

AMPHIBIANS AND REPTILES OF THE TAHOE NATIONAL FOREST:
HISTORICAL COLLECTIONS AND RESULTS OF 1997-1999
CALIFORNIA ACADEMY OF SCIENCES SURVEYS

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INTRODUCTION

The Tahoe National Forest comprises an area of approximately 800,000 acres, which has been relatively unstudied with respect to the amphibian and reptile fauna. Other than Hayes and Cliff (1982) who report on the amphibians and reptiles of Butte County, north of the Tahoe National Forest, there are no other published accounts on the region's general herpetology. Thus, biologists of the Tahoe National Forest have had to rely on published sources, which address the herpetofauna at a larger geographic scale and consequently at a lower level of resolution. Publications such as Stebbins (1985) contain information on the amphibians and reptiles of western North America, while Zeiner et al. (1988) contains distribution data at the state level as does Jennings and Hayes (1994) species accounts for state species of special concern. On a smaller geographic scale, Jennings (1996) gives an overview of the amphibians of the Sierra Nevada. The popular booklets by Basey (1969, 1976) give general accounts of the Sierran herpetofauna.

In general, the large-scale distribution of amphibians and reptiles in California is fairly well known. However, our knowledge of species distribution surprisingly lacks specificity when analyzing the herpetofauna at local levels. As outlined in the 1997 report of amphibian and reptile surveys in Tahoe National Forest (CCSA-05-97-17-024), the information on the distribution of amphibians and reptiles in the northern Sierra Nevada is spotty, is based on limited sampling, and to a large extent is outdated. The surprising lack of data on amphibian and reptile distributions for the Tahoe National Forest is highlighted by new county records for rather common species (Spencer et al. 1998; Koo et al. 1999).

The use of large-scale range maps, such as those in Stebbins (1985) and Zeiner et al. (1988), may be misleading when trying to determine a species distribution in a specific area such as the Tahoe National Forest. Most range maps only show the generalized species distributions. Local species distributions closely linked to topography, local climate, edaphic factors and the like, cannot be expected to be properly reflected.

Because large-scale biological inventories are financially prohibitive, habitat models are constructed to predict species compositions. Howell and Barrett (1998) test predictions of the California Wildlife Habitat Relationship (CWHR) System in coastal scrub and annual grassland habitats in coastal California. In both habitats sampled, the CWHR system predicts more species than the survey work found. For the habitats combined, CWHR predicts the occurrence of three amphibian and 17 reptile species. Their sampling detects only 50% of the predicted species (one amphibian and nine reptile species). Recent fieldwork, thus, brings into question the reliability of their model, quite apart from the lack of hard data.

The CWHR system also over estimates the number of species found to occur in the Tahoe National Forest. The CWHR range maps in Zeiner et al. (1988) predict that approximately 31 amphibian and reptile species are expected to occur in the Tahoe National Forest. Documented specimens from museum records and surveys confirm only 24 species (77%) of the CWHR system model to occur in the forest (Spencer et al. 1998).

The survey work we conducted in 1997 in the Tahoe National Forest was initiated to address these gaps in knowledge. Through the continued concern of national forest biologists, particularly those who rely on such information to make management recommendations, the Department of Herpetology, California Academy of Sciences (CAS) and the Tahoe National

Forest have continued a cooperative relationship to survey the amphibians and reptiles of the Tahoe National Forest.

Survey work remains requisite to understanding biodiversity and local distributions of a given area. Although generalized biological inventories are often undertaken, voucher specimens (specimens collected to document a species occurrence) are rarely taken. Surveys that rely on visual observations or photographic documentation can be inconclusive. In contrast, voucher specimens deposited in a natural history museum serve as physical evidence and thus are verifiable. These specimens also provide scientific data, such as age, reproductive stage, stomach content, toxicity and parasite load. Tissue samples become available for molecular studies in evolution and population dynamics.

Grinnell (1910) emphasized that one important element of a museum collection is its value in the future. As evident in the data provided here, museum specimens provide a historical perspective of species distribution. Biologists in the future will have access to the original record of faunal conditions and distribution patterns wherever collections are made and to assess the conditions that both broadly and locally affect the dynamics of the populations.

METHODS AND MATERIALS

Historical Records

Prior to field surveys, museum records were requested from major U.S. museums for their holdings from the counties which comprise the Tahoe National Forest (Table 1).

Table 1. Museum Collections Contacted, Museum Code and Number of Specimens from Within the Borders of the Tahoe National Forest.

Museum Collection	Museum Code	Number of specimens
American Museum of Natural History	AMNH	---
Brigham Young University	BYU	---
California Academy of Sciences	CAS	57
California State University, Chico	CSUC	81
California State University, Sacramento	CSUS	5
Carnegie Museum of Natural History	CM	---
Field Museum of Natural History	FMNH	14
Natural History Museum, University of Kansas	KU	1
Los Angeles County Natural History Museum	LACM	3
Museum of Comparative Zoology, Harvard University	MCZ	---
Museum of Vertebrate Zoology, University of California, Berkeley	MVZ	327
Museum of Zoology, University of Michigan	UMMZ	9
National Museum of Natural History	USNM	5
San Diego Natural History Museum	SDSNH	47
Stanford University Collection at the California Academy of Sciences	CAS-SU	58
Texas Memorial Museum, University of Texas, Austin	TNHC	---
University of Nevada, Las Vegas	UNLV	---
University of Nevada, Reno	UNR	1
University of Texas, Arlington	UTA	1

Records were geocoded by adding latitude and longitude to records which had sufficient locality descriptions. A variety of methods were employed to obtain latitude and longitude. Data consisting of only a place name were geocoded using National Geographic Names Data Base, Dataware Technologies Inc., 1993, or Place-Name-Index, Buckmaster Publishing, 1988. Specimen localities which contained information other than place names were geocoded using DeLorme Street Atlas USA 4.0 or Maptech Terrain Navigator (Edition 1) software. Localities containing data which are not specific enough to accurately geocode were not included in the distribution maps.

Surveys

1997-1999 survey crews consisted of two to four people with the personnel varying according to availability; CAS staff was present on all surveys. CAS staff included: Chris R. Feldman, Lindsay G. Henwood, Michelle S. Koo, Rhonda S. Lucas, Craig A. Reading, Carol L. Spencer, Jens V. Vindum, Jeffery A. Wilkinson and Kevin D. Wiseman. U.S. Forest Service staff included Marilyn M. Tierney and Kristen Sexton (Tahoe National Forest).

Surveys were conducted 12-21 May 1997, 21-25 July 1997, 20-29 August 1997, 29 June-3 July 1998, 7-17 July 1998, 25-30 July 1998, 8 August 1998, 3-13 August 1999, and 30 August-10 September 1999. Teams consisting of two CAS employees spent a total of 69 days over the three years conducting field surveys. Most surveys were conducted along streams, rivers, ponds, lakes and reservoirs. Surveys were conducted by two or more persons slowly walking up the middle or along the edges of watercourses searching all suitable-looking habitats for amphibians or reptiles. Surveys were done during the day and at night in suitable *Rana aurora* habitat. Data were recorded for all sites visited, and records were taken for all individual amphibians and reptiles observed as well as those collected.

