

THE RESOURCES AGENCY OF CALIFORNIA
Department of Fish and Game

STATUS REPORT ON CALIFORNIA'S THREATENED AMPHIBIANS AND REPTILES^{1/}

R. Bruce Bury^{2/}
Inland Fisheries Branch

SUMMARY

The herpetofauna of California is rich in numbers and diversity, but many endemic reptiles and amphibians are declining in abundance due to collecting and habitat destruction. Recent legislation and Fish and Game Commission action protects threatened forms, including 7 species and subspecies of salamanders, 1 toad, 1 lizard, and 4 snakes. In addition, there are special regulations protecting the desert tortoise. These comprise 7% of the 194 different species and subspecies that live in California. This review incorporates suggestions made by authorities on certain groups, and proposes the addition of 1 salamander, 4 lizard and 2 snake species or subspecies to those receiving protection. Present information suggests that guidelines need to be developed for the protection of nongame wildlife. Immediate action is required for several species and subspecies that are in danger of extinction in the near future. Habitat alteration is the primary threat to most of these endangered animals.

^{1/} Submitted December, 1971.

Inland Fisheries Administrative Report No. 72-2.

^{2/} Now with Museum of Vertebrate Zoology, University of California, Berkeley.

INTRODUCTION

Stebbins (1966 p. 21) aptly summarized the problems concerning amphibians and reptiles when he said, "Reptiles and amphibians are important to us in many ways.... Yet at a time of growing awareness of their value, their numbers are declining. The greatest destructive force is habitat disturbance. Most species of wild animals are adapted to a specific and complex set of conditions which must be met if they are to survive.... Marshes are drained, streams are placed in concrete troughs, canyons are dammed and inundated, the ground is cleared for subdivisions and highways, agriculture spreads into marginal lands and, spurred on by water developments, reaches out even into deserts, the stronghold of reptiles. Air, water, and soil are contaminated.... Interest in wildlife preservation cannot be separated from concern with efforts to limit human population growth and prevent careless exploitation of remaining natural areas."

In recent years the number of vertebrates threatened with extinction has markedly increased. In California many of our native amphibians and reptiles are declining in numbers due to collecting, particularly by the pet trade, and to loss of habitat as a result of agricultural developments, dams, industry (including mining, logging, and grazing), road construction, urbanization, and summer homes. The prolific rise of these activities has already forced many local populations of animals into extinction; several species and subspecies now face extermination.

Concern about the fate of threatened fish and wildlife led to the introduction and passage of the Endangered Species Conservation Act of 1969, which prevents the importation of endangered animals and forbids the interstate shipment of amphibians, reptiles, and other wildlife contrary to State laws. The State of California protects a number of native animals. The desert tortoise has been protected since 1935. It is now unlawful to sell, purchase, needlessly harm, take, or shoot any projectile at this animal. Most birds and some mammals have been fully protected for many years. However, the most comprehensive measures were taken in 1970 when the California Species Preservation Act and the Endangered Species Act were passed by the Legislature and signed into law. The first act revised the State list of fully protected birds and mammals, and established designations for fully protected fishes, amphibians, and reptiles. The second measure gives authority to the Fish and Game Commission to determine which animals are rare or endangered, whereby it is illegal to import into this state, or take, possess, or sell within California, including any part or product thereof, any animal so designated. A violation of either act is punishable by fines or imprisonment, or both.

The threatened amphibians and reptiles of California are listed in Table 1. The distribution of the protected species and subspecies are shown in Figure 1.

There are 7 salamanders, 1 toad, 1 lizard, 4 snakes, and 1 tortoise protected in California, which represent only 7% of the total number of species and

subspecies in the State. The herpetofauna of California is rich in numbers and diversity. There are 118 species (194 species + subspecies): 25 species (33 species + subspecies) of salamanders, 21 (24) frogs and toads, 4 (5) turtles and tortoises, 36 (58) lizards, and 32 (74) snakes. The great topographic and climatic conditions of California partly account for the diversity of its herpetofauna. There are more kinds and types of lizards in the deserts of southern California than anywhere else in the United States. The humid coastal belt in northwestern California harbors the most species of salamanders of any area in western North America. Several species and subspecies are restricted to the Central Valley. Others only occur in the Sierra Nevada, North Coast Range, or South Coast Range. Isolated populations and disjunct distributions are the rule rather than the exception in California. Due to this composition, many species and subspecies are restricted to particular areas and conditions where they can be easily depleted or decimated by human activities.

Most of the reptiles and amphibians discussed here are clearly illustrated and their natural history is summarized by Stebbins (1966 and in press). This paper is the first general review on the status of the rare, endangered, and fully protected amphibians and reptiles of California. Comments and recommendations are made on a number of status-undetermined species and subspecies. My objectives were to concisely identify the animals, denote their ranges and habitats, and, based on available knowledge, suggest ways to conserve these nongame wild animals, thereby insuring their survival.

ACKNOWLEDGMENTS

I thank Dr. Robert C. Stebbins for his helpful suggestions and review of the manuscript. Dr. Glenn R. Stewart kindly provided information about a number of the species accounts and his knowledge has been a source for many of my ideas. I am grateful to Leonard Fisk for his assistance and aid in the preparation of this paper.

CRITERIA

The following categories are based on the definitions contained in the Endangered Species Act (Fish and Game Code Section 2051) and the Bureau of Sport Fisheries and Wildlife (1966). **ENDANGERED** - a species or subspecies whose prospects of survival and reproduction are in immediate jeopardy; **RARE** - a species or subspecies that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment worsens; **STATUS-UNDETERMINED** - a species or subspecies that has been suggested as possibly rare or endangered, but about which there is not enough information to determine its status; **DEPLETED** - a species or subspecies that, although occurring in numbers adequate for survival, has been heavily depleted and continues to decline at a rate which gives cause for serious concern.

