AT THE CROSSROADS

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A Report on

CALIFORNIA'S ENDANGERED AND RARE FISH AND WILDLIFE

January 1972

"Within a century our state's emblem -- the California grizzly bear -- once exceptionally abundant, has joined the ranks of vanished animals."

...Tracy I. Storer

STATE OF CALIFORNIA—RESOURCES AGENCY

RONALD REAGAN, Governor

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
SACRAMENTO, CALIFORNIA 95814
G. Ray Arnett - Director

Honorable Ronald Reagan, Governor
State of California
Sacramento, California 95814

January 1, 1972

It is a pleasure, Governor Reagan---

---to transmit to you our first report on California's endangered and rare fish and wildlife.

This is an account of California's threatened life forms and our recommendations for their continual survival. Included are criteria used by the Department in compiling the list of threatened fish and wildlife adopted by the California Fish and Game Commission on May 21, 1971.

In the case of endangered species, immediate measures are required to ensure their continued survival. We strongly urge that public funds be provided to place under public stewardship those habitat areas critical to these animals and to support the necessary programs of protection and management.

That extinction is inevitable for any of California's endangered animals is unacceptable. History records that many of the nation's leading scientists at the turn of the century were predicting early extinction for a variety of California's wildlife. These included the band-tailed pigeon, white-tailed kite, sage grouse, mountain sheep, prong-horn antelope, California mule deer, ducks and geese. Fortunately, these prophecies of doom proved untrue, for none of these animals are now extinct or appear in this report.

Since the first protective fish and game laws were enacted in 1901, the State's game and sport fish have become the most carefully tended and conserved of all natural resources. Their protection and management is due to the hundreds of millions of dollars sportsmen have willingly provided through license fees and taxes on sporting equipment.

We hope this report will engender public interest and support in providing the funding and positive measures essential to the survival of California's threatened fish and wildlife. Without such response, many of these life forms may disappear forever.

Sincerely,

Director

Foreword

The Department of Fish and Game recognizes that this report on California's endangered and rare fish and wildlife is not conclusive. It does, however, confirm the current status of animals for which adequate knowledge is available.

Regrettably, the Department anticipates that other animals will be declared either endangered or rare as the results of current and future studies become known.

It may follow, too, that certain animals may be deleted from the list if it is found they no longer meet the criteria of threatened species.

The list of endangered and rare species adopted by the Fish and Game Commission is based on the following factors:

...Criteria as enumerated on pages 11 and 51;

...Department inventory of these animals; and,

...Expert opinion of many scientists and other informed persons who reviewed a listing of 129 California life forms -- animals that could possibly be threatened because of limitations in numbers, distribution, and essential habitat.

Howard R. Leach
Wildlife Management Branch

Leonard O. Fisk
Inland Fisheries Branch

Department of Fish and Game

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Cover photo -- The rare Island fox,
by Lyndal Laughrin

At the Crossroads . . .

William Anderson

"Wildlife is the property of the people, the sovereignty of which they have vested with the State to be conserved and managed for the benefit of all people."

The common law of this country stated above has been defended in court and reflected in federal and state laws since colonial times. Yet by tradition the hunter and fishermen have borne the financial burden of supporting the conservation and management of these resources.

We are now at the crossroads. While game species are assured continued propagation and relative abundance, 43 forms of California's nongame fish and wildlife are now threatened with extinction or endangerment. Recommendations contained in this report are directed towards preservation of these forms through public support and stewardship. Unless local, state and federal governments and concerned citizens are willing to exercise responsible care and provide funding, the prospect for continued survival of many of these life forms is in doubt. In today's world, endangered wildlife cannot survive on their own.

The Intent of the Legislature. . .

FISH AND GAME CODE

Article 1. California Species Preservation

900. The intent of the Legislature and the purpose of this article is to preserve, protect and enhance the birds, mammals, fish, amphibia, and reptiles of this state.
(Added by Stats. 1970, Ch. 1036.)

901. The department shall establish criteria for determining if a species or subspecies of bird, mammal, fish, amphibia or reptile is endangered or rare. A species is endangered when its prospects of survival and reproduction are in immediate jeopardy. A species or subspecies is rare when it may become endangered if its present environment worsens.
(Added by Stats. 1970, Ch. 1036.)

902. The department shall inventory the birds, mammals, fish, amphibia, and reptiles of the state which are threatened biennially. Such inventory shall include, but is not limited to: (a) An enumeration of the threatened birds, mammals, fish, amphibia and reptiles of the state. (b) A determination of the condition of each species with respect to its being endangered or rare, or becoming endangered or rare.
(Added by Stats. 1970, Ch. 1036.)

903. The department shall submit to the Governor and the Legislature biennially, not later than January 1, the first of which shall be submitted no later than January 1, 1972, a full and accurate report of the inventory, including recommendations for: (a) The addition or deletion of endangered and rare species under the fully protected category where necessary. (b) Preserving, protecting, and enhancing the conditions of endangered and rare species of the state.
(Added by Stats. 1970, Ch. 1036.)

The DFG Recommends

Assurance of the continuous survival of California's endangered and rare fish and wildlife requires that:

...Public funds be provided to share in the burden of preserving and managing fish and wildlife not hunted or commercially utilized.

...Research be conducted to determine the current status of these and other threatened animals and their requirements for survival.

...Critical habitat essential to the survival of these animals be placed under public stewardship or protected by law.

...Programs for the protection and management of each species by developed and implemented immediately.

The Legislature Finds. . .

FISH AND GAME CODE

Chapter 1.5. Endangered Species

2050. The Legislature finds that many species and subspecies of birds, mammals, fish, amphibia, and reptiles are endangered because their habitats are threatened with destruction, drastic modification, or severe curtailment, or because of commercial exploitation through exports and imports of birds, mammals, fish, amphibia, and reptiles, or by other means, or because of disease, predation, or other factors.

(Added by Stats. 1970, Ch. 1510.)

2051. These definitions govern the construction of this chapter:

(a) "Endangered animal" is an animal of a species or subspecies of birds, mammals, fish, amphibia, or reptiles, the prospects of survival and reproduction of which are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

(b) "Rare animal" is an animal of a species or subspecies of birds, mammals, fish, amphibia or reptiles that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment worsens.

(Added by Stats. 1970, Ch. 1510.)

2052. No person shall import into this state, or take, possess, or sell within this state, any bird, mammal, fish, amphibia or reptile, or any part or product thereof, that the commission determines to be an endangered animal or rare animal, except as otherwise provided in this chapter.

(Added by Stats. 1970, Ch. 1510.)

Why the Concern?

The 20th Century has experienced a powerful and efficient technology that is leading to exploitation of the world's resources and alteration of man's natural environment beyond comprehension.

In the past few years, California has surpassed all other 49 states in human population and technological growth. Its declining resource wealth and endangered fish and wildlife have only lately come to the attention of the general public. Unfortunately, unrecorded has been the destruction and continuing disruption and disappearance of plant and animal communities.

To be sure, the public is knowledgeable of the extinction of the California grizzly bear, but little has been said of the loss of inconspicuous forms of wildlife or unique natural areas of ecological importance.

Why then are we concerned that progressive developments before us threaten forms of life which are known but to a few scientists and informed people? For example, the Owens pupfish. What does it contribute, and is the earth any better off if it is preserved? Who cares about the processes that set this little animal apart from all others, and what life form, if any, follows once this animal becomes extinct? The specter of continual extermination of plant and animal life is ever before us, and knowledge that this can lead to further impoverishment of the earth is disturbing.

Joshua Lederberg sums it up: "The variety of species is a great library of information, literally encoded in the specific DNA molecules that characterize each type. It is paradoxical that, in this era of most rapid elimination of natural variety, we have begun to learn the keys to that code and to appreciate the subtleties of the evolutionary mechanism that it drives. Each different species is a unique adaptation to its own way of life, a lesson in 'how to live' that we never properly understand after we extinguish it."

A collapsed California brown pelican egg...Franklin Gress

"When we try to pick up anything by itself we
find it attached to everything in the universe."

...John Muir

Milestones

INTERNATIONAL

1966 International Union for Conservation of Nature, Morges, Switzerland, publishes a list of worldwide species it considers to be rare or endangered.

NATIONAL

1966 Endangered Species Preservation Act gives authority to the Secretary of the Interior to publish a list of native animals threatened with extinction and to provide federal programs of research and protection.

1969 Endangered Species Conservation Act extends to the Secretary of the Interior authority to deem endangered those worldwide animals faced with extinction and to prohibit their importation into the United States without permit.

STATE

1968 Ecological Reserve Act, established for the purpose of protecting rare or endangered wildlife or aquatic organisms or specialized habitat types, gives authority to the Department of Fish and Game to acquire by purchase, lease, gift, or otherwise land and water to be set aside as Ecological Reserves.

1970 California Species Preservation Act directs the California Department of Fish and Game to inventory all threatened fish and wildlife, develop criteria for rare and endangered, and report to the Governor and the Legislature every two years on the status of these animals.

1970 Endangered Species Act expresses legislative concern over California's threatened wildlife, defines rare and endangered wildlife, and gives authority to the Fish and Game Commission to deem what animals in California are rare and endangered.

1970 Assembly Joint Resolution 31 memorializes the President, Congress, and the Secretary of the Interior to assist the California Department of Fish and Game to compile a species inventory of threatened fish and wildlife of the State, to establish a set of criteria for determining rare and endangered species and to assist in a study of predatory control programs.

1970 Prohibition Against Importation of Endangered Wildlife. Penal Code Sections 6530o and 653p prohibit importation for commercial purposes and the selling of specified animals, including those listed by the Secretary of the Interior as endangered.

John Borneman

"The condor represents, among the warm-blooded vertebrates, birds and mammals, one of the very few remaining natural genetic reservoirs, unchanged since Pleistocene times a million years ago. What a catastrophe if the story were to be destroyed before the meaning could be unraveled, the code uninterpreted before it is lost."

...S. Dillon Ripley

Fish and Game Commission Action

AFTER PROCEEDINGS HAD IN ACCORDANCE WITH THE PROVISIONS OF THE ADMINISTRATIVE PROCEDURE ACT (Gov. Code, Title 2, Div. 3, Part 1, Chapter 4.5) AND PURSUANT TO THE AUTHORITY VESTED BY SECTIONS 2050-2055 OF THE FISH AND GAME CODE, AND TO IMPLEMENT, INTERPRET, OR MAKE SPECIFIC SECTIONS 2050-2055 OF THE FISH AND GAME CODE, THE FISH AND GAME COMMISSION HEREBY ADDS TO ITS REGULATIONS IN TITLE 14, CALIFORNIA ADMINISTRATIVE CODE, AS FOLLOWS:

670.5 Animals of California Declared to be Rare or Endangered. The following species and subspecies of California birds, mammals, fish, amphibia and reptiles are hereby declared to be endangered or rare, as indicated:

(a) Endangered:

(1) Birds:

California brown pelican (Pelecanus occidentalis californicus)
California condor (Gymnogyps californianus)
Southern bald eagle (Haliaeetus leucocephalus leucocephalus)
American peregrine falcon (Falco peregrinus anatum)
California clapper rail (Rallus longirostris obsoletus)
Yuma clapper rail (Rallus longirostris yumanensis)
Light-footed clapper rail (Rallus longirostris levipes)
California least tern (Sterna albifrons browni)

(2) Mammals:

Morro Bay kangaroo rat (Dipodomys heermanni morroensis)
Salt marsh harvest mouse (Reithrodontomys raviventris)

(3) Fishes:

Colorado squawfish (Ptychocheilus lucius)
Mohave chub (Gila mohavensis)
Owens pupfish (Cyprinodon radiosus)
Tecopa pupfish (Cyprinodon nevadensis calidae)
Unarmored threespine stickleback (Gasterosteus aculeatus williamsoni)

(4) Amphibians:

Santa Cruz long-toed salamander (Ambystoma macrodactylum croceum)
Desert slender salamander (Batrachoseps aridus)

(5) Reptiles:

Blunt-nosed leopard lizard (Crotaphytus wizlizenii silus)
San Francisco garter snake (Thamnophis sirtalis tetrataenia)

(b) Rare:

(1) Birds:

California black rail (Laterallus jamaicensis coturniculus)

California yellow-billed cuckoo (Coccyzus americanus occidentalis)

(2) Mammals:

Mohave ground squirrel (Citellus mohavensis)
Stephens kangaroo rat (Dipodomys stephensi)
Fresno kangaroo rat (Dipodomys nitratoides exilis)
San Joaquin kit fox (Vulpes macrotis mutica)
Island fox (Urocyon littoralis)
Wolverine (Gulo luscus)
Guadalupe fur seal (Arctocephalus townsendi)
California bighorn sheep (Ovis canadensis californiana)
Peninsular bighorn sheep (Ovis canadensis cremnobates)

(3) Fishes:

Lost River sucker (Catostomus luxatus)
Shortnose sucker (Chasmistes brevirostris)
Humpback sucker (Xyrauchen texanus)
Bonytail (Gila elegans)

(4) Amphibians:

Siskiyou mountain salamander (Plethodon stormi)
Kern Canyon slender salamander (Batrachoseps simatus)
Tehachapi slender salamander (Batrachoseps stebbinsi)
Limestone salamander (Hydromantes brunus)
Shasta salamander (Hydromantes shastae)
Black toad (Bufo boreas exsul)

(5) Reptiles:

Southern rubber boa (Charina bottae umbratica)
Alameda striped racer (Masticophis lateralis euryxanthus)
Giant garter snake (Thamnophis couchi gigas)

This order shall take effect on the thirtieth day after filing with the Secretary of State as provided in Section 11422 of the Government Code.

PASSED UNANIMOUSLY.

FISH AND GAME COMMISSION
(Agency)

Date of adoption, amendment, or repeal:

May 21, 1971

By: Leslie F. Edgerton
Leslie F. Edgerton
Executive Secretary
(Title)

Our Endangered Wildlife

The animals on the following pages are declared endangered by the California Fish and Game Commission because their continued existence is threatened by one or more conditions. If the answer is "yes" to any of the following questions, the animal under consideration is declared endangered:

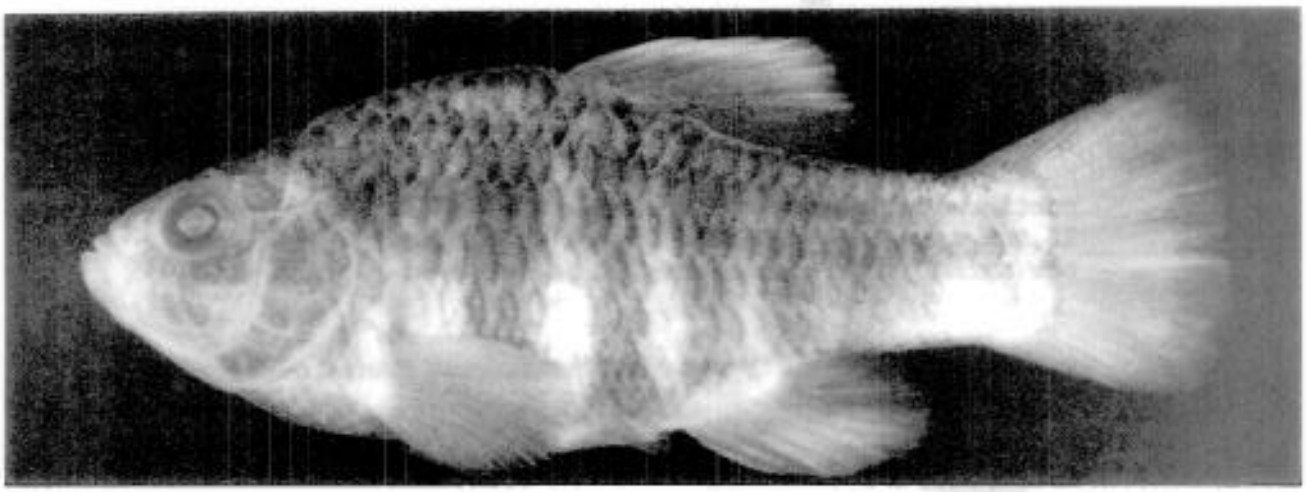
...Does the mortality rate of the animal consistently exceed the birth rate?