Specimens and Specimen-Associated

In general, up to five specimens of non-protected species were taken from each locality visited. Only one specimen was taken per locality for state protected species (species of special concern). Specimens were collected and humanely euthanized following protocols approved by the Academy's Animal Welfare Committee and the three North American herpetological societies (American Society of Ichthyologists and Herpetologists 1987). Specimens were fixed in 10% buffered formalin and later stored in 70% ethyl alcohol. In addition, tissue samples (usually liver) were removed and frozen in liquid nitrogen from at least one specimen per species per locality. The tissue samples, once received at the Academy, were placed in an ultracold freezer (-86° C). All specimens and tissues are deposited in the Herpetology research collections of the California Academy of Sciences.

Locality data were recorded for all specimens collected. These data consist of a written description of the locality, usually designated by mileage from a prominent land feature or road. Using Maptech Terrain Navigator each locality was designated to 1/16 section of the Public Land Survey System. Elevation was also taken from 7.5 minute topographic maps using Terrain Navigator. Latitude and longitude were obtained in the field using global positioning system (GPS) receivers (Garmin 12) set to North American Datum, 1927. GPS coordinates were checked against the 7.5 minute topographic maps in Maptech Terrain Navigator and corrected as required. All latitude and longitude coordinates were taken using North American Datum 1927. Point data were plotted on base maps of the national forest using ArcView (vers. 3.1).

RESULTS

A total of 1,733 historical records from the five counties surrounding the Tahoe National Forest were entered into a computerized database. Of the 1,733 records, 609 specimen records are from within the outermost borders of the Tahoe National Forest. The surveys resulted in a total of 688 specimens collected from the national forest (268 in 1997, 203 in 1998 and 217 in 1999). These specimens represent collections from 235 unique localities. Combining these records with the historical data, our database of specimens collected within the outermost forest boundaries consists of 1,297 specimen records, which represent 365 unique localities (115 from Nevada County, 91 from Placer County, 2 from Plumas County, 135 from Sierra County and 22 from Yuba County (see Appendix B, page B1)).

Twenty-five species (9 amphibian and 16 reptile) are known to occur within the Tahoe National Forest (Table 2). The surveys resulted in seven new county records, six from within the forest boundaries (Spencer et al. 1998; Koo et al. 1999). New county records were obtained for *Ambystoma macrodactylum* and *Clemmys marmorata* from Nevada County and *Coluber constrictor*, *Crotalus viridis*, *Diadophis punctatus*, *Elgaria coerulea*, and *Lampropeltis zonata* from Sierra County.

Table 2. Checklist Of Amphibian and Reptile Species Occurring in the Tahoe National Forest and Surrounding Counties.*

	Tahoe NF	Nevada Co.	Placer Co.	Plumas Co.	Sierra Co.	Yuba Co.
Amphibians						
<i>Ambystoma macrodactylum</i> **	X	X	X	X	X	
<i>Batrachoseps attenuatus</i>		X	X			X
<i>Batrachoseps diabolicus</i>			X			
<i>Bufo boreas</i> **	X	X	X	X	X	
<i>Ensatina eschscholtzii</i> **	X	X	X	X	X	X
<i>Hydromantes platycephalus</i>	X				X	
<i>Hyla regilla</i> **	X	X	X	X	X	X
<i>Rana aurora</i>			X	X		
<i>Rana boylei</i> **	X	X	X	X	X	X
<i>Rana catesbeiana</i>	X†	X	X	X	X	
<i>Rana muscosa</i> **	X	X	X	X	X	
<i>Rana pipiens</i>			X		X	
<i>Spea intermontana</i>				X		
<i>Taricha torosa</i> **	X	X	X	X		X

continued

Table 2 continued

	Tahoe NF	Nevada Co.	Placer Co.	Plumas Co.	Sierra Co.	Yuba Co.
Reptiles						
<i>Charina bottae</i> **	X	X	X	X	X	X
<i>Clemmys marmorata</i> **		X				
<i>Cnemidophorus tigris</i>			X			
<i>Coluber constrictor</i> **	X	X	X	X	X	X
<i>Contia tenuis</i> **	X	X	X	X	X	
<i>Crotalus viridis</i> **	X	X	X	X	X	X
<i>Diadophis punctatus</i> **	X	X	X	X	X	X
<i>Elgaria coerulea</i> **	X	X	X	X	X	X
<i>Elgaria multicarinata</i> **	X	X	X		X	X
<i>Eumeces gilberti</i>	X	X	X			X
<i>Eumeces skiltonianus</i> **	X	X	X	X	X	X
<i>Hypsiglena torquata</i>			X			
<i>Lampropeltis getula</i>			X			X
<i>Lampropeltis zonata</i> **	X	X		X	X	
<i>Masticophis lateralis</i>		X	X			X
<i>Phrynosoma coronatum</i>			X			
<i>Pituophis melanoleucus</i> **	X	X	X	X	X	X
<i>Rhinocheilus lecontei</i>			X			
<i>Sceloporus graciosus</i> **	X	X	X	X	X	X
<i>Sceloporus occidentalis</i> **	X	X	X	X	X	X
<i>Thamnophis couchii</i> **	X	X	X	X	X	X
<i>Thamnophis elegans</i> **	X	X	X	X	X	X
<i>Thamnophis sirtalis</i> **	X	X	X	X	X	X
Total Species	25					

*Based on 12 museum collections.

**Species collected during 1997, 1998 and 1999 surveys within the Tahoe National Forest.

Shaded cells are new county records based on voucher specimen(s) from within the boundaries of the Tahoe National Forest.

† Record based on verified sighting.

Because of time and financial limitations, we were not able to examine most museum specimens listed in this report. Specimens suspected of being misidentified were checked by curatorial staff at their respective institutions. Some specimen identifications may still be in error, and specimens suspected of erroneous identifications should be examined.

In summary, the results are embodied in the following appendices: Appendix A, an Annotated Species Account, which includes both species found within the National Forest boundaries and those expected to occur; Appendix B, Maps of Species Distributions for the Tahoe National Forest, arranged alphabetically by genus and species; and Appendix C, Catalog of Voucher Specimens, listed alphabetically by genus, species, county, museum and numerically by museum catalog number.

FUTURE PROJECTS

Despite data from historical collections as well as the collections made during the last three years, additional surveys are required to document and further clarify the distributions of amphibians and reptiles in the Tahoe National Forest. Of the 25 species now known to occur within the national forest, eight species (35%) are known from 10 or fewer specimens and nine species are known from 10 or fewer localities. Realizing that the entire forest cannot be surveyed, predictive models might be constructed to determine the likely distributions of given species.