GENERAL BIBLIOGRAPHY

- Bureau of Sport Fisheries and Wildlife. 1966. Rare and endangered fish and wildlife of the United States. Resource Publ. 34. (Mimeo).
- Bury, R. B. 1971. Endangered and rare reptiles and amphibians of California. Res. Rept., Biol. Lib., Univ. Calif., Berkeley. 76 p. (Mimeo).
- _____. In press. Threatened wildlife protected in California. Biol. Cons.
- Honegger, R. E. 1968. Red Data Book. Vol. 3 - Amphibia and reptilia. IUCN, Morges, Switzerland.
- Stebbins, R. C. 1951. Amphibians of western North America. Univ. Calif. Press, Berkeley and Los Angeles. 539 p.
- _____. 1954. Amphibians and reptiles of western North America. McGraw-Hill Book Co., New York. 528 p.
- _____. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 p.
- _____. In press. Amphibians and reptiles of California. Univ. Calif. Press, Berkeley and Los Angeles.

SPECIES ACCOUNTS

ENDANGERED AMPHIBIANS

Santa Cruz Long-toed Salamander (Ambystoma macrodactylum croceum)

Description

Adults are 2½ to 3½ inches in snout-vent length (3 to 6 inches total length) and the toes are relatively long in comparison with other salamanders. The coloration is striking. Dorsally they are black with irregular middorsal spots of yellow-gold or orange. The venter is sooty.

Range and Habitat

This salamander is only known from two ponds in Santa Cruz County: Valencia Lagoon (Rio Del Mar near Aptos) and ½ mile northwest of Ellicott railroad station (4 miles west of Watsonville). It is an isolated race whose nearest relative occurs 150 airline miles northeastward in the montane parts of the Sierra Nevada (A. m. sigillatum). A. m. croceum occurs in temporary ponds that fill during winter rains. Nearby woods appear to be important to the salamander since these areas provide summer refuge.

Remarks

Listed as ENDANGERED by IUCN and the Secretary of the Interior. The animal is in danger of extinction due to habitat destruction. Valencia Lagoon once consisted of a large pond and marsh, but in 1969 the area was drained by construction of a storm channel along the edge of a new freeway. The plight of the salamander was brought to the attention of the Division of Highways, and in 1970 they constructed a "salamander pond" in hopes that the prior disturbance could be rectified. The pond is 125 feet by 40 feet, and 4 feet deep in the middle. Despite this action, no salamanders are known to have bred at the site in 1970 or 1971. There is no assurance that the salamander will return to the man-made pond, but the adult salamanders are presumed to be long-lived and, hopefully, they will return when the site grows natural vegetation again. The Ellicott Station locality is an oval temporary pond which fills with water in the winter and spring. Willow thickets and perhaps nearby oak woodland provide summer refuge for the adult salamanders.

The fate of the Santa Cruz long-toed salamander is indeed questionable at this time. The pond and surrounding woods at Ellicott Station need to be acquired and Valencia Lagoon should be restored to a more natural state.

References

- Anderson, J. D. 1967. A comparison of the life histories of coastal and montane populations of Ambystoma macrodactylum in California. Amer. Midl. Nat., 77:323-355.
- Bury, R. B., and S. B. Ruth. In press. Santa Cruz long-toed salamander: Survival in doubt. Herpetological Review.

Ferguson, D. E. 1961. The geographic variation of Ambystoma macrodactylum Baird, with the description of two new subspecies. Amer. Midl. Nat., 65:311-338.

_____. 1963. Ambystoma macrodactylum. Catalogue of American amphibians and reptiles. Amer. Soc. of Ichth. and Herp.:4.1-4.2.

Desert Slender Salamander (Batrachoseps aridus)

Description

A small-sized member of the genus Batrachoseps that is 2½ to 4 inches in total length. Distinguished from other Batrachoseps by its ventral coloration, which consists of blackish maroon on the belly and gular area contrasting with flesh color on the tail.

Range and Habitat

Restricted to Hidden Palm Canyon, tributary of Deep Canyon, south of the town of Palm Desert, Riverside County. Occurs under limestone sheets and rocks at the base of water-soaked cliffs.

Remarks

Proposed for inclusion in the IUCN Red Data Book and the Bureau of Sport Fisheries and Wildlife Red Book as **ENDANGERED**.

Brame (1970) stated that "Because of the limited extent of the habitat (the limestone sheets could easily be decimated) of Batrachoseps aridus, I strongly urge that it be placed on the official red book list of rare and endangered species (U.S.A. and International); steps should be taken to protect this unusual habitat and its interesting occupants." Acquisition of the Hidden Canyon site is now being attempted by the Bureau of Land Management.

References

Brame, A. H., Jr. 1970. A new species of Batrachoseps (slender salamander) from the desert of southern California. L.A. Co. Mus. Contr. Sci. 200:1-11.

RARE AMPHIBIANS

Kern Canyon Slender Salamander (Batrachoseps simatus)

Description

A large species of the genus Batrachoseps that is 3½ to 5 inches in total length; distinguished by having the combination of relatively long legs, narrow head, long tail, and distinctive coloration (black sides and venter; dorsum with flecks of bronze and light brown pigment which may form an imperfect dorsal band).

Range and Habitat

Known only from north facing slopes on the south side of the Kern River Canyon, Kern County, and possibly from the vicinity of Fairview, Tulare County. This salamander is currently known from only 7 localities. It occurs under pine, oak, and prostrate chaparral scrub logs, as well as rocks and talus, on steep north facing slopes.

Remarks

Future road construction or other disturbances along the Kern River Canyon could eliminate the habitat for this species and also distinctive populations of B. relictus whose type-locality is in the Kern River Canyon. Protection of these salamanders will require undisturbed natural areas along the south side of the Kern River Canyon from Bodfish westward to the mouth of the canyon.

References

Brame, A. H., Jr., and K. F. Murray. 1968. Three new slender salamanders (Batrachoseps) with a discussion of relationships and speciation within the genus. Bull. L.A. Co. Mus. Nat. Hist., Sci. 4:1-35.

Tehachapi Slender Salamander (Batrachoseps stebbinsi)

Description

A large, robust species distinguished from all others in the genus by its relatively large feet and long legs. The sides and tail surface are deep black; the dorsum is distinctive with scattered large patches and blotches of red, dark brown, or light beige, sometimes forming an indistinct dorsal band.