...Is the animal incapable of adapting to environmental change?

...Is the habitat of the animal threatened by destruction or serious disturbance?

...Is the survival of the animal threatened by the unwanted introduction of other species through predation, competition, or disease?

...Does environmental pollution threaten the survival of the animal?



The endangered Owens pupfish...E. Philip Pister

"...It is not a sentimental but a grimly literal fact that unless we share this terrestrial globe with creatures other than ourselves, we shall not be able to live on it for long."

...Joseph Wood Krutch
"The Place No One Knew"

CALIFORNIA BROWN PELICAN (Pelecanus occidentalis californicus) ENDANGERED

Franklin Gress

DESCRIPTION: Large grayish-brown coastal bird with long, pouched bill; flies with neck and head folded back on shoulders and with alternate wing flapping and sailing. Adults have white heads and necks; immatures are dark headed.

DISTRIBUTION: Occurs on Pacific Coast from Canada to Mexico. Nests on California's Channel Islands, coastal islands of Baja California and Gulf of California. Population approximates 32,000 birds with 12,000 pelicans along California's coast, August through November. Anacapa Island nesting colony numbers 300 pairs.

STATUS: Endangered. California's only remaining nesting colony on Anacapa Island is currently

(Continued overleaf)

incapable of reproducing. Reproductive failure is due to collapse of thin-shelled eggs during incubation, attributed to the effects of pollutants on breeding areas. Seven young were produced in 600 nesting attempts in California in 1971. Similar reproductive failure is evident 400 miles southward on Pacific islands off Baja California, Mexico. However, pelicans appear to be nesting normally in large colonies located in the Gulf of California.

PROTECTIVE MEASURES TAKEN:

... Access to West Anacapa Island prohibited during nesting season except for essential limited scientific studies.

... Introduction of environmental pollutants to the ocean reduced by (1) prohibition of garden and household use of DDT as well as discontinuing use on all but four agricultural crops, and (2) reduction of volume of pesticides and other pollutants through sewer outfalls.

RECOMMENDATIONS:

... Initiate an intensive study to determine the trophic pathways involved in contamination of pelicans and other fish-eating birds frequenting California's coastal waters.

... Identify sources of contamination and immediately take measures to minimize or eliminate such contamination.

... Conduct continuing studies in California and Mexico to assess pelican reproduction and migration.

REFERENCES:

Gress, F. 1970. Reproductive status of the California brown pelican with notes on breeding biology and natural history. Calif. Dept. Fish and Game, Wildl. Mgmt. Br. Admin. Rept. 70-6. 21 p.

Jehl, J. R. Jr. 1950. Is thirty million years long enough? Pacific Discovery 23: p. 16-23.

Keith, J. O., L. A. Woods, Jr., and E. G. Hunt. 1970. Reproductive failure in brown pelicans on the Pacific Coast. Proc. 35th N. Amer. Wildl. and Nat. Res. Conf. 15 p.

Schreiber, R. W. and R. L. DeLong. 1969. Brown pelican status in California. Audubon Field Notes 23(1) p. 57-59.

CALIFORNIA CONDOR (*Gymnogyps californianus*) ENDANGERED

John Borneman

DESCRIPTION: A huge black vulture with white underwing patch and bare orange head. It is North America's largest land bird and has a wingspan of over nine feet.

DISTRIBUTION: A relic of the Ice Age, the California condor once ranged over much of western North America from British Columbia to Baja California. Its numbers are now reduced to slightly more than 50 birds confined largely to the rugged mountains of Ventura and Santa Barbara counties. Recent reports of a California condor in Baja California require further confirmation. One bird is in captivity at the Los Angeles Zoo.

STATUS: Endangered. Population is declining because of low recruitment of young, habitat loss, and human disturbance. Condors do not breed until 5-6 years old, females lay but one egg every two years, and incubation and brooding require six months.

PROTECTIVE MEASURES TAKEN:

... Fully protected bird under state law.

... Sespe and Sisquoc Condor Sanctuaries set aside to protect roosting and nesting sites.

(Continued overleaf)

... Buffer zone around roosting and nesting sites established to lessen human disturbance.

... Moratorium set on new oil and gas leasing within Sespe Condor Sanctuary.

... Information programs developed to acquaint the public with the condor and its needs for survival.

... Hi Mountain condor nest site acquired by The Nature Conservancy and placed under U. S. Forest Service protection.

RECOMMENDATIONS:

... Afford added protection to the condor in the Sespe Condor Sanctuary and other lands critical to condor survival through U. S. Forest Service administrative policy governing public access.

... Acquire for public ownership the private lands within the Sespe Condor Sanctuary.

... Continue studies and management programs by the Department of Fish and Game, U. S. Forest Service, and Bureau of Sport Fisheries and Wildlife.

... Undertake a cooperative study with Mexico to determine condor abundance and distribution in Baja California.

REFERENCES:

Carrier, D. 1971. Habitat management plan for the California condor. U. S. Dept. Agric., Forest Service, San Francisco, 51 p.

Koford, C. D. 1953. The California condor. Natl. Audubon Soc., Res. Rept. No. 4, 154 p.

Mallette, R. D. 1970. Operational management plan for California condor. Calif. Dept. Fish and Game, 59 p.

Miller, A. H., I. I. McMillan, and E. McMillan. 1965 The status and welfare of the California condor. Natl. Audubon Soc. Rept. No. 6, 61 p.

SOUTHERN BALD EAGLE (*Haliaeetus leucocephalus leucocephalus*) ENDANGERED

Karl W. Kenyon

DESCRIPTION: Large soaring bird, brownish black with white head and tail and yellow hooked beak and talons. Immature birds lack white plumage until third or fourth year and are difficult to distinguish from the golden eagle.

DISTRIBUTION: Only eagle restricted to North America. Occurs statewide, particularly along coast and interior California about large lakes, reservoirs, and wetlands. Nests in vicinity of large lakes and reservoirs from Fresno County north. Forty nest sites recorded in California; 15 were active in 1971 producing 14 young. Influx of northern birds evident in winter months; 87 bald eagles enumerated in 1971 Midwinter Eagle Inventory.

STATUS: Endangered. Historically, bald eagles nested in abundance on Channel Islands and along coast; present nesting limited to Sierra Nevada, Cascade, and Klamath mountains. Reasons for decline include shooting by irresponsible persons; removal of nest trees and human encroachment into nesting and feeding areas; environmental pollution and contamination of food chain by persistent pesticides.

(Continued overleaf)

SOUTHERN BALD EAGLE

PROTECTIVE MEASURES TAKEN:

... Fully protected bird under state law.

... Amended Bald Eagle Protection Act extends federal jurisdiction over all North American eagles.

... Continental Bald Eagle Project by National Audubon Society monitors nation's eagles.

... U. S. Forest Service, Bureau of Sport Fisheries and Wildlife, and private lumber interests have taken action to protect nest trees and nesting eagles.

... "Blanket permits" to kill golden eagles halted by Secretary of the Interior.

RECOMMENDATIONS:

... Increase public awareness of the plight of all American eagles and the need for protection.

... Identify all known eagle nests in California and protect them from destruction and human disturbance.

... Determine current reproductive status and eliminate or minimize factors limiting reproduction.

... Investigate the feasibility of breeding bald eagles in captivity for reintroduction to the wild.

... Place stringent controls on the use of persistent pesticides and other contaminants.

... Withdraw from sale public land areas of importance as eagle nesting sites and classify the areas for uses that will protect these nesting sites.

... Protect privately owned nesting sites through acquisition, easement, or memorandum of understanding with landowners.

REFERENCES:

Mallette, R. D. 1971. Raptor Survey. Calif. Dept. Fish and Game, P-R Compl. Repts. Special Wildl. Invest. W-54-R-3, unpublished.

Robbins, C. S. 1960. Status of the bald eagle summer of 1959. U. S. Fish and Wildl. Serv. leaflet 418, p. 1-8.

Sprunt, A. and F. J. Ligas. 1966. Audubon bald eagle studies 1960-66. Proc. 62nd Annual Conv. Natl. Audubon Soc. p. 25-30.

AMERICAN PEREGRINE FALCON (Falco peregrinus anatum) ENDANGERED

Kenneth Fink

DESCRIPTION: Commonly called the duck hawk. A medium sized blue-gray hawk with long pointed wings. Distinguished from other falcons by its black cap and black cheek patches. The prairie falcon is much browner and has a streaked breast.

DISTRIBUTION: The American peregrine--extinct as a breeding bird east of the Rocky Mountains--bred in California along the coast, Channel Islands, and in higher mountains inland. In the 1940s the breeding bird population was 100 pairs; in 1970 this population had declined to 10 birds, of which 2 pairs produced 4 young.

STATUS: Endangered. Mortality exceeds recruitment. Food chain contamination by persistent pesticides and other contaminants, illegal taking by falconers, human disturbance, and occasional shooting are contributing to its decline. Number of this subspecies in captivity unknown.

PROTECTIVE MEASURES TAKEN:
... Fully protected bird under state law.

(Continued overleaf)

... Importation, transportation, and possession of all hawks and owls without permit from the Department of Fish and Game are prohibited.

... All peregrines and prairie falcons in captivity in California must be registered and a nonremovable numbered band attached.

... Surveillance of known active nest sites is maintained during incubation and brooding of young.

... Introduction of environmental pollutants to the ocean reduced by (1) prohibition of garden and household use of DDT as well as discontinuing use on all but four agricultural crops, and (2) reduction of volume of pesticides and other pollutants through sewer outfalls.

RECOMMENDATIONS:

... Enact firm controls to minimize further environmental pollution by pesticides and other contaminants.

... Investigate the feasibility of breeding peregrine falcons in captivity for reintroduction to the wild.

... Direct conservation education efforts to better acquaint the public with the plight of the American peregrine and the added protection needed to assure survival.

... Protect active nest sites through acquisition, easement, or memorandum of understanding with landowners.

REFERENCES:

Herman, S. G. 1970. The peregrine falcon - a vanishing Californian. Outdoor California. Jan.-Feb., 1970 p. 10-14.

Herman S. G., M N. Kirven, and R. W. Risebrough. 1970. The peregrine falcon decline in California. 1. A preliminary review. Audubon Field Notes 24(4) p. 609-613.

Herman S. G. 1971. The peregrine falcon decline in California. 2. breeding status in 1970. Calif. Dept. Fish and Game. P-R Compl. Rept. Special Wildl. Invest. W-54-R-3, 4 p.

CALIFORNIA CLAPPER RAIL (Rallus longirostris obsoletus) ENDANGERED

Crayton Thorup

DESCRIPTION: Hen-sized, long-billed, brown bird with tawny breast, barred flanks, and a short upturned tail with white beneath. Largest of California's rails, this secretive marsh bird is seldom seen far from salt marshes.

DISTRIBUTION: Resident in salt marshes in San Francisco Bay and Elkhorn Slough. Casual visitor to Bolinas, Tomales, and Humboldt bays.

STATUS: Endangered. Highly specialized and apparently incapable of adapting to environmental change. Although relatively abundant in South San Francisco Bay, only a few nest in North San Francisco Bay and Elkhorn Slough. Clapper rails are absent from Suisun Bay and many other salt marshes along north and central coast. Bay fill and drainage as well as industrial pollution and the introduced old-world rat threaten continual existence. Status of the Elkhorn Slough population is unknown; South San Francisco Bay California clapper rail population numbers 1300 pairs.

PROTECTIVE MEASURES TAKEN:

... Fully protected bird under state law.

... Preservation of Palo Alto Marsh by City of Palo Alto.

... Acquisition of Knapp Gun Club and Tubbs Island in San Francisco Bay by the Nature Conservancy.

... Portions of Grecko Island and Mowry Slough, South San Francisco Bay, established as an Audubon Society sanctuary.

... Moratorium on bay fill set by Bay Conservation Development Commission.

(Continued overleaf)

CALIFORNIA CLAPPER RAIL

RECOMMENDATIONS:

... Protect salt marsh areas in South San Francisco Bay critical to clapper rail survival through immediate acquisition, easement, or memorandum of understanding with landowners.

... Establish South San Francisco Bay National Wildlife Refuge.

... Initiate an animal control program to reduce nest predation by old world rats.

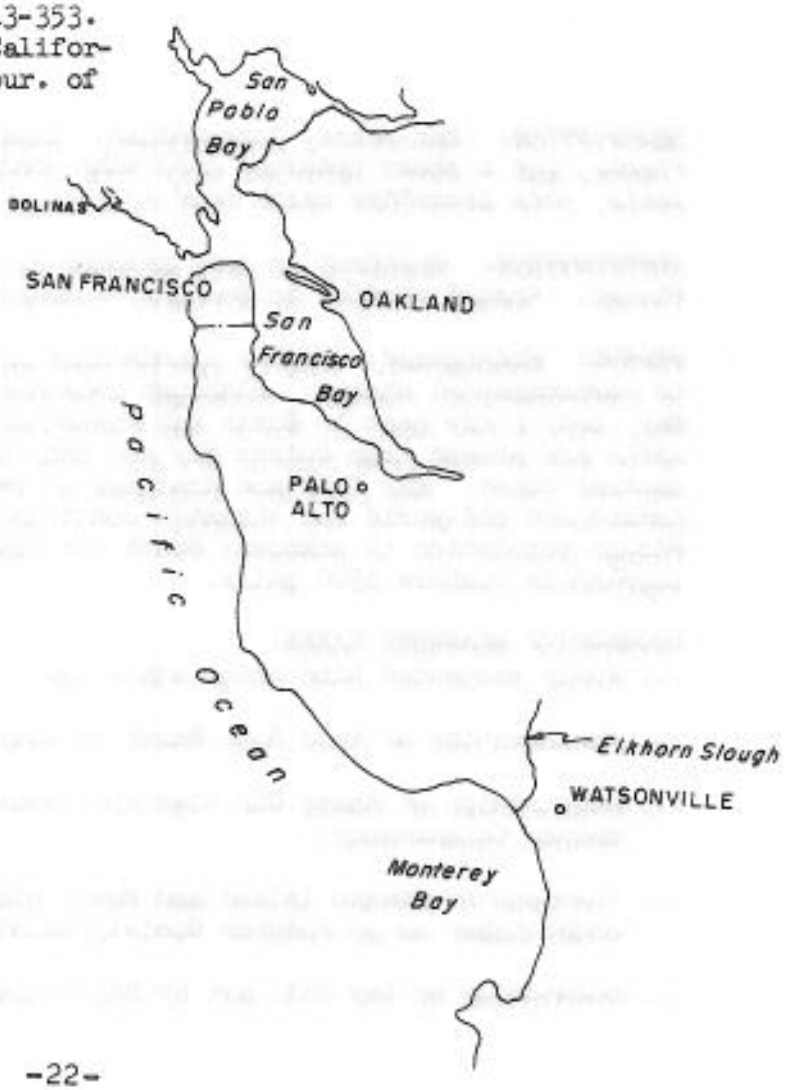
... Instigate a program to establish breeding colonies in areas presently not occupied by the California clapper rail.