However, such models require adequate information regarding habitat and elevation limits. Models such as CWHR are made on a state-level, and thus are not reliable at the national forest-level. The CWHR amphibian and reptile distribution maps are based on major vegetation types and/or elevation limits. However, parameters such as elevation limits for species differ with latitude; elevation limits for species occurring in the southern Sierra are not the same as those for the same species in the northern Sierra. Thus, for any model to be effective, data are needed which directly pertain to the specific forest area. As the U.S. Forest Service relies more on GIS, it is essential that baseline data exist for the national forest.

Future surveys should focus on general surveys in those areas that have not been adequately sampled as well as surveying for species which are of special concern to the national forest. There are still large areas within the national forest that require general survey work. Such areas include most of the high mountain lakes as well as many of the tributaries to the major drainages (see map of collecting localities in Appendix B, page B1).

Efforts could also be made to involve Forest Service employees in documenting species occurrence. Valuable data can be obtained by salvaging dead specimens. In particular, amphibians and reptiles killed by vehicles are often in good enough condition to be prepared as museum specimens and as such can provide much useful information. For instance, specimens with well-documented locality data provide additional information on distribution even if physically damaged. Ecological information such as activity periods, feeding behavior (from stomach contents), and parasite loads can also be obtained. In addition, these salvaged specimens provide useful data for systematic studies. The CAS Department of Herpetology will be pleased to provide interested staff with appropriate instructions and supplies to prepare such specimens.

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APPENDIX A.

ANNOTATED SPECIES ACCOUNT OF THE HERPETOFAUNA OF THE TAHOE NATIONAL FOREST

The following species account is based on specimen records (Appendix C) from 12 museum collections (see Table 1 for a list of the museums and museum codes) as well as specimens collected during the 1997, 1998 and 1999 surveys. Species are listed alphabetically by genus and species along with their common names (common names follow Stebbins 1985). Each record lists the general habitat requirements, comments on the distribution within the national forest and remarks. A list of species which may occur but have yet to be documented from the Tahoe National Forest follows the main species account. Species distribution maps follow in Appendix B.

Ambystoma macrodactylum Long-toed Salamander (Map B2)

Habitat: Throughout much of its range, *Ambystoma macrodactylum* occurs in a wide variety of habitats including semiarid sagebrush deserts, dry woodlands, humid forests, and alpine meadows (Nussbaum et al. 1983). In the Sierra Nevada, it is limited to montane forests and mountain meadows in the vicinity of ponds and lakes (Ferguson 1961; Stebbins 1962). Along the eastern slope of the Sierra Nevada, the species occurs in Sagebrush-Jeffrey Pine habitat in Carman Valley, Plumas County.

Distribution: Except for Yuba County, *A. macrodactylum* has been found in all counties surrounding the national forest, although very few localities have been documented. Within the Tahoe National Forest, there is only one locality record per county for Nevada and Placer Counties. The species occurs from about 5,400 ft. on the western slope to 7,320 ft. and extends down the eastern slope to about 5,200 ft. The distribution extends down the eastern slope of the Sierra into Carman Valley in Plumas County. The Carman Valley specimens, which were collected in 1998, may represent the first records of the species occurring in sagebrush habitats along the eastern base of the Sierra.

Remarks: Most of the specimens collected during our survey were found in water or in the immediate vicinity of water.

In Carman Valley, larvae were found in man-made pools; CAS 205941 and 206425-28 were collected from a large pool (3 yds. x 30 yds.) of a roadside ditch, and CAS 206430 was collected in a stock pond.

A. macrodactylum larvae was found freshly swallowed by Sierra Garter Snake (*Thamnophis couchii*) at French Meadows, Placer County (CAS 210001).

Because of the adverse effects of introduced trout (*Oncorhynchus* spp.) on *A. macrodactylum* eggs and larvae (Tyler et al. 1998), efforts should be made to document the current distribution of the species. Mining ponds which do not have introduced fish may prove to be important breeding refugia for this salamander.

Although none have been collected, our surveys report finding *A. macrodactylum* larvae in Sailor Meadows, Foresthill District.

Bufo boreas Western Toad (Map B3)

Habitat: The Western Toad occurs from grasslands in the Central Valley east across the Sierra into Great Basin Sagebrush (Hayes and Cliff 1982; Stebbins 1985; Zeiner et al. 1988). *Bufo boreas* may utilize streams, rivers, ponds, lakes, and reservoirs for breeding sites.

Distribution: Except Yuba County, *B. boreas* has been found within the national forest from all counties. Within the national forest, specimens have only been documented from relatively high elevations (5,320 ft. to 7,370 ft.).

Remarks: Although Hayes and Cliff (1982) mention that *B. boreas* is ubiquitous throughout Butte County, our surveys in the Tahoe and Plumas National Forests have not documented the

species below 3,520 ft. in Plumas County, 5,780 ft. in Sierra County, and 5,320 in Placer County. Despite historical records indicating that toads occur at lower elevations, our surveys only found *Bufo* at higher elevations along the western slope of the Sierra. *Bufo* was only found at five localities within the Tahoe National Forest. Toads were found at Sterling Lake (two localities), 6,987 ft. (CAS 209911, 209974-76); Middle Fork of the American River, 5,320 ft., Placer County (CAS 205862); Beartrap Meadow, 7,000 ft., Sierra County (CAS 202930); and Lake of the Woods, 7,370 ft., Sierra County (CAS 203406-10).

Based on the description given by Hayes and Cliff (1982) of toads being "ubiquitous" in Butte County and the fact that we did not find any toads below 3,520 ft. in Butte, Yuba, Sierra, Nevada and Plumas counties, we recommend focused surveys for *B. boreas* populations along the western slope.

Charina bottae Rubber Boa (Map B4)

Habitat: *Charina bottae* is found in a variety of habitats from Sierran Mixed Conifer forest along the western slope of the Sierra to Sagebrush on the eastern side of the Sierra.

Distribution: *C. bottae* has been documented from all counties within the national forest. Elevations range from about 3,400 ft. in the Goodyears Bar area, Sierra County (CAS 202883) to 6,768 ft. at Soda Springs Summit, Placer County (CAS-SU 4189). The distribution of *Charina* extends into Sagebrush-Jeffrey Pine on the eastern side of the Sierra where the species has been recorded from numerous localities.

Coluber constrictor Racer (Map B5)

Habitat: *Coluber constrictor* occurs in most habitats from the Central Valley to the Great Basin sagebrush except for zones above and including Red Fir forest. Within the national forest, the species is most commonly found in grassy forest openings but can also be found in areas with relatively open canopy.

Distribution: The Racer is documented from all counties surrounding the national forest and is found within the national forest from all counties except for Yuba. Along the western slope, *C. constrictor*'s elevation range extends from the Central Valley at about 200 ft. to 5,920 ft. in Placer County (CAS 209964-66). The lowest elevation recorded within the national forest is 2,640 ft. on the North Fork Yuba River Trail (CAS 205950). In Sagebrush habitat, Racers are recorded at 5,000 ft. in the Beckwourth area of Plumas County (outside Tahoe National Forest).

