensive geographic area and ruggedness of these subpopulations.

Approach: Continue to implement adaptive conservation actions delineated in the Conservation Strategies of the subpopulations. These actions focus on removal or preclusion of direct threats from nonnative species, disease and habitat loss, and identify corrective restoration strategies for protection and enhancement of key habitat areas.

WAP HABITAT LINKS: Intermountain Riparian, Wet Meadow, Springs and Springbrooks, Marshes, Lakes and Reservoirs.

Great Basin spadefoot

Spea intermontana

WAP 2012 species because of disease concerns and potential affects of climate change on amphibians in general due to their particular life history requirements.

Agency Status	
NV Natural Heritage	G5S4
USFWS	No Status
CCVI	Moderately Vulnerable



TREND: Trend is stable.

DISTRIBUTION: Across most of northern Nevada, Great Basin region.

GENERAL HABITAT AND LIFE HISTORY:

Mainly sagebrush flats, semi-desert shrublands, pinyon-juniper woodland. Digs its own burrow in loose soil or uses those of small mammals. Breeds in temporary or permanent water, including rain pools, pools in intermittent streams, and flooded areas along streams. Eggs are attached to vegetation in water or placed on bottom of pool.

Not well documented. Adults known to eat insects. Larvae probably eat algae, organic debris, plant tissue, etc., sometimes invertebrates and amphibian larvae.

Males reach sexual maturity at 1-2 years; females at 2 years. This species breeds between April and July depending on the location in overflow pools of permanent streams and in springs. Rainfall can stimulate breeding, but isn't always necessary. Irrigation is known to stimulate breeding as well. Breeding pools must hold water for at least 40 days for larvae to successfully metamorphose.

CONSERVATION CHALLENGES:

Could be threatened by large-scale habitat conversion.

NEEDS:

Research Needs: Determine the effects of anthropogenic disturbances (e.g., agriculture, mining, development, recreation, etc) on Great Basin spadefoot terrestrial and aquatic habitats and how those disturbances affect populations.

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

Approach:

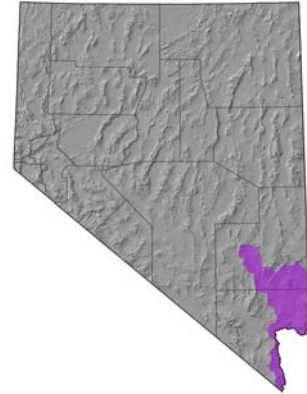
WAP HABITAT LINKS: Sagebrush, Intermountain Cold Desert Scrub, Intermountain Riparian, Lower Montane Woodlands and Chaparral.

Great Plains toad

Anaxyrus cognatus

WAP 2012 species because it has a very limited range within Nevada and has been extirpated from historic sites in both Lincoln and Clark Counties.

Agency Status	
NV Natural Heritage	G5S2
USFWS	No Status
CCVI	Presumed Stable



TREND: Trend is unknown but seems to be declining based on extirpations from Clark and Lincoln Counties.

DISTRIBUTION: Historically occurred in Clark and Lincoln Counties, but currently only found in Lincoln Co. This species reaches its western edge of range in Nevada.

GENERAL HABITAT AND LIFE HISTORY:

The Great Plains toad is found in deserts, grasslands, semidesert shrublands, open floodplains, and agricultural areas; typically in stream valleys. They are proficient burrowers and are usually underground when inactive. They breed in rain pools, flooded areas, and ponds and reservoirs that fluctuate in size. Eggs and larvae develop in shallow water (usually clear).

Metamorphosed toads eat primarily small terrestrial arthropods. Larvae eat suspended matter, organic debris, algae, and plant tissue.

Great Plains toads are inactive during cold winter months and during summer dry spells. They are mostly nocturnal but may be active diurnally during wet or humid weather. They are capable of migrating up to several hundred meters between breeding pools and non-breeding terrestrial habitats. Adults are sexually mature at 2-5 years. Individuals emerge from burrows after heavy spring rains and move to breeding wetlands generally from March to September. Breeding and egg-laying occurs in temporary pools, slow streams, irrigation ditches, holding ponds, and flooded fields. Eggs hatch in 2-7 days and tadpoles metamorphose in 17-45 days after hatching depending on the water temperature and evaporation rates.