REFERENCES:

Gill, R. E. 1971. Breeding bird survey South San Francisco Bay, 1971. Calif. Dept. Fish and Game, unpublished.

Oberholser, H. C. 1937. A revision of the clapper rails (Rallus longirostris) broddaert). Proc. U. S. Natl. Museum, Smithsonian Inst. 84(3018) p. 313-353.

Zucca, J. J. 1954. A study of the California clapper rail. The Wasmann Jour. of Biol. 12 (2) p. 135-153.



YUMA CLAPPER RAIL (Rallus longirostris yumanensis) ENDANGERED

Richard Todd

DESCRIPTION: Smallest of the clapper rails in California and the only one inhabiting freshwater marshes along the Colorado River and Salton Sea.

DISTRIBUTION: Nests along the Colorado River from Mexico to Topock Marsh in areas of dense cattails and tules. Occurs mostly in Topock Marsh, Havasu Lake National Wildlife Refuge and further south in Imperial National Wildlife Refuge, Mittry Lake and east of Yuma. Numbers in excess of 300 pairs. Also nests at south end of Salton Sea and on the Imperial Wildlife Area.

STATUS: Endangered. Channelization and phreatophyte removal along the Colorado River threaten continued survival of the Yuma clapper rail.

PROTECTIVE MEASURES TAKEN:
... Fully protected bird under state law.

... Federal program of preservation and management of clapper rail habitat enacted for Havasu Lake National Wildlife Refuge.

RECOMMENDATIONS:
... Department conduct a survey of Yuma clapper rail habitat in California.

... Preserve habitat areas critical to clapper rail survival in their natural state through acquisition, easement, or memorandum of understanding with landowners.

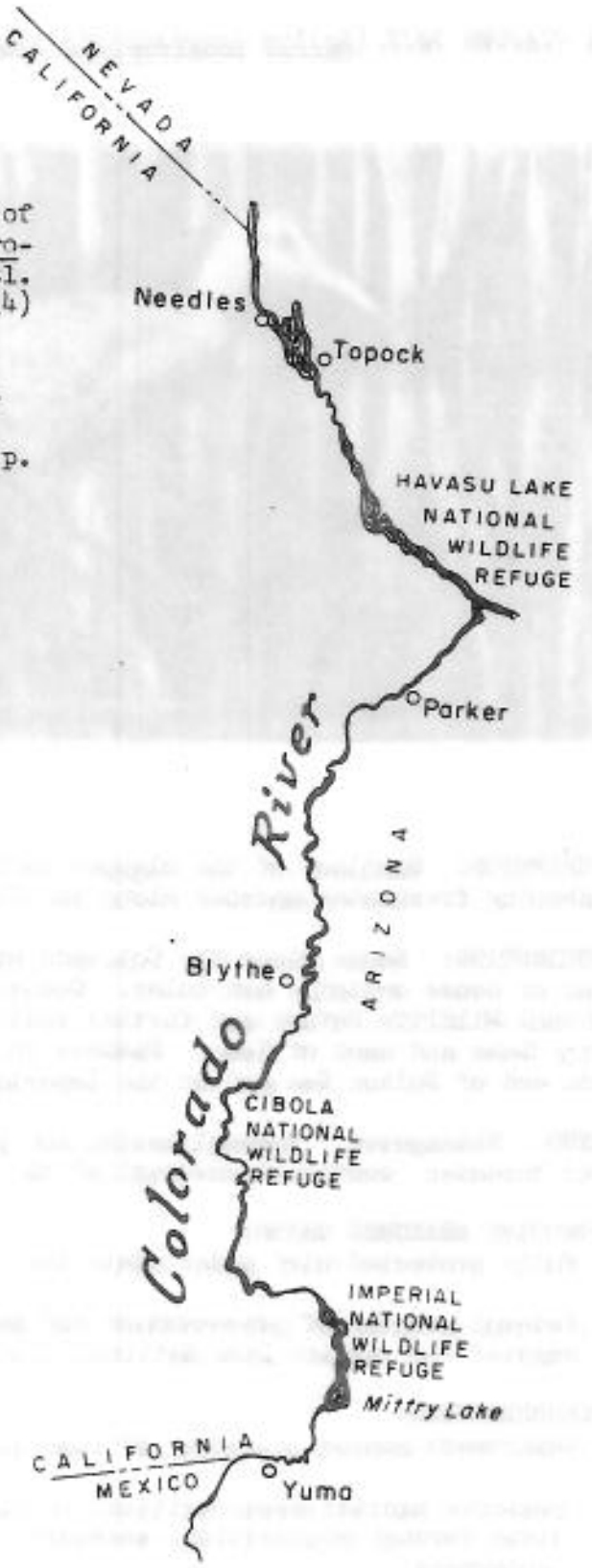
(Continued overleaf)

YUMA CLAPPER RAIL

REFERENCES:

Oberholser, H. C. 1937. A revision of the clapper rails (Rallus longirostris broddaert). Proc. U.S. Natl. Museum, Smithsonian Inst. 84(3014) p. 313-353.

Todd, R. L. 1969. Arizona Game and Fish Department Nongame Investigations, 1968-69. P-R W-53-R-1 Completion Rept., Apr. 1969, 25 p.



LIGHT-FOOTED CLAPPER RAIL (*Rallus longirostris levipes*) ENDANGERED

Herbert Clarke

DESCRIPTION: Slightly smaller and darker than the California clapper rail. The only clapper rail found in southern California coastal salt marshes.

DISTRIBUTION: Ranges from Santa Barbara south to San Quentin Bay, Lower California. Breeding colonies in California limited currently to Anaheim Bay, Los Penasquitos Lagoon, Tijuana River Marsh, and remnant salt marshes in Mission and San Diego bays.

STATUS: Endangered. A freeway through Anaheim Bay and planned developments of Tijuana River Marsh, South San Diego Bay, Mission Bay, Upper Newport Bay, Los Penasquitos Lagoon, and other southern California coastal salt marshes threaten continued survival of the light-footed clapper rail.

PROTECTIVE MEASURES TAKEN:

... Fully protected bird under state law.

... Abandonment of freeway or a freeway interchange at Goleta Slough, Santa Barbara County.

... Preservation of Carpinteria Marsh, Santa Barbara County, by the University of California.

RECOMMENDATIONS:

... Select alternative freeway route bypassing the Anaheim Bay Marsh.

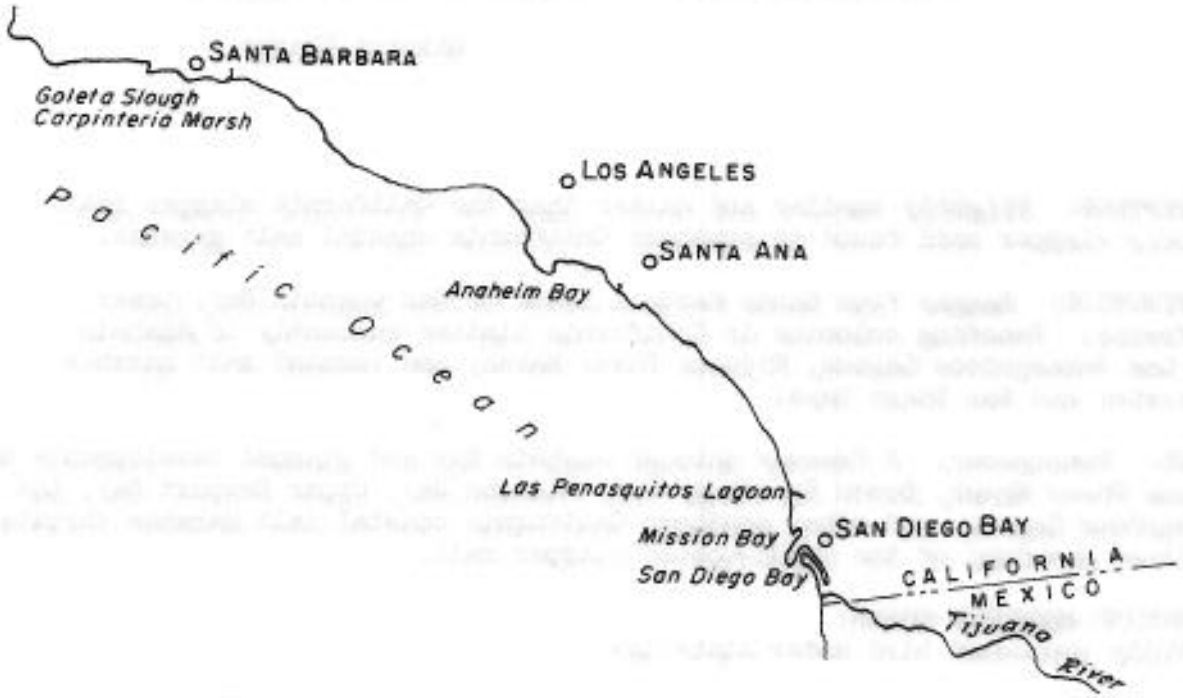
(Continued overleaf)

... Establish Anaheim Bay as a National Wildlife Refuge.

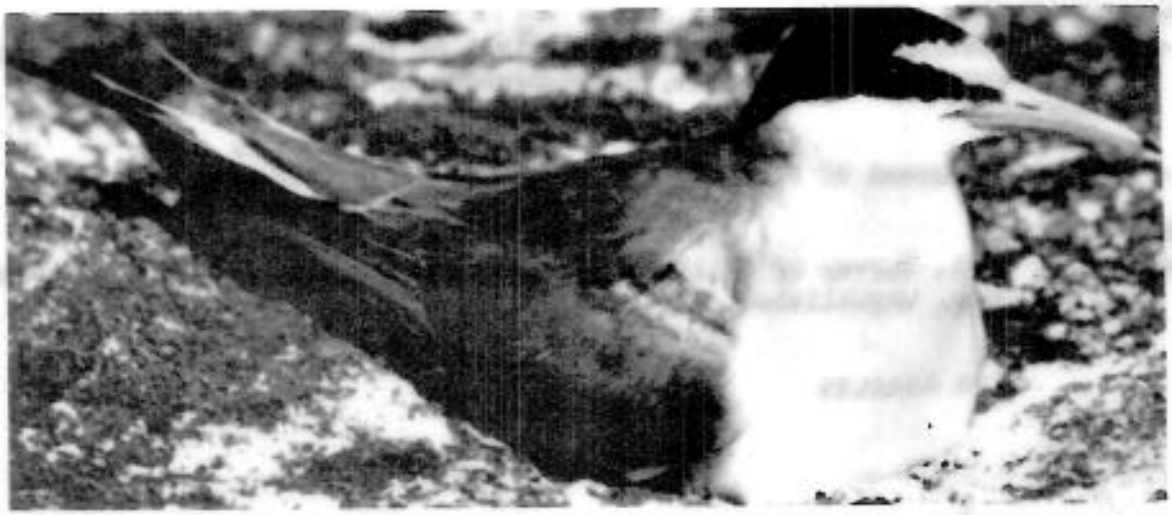
... Modify the International Boundary and Water Commission flood control plans for Tijuana River to protect habitat essential for survival of the light-footed clapper rail.

... Include setting aside a Nature Preserve for the light-footed clapper rail in future plans of Department of Parks and Recreation for Border Field, San Diego County.

REFERENCES:
Oberholser, H.C. 1937. A revision of the clapper rails (Rallus longirostris broddaert). Proc. U. S. Natl. Museum, Smithsonian Inst. 84(3014) p. 313-353.
Speth, J. W. 1969. Status report on the coastal wetlands of southern California as of February 1, 1969. Calif. Dept. Fish and Game, 29 p.



CALIFORNIA LEAST TERN (*Sterna albifrons browni*) ENDANGERED



Kenneth Fink

DESCRIPTION: Smallest of the terns, this sparrow-sized bird is easily recognized by its white body, black-tipped wings, and black-capped head. Its quick wing beats and hovering action separate it from the larger terns.

DISTRIBUTION: Summer visitor from April through September along the coastline from Mexico to San Francisco. Winters in southern hemisphere and breeds along the Pacific Coast from Baja California to San Francisco Bay. In 1970, 300 pairs nested in 15 nesting sites located mostly on southern California beaches.

STATUS: Endangered. Habitat destruction and disturbance and predation are responsible for the rapidly declining population. Requires sandy beaches free from human disturbance to assure successful nesting.

PROTECTIVE MEASURES TAKEN:

... Fully protected bird under state law.

... Huntington Beach State Park Tern Sanctuary established by state.

... Santa Margarita River Tern Sanctuary established on Camp Pendleton Marine Base.

... Orange County Board of Supervisors has delayed development of Sunset Aquatic Park.

... Buena Vista Lagoon Ecological Reserve established by state.

... Nesting habitat developed by Navy at Seal Beach Naval Weapons Station.

(Continued overleaf)

CALIFORNIA LEAST TERN

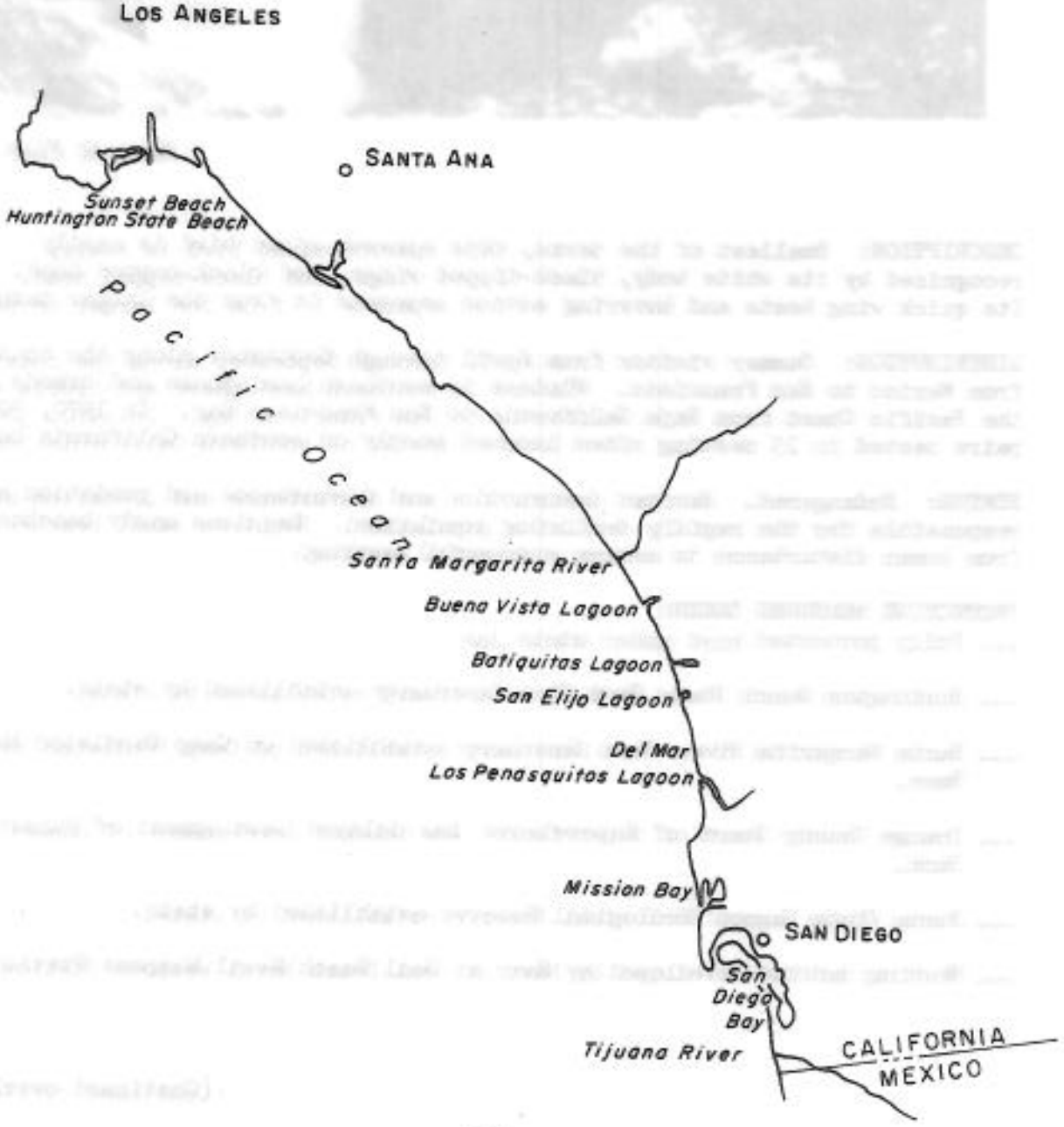
RECOMMENDATIONS:

... Protect nesting areas critical to survival of the California least tern through acquisition, easement, or memorandum of understanding with landowners.