Remarks: Four *C. constrictor* (vouchers CAS 209964-66) were found in a meadow adjacent to rock outcrops in French Meadow (T15N R15E Sec6 (NW ¼), Placer County, at an elevation of 5,920 ft.

Contia tenuis Sharp-tailed Snake (Map B6)

Habitat: The Sharp-tailed snake occurs from the Blue Oak woodlands in the western foothills east to Sierran Mixed Conifer forest. Stebbins (1954) describes *Contia* occurring in the Upper

Sonoran and Transition Life-Zones. Stebbins (1985) mentions that *Contia* occur in the openings on the edge of coniferous forest. Cook (1960) describes *Contia* inhabiting areas from the Upper Sonoran life zone extending into the coniferous forest in the low elevation marginal or ecotonal areas, and in Transitional regions, the species can be found in valley floors, meadows, and clearings that are associated with some Upper Sonoran vegetation, especially oaks. Leonard and Ovaska (1998) describe preferred habitat as coniferous and deciduous forest, forest edges, oak savanna, broken chaparral, meadows and disturbed habitats in residential areas. In the Plumas National Forest, surveys found this snake at higher elevations within coniferous forest than were previously expected. Specimens collected in the Golden Trout Crossing area were in small open areas within mid-elevation Sierran Mixed Conifer forest dominated by Douglas-fir (*Pseudotsuga menziesii*), Incense Cedar (*Calocedrus decurrens*), Ponderosa Pine (*Pinus ponderosa*), and Black Oak (*Quercus kelloggii*).

Distribution: The species is only documented by two specimens within the Tahoe National Forest and only from Sierra County. Specimens are recorded from Pike City, 3,480 ft. (CAS 207044) and the vicinity of Downieville, at approximately 2,900 ft. (MVZ 15985).

Hayes and Cliff (1982) offer the upper elevation of *C. tenuis* as 2,300 ft. in Butte County. One specimen (CAS 205652) was taken at 3,600 ft. from 0.8 mi. S (by Forest Rd. 22N24.5) of Golden Trout Crossing, Plumas National Forest, Butte County.

Crotalus viridis Western Rattlesnake (Map B7)

Habitat: *Crotalus* is found in a variety of habitats, usually in areas of open canopy and rocky substrate such as talus or rocky slopes and mine tailings.

Distribution: *Crotalus* is documented from all counties surrounding the national forest. However, the species is only documented from two localities within the Tahoe National Forest. Both specimens were found in Sierra County at fairly low elevations; 2,480 ft. along Humbug Creek, and at 2,600 ft. in Devils Canyon. The species has been found up to 4,800 ft. on the western slope of the Sierra in Plumas County, Plumas National Forest, and at 5,000 ft. in Sagebrush habitat of northern Sierra Valley.

Remarks: *Crotalus viridis* is reported to occur on the Sierra Buttes, Sierra County (pers. comm. M.M. Tierney 1997), however, there are no specimen records to substantiate the sightings.

Diadophis punctatus Ringneck Snake (Map B8)

Habitat: Hayes and Cliff (1982) mention that the distribution of *Diadophis* corresponds to the distribution of Bigleaf Maple (*Acer macrophyllum*) and California Bay (*Umbellularia californica*). However, one of the specimens from the 1999 survey was found in Sierran Mixed Conifer forest (Sugar Pine (*Pinus lambertiana*), Incense Cedar (*Calocedrus decurrens*), Ponderosa Pine (*P. ponderosa*), White Fir (*Abies concolor*)). Ringneck Snakes have also been documented from the Plumas National Forest from mixed conifer forest. *Diadophis* is usually not found in the open, preferring cover under bark, logs, stones etc. (Stebbins 1985).

Distribution: Only three *Diadophis* records exist for the Tahoe National Forest. Specimens were collected along Kanaka Creek, Sierra County, 3,480 ft. (CAS 203485), Skunk Canyon, Placer County, 3,080 ft. (CAS 209938) and at the south edge of Eagle Lake, Nevada County, 5,440 ft. (CAS 209870).

Remarks: Hayes and Cliff (1982) list the upper elevation for the species as 3,330 ft. in Butte County. The Eagle Lake specimen (CAS 209870) extends this elevation limit by over 2,000 ft.

Elgaria coerulea Northern Alligator Lizard (Map B9)

Habitat: Within the study area, the general habitat of *Elgaria coerulea* is considered to be cool, moist localities from the Upper Sonoran to Canadian Zones (Lais 1976a) and montane coniferous forests (Good 1988) and Montane Chaparral (Zeiner et al. 1988). A number of isolated populations have been found in Great Basin habitats (Vindum and Arnold 1997). These isolated populations suggest that *E. coerulea* may once have been more widely distributed in the now arid areas of the western Great Basin Desert (Vindum and Arnold 1997).

Distribution: Hayes and Cliff (1982) list the elevation distribution of this lizard within Butte County as over 3,000 ft. The lowest recorded elevation from within the study area is 2,680 ft. in Placer County. The highest elevation documented for *E. coerulea* from within the national forest is from 6,880 ft. in the vicinity of Downey Lake, Nevada County (CAS 209848). Specimens have been found at elevations over 6,000 ft. in Plumas, Sierra, Nevada and Placer counties (6,300 ft., 6,400 ft., 6,880 ft., 6,800 ft., respectively).

Remarks: Spencer et al. (1998) report on a new county record from Sierra County; subsequent specimens have been collected in the county from four localities and up to an elevation of 6,400 ft.

CAS 203459 collected on 20 August 1997 contained seven embryos close to full-term.

Elgaria multicarinata Southern Alligator Lizard (Map B9)

Habitat: *Elgaria multicarinata* occurs mainly in oak woodland, chaparral and semi-desert (Good 1988) but may extend into mountains associated with Ponderosa Pine (*P. ponderosa*), Black Oak (*Quercus kelloggii*), Bigleaf Maple (*Acer macrophyllum*), and Madrone (*Arbutus menziesii*) (Lais 1976b). It does not frequent dense coniferous forest (Lais 1976b).

Distribution: *E. multicarinata* ranges in elevation from the base (100 ft.) of the Sierra foothills to 3,960 ft. in Sierra County (USNM 312857). *E. multicarinata* occurs at lower elevations than *E. coerulea* but will overlap with *E. coerulea* at elevations between 2,000 ft. and 4,000 ft. along the western slope.

Remarks: In contrast to Lais' (1976b) description, CAS 202917 was collected in fairly dense Sierran Mixed Conifer forest in New York Ravine, Sierra County, at an elevation of 3,120 ft.

Ensatina eschscholtzii Ensatina (Map B10)

Habitat: *Ensatina* occurs in the Upper Sonoran and Transition Life-Zones along the western slope of the Sierra Nevada (Stebbins 1949). Specimens collected during our surveys were found in Ponderosa Pine forest and Sierran Mixed Conifer forest.