CONSERVATION CHALLENGES:

Moderately to severely threatened by dams and water diversions, competition with non-native species, and may hybridize with *B. woodhousii*. Intensive cultivation and herbicide/pesticide use may be reducing populations in some regions. Experienced loss of breeding and non-breeding habitats due to suburban sprawl.

NEEDS:

Research Needs: Information on distribution, location of breeding sites, demographics, status and trend and life history for Nevada populations is needed.

Monitoring and Existing Plans: Not currently monitored. Covered in the Partners in Amphibian and Reptile Conservation Amphibian and Reptile Habitat Management Guidelines.

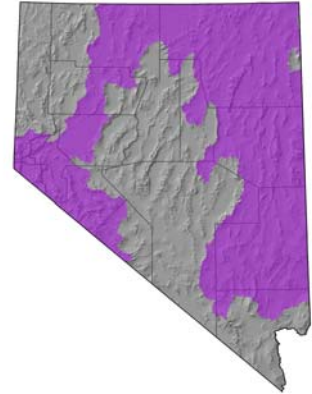
Approach: Identify population loci and determine population status and trend for the species. Implement conservation actions as necessary to maintain or increase current population numbers.

WAP HABITAT LINKS: Mojave Warm Desert and Mixed Desert Scrub, Warm Desert Riparian, Grasslands and Meadows, Agricultural Lands, Lakes and Reservoirs.

northern leopard frog

Rana pipiens

WAP 2012 species due to its declining trend, known extirpations, and now-fragmented populations.



Agency Status	
NV Natural Heritage	G5S2S3
USFWS	No Status
BLM-NV	Sensitive
State Prot	Protected Amphibians NAC 503.075.2
CCVI	Presumed Stable

TREND: Declining; one survey found only 15 out 117 sites to be occupied. However, further surveying over multiple years needs to be conducted to truly determine this species trend.

DISTRIBUTION: Historically occurred throughout eastern and some portions of western NV.

GENERAL HABITAT AND LIFE HISTORY:

Northern leopard frogs require a mosaic of habitats, including aquatic overwintering and breeding habitats, as well as upland post-breeding habitats and the links between the two. Springs, slow streams, marshes, bogs, ponds, canals, flood plains, reservoirs, and lakes are used; usually permanent water with rooted aquatic vegetation. In summer, commonly inhabits wet meadows and fields. Takes cover underwater, in damp niches, or in caves when inactive. Overwinters usually underwater and requires well-oxygenated water that does not completely freeze. Eggs are laid and larvae typically develop in shallow, still, permanent water, generally in areas well exposed to sunlight. Generally eggs are attached to vegetation just below the surface of the water.

Metamorphosed frogs eat various small invertebrates obtained along water's edge or in nearby meadows or fields; rarely eats small vertebrates. Larvae eat algae, plant tissue, organic debris, and probably some small invertebrates.

The time of egg deposition varies with latitude and elevation. Breeding often peaks when water temperatures reach about 10°C. At a particular site, egg deposition generally occurs within a span of about 10 days. Aquatic larvae metamorphose into small frogs in early to late summer, a few months after egg deposition.

CONSERVATION CHALLENGES:

Habitat degradation, fragmentation and loss due to over-grazing, water impoundments or other alterations, and development (urban, agriculture) are the main threats to this species. Interactions with introduced species may also be contributing to declines.

NEEDS:

Research Needs: Information is needed on the distribution of this species as well as its long-term trend. Extensive, multi-year surveys need to be conducted to gain a better understanding of the status of this species.

Monitoring and Existing Plans: Monitored through the Humboldt-Toiyabe National Forest in partnership with Nevada Department of Wildlife.