... Initiate programs of habitat management and protection immediately.

REFERENCES:

Craig, A.M. 1971. Survey of California least tern nesting sites. Calif. Dept. Fish and Game, unpublished, 112 p.



MORRO BAY KANGAROO RAT (Dipodomys heermanni morroensis) ENDANGERED

Glenn Stewart

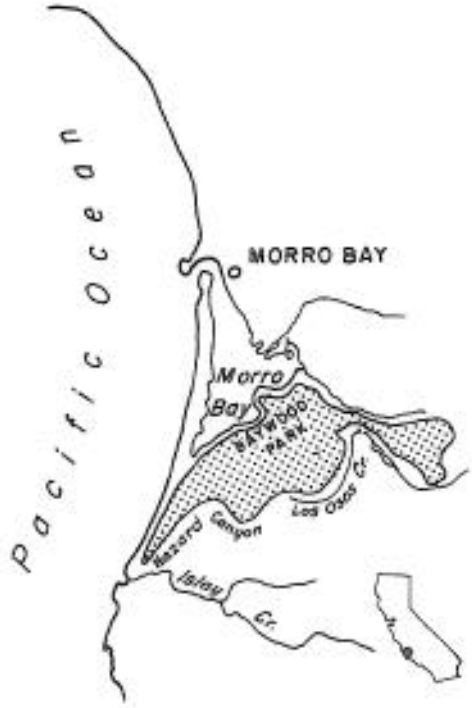
DESCRIPTION: This long-tailed rat with large hind and small front feet is the darkest of all kangaroo rats. The white hip stripe distinguishes it from other subspecies.

DISTRIBUTION: In 1957 it was reported to occur only within 4.8 square miles of sandy soil on the south side of Morro Bay. Its range is now 1.7 square miles and its population is approximately 3,000 animals.

STATUS: Endangered. Continual growth of Los Osos and Baywood communities, reduction in escape cover, and predation by house cats threaten continued survival.

PROTECTIVE MEASURES TAKEN:
... Fully protected mammal under state law.

... Montana De Oro State Park boundary extended by Department of Parks and Recreation.



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... Prohibition of dune buggy and other vehicular traffic in habitat area gives added protection.

RECOMMENDATIONS:

... Give high priority to extension of Montana De Oro State Park to Shark Inlet in acquisition plans of the Department of Parks and Recreation.

... Request Land and Water Conservation Funds for acquisition of an additional 50 acres of essential habitat.

... Classify lands within the State Park System inhabited by this endangered species as a Nature Preserve.

... Initiate an active management program to aid in protection and enhancement of habitat for the Morro Bay kangaroo rat.

REFERENCES:

Congdon, J. D. 1971. Population estimate and distribution of the Morro Bay kangaroo rat. Calif. Dept. Fish and Game, unpublished, 16 p.

Grinnell, J. 1922. A geographical study of the kangaroo rats of California. Univ. of Calif. Publ. in Zool., 24, p. 126-129.

Stewart, G. R. and A. I. Roest. 1960. Distribution and habits of kangaroo rats at Morro Bay. Journ. of Mamm. 41 (1), p. 126-129.

SALT MARSH HARVEST MOUSE (Reithrodontomys raviventris) ENDANGERED

Walt Luke

DESCRIPTION: A unique mouse inhabiting San Francisco Bay brackish and salt marshes. Recognized by its rich brown back and cinnamon to whitish underparts. One of few mammals able to drink salt water.

DISTRIBUTION: Formerly inhabited the extensive marshes once bordering San Francisco Bay. Now restricted to scattered colonies within its original range.

STATUS: Endangered. Continual destruction of salt marsh habitat by bay fill and diking are major factors contributing to decline of the salt marsh harvest mouse.

PROTECTIVE MEASURES TAKEN:

... Fully protected mammal under state law.

... Acquisition of Tubbs Island, North San Francisco Bay, and Knapp Gun Club, South San Francisco Bay, by The Nature Conservancy.

... Preservation of Palo Alto Marsh by City of Palo Alto.

... Portions of Grecko Island and Mowry Slough, South San Francisco Bay, established as an Audubon Society sanctuary.

... Moratorium on bay fill set by Bay Conservation Development Commission.

(Continued overleaf)

SALT MARSH HARVEST MOUSE

RECOMMENDATIONS:

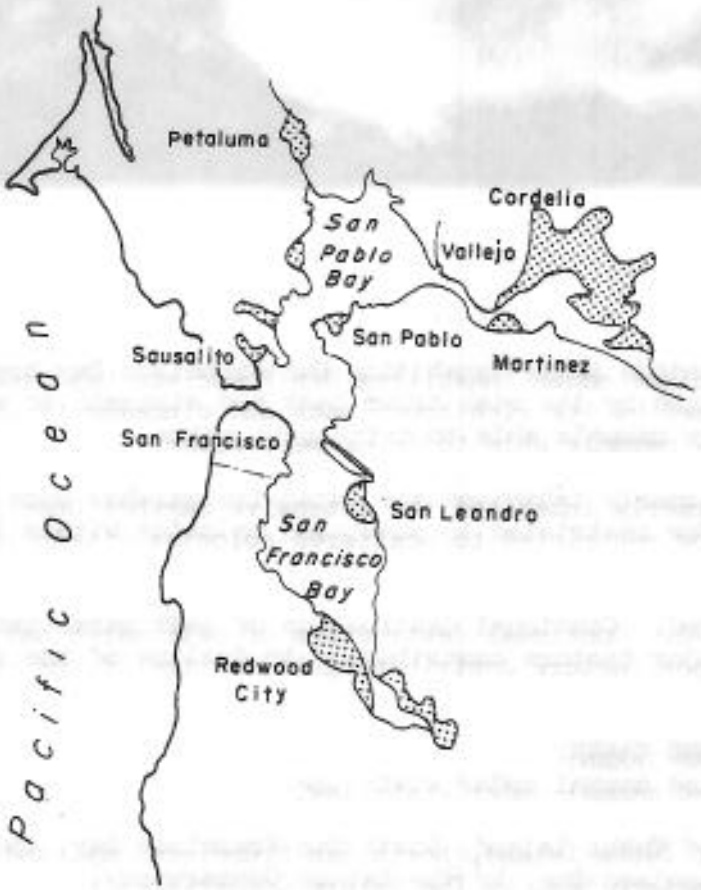
... Establish South San Francisco Bay National Wildlife Refuge.

... Preserve habitat areas critical to salt-marsh harvest mouse survival through acquisition, easement, or memorandum of understanding with landowners.

REFERENCES:

Fisler, G. F. 1965. Adaptations and specification in harvest mice of the marshes of San Francisco Bay. Univ. of Calif. Publ. in Zool. 77. 108 p.

Schaub, D. B. 1971. Salt marsh harvest mouse survey, 1971. Calif. Dept. of Fish and Game, P-R Completion Rept. W-54-R-3. 35 p.



COLORADO SQUAWFISH (Ptychocheilus lucius) ENDANGERED

J. Bruce Kimsey

DESCRIPTION: This is a slender fish with a somewhat pike-like appearance. However, there are no teeth in the mouth. Coloration is dusky-greenish above, silvery on the sides, and yellowish to white on the belly. The head is long, slender, and depressed, with a large mouth and small eyes. The scales are small and the lateral line is strongly decurved. It is the largest of the American minnows, reportedly growing to 5 feet and 80 pounds.

DISTRIBUTION: Originally abundant throughout the Colorado River and major tributaries in deeper water and strong currents. Present in the upper drainage, it is now seldom seen below Glen Canyon Dam in northern Arizona.

STATUS: Endangered. May be extinct in California, since it has not been collected here for over 15 years. Extensive habitat alterations, resulting primarily from changes in land use and the construction of large reservoirs, have largely been responsible for the decline in numbers. The critical factors in the habitat, except perhaps flowing water, are unknown.

PROTECTIVE MEASURES TAKEN:

... Fully protected fish under state law.

... Declared endangered by the Secretary of the Interior.

RECOMMENDATIONS:

... Determine if populations exist in California and what measures are necessary for their continued survival.

REFERENCES:

La Rivers, I. 1962. Fishes and fisheries of Nevada. Nev. Fish and Game Comm., p. 381-384.

MOHAVE CHUB (Gila mohavensis) ENDANGERED

Leonard Fisk

DESCRIPTION: Color is dark olive above to bluish or creamy white on the belly. There are brilliant bluish or gold reflections on the sides, giving a metallic appearance. The body is rather slab-sided, with a relatively deep caudal peduncle.

DISTRIBUTION: Originally found in the Mojave River from above the junction of the East and West Forks downstream to Soda Lake. It is now restricted to Lake Tuendae and nearby springs at the Zzyzx Mineral Springs Resort on the west side of Soda Lake near Baker, San Bernardino County.

STATUS: Endangered. A related species (Gila orcutti) was illegally introduced into the Mojave River, and has hybridized with the Mohave chub in all areas except near Baker.

PROTECTIVE MEASURES TAKEN:
... Fully protected fish under state law.

... Declared endangered by the Secretary of the Interior and the International Union for the Conservation of Nature and Natural Resources.

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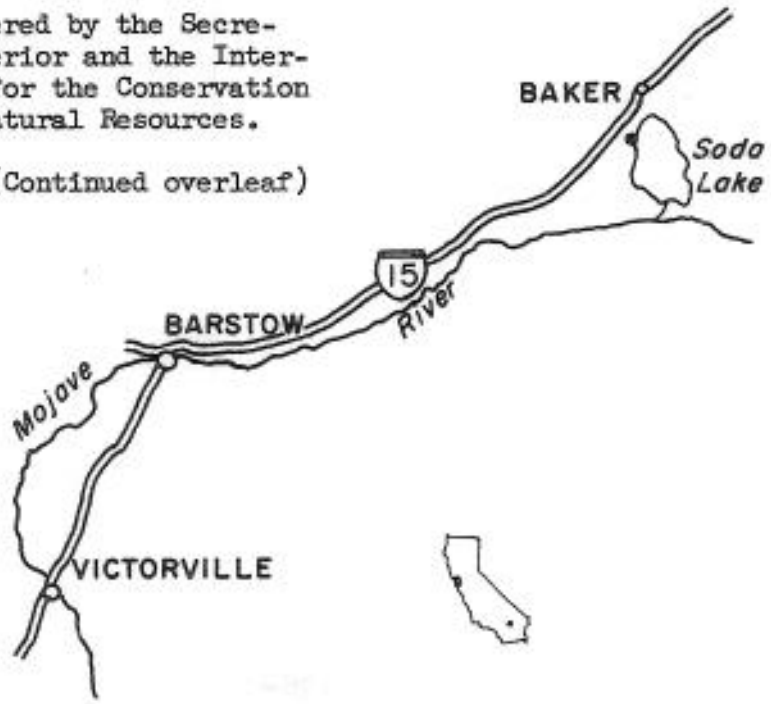


MOHAVE CHUB

... Recently introduced into Piute Springs and Two Hole Springs, San Bernardino County, and a pond at China Lake Naval Weapons Center, Kern County.

... Occupant of Zzyzx Springs Resort is sympathetic to maintaining populations at this location.

RECOMMENDATIONS:

... Investigate the possibility of establishing Zzyzx Springs as an ecological reserve after conflict over property ownership has been resolved.

... Monitor populations at Zzyzx Springs and the transplant locations periodically to keep abreast of developments or impending problems.

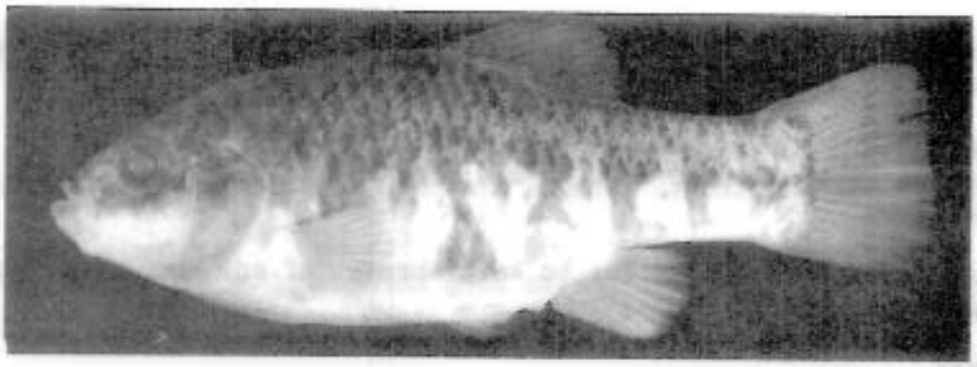
REFERENCES:

Hubbs, C. L., and R. R. Miller. 1943. Mass hybridization between two genera of cyprinidid fishes in the Mohave Desert, California. Pap. Mich. Acad. Sci., Arts, and Let., 28(1942):343-378.

Miller, R. R. 1968. Records of some native freshwater fishes transplanted into various waters of California, Baja California, and Nevada. Calif. Fish and Game, 54(3):1970-179.

St. Amant, J. A., and S. Sasaki. 1971. Progress report on reestablishment of the Mohave chub Gila mohavensis (Snyder) - an endangered species. Calif. Fish and Game, 57(4):307-308.

OWENS PUPFISH (Cyprinodon radiosus) ENDANGERED



E. Philip Pister

DESCRIPTION: A small (less than 2 inches) stout-bodied fish with notched teeth. The dorsal fin is far forward with a thickened first ray. There are 7 pelvic fin rays. Male breeding coloration is bright blue on the body, with a narrow, dusky to black band on the tail. Females are brown above to whitish below, with dark blotches on the sides.

DISTRIBUTION: Originally abundant in the Owens Valley from near Lone Pine northward to Fish Slough. Now confined to several small areas in Fish Slough and a small pond north of Big Pine. Preferred habitat is still or slow-moving, shallow water with some vegetation.

STATUS: Endangered. Much of the habitat has been eliminated by drainage and drying of marshy areas through export of water. This species also has been eliminated from some areas by competition from introduced fishes.

PROTECTIVE MEASURES TAKEN:

... Fully protected fish under state law.

... Declared endangered by the Secretary of the Interior and the International Union for the Conservation of Nature and Natural Resources.