Range and Habitat

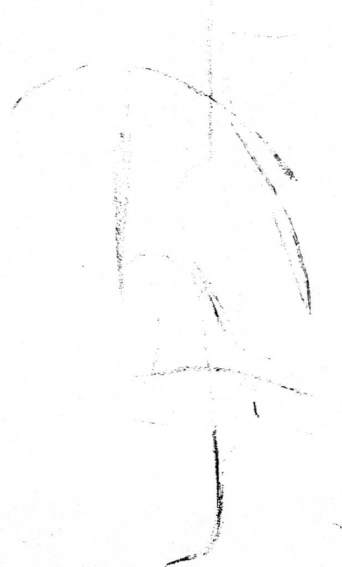
Known from several localities along the Paris - Lorraine to Bodfish road, and at a single locality in the Tehachapi Mountains at 6.3 miles southeast of Keene Post Office, Kern County. Occurs under rock talus in foothill woodland and riparian communities.

Remarks

The habitat for the Tehachapi Mountains population was recently damaged by construction of a new freeway (U.S. Hwy. 466). The salamander appears to be scarce and occurs in disjunct populations. Maintenance of natural areas along the Paris - Lorraine to Bodfish road (next to Caliente Creek) from 1 to 10 miles west of Paris - Lorraine, and protection of what remains of the Tehachapi Pass site will be required to insure the survival of this species.

References

Brame, A. H., Jr., and K. F. Murray. 1968. Three new slender salamanders (Batrachoseps) with a discussion of relationships and speciation within the genus. Bull. L.A. Co. Mus. of Nat. Hist., Sci. 4:1-35.



Limestone Salamander (Hydromantes brunus)

Description

Adults are 3 to 4 inches in total length. Dorsal color is uniform brown; the venter is cream colored to pale gray. They have a flattened body, relatively long legs, and partly webbed toes.

Range and Habitat

Restricted to the lower Merced River, Mariposa County. The only known localities are in the vicinity of Briceburg and at Hell Hollow about 15 miles downstream from Briceburg along the Merced River. Associated with limestone in the Digger pine-chaparral belt, living in crevices of cliffs and ledges, in talus, and along the rocky slopes bordering streams, especially where overgrown with moss.

Remarks

Members of the genus Hydromantes are referred to as web-toed salamanders. There are 5 species with a widely disjunct distribution. Two species occur in limestone areas of southern Europe. Three species are endemic to California: H. brunus in the lower Merced River region, H. shastae in limestone areas north of Lake Shasta, Shasta County, and H. platycephalus occurring in granite exposures of the Sierra Nevada from 4,000 to 11,000 feet elevation.

Disturbance of limestone outcrops anywhere within an airline radius of 5 miles of Briceburg and anywhere in the drainage of Hell Hollow could destroy habitat of this salamander. Road construction along State Highway 140 and possible mining developments near Briceburg are factors that could threaten this animal.

References

Gorman, J. 1954. A new species of salamander from central California. *Herpetologica*, 10(4):153-159.

_____. 1964. Hydromantes brunus, H. platycephalus, and H. shastae. Catalogue of American Amphibians and Reptiles, Amer. Soc. of Ichth. and Herp.:11.1-11.2.

Shasta Salamander (Hydromantes shastae)

Description

Adults are 3 to 4 inches long. Similar to H. brunus, they have long legs, a flattened body, and partly webbed toes. Coloration differs. The dorsum of adult H. shastae is gray-green, beige or tan, sometimes with a reddish hue. The tail often has some yellow color. Silvery flecks occur on the pale venter.

Range and Habitat

Closely associated with limestone outcrops north of Shasta Lake, Shasta County. It occurs in four areas of steep limestone slopes and hills, and is usually restricted to the cool, wet ravines and valleys. Nearby vegetation is usually oak woodland or chaparral, but may include woods of fir and pine.

Remarks

Parts of its habitat occur within the Lake Shasta National Recreation Area (Brock Mountain, Low Pass Creek, and Potter Creek caves). Other populations live at and near Samwell Cave and the McCloud River Forest Service Station. Preservation of the limestone outcrops north of Lake Shasta is needed in order to protect the habitat of H. shastae and a wealth of other animal life restricted to these ancient rock formations.

References

- Bury, R. B., G. M. Fellers, and S. B. Ruth. 1969. First records of Plethodon dunni in California, and new distributional data on Ascaphus truei, Rhyacotriton olympicus, and Hydromantes shastae. Jour. Herpetology, 3(3-4):157-161.
- Gorman, J. 1964. Hydromantes brunus, H. platycephalus, and H. shastae. Catalogue of American Amphibians and Reptiles, Amer. Soc. Ichth. Herp.: 11.1-11.2.
- _____ and C. L. Camp. 1953. A new species of salamander of the genus Hydromantes from California, with notes on habits and habitat. Copeia, 1953(1):39-43.

Siskiyou Mountain Salamander (Plethodon stormi)

Description

Adults are 4 to 6 inches in total length and the body is elongate. Dorsal color is dull brown to chocolate brown with flecks of white; the venter is pale brown or gray.

Range and Habitat

Restricted to the Applegate River basin in southern Oregon and extreme northern Siskiyou County, California. Recently found near the U.S. Forest Service Cook and Green Guard Station and 7 miles north of Seiad Valley. Found under loose rock rubble and talus slopes on north-facing slopes or heavily wooded areas.

Remarks

Few have been found in California and it seems to be uncommon. However, examination of the closely related P. elongatus which occurs in the Klamath River basin of California and coastal areas of northern California and southern Oregon indicates that P. stormi may represent an isolated race of P. elongatus. Further suitable habitat for P. stormi is not greatly restricted. P. stormi needs to be evaluated more carefully to determine if it should remain as a rare species.

References

- Brodie, E. D., Jr. 1970. Western salamanders of the genus Plethodon: Systematics and geographic variation. *Herpetologica*, 26(4):468-516.
- Bury, R. B. 1971. Endangered and rare reptiles and amphibians of California. Biol. Lib., Univ. Calif., Berkeley. 76 p. (Mimeo).
- Highton, R., and A. H. Brame, Jr. 1965. Plethodon stormi species nov. Amphibian: Urodela; Plethodontidae. Pilot Register of Zoology, Card No. 20.