Distribution: Hayes and Cliff (1982) describe the western edge of the distribution as approximating the lower limit of the distribution of Ponderosa Pine (*Pinus ponderosa*). *Ensatina* may occur in shaded canyons down to elevations of 1,330 ft. in Butte County (Hayes and Cliff 1982). Along the western edge of the Sierra, the lowest elevation for documented specimens is 1,700 ft. in Butte County, 2,125 ft. in Yuba County, 3,100 ft. in Sierra County, 2,000 ft. in Nevada County and 2,200 ft. in Placer County. The highest elevation recorded from within the Tahoe National Forest is 5,320 ft. from near the southern shore of French Meadows Reservoir, Placer County (CAS 206379-80).

Eumeces gilberti Gilbert's Skink (Map B11)

Habitat: Mostly occurring in Mixed Chaparral, Blue Oak-Gray Pine and lower Ponderosa Pine forest, this species also occurs on the valley floor in some areas (Rodgers and Fitch 1947). *Eumeces gilberti* prefers areas of rocky substrate and depend on rocks for shelter. (Rodgers and Fitch 1947).

Distribution: This skink inhabits the foothills of the Sierra Nevada to the northern limit of its distribution at the Yuba River, Yuba County (Jones 1985). Rodgers and Fitch (1947) offer the upper elevation for Yuba and Placer Counties as 2,500 ft. Since Rodgers and Fitch (1947) reported on the species, new specimens have been deposited in the MVZ collection (MVZ 45273-74) which were collected at elevations up to 4,000 ft. in Nevada County.

Eumeces skiltonianus Western Skink (Map B11)

Habitat: *Eumeces skiltonianus* occupies a variety of habitats along the western slope of the Sierra. The majority of collections are from habitats between the central valley grasslands east to Ponderosa Pine forest and extending into Montane Hardwood and Sierran Mixed Conifer forest. The species is usually found in areas of open canopy such as grassy meadows or rocky slopes. *E. skiltonianus* is usually not found in heavy forested areas.

On the eastern side of the Sierra, the species can be found in Jeffrey Pine forest and Sagebrush habitats where rocks and logs provide cover.

Distribution: There are only six locality records for this usually common species. Along the western slope of the Sierra Nevada in the Tahoe National Forest the highest record is about 4,040 ft. at Red Point, Placer County (CAS-SU 4-5). The species attains higher elevations on the eastern side of the Sierra Nevada reaching elevations of 6,200 ft., in the Plumas National Forest. The occurrence along the east side of the Sierra is based on few specimens. *Eumeces* is documented from Sagebrush-Jeffrey Pine habitat from Sierraville (UNR 3117) and Cottonwood Creek (MVZ 100303), Sierra County.

Hydromantes platycephalus Mount Lyell Salamander

Habitat: Jennings and Hayes (1994) describe appropriate habitat for *Hydromantes platycephalus* as within alpine or subalpine vegetation in and among rocky outcrops and scattered boulders almost always in the presence of water, either permanent or seasonal such as snow melt. Stebbins (1985) associates the species with granite outcrops where fissures are present.

Distribution: Within the Tahoe National Forest, the species is only found on the Sierra Buttes, Sierra County (MVZ 15827-29 158628-37).

Hyla regilla Pacific Tree Frog (Map B12)

Habitat: *Hyla regilla* occurs close to water sources in all vegetation types except for extreme alpine habitats. This frog breeds in vernal pools, marshes, lakes, ponds, roadside ditches, reservoirs, and slow streams (Stebbins 1985). The species can also be found along rivers in side pools left by earlier high water.

Distribution: *H. regilla* occurs throughout the national forest. It has been found at elevations above 7,000 ft. along the Sierran crest from Plumas County to Placer County. The highest recorded elevation within the national forest is 8,300 ft., Nevada County (MVZ 193549).

Remarks: Within the study area, there are few records from Sagebrush habitat east of the eastern slope of the Sierra. The lack of collections from this area is most likely do to inadequate sampling. Because the species is often ubiquitous, it is often overlooked as a common species in collecting efforts.

Lampropeltis zonata Mountain King Snake (Map B13)

Habitat: Zweifel (1952, 1974) lists *Lampropeltis zonata* as mostly restricted to Ponderosa Pine forest, and that the species is a good indicator of the Transition Zone within the Sierra Nevada.

Distribution: Within the national forest, the species occurs only along the western slope of the Sierra in Ponderosa Pine, Montane Hardwood and Sierran Mixed Conifer forest. There are only four records of the Mountain King Snake from the Tahoe National Forest. Documented records exist for Washington, Nevada County, approximately 2,612 ft. (USNM 307613) and from three localities in Sierra County along Hwy. 49 at elevations of 2,520 ft., 2,978 ft. and 3,440 ft. (CAS 202935, 205956 and 202889, respectively).

Based on museum records, the known elevation range in adjacent Plumas National Forest is between 1,990 ft. in Butte County and 4,320 ft. in Plumas County.

Pituophis melanoleucus Gopher Snake (Map B14)

Habitat: *Pituophis melanoleucus* inhabits a variety of habitats up to the upper edge of Sierran Mixed Conifer forest.

Distribution: This usually common snake is known from only six localities within the Tahoe National Forest. One specimen is recorded from Shirttail Campground, 3,680 ft., Placer County (CAS 205866). The other five specimens were collected along Hwy. 49, Sierra County, from elevations of 2,520 ft., 3,560 ft., 3,800 ft., 4,186 ft. and 4,600 ft. (CAS 203364, CAS 202873, CAS 203362, SDSNH 41361 and CAS 202903, respectively). Four records document the species occurring near the national forest on the east side of the Sierra Nevada. One specimen is documented from the Truckee River at the state line, 5,040 ft. (MVZ 45779). The other three specimens are recorded from the north end of Sierra Valley at an elevation of 5,000 ft. (4.5 and 5 mi. S of Beckwourth on Hwy. A23 (MVZ 100296 and 100295, respectively) and 1.7 mi. N of Beckwourth on Forest Rd. 177 (CAS 209264)).

Hayes and Cliff (1982) cite 6,000 ft. as the upper elevation limit in Butte County. Based on museum records, the upper elevation of known localities is: 5,100 ft. in Lassen County; 5,000 ft. in Plumas County; and 5,040 ft. in Sierra County.

Rana boylei Foothill Yellow-legged Frog (Map B15)

Habitat: *Rana boylei* occurs in a variety of habitats from Mixed Chaparral and Blue Oak-Gray Pine to Sierran Mixed Conifer forest. *R. boylei* inhabits areas with moving water but tends to avoid areas with steep gradients (Zweifel 1955). In streams, this frog is found in stretches of open canopy and gravel substrate. In large streams or rivers, *R. boylei* tends to use side pools left by earlier high water or pools fed by smaller streams or seeps. Preferred sites include gravel, cobble-sized rocks, and large boulders (Zweifel 1955, 1968; Jennings 1988; Jennings and Hayes 1994).