... A sanctuary for this and other native Owens Valley fishes has been established in Fish Slough.

(Continued overleaf)

OWENS PUPFISH

... Two other informal "sanctuaries" have been established in southern Mono and northern Inyo Counties.

RECOMMENDATIONS:

... Determine if additional refuges are required to provide adequate protection.

... Monitor existing populations to keep abreast of any changes or possible problems.

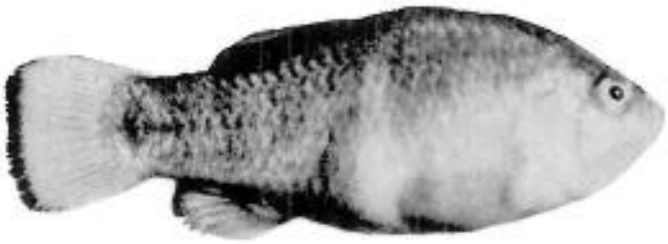
REFERENCES:

Miller, R. R. 1948. The cyprinodont fishes of the Death Valley system of eastern California and southwestern Nevada. Misc. Publ. Mus. Zool. Univ. Mich. 68:1-155.

_____.1961. Man and the changing fish fauna of the American Southwest. Pap. Mich. Acad. Sci., Arts, and Let., 46(1960):365-404.

Miller, R. R., and E. P. Pister. 1971. Management of the Owens pupfish, Cyprinodon radiosus, in Mono County, California. Trans. Amer. Fish. Soc., 100(3):502-509.

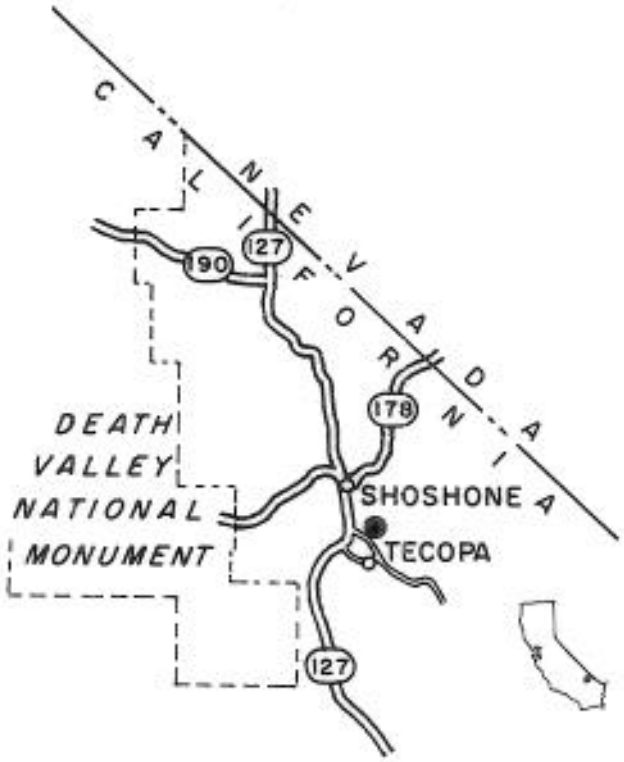
TECOPA PUPFISH (Cyprinodon nevadensis calidae) ENDANGERED



E. Philip Pister

DESCRIPTION: Similar to other pupfishes but has larger scales and more posteriorly placed pelvic fins, which have 6 rays. The dorsal fin is farther back than on the Owens pupfish. The caudal fins of males have a prominent black edge, but otherwise are similar in color to C. radiosus.

DISTRIBUTION: Originally found only in the outflows of North and South Tecopa Hot Springs, Inyo County, from which it has been eliminated. It was last known from an artificial pond and nearby creek at Jeds Motel, Tecopa Hot Springs.



STATUS: Endangered. Elimination of the Tecopa pupfish from its original locality was due to the introduction of mosquitofish, alteration of the habitat, and probably contamination of the water. Due to extremely limited distribution, this fish is vulnerable to extinction from a single calamitous event. The status of existing populations is unknown.

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

... Declared endangered by the International Union for the Conservation of Nature and Natural Resources.

RECOMMENDATIONS:

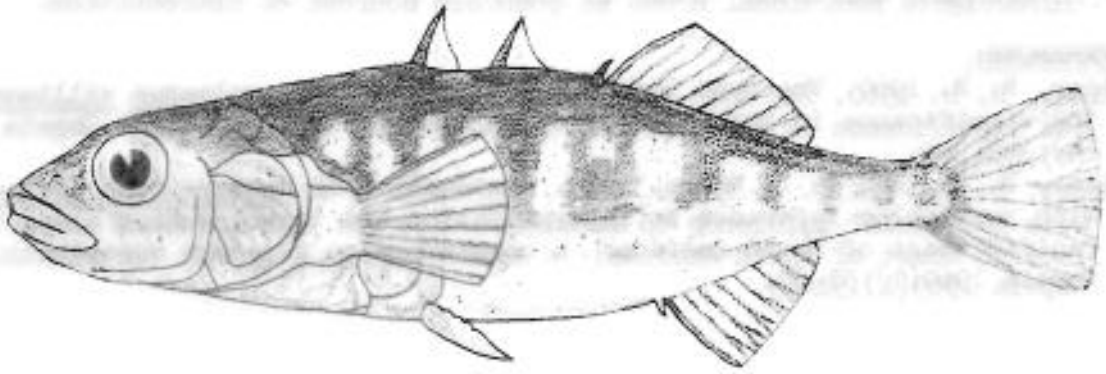
... Inventory existing populations to determine numbers and locations.

... Develop a plan to introduce this fish into additional adjacent areas, if possible, to insure its perpetuation.

REFERENCES:

Miller, R. R. 1948. The cyprinodont fishes of the Death Valley system of eastern California and southwestern Nevada. Misc. Publ. Mus. Zool. Univ. Mich. 68:1-155.

UNARMORED THREESPINE STICKLEBACK ENDANGERED
(Gasterosteus aculeatus williamsoni)



Leonard Fisk

DESCRIPTION: Three sharp, erectile spines precede the soft dorsal fin. Ventral fins are sharp spines. The body is without scales but may have 1-3 plates on the sides. Color is greenish to olive above, grading to silvery on the lower sides and belly. Males have scarlet throat and belly, blue eyes, and greenish fins at spawning time. Females have pinkish throat and belly at this time. Size is small, rarely over 3 inches. This subspecies has fewer lateral plates (0-3), shorter and weaker spines, and more rounded pectoral and caudal fins than the other subspecies.

DISTRIBUTION: The unarmored form still persists in Soledad Canyon in the upper Santa Clara River drainage, Los Angeles County. It has probably hybridized with G. a. microcephalus in other areas where it was present.

STATUS: Endangered. Populations from the Los Angeles Basin streams (Los Angeles, San Gabriel, Santa Ana Rivers) have been exterminated. The population in the Santa Clara River is threatened by increased recreational use and development in Soledad Canyon.

PROTECTIVE MEASURES TAKEN:
... Fully protected fish under state law.

... Declared endangered by the Secretary of the Interior and the International Union for the Conservation of Nature and Natural Resources.

RECOMMENDATIONS:
... Surveys are needed to determine if genetically pure populations exist in the Mojave River and the lower Cuyama River drainage.

... Develop plans to protect the population in Soledad Canyon.

(Continued overleaf)

... Investigate additional areas as possible sources of introduction.

REFERENCES:

Miller, R. R. 1960. The type locality of Gasterosteus aculeatus williamsoni and its significance in the taxonomy of California sticklebacks. Copeia 1960 (4):348-350.

Miller, R. R., and C. L. Hubbs. 1969. Systematics of Gasterosteus aculeatus, with particular reference to intergradation and introgression along the Pacific Coast of North America: a commentary on a recent contribution. Copeia 1969(1):51-69.

SANTA CRUZ LONG-TOED SALAMANDER
(Ambystoma macrodactylum croceum)

ENDANGERED

Roy McDermott

DESCRIPTION: A small salamander with relatively long toes. Color is black above with irregular middorsal spots of metallic yellow-gold to orange. The ventral side is sooty. The teeth form a continuous or broken band across the roof of the mouth. Adults grow to about 5 inches.

DISTRIBUTION: Known from only 2 locations in Santa Cruz County - Valencia Lagoon near Aptos and near Ellicott Station 4 miles northwest of Watsonville. This salamander is associated with wooded areas where it takes refuge in the summer. It breeds in temporary ponds in winter, where the larvae develop for several months before transforming and migrating to the oak or willow thickets.

STATUS: Endangered. The Valencia Lagoon habitat was drastically altered recently by freeway construction. The Ellicott Station location is threatened by a proposed mobile home park that would probably eliminate the present habitat.

PROTECTIVE MEASURES TAKEN:

... Fully protected amphibian under state law.

... Declared endangered by the Secretary of the Interior and the International Union for the Conservation of Nature and Natural Resources.

... An artificial temporary pond was constructed at Valencia Lagoon in 1970 by the Division of Highways in an attempt to restore a place for reproduction.

... The Nature Conservancy has been contacted regarding funds for purchase of the property near Ellicott Station.

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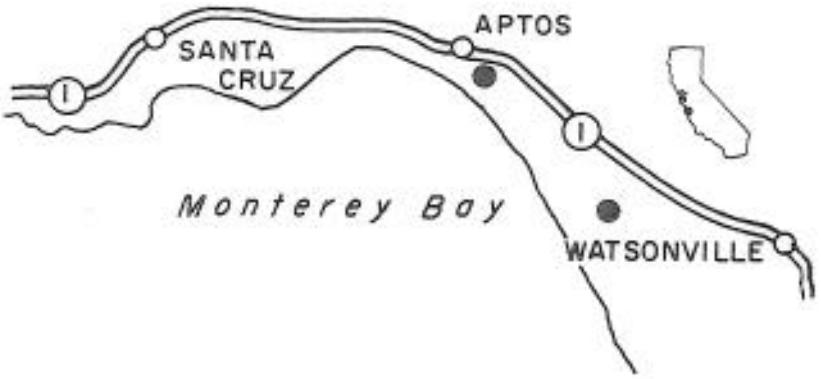


SANTA CRUZ LONG-TOED SALAMANDER

RECOMMENDATIONS:

... Acquire public funds to purchase the Ellicott Station pond property before the habitat is eliminated.

... If the Ellicott Station property is not purchased, collect all available salamanders and transplant to some other suitable location if one can be found before any development begins.

... Monitor the population at Valencia Lagoon to determine if the artificial pond is used. If not, some of these animals should be considered for transplanting to another location.

... Purchase with public funds the small strip of property at Valencia Lagoon between the south boundary of the highway right-of-way and the private road, and fence to provide protection for the reproduction area.

REFERENCES:

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

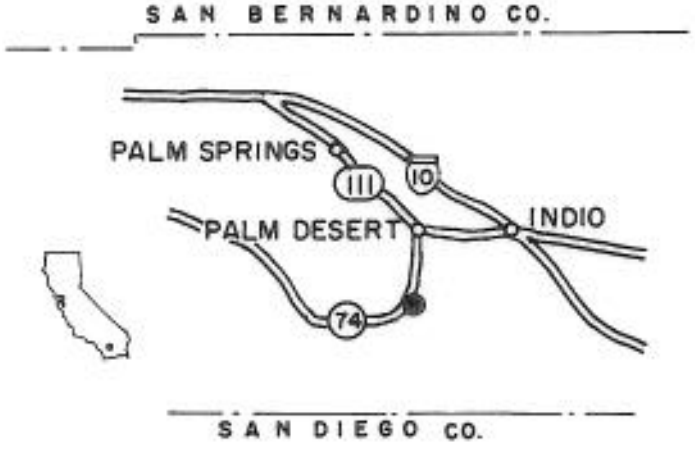
Russell, R. W. and J. E. Anderson. 1956. A disjunct population of the long-nosed (sic) salamander from the coast of California. Herpetologica, 12:137-140.

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

DESERT SLENDER SALAMANDER (Batrachoseps aridus) ENDANGERED

Patricia L. Brame

DESCRIPTION: A moderately small slender salamander with a short tail. There are 4 toes on all feet. Color is blackish maroon above, overlaid with an indistinct lighter band. Ventrally, the trunk is a darker blackish maroon and the underside of the tail is flesh colored. Adults grow to 4-4½ inches.



DISTRIBUTION: Known only from Hidden Palm Canyon, a tributary of Deep Canyon, about 10 miles south of Palm Desert, Riverside County. It inhabits the undersides of limestone sheets and rocks along the lower level of cliffs and at the base of cliffs where continuous water seepage occurs. The habitat is on private property.

STATUS: Endangered. This salamander, first discovered in 1969, is found in a very restricted area. The habitat could be destroyed very easily.

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

... The U.S. Bureau of Land Management has been requested to consider acquiring the quarter-section where this animal occurs. Remainder of this section is owned by the BLM.

RECOMMENDATIONS:

... Private property essential to desert slender salamander survival should be acquired by a public agency, preferably BLM.

... Monitor population and habitat to keep abreast of any changes.

... Search additional canyon areas for the possible existence of this species in other locations.

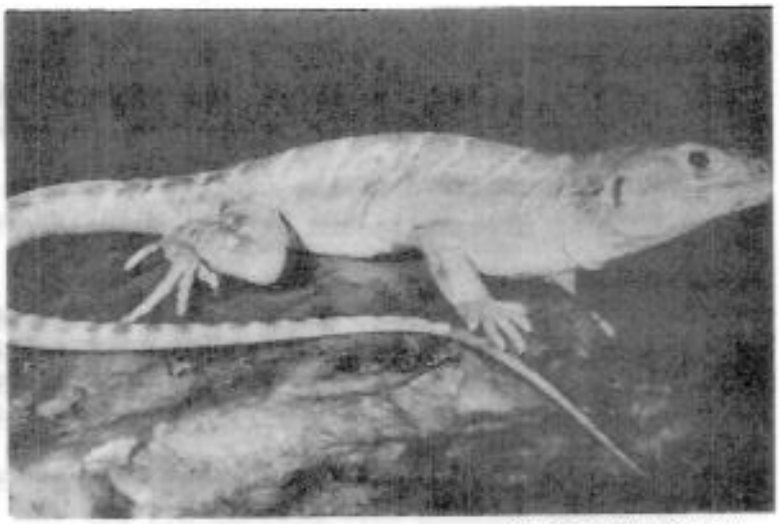
(Continued overleaf)

DESERT SLENDER SALAMANDER

REFERENCES:

Boynton, K. L. 1971. The singular salamander. Desert 34(10):18-21.
Brame, A. H., Jr. 1970. A new species of Batrachoseps (slender salamander) from the desert of southern California. L. A. Co. Mus. Contri. Sci. 200:1-11.

BLUNT-NOSED LEOPARD LIZARD (Crotaphytus wislizenii silus) ENDANGERED



Nathan W. Cohen

DESCRIPTION: A robust lizard with a long, round tail. The head is large with a short, blunt snout. Color above is gray or brown, with whitish crossbars on back and tail. "Leopard" spots are present on back and tail. The throat is streaked or spotted with gray. The undersurfaces of the tail and thighs are yellow. Length from snout to vent in adults is $3\frac{1}{2}$-5 inches.

DISTRIBUTION: Originally found in the San Joaquin Valley and adjacent foothills from about San Joaquin County southward and into eastern San Luis Obispo County. It now occurs in scattered locations in the valley, in the foothills of Tulare and Kern Counties, and up the eastern portions of the Coast Range foothills. It inhabits sparsely vegetated plains, alkali flats, low foothills, grasslands, canyon floors, large washes, and arroyos. It is absent or scarce in areas of heavy vegetation or tall grass.