Black Toad (Bufo boreas exsul)

Description

Black back (often appearing as a shining lacquer black) with a narrow mid-dorsal stripe of white, and dark mottling on the undersides differentiates this species from all other North American toads (Bufo). Adults are small, measuring about 2 inches long, rarely up to 3 inches.

Range and Habitat

Restricted to marshes and waterways in the southwestern part of Deep Springs Valley, Inyo County, California. There are two known localities: Antelope Springs and Deep Springs (=Buckhorn Springs). B. b. exsul probably reached this valley in Pleistocene times and has since been isolated due to drier conditions. Adults spend much time in the water during the breeding season.

Remarks

Myers (1942) reported this form has perhaps the most restricted range of any known amphibian. He hoped that persons would not endanger its existence by the introduction of bullfrogs or other predators, a reprehensible type of destruction that has become all too common in desert spring areas of the Southwest. Schuierer (1962) found that irrigation developments had detrimental effects on the toads. Recently, Deep Springs College, which owns an important part of the habitat (Buckhorn Springs) where the toad lives, adopted the toad and is pursuing a program designed to insure perpetuation of this interesting form that time and evolution left at its doorstep (Pister, 1971). Preservation of the springs and marshes in Deep Springs Valley are essential to its survival.

References

- Myers, G. S. 1942. The black toad of Deep Springs Valley, Inyo County, California. Occ. Pap. Mus. of Zool., Univ. of Mich. 460:1-13.
- Pister, P. 1971. Survival in the desert. DFG helps college to perpetuate the rare black toad. Outdoor Calif., 32 (1-2):16.
- Schuierer, F. W. 1962. Remarks upon the natural history of Bufo exsul Myers, the endemic toad of Deep Springs Valley, Inyo County, California. Herpetologica, 17(4):260-266.

ENDANGERED REPTILES

Blunt-nosed Leopard Lizard (Crotaphytus silus)

Description

Robust body with a long, slender tail; large head with a short snout; adults are 6 to 8 inches in total length. Dorsal ground color is gray or brown, and the dorsum has broad, distinct bands. Throat with dark gray blotches in contrast to longitudinal stripes of the common leopard lizard. Undersides of tail and thighs yellowish, and during the breeding season the male with salmon or rust color ventrally.

Range and Habitat

Confined to the San Joaquin Valley and surrounding foothills. Occurs from about 100 feet elevation on the valley floor up to 2,000 feet on the Carrizo Plain in eastern San Luis Obispo County. Prefers an open habitat, inhabiting sparsely vegetated plains, alkali flats, low foothills, canyon floors, large washes, and arroyos.

Remarks

Recognized as ENDANGERED by IUCN and the Secretary of the Interior.

This lizard is becoming more difficult to find than formerly due to cultivation of the San Joaquin Valley. With completion of irrigation projects (California Water Plan) and with continued urbanization, little hope remains for the survival of the native fauna and flora of this semiarid basin (Montanucci, 1965). Preservation of open natural areas is critical for the continuance of endemic biota in the San Joaquin Valley. Protected areas need to be established on government lands, such as the Naval Petroleum Reserve near Taft, Kern County, and on existing wildlife refuges. A small population occurs within the boundary of the Kern Wildlife Refuge and authorities there are taking steps to protect it.

References

- Montanucci, R. R. 1965. Observations on the San Joaquin leopard lizard, Crotaphytus wislizenii silus Stejneger. *Herpetologica*, 21(4):270-283.
- _____. 1970. Analysis of hybridization between Crotaphytus wislizenii and Crotaphytus silus (Sauria: Iguanidae) in California. *Copeia*, 1970 (1):104-123.
- Stebbins, R. C. 1954. *Amphibians and reptiles of western North America*. McGraw-Hill Book Co., Inc., N.Y. 528 p.

San Francisco Garter Snake (Thamnophis sirtalis tetrataenia)

Description

One of the most strikingly beautiful reptiles in North America. The top of the head is red. It has a wide middorsal stripe of greenish yellow edged with black stripes. These dorsal stripes are bordered laterally by a broad red stripe on each side, which is trimmed with black stripes. The venter is greenish blue. Adults are $1\frac{1}{2}$ to $3\frac{1}{2}$ feet long.

Range and Habitat

Restricted to the western parts of the San Francisco Peninsula from about the San Francisco County line south along the crest of the peninsula hills to Crystal Lake and along the coast to Point Ano Nuevo, San Mateo County. Found associated with vegetation that borders ponds and lakes; marshy areas with cover appear to be especially favored by the snake.

Remarks

Urbanization has greatly restricted the available habitat for the snake. Karl Switak (pers. comm.), of the Steinhart Aquarium, related that there are no longer any known localities where T. s. tetrataenia is abundant. Survival of this rare snake depends on protection of habitat. The Crystal Springs region between San Bruno and Woodside, San Mateo County, is a fish and game refuge, portions of which need to be maintained in a natural state. These lands are part of the San Francisco Municipal Water District. Marshy areas in the vicinity of Sharp Park golf links harbor the snake, and these lands need to be protected, particularly since this population has all the distinctive traits of the subspecies in their fullest expression.

References

- Banta, B. H., and D. Morakfa. 1966. An annotated check list of the recent amphibians and reptiles inhabiting the City and County of San Francisco, California. Wasmann Jour. of Biol., 24(2):223-238.
- Fox, W. 1951. The status of the gartersnake, Thamnophis sirtalis tetrataenia. Copeia, 1951(4):257-267.
- Wright, A. H., and A. A. Wright. 1957. Handbook of snakes of the United States and Canada. Comstock Publ. Co., Ithaca, N.Y. 2 Vol. 1106 p.

RARE REPTILES

Giant Garter Snake (Thamnophis couchi gigas)

Description

One of the largest garter snakes in North America, measuring up to 4½ feet long. Ground color is dull brown overlaid with a checkered pattern of well separated black spots, and dull yellow middorsal stripe. Venter is brown.