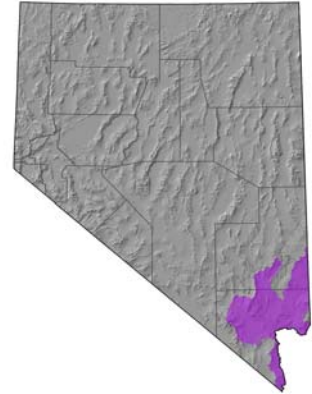
Approach: Continue to monitor for the species through Forest Service and NDOW partnership. Monitoring should also include occupied and potential habitats on BLM and private lands.

WAP HABITAT LINKS: Marshes, Lakes and Reservoirs, Wet Meadow, Intermountain Riparian, Springs and Springbrooks.

relict leopard frog

Rana onca

WAP 2012 species due to its very restricted population, well-documented declines, and on-going need for extensive management actions to prevent the extinction of the species.



Agency Status	
NV Natural Heritage	G1S1
USFWS	C
BLM-NV	Sensitive
State Prot	Protected Amphibians NAC 503.075.2
CCVI	Moderately Vulnerable

TREND: Trend appears to be declining in NV.

DISTRIBUTION: Restricted to only a few localities including Overton Arm of Lake Mead, and Black Canyon below Lake Mead, although historically present along the Virgin, Muddy, and Colorado Rivers.

GENERAL HABITAT AND LIFE HISTORY:

Relict leopard frogs occupy spring, spring outflow, and associated marsh and wetland habitats generally in close proximity to river systems. They are active year-round, and are most often observed in shallow water along channel or pool margins. Breeding has been documented in September, November, and late January through March.

Adults probably are mainly invertivorous. Larvae probably eat algae, organic debris, plant tissue, and minute organisms in water.

Individuals reach sexual maturity in 1-2 years.

CONSERVATION CHALLENGES:

Current distribution of this species is severely reduced to as few as 6 populations in two areas of Lake Mead NRA. Key concerns include: habitat degradation from water development and diversion, modifications to spring source pools and outflows, inundation of historic habitats, changes in plant communities including invasive plant encroachment and grazing by feral and domestic livestock; competition and predation by nonnative species; small population size, limited habitats, and fragmentation and isolation of existing habitats.

NEEDS:

Research Needs: Continue efforts to define current and historic distribution. Determine important breeding areas for known populations. Determine habitat requirements and conditions required for long-term survival; develop methods for maintaining favorable habitat quality. Determine population and life history characteristics. Identification and evaluation of potential translocation or repatriation sites.

Monitoring and Existing Plans: Semi-annual monitoring of all known populations is ongoing under direction of the Relict Leopard Frog Conservation Team (RLFCT). The National Park Service (NPS) is the lead for monitoring efforts on NPS lands with assistance from NDOW, AGFD, UNLV, and other cooperative partners. There is an active Relict Leopard Frog Conservation Agreement and the species is covered in both the Lower Colorado River MSCP and the Clark County MSHCP.

Approach: Implement conservation strategy actions identified in Relict Leopard Frog CAS through direction of the RLFCT. Key actions include management of active threats, restoration and maintenance of existing and historic habitats, development of additional populations through translocation, maintenance of head-start and captive breeding efforts.

WAP HABITAT LINKS: Warm Desert Riparian, Springs and Springbrooks, Marshes, Desert Playas and Ephemeral Pools.

Sierra Nevada yellow-legged frog

Rana sierrae

Although this species is considered extirpated from Nevada, this has not been confirmed and surveys and management actions should be considered for long-term reintroduction or natural repopulation as the species is extant in adjacent areas in California.



Agency Status	
NV Natural Heritage	G1SH
USFWS	No Status
BLM-NV	Sensitive
LTBMU	Sensitive
IUCN	Endangered
CCVI	Presumed Stable

TREND: Declining rapidly if still extant in Nevada, although it is currently considered to be extirpated from the State.

DISTRIBUTION: Restricted to the Sierra Nevada, California, and extreme western Nevada (Mt. Rose).

GENERAL HABITAT AND LIFE HISTORY:

Rarely found more than 1m from water, usually near rocky stream beds, lakes, ponds, and tarns, typically with grassy or muddy banks and edges. Both adults and larvae overwinter for up to 9 months in the bottoms of lakes that are at least 1.7m deep (some evidence that lakes at least 2.5m are ideal), under ledges of stream or lake banks, or in rocky streams.