STATUS: Endangered. This form is believed to be on the verge of extermination because of land use changes. Subdivisions, water control, and increasing agricultural use have eliminated many populations. The sparsely vegetated plains and grassland areas preferred by this animal are rapidly dwindling and will continue to do so with additional water being imported for agricultural purposes.

PROTECTIVE MEASURES TAKEN:

... Fully protected reptile under state law.

... Declared endangered by the Secretary of the Interior and the International Union for the Conservation of Nature and Natural Resources.

(Continued overleaf)

BLUNT-NOSED LEOPARD LIZARD

RECOMMENDATIONS:

... Conduct surveys throughout the range of the blunt-nosed leopard lizard to determine the extent and status of existing populations.

... Protect remnants of the habitat on public lands, such as the Naval Petroleum Reserve near Taft, and several wildlife refuges.

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

SAN FRANCISCO GARTER SNAKE (Thamnophis sirtalis tetrataenia) ENDANGERED

DESCRIPTION: One of the most strikingly beautiful snakes of North America, this slender serpent has a head only slightly wider than the neck. The top of the head is red, there is a wide middorsal stripe of greenish-yellow edged with black, and broad unbroken red stripes on each side bordered with black. The ventral side is greenish blue. Adults grow to 4 feet.

Nathan W. Cohen

DISTRIBUTION: From northern San Mateo County southward along the crest of the peninsula hills at least to Crystal Springs Lakes, and along the coast west of this region southward to Point Ano Nuevo. It is found most commonly in vegetation that borders ponds and lakes. Marshy areas with good cover appear to be especially favored.

STATUS: Endangered. This is one of the most endangered forms of snakes. Small populations are present around the Crystal Springs Reservoirs and perhaps near Sharp Park. Housing developments and road construction have eliminated much of the potential habitat for this snake.

PROTECTIVE MEASURES TAKEN:

... Fully protected reptile under state law.

... Declared endangered by the Secretary of the Interior and the International Union for the Conservation of Nature and Natural Resources.

RECOMMENDATIONS:

... Retain portions of the San Francisco Fish and Game Refuge in a natural state to insure the perpetuation of the existing population.

... Conduct a thorough search of the

(Continued overleaf)

area between San Francisco and Point Ano Nuevo to determine if additional populations occur.

... Develop a management plan for any substantial population identified above.

... Explore the possibility of breeding this animal in captivity for release in protected areas to bolster existing stocks.

REFERENCES:

Fox, W. 1951. The status of the gartersnake, Thamnophis sirtalis tetrateania. Copeia, 1951(4):257-267.

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

Our Rare Wildlife

The animals on the following pages are declared rare by the California Fish and Game Commission because their continued existence is threatened by one or more conditions. If the answer is "yes" to any of the following questions, the animal under consideration is declared rare:

...Is the animal confined to a relatively small and specialized habitat, and is it incapable of adapting to different environmental conditions?

...Although found in other parts of the world, is the animal nowhere abundant?

...Is the animal in California so limited that any appreciable reduction in range, numbers, or habitat would cause it to become endangered?

...If current management and protection programs were diminished in any degree, would the animal become endangered?

Our Rare Wildlife

CALIFORNIA BLACK RAIL (*Laterallus jamaicensis coturniculus*) **RARE**

DESCRIPTION: A sparrow-sized blackish rail with small black bill, white-speckled back, and white bars on sides.

DISTRIBUTION: Historically occurred in limited numbers in salt marshes from Tomales Bay south to Baja California and in freshwater marshes inland including portions of the Colorado River. Current distribution and numbers undetermined.

STATUS: Rare. Because of its secretiveness and small numbers it is only rarely seen. Destruction of coastal and inland wetlands by filling and draining threatens habitat vital to existence of the California black rail.

PROTECTIVE MEASURES TAKEN:
... Fully protected bird under state law.

RECOMMENDATIONS:
... Determine current status of the California black rail.

REFERENCES:
Grinnell, J. and A. H. Miller. 1944. The distribution of the birds of California. Cooper Ornith. Club, Berkeley. p. 130-131.

CALIFORNIA YELLOW-BILLED CUCKOO (Coccyzus americanus occidentalis) RARE

Hal Harrison

DESCRIPTION: A robin-sized brown bird with white underparts, cinnamon colored outspread wings, and a long tail with white spots. Never found far from dense streamside growth.

DISTRIBUTION: Although never very numerous in California, the California yellow-billed cuckoo historically nested along stream courses from Shasta County to southern California and along the Colorado River. Present distribution and numbers unknown.

STATUS: Rare. Very rarely seen in California today. Its habitat of dense streamside plant growth has been destroyed by accelerated urbanization and land use changes throughout most of California's Central Valley.

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:

... Determine current status of the California yellow-billed cuckoo.

REFERENCES:

... Grinnell, J. and A. H. Miller. 1944. The distribution of the birds of California. Cooper Ornith. Club, Berkeley. p. 186-187.

MOHAVE GROUND SQUIRREL (Citellus mohavensis)

RARE

George Bartholomew

DESCRIPTION: A small desert-dwelling ground squirrel resembling the antelope ground squirrel. Upper parts are more pinkish without mottling, and tail undersurface is white instead of cinnamon.

DISTRIBUTION: Historically occurred in the Mohave Desert west to Palmdale, north to Haiwee Mesa and south to Rabbit Springs near Hesperia. Distribution and numbers not presently known.

STATUS: Rare. Is less numerous than the antelope ground squirrel with whom it competes. Remains underground from August to March. Accelerated urbanization and land use changes taking place in the Mohave River Basin and Antelope Valley are destroying most of its habitat.

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:

... Determine current status of the Mohave ground squirrel.

REFERENCES:

Bartholomew, G. W. and J. W. Hudson. 1961. Desert ground squirrels. Scientific American Nov. 1961 p. 107-116.

Burt, W. H. 1936. Notes on the habits of the Mohave ground squirrel. Journ. Mamm. 17(3) p. 221-224.

Howell, A. H. 1938. Revision of the North American ground squirrels. North Amer. Fauna. 56 p. 183-185.

Ingles, L. G. 1965. Mammals of the Pacific States. Stanford Univ. Press. 506 p.

STEPHEN'S KANGAROO RAT (Dipodomys stephensi) RARE

DESCRIPTION: Distinguished from other kangaroo rats only in skull measurements and restricted distribution.

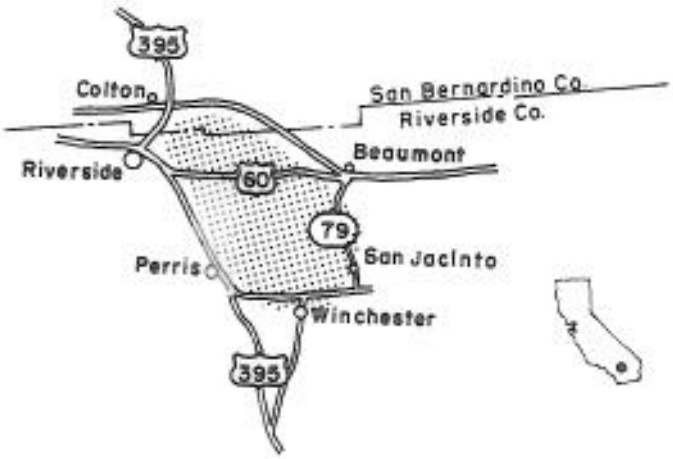
DISTRIBUTION: Historically found only in San Jacinto Valley, Riverside County, and extreme southern San Bernardino Valley. Distribution and numbers not presently known.

STATUS: Rare. Urbanization and land use change have destroyed most of its historical habitat. Small populations of Stephen's kangaroo rats may still exist in remnant undisturbed habitat areas within its historical range.

PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Determine current status of the Stephen's kangaroo rat.

REFERENCES:
Grinnel, J. 1922. The kangaroo rats of California. Univ. of Calif. Publ. in Zool. 24. p. 65-67.
_____. 1933. Review of the recent mammal fauna of California. Univ. of Calif. Publ. in Zool. 40(2). p. 160.



FRESNO KANGAROO RAT (Dipodomys nitratoides exilis) RARE

DESCRIPTION: This subspecies of the dark-colored San Joaquin kangaroo rat is the smallest of the kangaroo rats.

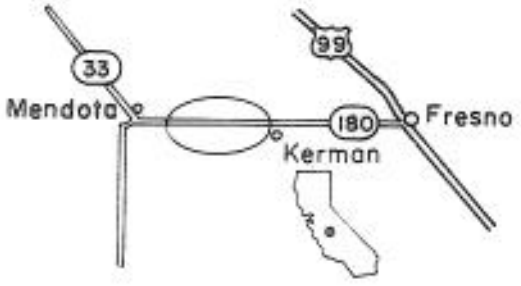
DISTRIBUTION: Known to occur only in a small area in the San Joaquin Valley near Fresno. Distribution and numbers not presently known.

STATUS: Rare. Irrigated agriculture and urbanization have destroyed most of its historical habitat. Reported to occur presently only in a small area of uncultivated alkaline soil near Kerman, west of Fresno.

PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Determine current status of the Fresno kangaroo rat.

REFERENCES:
Boolootian, R. A. 1954. An analysis of subspecific variations in Dipodomys nitratoides. Journ. Mamm. 35(4) P. 570-576.
Cultbertson, A. E. 1934. Rediscovery of Dipodomys nitroides exilis. Journ. Mamm. 15(2) p. 161-162.
Grinnell, J. 1922. The kangaroo rats of California. Univ. of Calif. Publ. in Zool. 24. p. 84-85.
_____. 1933. Review of the recent mammal fauna of California. Univ. of Calif. Publ. in Zool. 40(2) p. 161.



SAN JOAQUIN KIT FOX (*Vulpes macrotis mutica*) RARE

Herbert Hagen

DESCRIPTION: A small, grizzled gray fox weighing 4-6 pounds with large ears, long legs, and a round black-tipped tail.

DISTRIBUTION: Occurs from the Tehachapi Mountain foothills surrounding the southern end of the San Joaquin Valley, north along the foothills of western San Joaquin Valley almost to Los Banos, and on the eastern edge of the valley north to about Porterville. Numbers between 1,000 and 3,000 with highest population occurring on the valley floor at the southernmost end of the San Joaquin Valley.

STATUS: Rare. Is restricted to areas of native vegetation supporting kangaroo rats. Conversion of valley lands to irrigated agriculture further restricts kit fox to rolling foothills, canyons, and arid flatlands unsuited to agriculture or urbanization.

(Continued overleaf)

SAN JOAQUIN KIT FOX

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

... Department of Interior requires federal agencies to have a permit to use toxic materials on federal lands inhabited by rare or endangered wildlife.

... Bureau of Sport Fisheries and Wildlife discontinued its use of 1080 poison in California on July 1, 1970.

RECOMMENDATIONS:

... Establish a San Joaquin kit fox ecological reserve in that portion of the Elk Hills Naval Petroleum Reserve critical to kit fox survival.

... Prohibit night hunting in areas inhabited by kit foxes.

... Reclassify Bureau of Land Management lands essential to San Joaquin kit fox survival for uses compatible with maintaining kit fox populations.

... Provide an educational program to alert the public to the need to protect the San Joaquin kit fox.

REFERENCES:

Laughrin, L. 1970. San Joaquin kit fox - its distribution and abundance. Calif. Dept. Fish and Game, Wildl. Mgmt. Br. Adm. Rept. 70-2, 20 p.

Morrell, S. 1971. Life history of the San Joaquin kit fox. Calif. Dept. Fish and Game, Wildl. Mgmt. Br. Adm. Rept. 71-10, 31 p.

ISLAND FOX (Urocyon littoralis) RARE

Lloyd Ingles

DESCRIPTION: The island fox is similar in coloration to the gray fox of mainland California but is much smaller and has a conspicuously short tail.

DISTRIBUTION: Confined to Santa Catalina, San Clemente, San Nicolas, Santa Cruz, Santa Rosa, and San Miguel Islands off the coast of southern California. Present numbers unknown.

STATUS: Rare. Remoteness of the Channel Islands and access control by the military and private landowners provide protection. Populations could be placed in jeopardy if current land and human use practices are changed.

PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Determine current status of each island population and factors affecting their welfare.

(Continued overleaf)

ISLAND FOX

REFERENCES:
Laughrin, L. 1971. Preliminary account of the island fox. Calif. Dept. of Fish and Game. P-R Completion Rept. W-54-R-3. 7 p.
Grinnell, J., J. Dixon and J. Linsdale. 1937. Furbearing mammals of California. Univ. of Calif. Press. Berkeley (2) p. 452-471.

WOLVERINE (Gulo luscus luteus) RARE

Lloyd Ingles

DESCRIPTION: A small bear-like animal with shaggy black fur and a brownish stripe along its sides. Also recognized by its broad head, small eyes, rounded ears, and short blunt-ended tail. It is the largest member of the weasel family.

DISTRIBUTION: Formerly found in the high Sierra Nevada Mountains from Lake Tahoe south to Mt. Whitney, chiefly above 8,000'. Also reported in Shasta County. Current distribution and numbers undetermined.

STATUS: Rare. Because of its secretiveness and small numbers it is only rarely seen. In 1933, only 15 wolverine were reported to exist in California. There has been no commercial trapping since 1959. Recent sightings indicate wolverine are becoming more numerous and are extending their range north of Lake Tahoe into Shasta and Trinity counties.

PROTECTIVE MEASURES TAKEN:
... Given status of protected furbearing mammal in 1959.

... Declared a fully protected mammal under state law in 1970.

(Continued overleaf)

WOLVERINE

RECOMMENDATIONS:

... Determine current status of the wolverine in California.

REFERENCES:

Grinnell, J., J. Dixon and J. Linsdale. 1937. Furbearing mammals of California. Univ. of Calif. Press, Berkeley (1) p. 271-270.

Sumner, L. and J. Dixon. 1953. Birds and mammals of the Sierra Nevada. Univ. of Calif. Press, Berkeley. p. 323-331.

GUADALUPE FUR SEAL (Arctocephalus townsendi) RARE

DESCRIPTION: Distinguished from the slightly longer sea lion and other eared seals by long pointed snout, low forehead, and soft, dense, plush-like blackish gray fur.

DISTRIBUTION: Occurred historically from the Farallon Islands west of San Francisco, south to San Benito Island, Baja California, Mexico. Last reported in California waters in 1949 when one was observed on San Nicolas Island. Population numbered 600 in 1965.

STATUS: Rare. Breeding colony on Guadalupe Island, Mexico, slowly increasing in numbers. Human disturbance and illegal shooting responsible for slow increase in numbers.

George Bartholomew

PROTECTIVE MEASURES TAKEN:

... Fully protected mammal under state law.

... Fully protected by Mexican government, although permits are on occasion issued for zoo collections.

... Access to breeding grounds on Guadalupe Island restricted by Mexican government.

RECOMMENDATIONS:

... Initiate cooperative studies with Mexico to monitor the population and determine what measures can be taken to increase their numbers.