Range and Habitat

Floor of the Central Valley from Sacramento and Antioch southward to Buena Vista Lake. The snake is confined to the vicinity of permanent fresh water, and usually found in areas overgrown with tules, willows, and weeds.

Remarks

Threatened by further destruction of its habitat by agricultural practices and urbanization, particularly the filling of sloughs and marshy areas grown over with cattails and weeds. Pesticides are suspected as being detrimental to the snake since it lives in one of the heaviest areas in the nation for pesticide usage. Hopefully the giant garter snake can be protected by maintaining natural water courses. Wildlife refuges and private duck clubs afford some of the best habitat today because the cattails and reeds have not been drastically altered.

References

- Fitch, H. S. 1940. A biogeographical study of the ordinoides Artenkreis of garter snakes (genus Thamnophis). Univ. Calif. Publ. Zool., 44(1):1-150.
- Fox, W. 1951. Relationships among the garter snakes of the Thamnophis elegans Rassenkreis. Univ. Calif. Publ. Zool., 50(5):485-530.
- Wright, A. H., and A. A. Wright. 1957. Handbook of snakes of the United States and Canada. Comstock Publ. Assoc., Ithaca, N.Y. 2 Vol. 1106 p.

Southern Rubber Boa (Charina bottae umbratica)

Description

A stout-bodied snake with a short, blunt tail. Scales smooth, small and shiny. Adults are 15 to 30 inches long. Olive or yellow-brown above; pale yellow on venter.

Range and Habitat

Known only from montane areas of southern California, principally western San Bernardino and Riverside counties. Usually associated with woodland and forest, living under rotting logs, fallen trees, and rocks. Maintenance of natural forested areas is important to its survival.

References

Klauber, L. M. 1943. The subspecies of the rubber snake, Charina. Trans. San Diego Soc. Nat. Hist., 10(7):83-90.

Alameda Striped Racer (Masticophis lateralis euryxanthus)

Description

A slender, fast-moving snake that is 3 to 4 feet long. It is black or dark brown above with a distinct orange stripe down each side. The anterior parts of the venter are orange; posteriorly the color is cream.

Range and Habitat

Known only from Alameda and Contra Costa counties. Occurs in valleys, foothills, and low mountains, usually in areas of chaparral, brush, or open woods where there are rocky gullies, outcrops, and talus.

Remarks

The snake is rare in the area east of San Francisco Bay as indicated by the very small number of specimens in collections. Habitat for the snake has been greatly reduced by construction of homes and roads. Maintenance of open space, such as the East Bay Municipal Utility District lands, are necessary in order to preserve habitat for this serpent.

References

Riemer, W. J. 1954. A new subspecies of the snake Masticophis lateralis from California. Copeia, 1954(1):45-48.

SPECIAL PROTECTION

Desert Tortoise (Gopherus agassizi)

Description

A land dwelling tortoise with a high domed shell, stocky limbs, and stump-like feet. Brown to horn colored shell. Adults are 10 to 14½ inches in shell length.

Range and Habitat

Extreme northwestern Sinaloa, Mexico, northward in desert regions to southern Nevada and southwestern Utah; western Arizona; and the Mojave Desert of California. Desert tortoises frequent areas with low desert shrubs and annuals, which serve as food, and usually where the soil is compact enough for construction of burrows. The tortoise occurs in scattered parts of the Mojave Desert.

Remarks

It is the only native tortoise in California, but may be confused occasionally with Texas tortoises (G. berlandieri) that have been imported into California and released in desert regions. Leach and Fisk (1969) provide a key for identification of North American tortoises (Gopherus). They stated that "this species is seriously threatened with extirpation over much of its range in California. Urbanization of the Mojave River Basin and Antelope Valley in southern California, occasioned by the import of northern water into these areas by the State Water Project, will virtually eliminate this animal from the upper reaches of the Mojave Desert." Increasing numbers of desert tortoises are being killed on desert highways and illegally captured by tourists, and increasing human encroachment on their habitat give cause for concern.

Desert tortoises need to be protected by: (1) establishment of reserves on private and public lands; (2) construction of adequate fences along desert roads where there are large populations of tortoises; (3) limiting off-road vehicle use to areas not important to desert tortoises; and (4) prohibiting the importation of all North American tortoises (genus Gopherus) into California because they may carry diseases, parasites, and infections that may harm native G. agassizi, besides being potential competitors for food and space.

References

- Leach, H., and L. Fisk. 1969. The gopher tortoises. Calif. Dept. Fish and Game, Inland Fish. Infor. Leaflet No. 26. 9 p. (Mimeo).
- Miller, L. 1932. Notes on the desert tortoise (Testudo agassizii). Trans. San Diego Soc. Nat. Hist., 7(18):187-208.
- Woodbury, A. M., and R. Hardy. 1948. Studies of the desert tortoise Gopherus agassizii. Ecol. Monographs, 18(2):145-200.

SPECIES NEEDING PROTECTION

California Legless Lizard (Anniella pulchra)

Description

A burrowing, limbless lizard that is about as big around and long as a lead pencil. It has small eyelids. Scales are small, smooth, and glossy. The venter is yellowish. A. p. pulchra is silver or light brown above; A. p. nigra is dark brown or black dorsally.

Range and Habitat

The distribution of A. p. pulchra consists of disjunct populations from Antioch, Contra Costa County, southward to northern Baja California; a few localities are known from the western edge of the Mojave Desert and on the west slopes of the southern part of the Sierra Nevada. A. p. nigra occurs on the coast from southern Santa Cruz County south to San Luis Obispo County. Legless lizards live in loose soil or sandy areas with plant cover, especially near bush lupine. They frequent the sparse vegetation along coastal beaches. A. p. pulchra is known from areas of chaparral, oak woodland, and streamside vegetation in southern California.