Distribution: Generally *R. boylei* is found below 5,000 ft. along the western slope of the Sierra. Within the national forest, the species has not been recorded over 4,000 ft. The distribution map in Jennings and Hayes (1994) for *R. boylei* indicates that populations still occur within the general region of the Tahoe National Forest. However, in the distribution map presented by Jennings (1996), the distribution for the Foothill Yellow-legged frog indicates that the species is extinct along the western slope of Plumas, Sierra, Yuba, and Nevada Counties. Our surveys reveal that the species still occurs in some tributaries to most of the main drainages. Below, we summarize known (historical) localities where *R. boylei* has been collected as well as localities that are now documented with voucher specimens from our surveys.

DRAINAGES WHERE *RANA BOYLEI* HAVE BEEN RECORDED WITHIN THE TAHOE NATIONAL FOREST (localities in bold represent presence verified by specimens collected during 1997-1999 surveys)

North Yuba River Drainage

North Yuba River, **2,400 ft., 2,520 ft., 3,000 ft.**

Devils Canyon, **2,600 ft.**

Fiddle Creek, **2,360 ft.**

Humbug Creek, **2,320 ft., 2,360 ft.**

Ramshorn Creek, **2,865 ft.**

Saint Catherine Creek, **2,520 ft.**

Woodruff Creek, **2,960 ft.**

Woodruff Creek (western tributaries), **3,790 ft., 4,000 ft.**

Youngs Ravine, **3,475 ft.**

South Yuba River Drainage

South Yuba River 2,620 ft., 2,880 ft.
Poorman Creek, ca 2,600 ft.
South Fork Poorman Creek, unknown elevation
Washington Creek, 2600-2800 ft., ca.2,610 ft.

Middle Yuba Drainage

Middle Yuba River, 3,360 ft.
Grizzly Creek, 3,180 ft.
Kanaka Creek, 3,000 ft.
Moonshine Creek, unknown elevation

North Fork Middle Fork American River Drainage

North Shirttail Creek, 3,600 ft.

North Fork American River Drainage

North Fork American River, 1,480 ft.
Skunk Canyon Creek, 1,635 ft.

Rana catesbeiana Bullfrog

Habitat: The habitat requirements of *Rana catesbeiana* are similar to those of *R. aurora*, occurring in ponds, marshes, lakes, reservoirs, and slow-moving streams (Stebbins 1985).

Distribution: This introduced species is recorded from all counties surrounding the national forest and occurs throughout the western slope. Although there are no voucher specimens from the Tahoe National Forest, bullfrogs have been sighted in Joubert Diggings in Sierra County (pers. obs. J.V. Vindum 1997). The species most likely occurs throughout the Tahoe National Forest below elevations of approximately 5,000 ft. In the Plumas National Forest, it is found up to 4,760 ft. in Plumas County and to 4,400 ft. in Sierra County.

Rana muscosa Mountain Yellow-legged Frog (Map B15)

Habitat: *Rana muscosa* inhabits a variety of aquatic habitats, including streams, ponds, and lakes (Zweifel 1955; Mullally and Cunningham 1956). Preferred habitat includes streams with moderately rocky shorelines interspersed with vegetation (Mullally and Cunningham 1956). In high elevation streams that meander through meadows with vertical or overhanging banks, the densest populations of *R. muscosa* are in areas with banks of less than 10 inches in vertical height (Mullally and Cunningham 1956).

Distribution: In the Sierra Nevada, Zweifel (1955) lists the lower limit in elevation as 4,500 ft. at San Antonio Creek, Calaveras County. A newly documented locality from Pinkard Creek meadow, Butte County (CAS 203170), extends the lower limit to 3,425 ft. The lowest record for the Tahoe National Forest is 5,200 ft. in Poorman Creek, Nevada County (MVZ 136159-68). The highest elevation recorded within the study area is 7,840 ft. at Castle Creek, Round Valley, Nevada County (CSUC 1262-3). Elevation limits range from 5,200 ft. to 7,840 ft. in Nevada County, 6,000 ft. to 7,500 ft. in Placer County and 5,750 ft. to 6,440 ft. in Sierra County. The

species has been found from 33 localities within the Tahoe National Forest (15 from Nevada County, nine from Placer County (five of which are in the Squaw Valley area) and nine from Sierra).

Remarks: The 1997-1999 surveys found *R. muscosa* from two additional localities. In Sierra County, the species was documented in Independence Creek (CAS 203394, 207047), and in Nevada County, the species was found in an unnamed pond along Rattlesnake Rd, T17N R13E Sec14 (NW ¼) (CAS 210033).

Sceloporus graciosus Sagebrush Lizard (Map B16)

Habitat: *Sceloporus graciosus* occurs in most habitats from Ponderosa Pine forest to Red Fir forest and Montane Chaparral. Usually found in areas of open canopy, it tends to be more of a ground-dweller than *S. occidentalis*, preferring habitats of sandy soil with widely scattered shrubs or rocks. The species is not found in dense forest.

Distribution: In the Tahoe National Forest, *S. graciosus* has been found from the western slope of the Sierra Nevada from about 2,360 ft. (CAS 205962) to mountain passes of approximately 7,500 ft. (CAS-SU 23276). Sagebrush Lizards have been documented from the eastern Sierra Nevada in Sagebrush-Jeffrey Pine habitat at elevations between 5,020 ft. and 5,120 ft. in Carmen Valley (CAS 202904, 203338-39) and at 5,800 ft. along Cottonwood Creek (MVZ 92683).

Remarks: *S. graciosus* is sympatric with *S. occidentalis* throughout most of its distribution within the national forest except for lower elevations along the western foothills where the distribution of *S. graciosus* is spotty. At higher elevations, over about 6,000 ft., *S. occidentalis* becomes sparse.

Sceloporus occidentalis Western Fence Lizard (Map B17)

Habitat: Like *Sceloporus graciosus*, it occurs in most habitats within the forest but favors a lower elevation range. *S. occidentalis* favors areas of open canopy with rocks, fallen logs, trees, or other structures (i.e., old buildings, wood piles). The species is infrequently found in dense forest.

Distribution: *S. occidentalis* is found throughout the national forest from the lowest western slopes to 7,320 ft. at Upper Lola Montes Lake, Nevada County (CAS 209909). Specimens have been recorded up to elevations of 6,768 ft. at Soda Springs Summit, Placer County (SDSNH 20441-49) and to 5,160 ft. in the Oak Ranch area, Sierra County (CAS 205899). The species also occurs on the east side of the Sierra Nevada in Sagebrush-Jeffrey Pine habitat where it has been documented from seven localities ranging in elevation from 5,120 ft. in Antelope Valley (CAS 202907-13) to 6,260 ft. in Pats Meadow (CAS 203418-19), Sierra County.