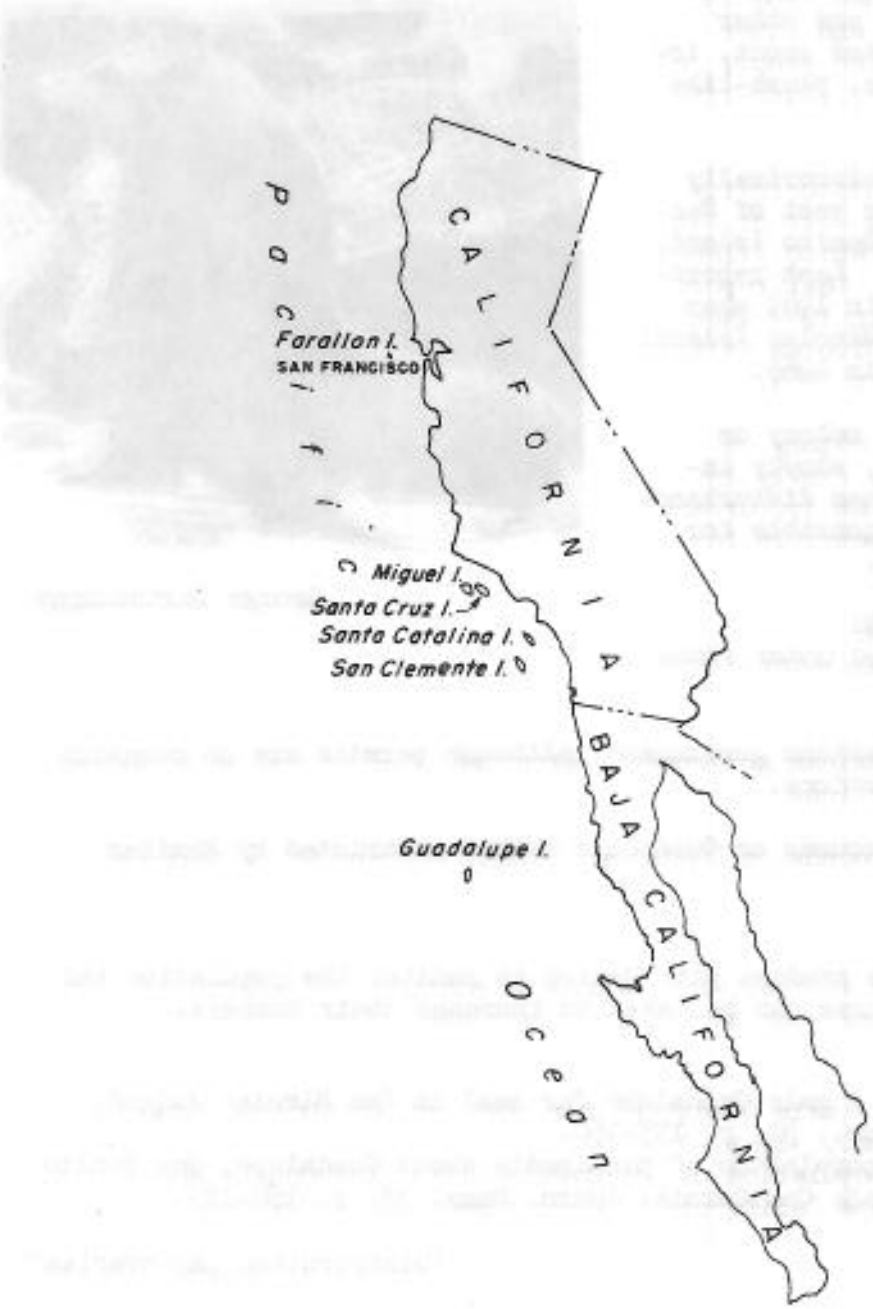
REFERENCES:

Bartholomew, G. A. 1950. A male Guadalupe fur seal on San Nicolas Island, California. Journ. Mamm., 31, p. 175-180.

_____. 1952. Winter population of pinnipedia about Guadalupe, San Benito, and Cedros Islands, Baja California. Journ. Mamm. 33, p. 160-171.

(Distribution map overleaf)

GUADALUPE FUR SEAL (Distribution map)



CALIFORNIA BIGHORN SHEEP (Ovis canadensis californiana) RARE

DESCRIPTION: Similar to the Peninsular and Desert bighorn sheep; however, this race tends to have smaller horns and is highly restricted in its distribution.

DISTRIBUTION: Occurs in the Sierra Nevada Mountains from the vicinity of Mammoth Lake south to Mt. Langley. Ranges in elevation from 4,000 feet to 12,000 feet with largest population in the Mt. Baxter and Mt. Williamson area. Numbers 250 animals.

STATUS: Rare. Appears to be declining due to increased human use of area.

PROTECTIVE MEASURES TAKEN:

... Fully protected mammal under state law.

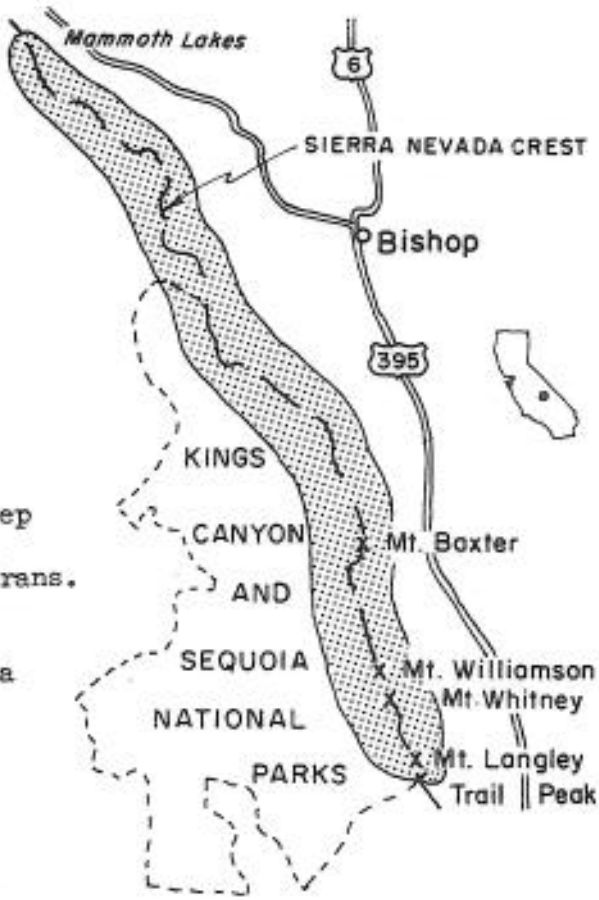
... Human use in key areas is restricted by U. S. Forest Service and Park Service.

... A transplant of California bighorn from British Columbia was made into northern California in 1971 to re-establish this population in that area.

RECOMMENDATIONS:

... Regulate human use in key bighorn wintering and summering areas.

David Dunaway



REFERENCES:

Dunaway, D. J. 1970. Status of bighorn sheep populations and habitat studies on the Inyo National Forest. Desert Bighorn Trans. 1970. p. 127-146.

McCullough, D. and E. R. Schneegas. 1966. Winter observations on the Sierra Nevada bighorn sheep. Calif. Fish and Game, 52(2), p. 68-84.

PENINSULAR BIGHORN SHEEP (Ovis canadensis cremnobates) RARE

DESCRIPTION: Large and more deer-like than domestic sheep. Readily distinguished by pale color and white rump patch. Both sexes bear true horns which are never shed; males have massive curled horns.

Wallace Macgregor

DISTRIBUTION: A mixture of Peninsular bighorn and desert bighorn occur in the Santa Rosa Mountains, Riverside County, and southerly in mountain ranges in San Diego County and Baja California, Mexico. Numbers 400 animals in California.

STATUS: Rare. Habitat destruction and disturbance together with illegal shooting responsible for declining numbers.

PROTECTIVE MEASURES TAKEN:

... Fully protected mammal under state law.

... Added protection afforded by Anza Borrego State Park and Game Refuge 4D.

... Waterholes are developed and maintained by department and other agencies.

RECOMMENDATIONS:

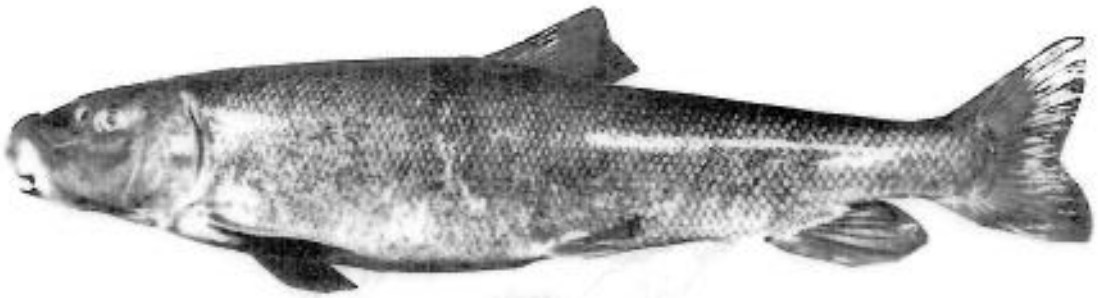
... Acquire parcels of private lands essential for bighorn sheep survival and place them under public stewardship.

... Provide safeguards for bighorn sheep through safety features in highway design and construction.

REFERENCES:

Dept. Fish and Game. 1970. Report on the status of bighorn sheep in California. Wildl. Mgmt. Br., 107 p.

LOST RIVER SUCKER (Catostomus luxatus) RARE



Joseph H. Wales

DESCRIPTION: This is a large sucker, growing to 3 feet. The head is long and slender, with a slight hump on the snout. The mouth is terminal and oblique and may contain some small papillae on the thin lips. The gill rakers are short and triangular, without tufts or teeth on the edges. Color is dark above and pale below.

DISTRIBUTION: Native to the Lost River and Upper Klamath Lake in Oregon. It has been taken in Copco Lake and reported from Tule, Lower Klamath, and Sheepy Lakes in California.

STATUS: Rare. This species was utilized as a food fish by the Modoc and Klamath Indians and by residents of the Lower Klamath Lake area. Agricultural developments and reclamation in the mid-1920s drastically reduced the habitat for this fish.

PROTECTIVE MEASURES TAKEN:
... Fully protected fish under state law.

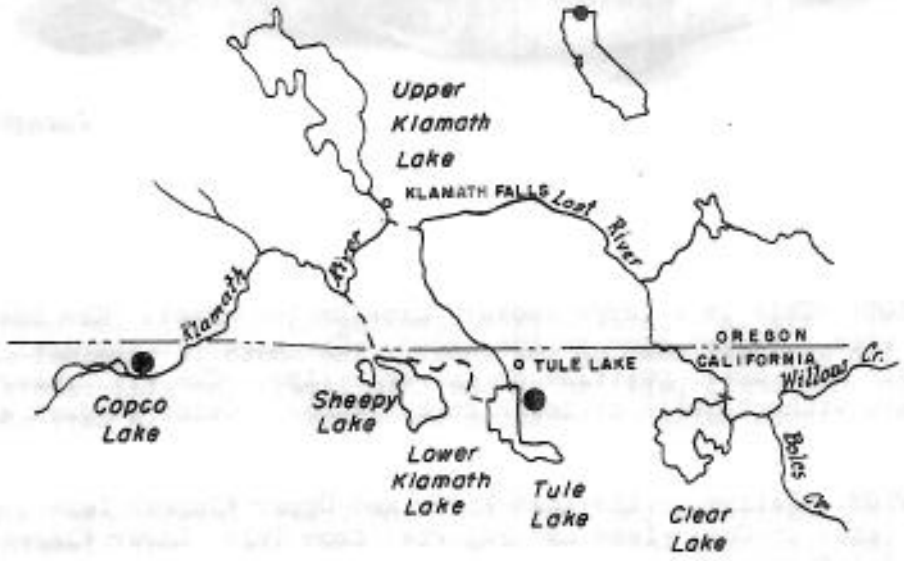
RECOMMENDATIONS:
... Conduct a reconnaissance to determine the present abundance and distribution of this fish.

... Develop a plan for the protection of this species from the results of the above study. Include provisions for the shortnose sucker in this plan.

REFERENCES:
Coots, M. 1965. Occurrences of the Lost River sucker, Deltistes luxatus (Cope), and shortnose sucker, Chasmistes brevirostris Cope, in northern California. Calif. Fish and Game 51(2):68-73.

(Distribution map overleaf)

LOST RIVER SUCKER (distribution map)



SHORTNOSE SUCKER (Chasmistes brevirostris) RARE

Joseph H. Wales

DESCRIPTION: This is a heavy-bodied sucker, nearly round in cross section, that grows to over 20 inches. The head is rather small with a prominent hump on the snout. The mouth is oblique and with striations rather than papillae on the thin lips. The triangular gill rakers are fringed with fine teeth. Color is dusky above and pale below.

DISTRIBUTION: Has been collected in Copco Lake, and in Boles Creek upstream from Clear Lake Reservoir. It also occurs in Upper Klamath Lake, Oregon.

STATUS: Rare. This fish was never abundant in California and has apparently declined in Oregon. Agricultural reclamation has been responsible for at least part of the decline.

PROTECTIVE MEASURES
... Fully protected fish under state law.

... Declared rare by the International Union for the Conservation of Nature and Natural Resources.

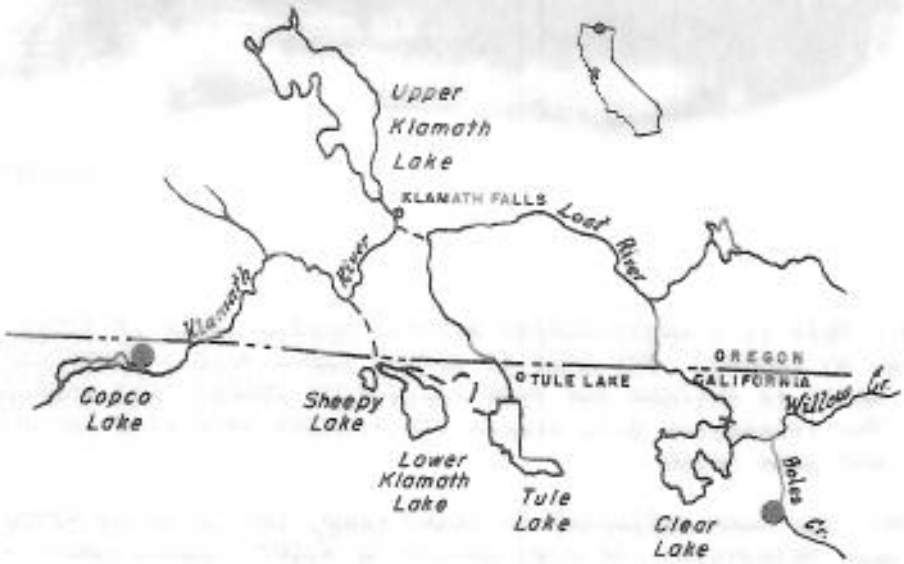
RECOMMENDATIONS:
... Conduct reconnaissance to determine the present abundance and distribution of this fish.

... Develop a plan for the protection of this species from the results of the above study. Include provisions for the Lost River sucker in this plan.

REFERENCES:
Coots, M. 1965. Occurrences of the Lost River sucker, Deltistes luxatus (Cope), and shortnose sucker, Chasmistes brevirostris Cope, in northern California. Calif. Fish and Game 51(2):68-73.

(Distribution map overleaf)

SHORTNOSE SUCKER (distribution map)



HUMPBACK SUCKER (Xyrauchen texanus) RARE

Joseph H. Wales

DESCRIPTION: This resembles other California suckers, except that there is a sharp-edged hump just behind the head, most prominent in large adults. Color is olivaceous except during the breeding season when the dorsal surface turns dark to black, and the ventral surface turns bright orange. It grows to about 2 feet and 8-10 pounds.

DISTRIBUTION: In California it is restricted to the Colorado River.