Adults eat aquatic and terrestrial invertebrates and anuran larvae; availability of larval anuran prey may be an important factor in distribution, body condition, and survival of adults (Pope and Matthews 2002). Larvae eat algae, organic debris, plant tissue, and minute organisms in water.

Mating and egg-laying occur from May to August. Egg-laying sites must be connected to permanent lakes or ponds that do not freeze to the bottom in winter, because the tadpoles overwinter, possibly taking as many as three or four summers before they transform.

CONSERVATION CHALLENGES:

Global population declines have occurred, some in seemingly pristine environments. In the high Sierra Nevada lakes, this species does not successfully coexist with introduced fishes, which is likely the cause for its decline. This species exhibits strong site fidelity and is subject to decline due to drying habitats (Matthews and Preisler 2010). This species no longer occurs in Nevada.

NEEDS:

Research Needs: This species may be extirpated in NV, so basic surveys of suitable habitat are needed. If no occupied habitats are located, habitat evaluation is needed to determine the likely success of transplanted individuals from nearby California populations.

Monitoring and Existing Plans: No monitoring of this species occurs in NV. Covered in the Humboldt-Toiyabe Forest Plan Revision and the Partners in Amphibian and Reptile Conservation Amphibian and Reptile Habitat Management Guidelines.

Approach: Prohibit introductions of non-native fishes in suitable habitats. Removal of non-native fishes and re-establishment of metapopulation dynamics might reverse the decline (Knapp and Matthews 2000).

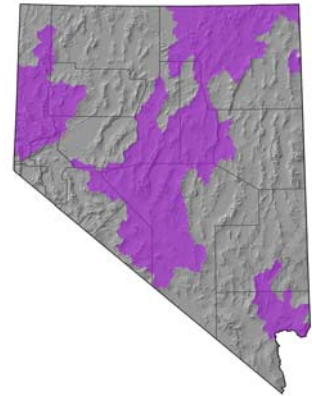
WAP HABITAT LINKS: Intermountain Riparian, Lakes and Reservoirs, Wet Meadow, Springs and Springbrooks.

western toad

Anaxyrus boreas

Although this species is common throughout the Great Basin, there are potentially distinct and isolated endemic species cryptically found within *B. boreas*.

Agency Status	
NV Natural Heritage	G4S4
USFWS	No Status
CCVI	Presumed Stable



TREND: Trend is unknown.

DISTRIBUTION: North and central NV.

GENERAL HABITAT AND LIFE HISTORY:

This species is found in a wide variety of habitats ranging from desert springs to mountain wetlands, and it ranges into various uplands habitats around ponds, lakes, reservoirs, and slow-moving rivers and streams. It digs its own burrow in loose soil or uses those of small mammals, or shelters under logs or rocks. The eggs and larvae develop in shallow areas of ponds, lakes, or reservoirs, or in pools of slow-moving streams.

Metamorphosed individuals feed on various small terrestrial invertebrates. Larvae filter suspended plant material or feed on bottom detritus (Nussbaum et al. 1983).

This species is sexually mature at 4-6 years. Mating and egg-laying occur between January and July depending on elevation and snowpack. Eggs are laid in still or barely moving waters of seasonal pools, ponds, streams, and small lakes. Eggs hatch in 3-10 days; may be up to 12 days in colder waters at higher elevations. Larvae metamorphose in 1-3 months; speed of larval development is dependent upon temperature.

CONSERVATION CHALLENGES:

No threats currently identified.

NEEDS:

Research Needs: Genetic analysis of potentially distinct species needs investigation and publication. Distinct and rare species arising from such an analysis would then be the focus of appropriate conservation actions.

Monitoring and Existing Plans: Some isolated populations, such as in Dixie Valley, are actively being monitored and have proactive conservation measures in place.

Approach:

WAP HABITAT LINKS: Sierra Coniferous Forests and Woodlands, Lower Montane Woodlands, Intermountain Coniferous Forests and Woodlands, Intermountain Riparian, Aspen, Grasslands and Meadows, Springs and Springbrooks, Lakes and Reservoirs.