Taricha torosa California Newt (Map B18)

Habitat: The Sierran form of *Taricha torosa* is mainly a forest species (Riemer 1958). It can be found adjacent to and in streams, rivers, lakes, and reservoirs from the western foothills east through Sierran Mixed Conifer forest.

Distribution: The species can be common along western drainages in Butte and Yuba Counties. *T. torosa* is not recorded from any drainages in Sierra County, and within the Tahoe National Forest, it is only documented at higher elevations in Nevada and Placer Counties. The upper elevation limit for the Sierran populations of *T. torosa* is at Laurel Lake above Hetch Hetchy, Tuolumne County, at an approximate elevation of 6,700 ft. (Riemer 1958). In the Tahoe National Forest, *T. torosa* (CAS 203375) was found along the north shore of Bowman Lake at an elevation of 5,600 ft. The species has not been collected east of the Sierran crest.

Thamnophis couchii Sierra Garter Snake (Map B19)

Habitat: Within the national forest, *Thamnophis couchii* is closely associated with aquatic environments in montane coniferous forest. In the western portion of its distribution, the species may occur along aquatic habitats within oak woodlands, grassy valleys, and chaparral (Rossman et al. 1996). It frequents streams, rivers, ponds, lakes, and reservoirs usually in areas with rocky substrate.

Distribution: Hayes and Cliff (1982) list the lower limit of the species distribution in Butte County as 330 ft. The lowest elevation found from Yuba to Placer County is 2,246 ft. *T. couchii*'s elevation range extends from approximately 2,246 ft. along the North Fork Yuba River, Sierra County (CAS 201528) to 7,120 ft. in a pond in the vicinity of Stanford Lake, Nevada County (CAS 209775). The species has been found at 6,320 ft. in French Meadows, Placer County (CAS 209997-210001) and at 6,720 ft. at Tamarack Lake, Sierra County (CAS 205911).

T. couchii occurs along the Truckee River drainage extending east into Nevada (Fitch 1984; Rossman et al. 1996).

Remarks: *T. couchii* is known to feed on frog and salamander larvae and post-metamorphic frogs in ephemeral habitats; in permanent streams, the snake tends to feed predominantly on fish (Rossman et al. 1996). One snake from French Meadows (CAS 210001) contained a freshly swallowed *Ambystoma macrodactylum* larvae. A specimen (CAS 210021) taken from Lily Lake, T21N R12E Sec5 (NE ¼ of NW ¼), Plumas County, Plumas National Forest was also found having fed on *A. macrodactylum* larvae. Other Sierra Garter snakes from the Plumas National Forest contained a minnow (Cyprinidae), trout (Salmonidae) and hitch (*Lavinia exilicauda*).

Thamnophis elegans Western Terrestrial Garter Snake (Map B20)

Habitat: Zeiner et al. (1988) mentions that *Thamnophis elegans* is associated with permanent or semi-permanent bodies of water in a variety of habitats. *T. elegans* occurs throughout western North America and within its distribution some populations tend to be more terrestrial than others (Rossman et al. 1996). In the eastern portion of the Tahoe National Forest, *T. elegans* tends to favor the margins of ponds and streams while being more terrestrial on the western slope of the

Sierra Nevada. White and Kolb (1974) found *T. elegans* in the Sagehen Creek area to be closely associated with streams. *T. elegans* frequents Ponderosa Pine, Douglas Fir, White and Red Fir, Aspen, Jeffrey Pine, and Sagebrush habitats.

Distribution: Along the western slope, the species is found as low as 110 ft., although it tends to be absent from the valley floor (Hayes and Cliff 1982). Upper elevations for the Tahoe National Forest include 6,944 ft. at Independence Lake, Sierra County (MVZ 79577), 6,600 ft. at Sagehen Creek, Nevada County (MVZ 60616), and 6,500 ft. 2 mi. west of Soda Springs Station, Placer County (MVZ 5345). The upper limits in elevation probably extend over 7,000 ft. A specimen was found at an elevation of 7,032 ft. in a small pond in Aspen-Red Fir forest at the headwaters of Ferris Creek, Plumas County, Plumas National Forest.

Remarks: Fitch (1940) asserts that *T. elegans* exhibits differential feeding habits in different parts of its range. Specifically, the Great Basin specimens prey more on aquatic animals (fish or leeches) whereas specimens along the western slope of the Sierra feed on terrestrial prey items. *T. elegans* in the Sagehen Creek area of the eastern Sierra was found by White and Kolb (1974) to feed mainly on fish and rodents. Although our sample size is small, stomach contents taken from the snakes with obvious stomach contents corroborate the findings of Fitch (1940) for the western Sierra and those of White and Kolb (1974) for the eastern side of the Sierra Nevada. Specimens collected along the western slope of the Sierra in the Tahoe and Plumas National Forests contained slugs (CAS 202920, 205560, 205668 and 205696), a juvenile northern alligator lizard (*Elgaria coerulea*; CAS 205668), and an adult *Ensatina eschscholtzii* (CAS 205377). On the east side of the Sierra Nevada, two specimens (CAS 206104 and 206160) from the Dixie Mountain State Game Refuge, Plumas National Forest, contained two trout (*Oncorhynchus* sp.) and a rodent (a subadult *Microtus* sp.), respectively. A snake (CAS 203417) from Smithneck Creek, Tahoe National Forest also contained a rodent.

Thamnophis sirtalis Common Garter Snake (Map B21)

Habitat: Similar to *Thamnophis elegans*, *T. sirtalis* frequents a variety of habitats extending from the Central Valley to Red Fir forest. It seems to favor lentic habitats with emergent vegetation (Hayes and Cliff 1982).

Distribution: Although *T. sirtalis* occurs on the Central Valley floor most of the specimens recorded from the Tahoe National Forest are from moderately high elevations. Lower limits include approximately 2,880 ft. in Yuba County (CAS 208702), 4,475 ft. in Sierra County (CAS 202892), 5,250 ft. in Nevada County (CAS 203383) and 5,600 ft. in Placer County (CAS 206416). Upper elevation limits include 7,370 ft. at Lake of the Woods, Sierra County, (CAS 203405), 7,320 ft. at Upper Lola Montes Lake, Nevada County (CAS 209907-08) and 7,500 ft. at Five Lakes, Placer County (MVZ 71856).

The species is not well documented from the eastern portion of national forest. There are a few extralimital records from Sierra Valley, in Plumas and Sierra counties.

Remarks: CAS 209984 from an unnamed pond along Rattlesnake Rd., T17N R13E Sec14 (NW ¼ of SE ¼), Nevada County; contained a freshly swallowed juvenile *R. muscosa*. At Furnace Flat, a snake (CAS 209985) was found in the process of digesting a dried carcass of a Fox Sparrow (*Passerella iliaca*).