Remarks

Listed as ENDANGERED by IUCN and STATUS-UNDETERMINED by the Bureau of Sport Fisheries and Wildlife. There are 2 species in the family Anniellidae: A. geronimensis is restricted to San Geronimo Island and nearby areas on the mainland of Baja California; A. pulchra occurs in California and northern Baja California. These are the only limbless lizards in western North America, and are thought to be derived from an ancestor of the alligator lizards (Family Anguidae). Agricultural practices are destructive to populations as farmers uncover lizards while plowing near Antioch and along Monterey Bay (Miller, 1944). A. p. pulchra near Antioch is threatened by industrial developments in sandy areas east of Antioch and south of the San Joaquin River. Populations of A. p. pulchra have been obliterated by construction of suburbs and roads in the coastal sand dunes of southern California. A. p. nigra is seriously threatened due to urbanization and agricultural developments in the Monterey Bay area. The sand dunes from Pajarro Dunes south to Point Pinos along Monterey Bay harbor A. p. nigra and many other unique forms of life. This community of coastal vegetation and associated animals needs to be maintained in a natural state, both for the protection of the habitat of A. p. nigra and for preservation of an outstanding landscape.

Anniella pulchra should be declared rare by the Fish and Game Commission.

References

Miller, C. M. 1944. Ecologic relations and adaptations of the limbless lizards of the genus Anniella. Ecol. Monographs, 14(3):271-289.

Stebbins, R. C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 p.

Panamint Alligator Lizard (Gerrhonotus panamintinus)

Description

A stout-bodied; short-limbed (alligator-like) lizard that is 4 to 6 inches in snout to vent length with a tail about twice the body length. It is light yellow or beige above with regular broad brown crossbands, 7 or 8 between the back of the head (marked by ear openings) and the anterior border of the thighs. Young with contrasting dark crossbars on pale ground color.

Range and Habitat

The species is restricted to desert mountain ranges in southeastern California. It is known from Panamint (Surprise Canyon, 2,800-4,800 feet), Nelson (Grapevine Canyon, 4,850-5,100 feet), and Inyo (Daisy Canyon, 4,000 feet) Mountains. The lizard occurs in riparian habitat or in drier areas with creosote bush, desert mint and cacti. Frequently found near rock outcrops.

Remarks

Listed as INDETERMINATE (STATUS-UNDETERMINED) by IUCN.

Banta (1963) said that, "The difficulty in obtaining samples of this species... cannot be minimized. Since many of the areas in the desert mountain ranges, where it is likely to occur, are relatively inaccessible except by pack animal or four-wheel-drive vehicle, the determination of distributional limits may not be accomplished for some time to come." Off-road vehicles now bring a grave new threat to isolated populations of the lizard. At this time, it appears that G. panamintinus is one of the poorest known and most uncommon lizards in California. It has only been recorded from three localities, and collecting may easily deplete these populations.

This species should be declared rare by the Fish and Game Commission.

References

- Banta, B. H. 1963. Remarks upon the natural history of Gerrhonotus panamintinus Stebbins. Occ. Papers, Calif. Acad. Sci., 36:1-12.
- Stebbins, R. C. 1958. A new alligator lizard from the Panamint Mountains, Inyo County, California. Amer. Mus. Nov., No. 1883:1-27.

Orange-throated Whiptail Lizard (Cnemidophorus hyperythrus beldingi)

Description

A small whiptail, measuring 2 to 2-3/4 inches in snout to vent length. It is striped and unspotted with an orange throat. The ground color is brown to black overlaid with yellowish dorsal stripes and white stripes on the sides. The male has pale orange ventrally, while the color in the female, when present, is less intense.

Range and Habitat

This form occurs from Laguna Beach and the vicinity of Riverside and San Jacinto in southern California, west of the crest of the mountains, to northern Baja California. Other subspecies range south to the tip of Baja California. The orange-throated whiptail inhabits washes or sandy soils in the coastal chaparral of southern California. Adults prefer areas frequently interspersed by low, relatively large bushes.

Remarks

The IUCN considers the lizard to be a RARE subspecies.

Bostic (1966a) said that C. h. beldingi have been conspicuously absent from Los Angeles and Orange counties, despite the relative frequency of what seems to be suitable whiptail habitats. "Perhaps urban and suburban development in Los Angeles County, and particularly agricultural and suburban development in Orange County, serve, in part, as effective dispersal barriers." Urbanization and razing of chaparral communities in San Diego and Riverside counties eliminate suitable habitat for this lizard and other wildlife.

The orange-throated whiptail should be declared rare by the Fish and Game Commission.

References

- Bostic, D. L. 1965. Home range of the teiid lizard, Cnemidophorus hyperythrus beldingi. Southwestern Naturalist, 10(4):278-281.
- _____. 1966a. Food and feeding behavior of the teiid lizard, Cnemidophorus hyperythrus beldingi. Herpetologica, 22(1):23-31.
- _____. 1966b. A preliminary report of reproduction in the teiid lizard, Cnemidophorus hyperythrus beldingi. Herpetologica, 22(2):81-90.
- Stebbins, R. C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 p.

San Diego Horned Lizard (Phrynosoma coronatum blainvillei)

Description

A horned lizard (often called horned "toads") with sharp spines on the back of the head and a flattened, oval body. Total length is 5 to 6½ inches. There are a large pair of horns at the back of the neck which are longer than any others. On each side of the body there are two rows of pointed fringe scales. There are 2 to 3 rows of large pointed scales on each side of the throat. Body color above is gray, yellowish-brown, or, occasionally, a reddish hue; there are a pair of dark blotches on the neck and undulating blotches on the back. Venter is light brown or yellowish with dusky spots.

Range and Habitat

Scattered localities in southern California from southwestern San Bernardino and southern Los Angeles counties south to northern Baja California. It occurs west of the desert region. Frequents sandy washes in lowlands or chaparral areas to the pine zone in the San Gabriel Mountains.

Remarks

Listed as DEPLETED by IUCN.

Dr. Glenn R. Stewart (pers. comm.) related that, "This subspecies has been extirpated from most of the lowland areas in southern California where it used to be common. Populations can still be found in some of the more remote foothills and valleys. The lizard is declining due to destruction of favored habitat by urban developments, highways, and agriculture, in addition to collecting by children and the pet industry."

This lizard should be considered depleted.

References

Reeve, W. L. 1952. Taxonomy and distribution of the horned lizards genus Phrynosoma. Univ. Kansas Sci. Bull., 3(14):817-960.