**SPECIES WHICH HAVE NOT BEEN FOUND BUT MAY OCCUR WITHIN
THE TAHOE NATIONAL FOREST BOUNDARY.**

Batrachoseps attenuatus California Slender Salamander

Batrachoseps is confined to the western foothills in woodland or chaparral from the eastern edge of Sacramento Valley grasslands to the western edge of Ponderosa Pine (*Pinus ponderosa*) (Hayes and Cliff 1982). *B. attenuatus* occurs along the western edge of the national forest from Yuba to Placer County but tends not to occur at elevations high enough to include national forest lands. Hayes and Cliff (1982) list the upper elevation of *B. attenuatus* as about 2,000 ft. in Butte County. The species occurs at higher elevations in Nevada County, with elevations extending to 3,000 ft. in the Round Mountain area.

The closest localities to the Tahoe National Forest include 3.5 mi. S of San Juan, Nevada County, the Round Mountain area, Nevada County, and the Auburn area of Placer County. Additional surveys will most likely yield specimens from the western edge of the national forest. The newly described *Batrachoseps diabolicus* ranges from the American River south to the Merced River at elevations below 984 ft. (Jockusch et al. 1998). *B. diabolicus* occurs in open, brushy areas on the margins of chaparral and scattered pines (*Pinus sabiniana*, and occasionally *P. ponderosa*) (Jockusch et al. 1998). It is doubtful that *B. diabolicus* occurs in the Tahoe National Forest because of its cited affinity for low elevation chaparral and Blue Oak-Gray Pine habitats.

Clemmys marmorata Western Pond Turtle

Our only native freshwater turtle frequents ponds, lakes, reservoirs, and streams (Stebbins 1985; Jennings and Hayes 1994; Bury 1970). In streams and rivers, *Clemmys* require areas of slow-moving water that are adjacent to upland areas, which can be utilized for egg deposition and over-wintering (Jennings and Hayes 1994).

Clemmys occurs along the Sierran foothills; Hayes and Cliff (1982) list the upper elevation in Butte County as 3,330 ft. There are no historic records from any of the counties surrounding the forest. A voucher specimen (CAS 207045) from North San Juan, on Hwy. 49, Nevada County represents a new county record (Koo et al. 1999).

Cnemidophorus tigris Western Whiptail

Although there are no museum records of *Cnemidophorus tigris* within the national forest, it may occur along the western border. This fast-moving lizard favors open areas such as desert and semidesert areas including chaparral, and the lower edges of Ponderosa Pine and Blue Oak-Gray Pine forest as long as the substrate is free of dense grass and shrubs (Stebbins 1985). On the western border of the forest, the valley subspecies of *C. tigris* may extend into lower elevation canyons that extend into the national forest.

Hypsiglena torquata Night Snake

Stebbins (1985) describes *Hypsiglena* as frequenting a variety of habitats including: "grassland, chaparral, sagebrush flats, deserts, woodland, moist mountain meadows, thornscrub, and thornforest". The only museum records of *Hypsiglena* are found west of the national forest, which suggests that in contiguous habitats, it may occur within the national forest as well, particularly in lower elevation canyons and foothills. In Placer County, the nearest record to the Tahoe National Forest is from 2.5 mi. WNW of Foresthill (MVZ 175434).

Lampropeltis getula Common Kingsnake

The distribution maps for *Lampropeltis getula* in Stebbins (1985) and Zeiner et al. (1988) clearly indicate the species is expected to occur throughout the national forest. However, Hayes and Cliff (1982) state that for Butte County the upper elevation limit of *L. getula* is 2,330 ft., and, in fact, is infrequent above 2,000 ft. This would limit the species to the extreme western portions of the Tahoe National Forest.

Masticophis lateralis California Whipsnake

Masticophis lateralis is restricted west of the Sierra Nevada (Ortenburger 1928), favoring mainly chaparral, scrubbrush, and upland foothills (Stebbins 1985). Suitable habitat exists within the national forest along the lower elevations of the western boundary.

Phrynosoma coronatum Coast Horned Lizard

Although the Coast Horned Lizard is most abundant in sandy loam soils and alkali flats, the species is also known from a variety of other habitats including riparian woodland clearings, chaparral, and exposed gravel-sand substrate with scattered shrubs (Jennings and Hayes 1994).

The distribution of *P. coronatum* extends north to northern Butte County along the foothills of the Sierra Nevada. Based on museum records, *P. coronatum* has not been found in the Sierra foothills within the counties surrounding the national forest since 1952. Historically, they are recorded from: Auburn (USNM 13844, collected in 1884) and Colfax (CAS-SU 5832, no date available), Placer County.

Rana aurora Red-legged Frog (Map B15)

Rana aurora occurs within a variety of vegetation types. It prefers ponds or pools in slow-moving streams which have emergent and submergent vegetation as well as vegetation along the banks (Storer 1925). The largest populations are found in deep ponds with dense stands of overhanging willow and fringed with cattails (Jennings 1988).

Based on the collections queried, there are no historical voucher specimens of *R. aurora* from within the national forest. The closest localities are: 0.5 mi. NE of Dutch Flat, Placer

County; and Michigan Bluff, Placer County. The highest elevation record from the western counties is 3,360 ft. (MVZ 29314-16; 0.5 mi. NE of Dutch Flat).

Rana pipiens Northern Leopard Frog

Only two historical localities exist for this species within the counties surrounding the forest. In 1934, six specimens were found in Trout Creek, 2.5 mi. W of state line, Placer County (MVZ 17175-80) and one specimen was recorded in 1958 from 1 mi. NE of Sierraville, Sierra County (CSUS 356). Aquatic habitats on the east side of the Sierra which have emergent or submergent vegetation should be surveyed for this frog, particularly areas such as Sierra Valley.

Spea intermontana Great Basin Spadefoot

Spea intermontana is associated with Sagebrush, Pinyon-Juniper woodlands, and alkali scrub habitats of the Great Basin (Stebbins 1985; Zeiner et al. 1988). It breeds in temporary and permanent water using pools, roadside ditches, irrigation ponds, and reservoirs (Nussbaum et al. 1983). Breeding usually takes place between May and July following spring or summer rains (Stebbins 1985). The species is primarily nocturnal, foraging on rainy nights or when the humidity is high (Nussbaum et al. 1983). Specimens collected in Lassen and Plumas Counties were all collected in June and July.

The closest record to the Tahoe National Forest is from 1 mi. E of Vinton, 5,000 ft., Plumas County. Night surveys should be conducted for this species during summer rains in sagebrush habitats within Sierra and Plumas counties.

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APPENDIX B.

MAPS OF SPECIES DISTRIBUTION IN THE TAHOE NATIONAL FOREST

Map B1 shows collecting localities for the Tahoe National Forest. Subsequent maps are arranged alphabetically by genus and species. In all maps, the distribution data displayed are those occurring within the general boundaries of the national forest. Species represented by a single locality may not be shown. Locality records from the 1997-1999 surveys are highlighted in red. Specimens collected prior to 1997 are shown in yellow.