San Joaquin Whipsnake (Masticophis flagellum ruddocki)

Description

A large, agile snake with a slender body that measures 3 to 7 feet long. Light yellow brown above with the color uniform over head and body.

Range and Habitat

Occurs in the Central Valley and surrounding foothills from Sutter and Colusa counties southward to Kern County. Frequents semiarid areas. Most known localities are on the floor of the Central Valley or in washes and flats in the foothills. Generally occurs in open brushland, chaparral, and grassland. Tolerant of warm environments, and is active during the day.

Remarks

Most of the habitat of this snake has been eliminated by agricultural activities in the Central Valley and destruction of other areas by urbanization. Natural landscapes are required for its existence. San Luis Reservoir and Hwy. Interstate 580 will accelerate the demise of the snake as developments come to the western part of the Central Valley and adjoining foothills. The following areas particularly need to be protected in order to insure the survival of the snake: Mercy Hot Springs and Panoche Hills region, Fresno County; vicinity of McKittrick and the Tehachapi Mountains, Kern County; Panoche Pass, San Benito County; Corral Hollow, San Joaquin County; and the Carrizo Plains, San Luis Obispo County.

This whipsnake should be considered depleted.

References

- Brattstrom, B. H., and J. W. Warren. 1953. A new subspecies of racer, Masticophis flagellum, from the San Joaquin Valley of California. *Herpetologica*, 9:177-179.
- Klauber, L. M. 1942. The status of the black whip snake. *Copeia*, 1942 (2):88-97.
- Wilson, L. D. 1970. The coachwhip snake, Masticophis flagellum (Shaw): taxonomy and distribution. *Tulane Studies in Zool. and Bot.*, 16(2):31-99.

Two-striped Garter Snake (Thamnophis couchi hammondi)

Description

A form of the western aquatic garter snake, Thamnophis couchi, which lacks a dorsal stripe (or only represented by a spot on the neck). Lateral stripes on sides of body usually present and yellowish. Ground color is olive-gray to brown with dark spots on the sides of the body above the lateral lines. A melanistic color phase occurs in coastal areas of San Luis Obispo and Monterey counties. Adults are 18 to 42 inches in total length.

Range and Habitat

T. c. hammondi ranges through coastal mountains and the coastal slopes from Monterey Bay south to northern Baja California. It is confined to the vicinity of permanent fresh water, usually rocky streams with pools.

Remarks

Listed as DEPLETED by IUCN and STATUS-UNDETERMINED by Bureau of Sport Fisheries and Wildlife.

Dr. Glenn R. Stewart (pers. comm.) said that, "T. c. hammondi is rare or extinct in many areas where it was abundant only a few years ago, but it is still common in some localities. Populations are declining due to habitat destruction by urban developments, diversion of water from rivers and ponds; collecting by children and the pet industry; and exposure to agricultural pesticides is also suspected."

This garter snake should be considered depleted.

References

- Fitch, H. S. 1940. A biogeographical study of the ordinoides Artenkreis of garter snakes (genus Thamnophis). Univ. Calif. Publ. Zool., 44(1):1-150.
- Wright, A. H., and A. A. Wright. 1957. Handbook of snakes of the United States and Canada. Comstock Publ. Assoc., Ithaca, N.Y. 2 vols. 1105 p.

California Tiger Salamander (Ambystoma tigrinum californiense)

Description

A large, robust salamander that reaches 8 inches in total length. Ground color is black. There are many large yellow or white spots on the dorsal surface of the body and limbs. The ventral surfaces are dusky yellow or cream.

Range and Habitat

Scattered populations live in the Central Valley and adjacent foothills in the Sierra Nevada and central Coast Range of California from Sonoma and Sacramento counties southward. It also occurs in the San Francisco Bay area and Monterey County.

The salamanders live in underground retreats, such as ground squirrel burrows, during most of the year and avoid the dry summers. They emerge during heavy rains in late fall and early spring. Adults are nocturnal and are active on the surface for only a few weeks out of the year. A. t. californiense is known from oak woodland and grassland communities, and due to its seclusion during dry periods it also occurs in semiarid regions such as the San Joaquin Valley. May go unnoticed because of its brief exposure on the surface during breeding and adults move at night often during rain. Careful checking of suspected areas of occurrence, therefore, is necessary before status of populations can be determined with any confidence.

Remarks

Listed as DEPLETED by IUCN.

Adults breed and lay eggs in ponds or slow parts of creeks, and often these bodies of water are temporary. Egg deposition is in January or February. Embryonic development and growth of larvae are rapid. Metamorphosis takes place in mid-May or early June, when the young must escape drying pools and increasing warmer days. Agricultural developments have obliterated many breeding sites in lowland areas of the San Joaquin Valley and elsewhere, while urbanization and flood control projects have destroyed ponds in the San Francisco Bay region. Survival of the salamander depends on protection of ephemeral pools formed by winter rains and natural areas in the lowland areas of Central California.

Additional information is needed to determine the status of this animal.

References

- Stebbins, R. C. 1951. Amphibians of western North America. Univ. Calif. Press, Berkeley and Los Angeles. 539 p.
- Storer, T. I. 1925. A synopsis of the Amphibia of California. Univ. Calif. Publ. Zool., 27:1-342.

TABLE 1

The Threatened Reptiles and Amphibians of California

F = Fully Protected; E = Endangered; R = Rare; D = Depleted; S = Status-Undetermined

F E R D S	Name of Animal (Protected by 1 or more laws)
++	Santa Cruz long-toed salamander, <u>Ambystoma macrodactylum croceum</u>
+	Limestone salamander, <u>Hydromantes brunus</u>
+	Black toad, <u>Bufo exsul</u>
+	Desert slender salamander, <u>Batrachoseps aridus</u>
+	Kern Canyon slender salamander, <u>Batrachoseps simatus</u>
+	Tehachapi slender salamander, <u>Batrachoseps stebbinsi</u>
+	Shasta salamander, <u>Hydromantes shastae</u>
+	Siskiyou Mountains salamander, <u>Plethodon stormi</u>
++	Blunt-nosed leopard lizard, <u>Crotaphytus silus</u>
++	San Francisco garter snake, <u>Thamnophis sirtalis tetrataenia</u>
+	Southern rubber boa, <u>Charina bottae umbratica</u>
+	Alameda striped racer, <u>Masticophis lateralis euryxanthus</u>
+	Giant garter snake, <u>Thamnophis couchi gigas</u>
+	Desert tortoise, <u>Gopherus agassizi</u> (Protected by Special Regulations)

F E R D S	Name of Proposed Addition
+	California legless lizard, <u>Anniella pulchra</u>
+	Panamint alligator lizard, <u>Gerrhonotus panamintinus</u>
+	Orange-throated whiptail lizard, <u>Cnemidophorus hyperthrus beldingi</u>
+	San Diego horned lizard, <u>Phrynosoma coronatum blainvelli</u>
+	San Joaquin whipsnake, <u>Masticophis flagellum ruddocki</u>
+	Two-striped garter snake, <u>Thamnophis couchi hammondi</u>

Table 1 (contd)

F E R D S	Name of Animal Needing Consideration for Protection
+	California tiger salamander, <u>Ambystoma tigrinum californiense</u>
+	Mount Lyell salamander, <u>Hydromantes platycephalus</u>
+	Yellow-blotched salamander, <u>Ensatina eschscholtzi croceater</u>
+	Large-blotched salamander, <u>Ensatina eschscholtzi klauberi</u>
+	California red-legged frog, <u>Rana aurora draytoni</u>
+	Western spadefoot toad, <u>Scaphiopus hammondi</u>
+	California canyon treefrog, <u>Hyla cadaverina</u> (=H. <u>californiae</u>)
+	Arroyo toad, <u>Bufo microscaphus californicus</u>
+	Yosemite toad, <u>Bufo canorus</u>
+	Granite night lizard, <u>Xantusia henshawi</u>
+	Coachella Valley fring-toed lizard, <u>Uma inornata</u>
+	Flat-tailed horned lizard, <u>Phrynosoma m'calli</u>
+	Gila monster, <u>Heloderma suspectum</u>
+	California mountain kingsnake, <u>Lampropeltis zonata</u>
+	Rosy boa, <u>Lichanura trivirgata</u>
+	Sharp-tailed snake, <u>Contia tenuis</u>
+	Pacific pond turtle, <u>Clemmys marmorata</u>

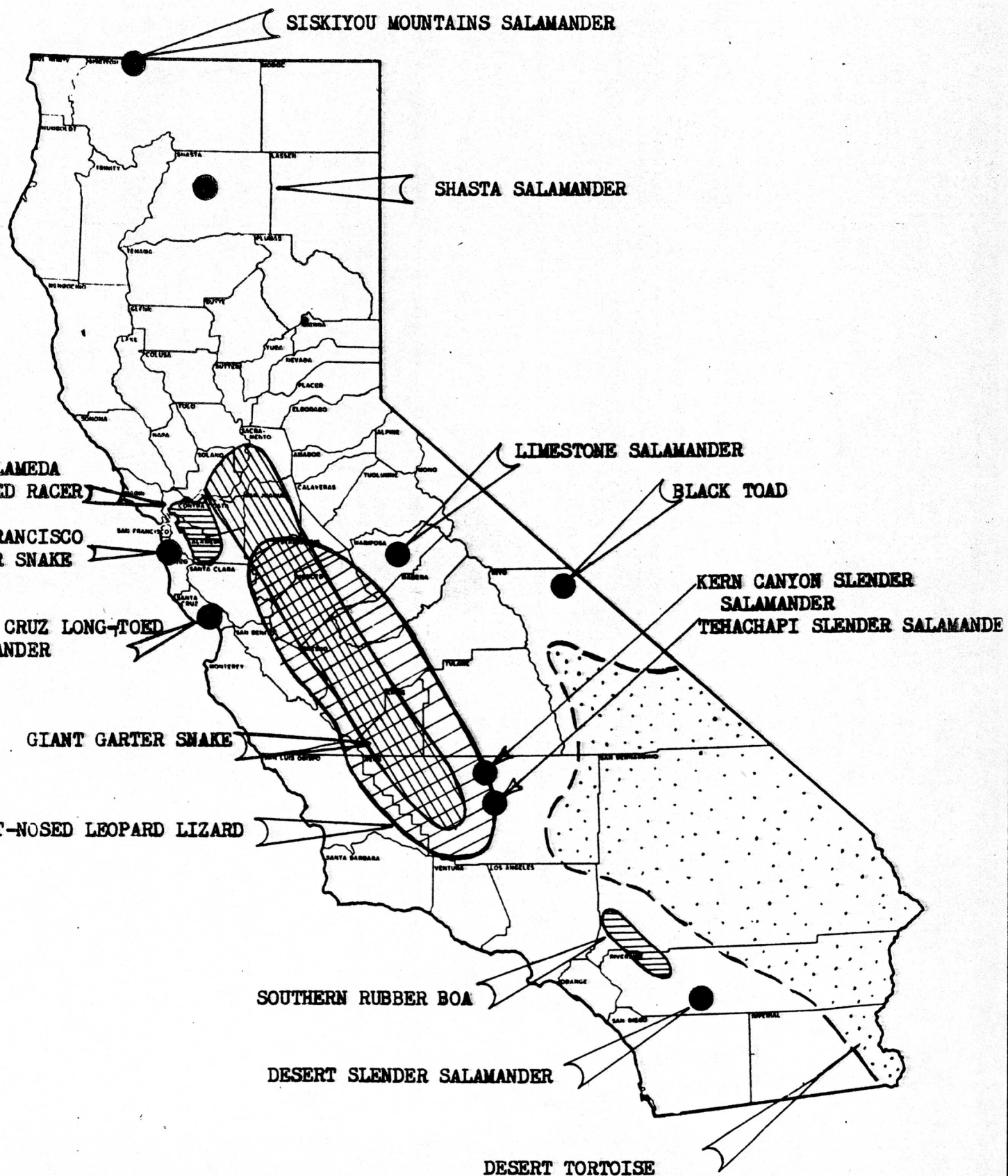


FIGURE 1. Rare, endangered and protected reptiles and amphibians of California