STATUS: Rare. Formerly one of the most abundant fishes in the lower Colorado River, its decline was probably precipitated by alteration of the habitat by dams and channelization, and by competition and predation by introduced species. It is now present in limited numbers, particularly in the reservoirs such as Lake Havasu.

PROTECTIVE MEASURES TAKEN:
... Fully protected fish under state law.

RECOMMENDATIONS:
... Little can now be done to alter the habitat in favor of this fish. It should continue to receive protection in areas where present.

REFERENCES:
Douglas, P. A. 1952. Notes on the spawning of the humpback sucker, Xyrauchen texanus (Abbott). Calif. Fish and Game 38(2):149-155.
La Rivers, I. 1962. Fishes and Fisheries of Nevada. Nev. Fish and Game Comm., pp. 357-362.

BONYTAIL (*Gila elegans*) RARE

Joseph H. Wales

DESCRIPTION: This chub has a short head with a broad snout. The back is sharply arched behind the head, particularly in adults. The caudal peduncle is extremely long and slender and nearly round in cross section. The dorsal and anal fins are large and sickle-shaped, and the caudal fin is long, pointed, and deeply forked. The eyes are small and set low on the head. Color is bluish above and pale below. It grows to about 2 feet.

DISTRIBUTION: In California the bonytail is restricted to the Colorado River.

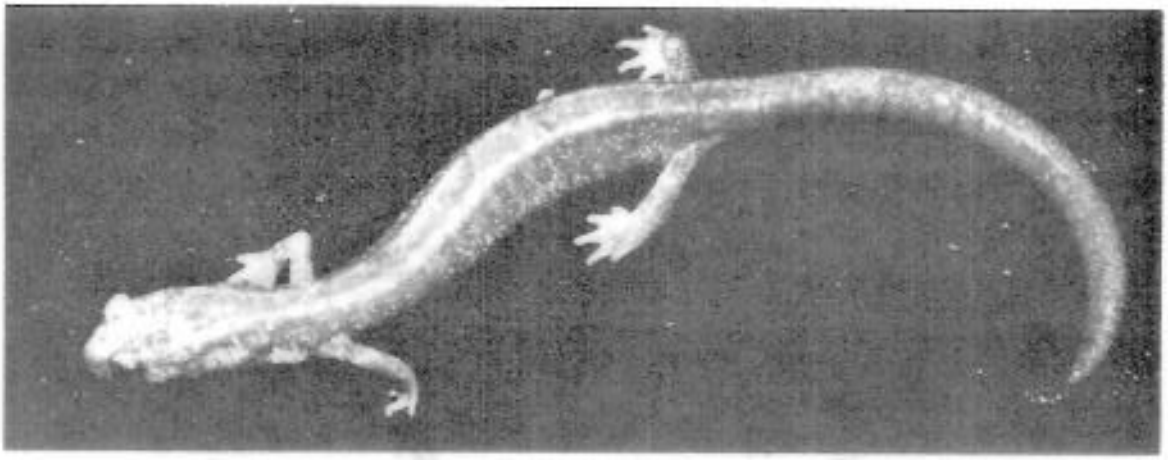
STATUS: Rare. This fish was associated with the swift, muddy stream flows, which have been drastically changed by the construction of large reservoirs. This species has not been seen in recent years, and may not now exist in California.

PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Make an inventory to determine if populations exist in California and develop necessary programs for their continued survival, if possible.

REFERENCES:
La Rivers, I. 1962. Fishes and Fisheries of Nevada. Nev. Fish and Game Comm., pp. 391-393.

SISKIYOU MOUNTAIN SALAMANDER (Plethodon stormi) RARE



Arden H. Brame, Jr.

DESCRIPTION: This is a slim-bodied salamander with short legs. Color is dull brown to chocolate brown on the dorsal surface and sides, often profusely speckled with white or yellowish flecks. The ventral surface is purplish gray. Adults grow to 4-6 inches.

DISTRIBUTION: Occurs near the Hutton Guard Station and the Cook and Green Guard Station in the upper Applegate River drainage, and nearby in Seiad Creek in the Klamath River drainage, Siskiyou County. It is associated with loose rock rubble and talus slopes on north facing slopes, or in heavily wooded areas.

STATUS: Rare. This form is present only in the areas described and a short distance into Oregon. It is closely related to the Del Norte salamander (P. elongatus), intergrades of which have recently been found.

PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

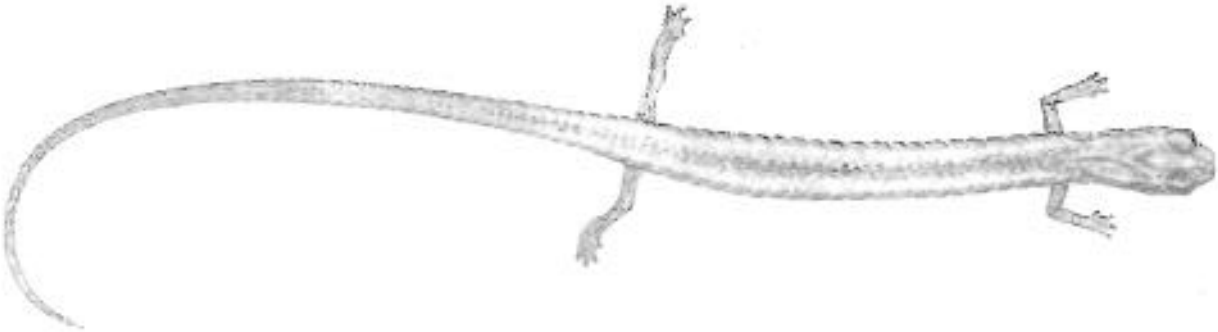
RECOMMENDATIONS:
... Conduct additional studies to determine the relationship of this form with the Del Norte salamander. If they are but variants of one species, this form will not require further full protection.

REFERENCES:
Brodie, E. D. 1970. Western salamanders of the genus Plethodon: Systematics and geographic variation. Herpetologica 26(4):468-516.
Stebbins, R. C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co. Boston. 279 p.

(Distribution map overleaf)

SISKIYOU MOUNTAIN SALAMANDER (Distribution map)

KERN CANYON SLENDER SALAMANDER (Batrachoseps simatus) RARE

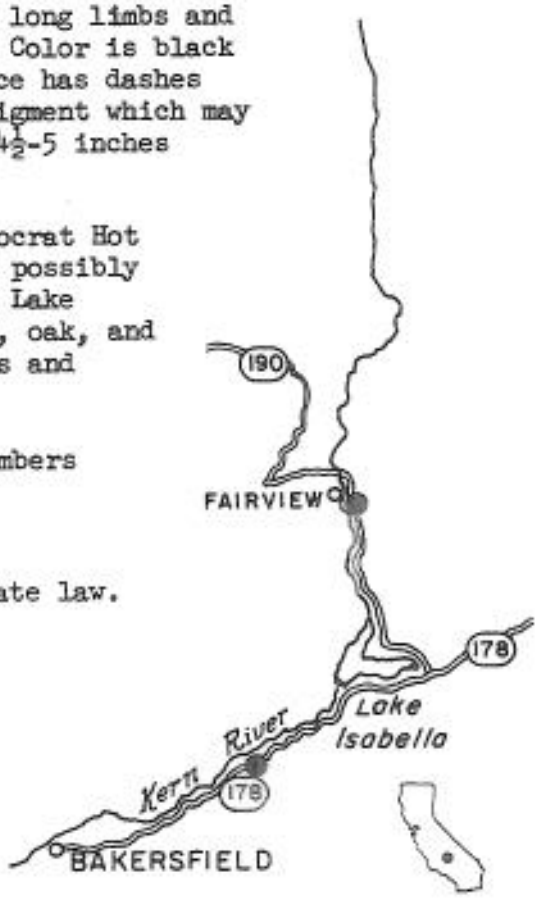


Patricia L. Brame

DESCRIPTION: Slender salamanders are rather small and wormlike with minute limbs. This species has relatively long limbs and tail and a narrow head. All feet have 4 toes. Color is black on the sides and ventral surface. Dorsal surface has dashes and patches of bronze and light reddish-brown pigment which may form an imperfect dorsal band. Adults grow to 4½-5 inches total length.

DISTRIBUTION: Kern River Canyon from about Democrat Hot Springs downstream to Live Oak Picnic Area, and possibly another population upstream near Fairview above Lake Isabella. These salamanders occur beneath pine, oak, and prostrate chaparral logs, as well as large rocks and talus, on rather steep north-facing slopes.

STATUS: Rare. This species occurs in small numbers through its restricted range.



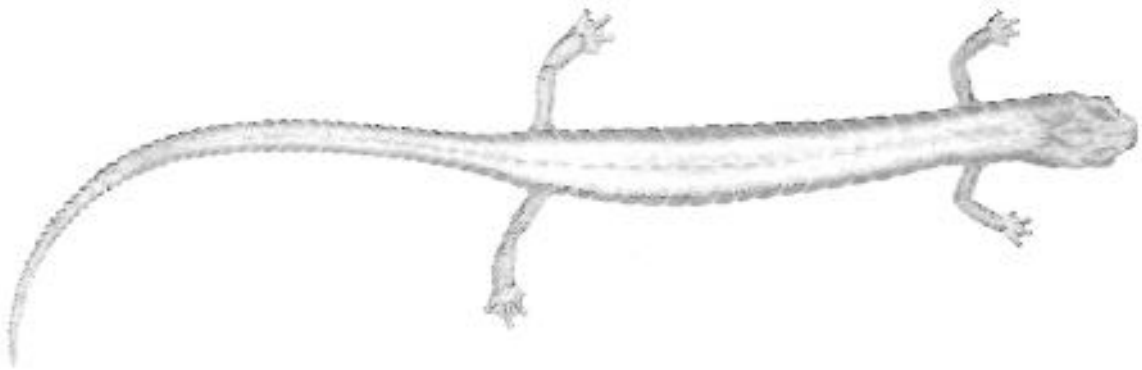
PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Design future road construction in Kern River Canyon so as to minimize damage to the habitat of this species.

... Investigate additional areas in the Kern River Canyon to determine if this species is more widespread than presently known.

REFERENCES:
Brame, A. H. Jr., and K. F. Murray. 1968. Three new 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) RARE



Patricia L. Brame

DESCRIPTION: This is a large, robust member of Batrachoseps. It is distinguished by its relatively large feet and long legs. Dorsal color is dark, with dark red, brick red, light or dark brown, or light beige patches and blotches, sometimes forming an indistinct band. The sides and tail are deep black. The ventral surfaces are dark gray-black. Adults grow to about 5 inches.

DISTRIBUTION: Has been collected from 5 small areas in the Piute and Tehachapi Mountains east of Bakersfield. The area in the Tehachapis along State Highway 58 was destroyed recently by freeway construction. This species lives in rock talus in foothill woodland and riparian vegetation.

STATUS: Rare. This salamander occurs in small numbers in a very restricted range.

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:

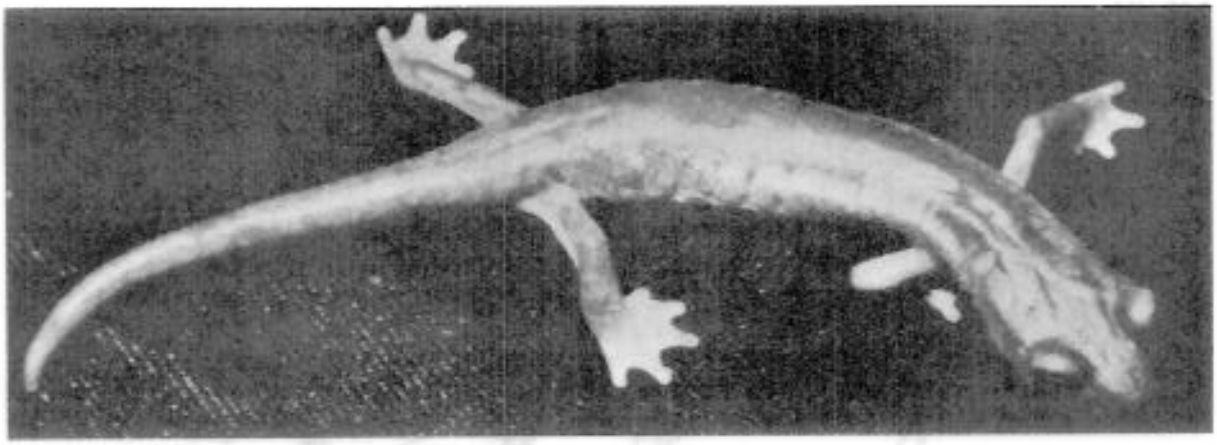
... Carefully plan any future road construction or disturbance of slopes along the Lorraine-Bodfish road to prevent further damage to the habitat of this species.

... Conduct additional investigations to determine if this species occurs in other areas of the Tehachapi and Piute Mountains.

REFERENCES:

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

LIMESTONE SALAMANDER (Hydromantes brunus) RARE



Arden H. Brame, Jr.

DESCRIPTION: This salamander has webbed toes, a mushroom-like tongue with free margins, and a flattened body. Color is uniformly brown above and pale brown to gray below. The underside of the tail is yellowish. The young are pale yellowish green above, changing with age through pale yellow to beige or brown. Adults grow to 3-4 inches.

DISTRIBUTION: Limited to the vicinity of Briceburg and along Bear Creek, tributary to the Merced River, Mariposa County. It has also been found in Hell Hollow, about 4 miles upstream from the head of Lake McClure. As the name indicates, this species is associated with limestone outcrops in the Digger pine-chaparral belt of the lower Merced River Canyon, living in crevices of cliffs and ledges of talus, especially where overgrown with moss.

STATUS: Rare. Numbers appear to be limited in the few locations where this species occurs. Retreats in the limestone bluffs may be critical, since the hot dry summer weather makes this location marginal for salamanders.

PROTECTIVE MEASURES TAKEN:
... Fully protected salamander under state law.

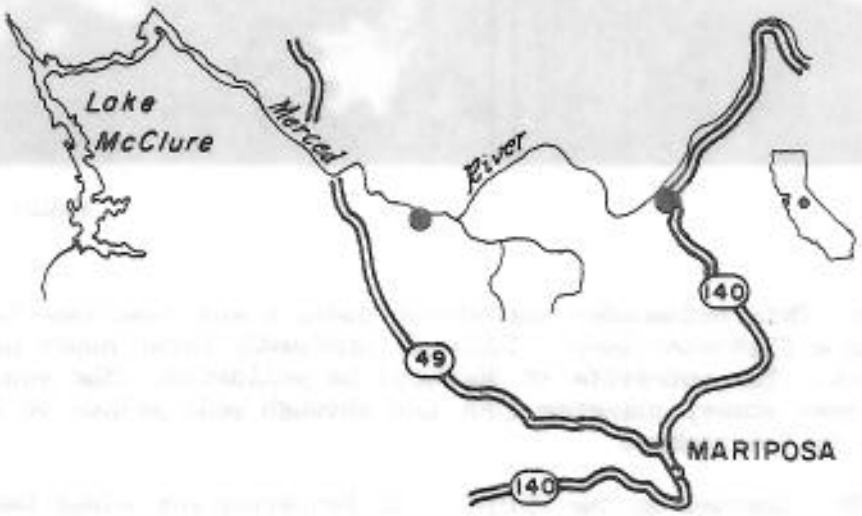
RECOMMENDATIONS:
... Evaluate any proposed disturbance of the limestone outcrops in this area to determine possible detrimental effects.

... Conduct investigations of adjacent areas to determine if this species is more widespread than presently known.

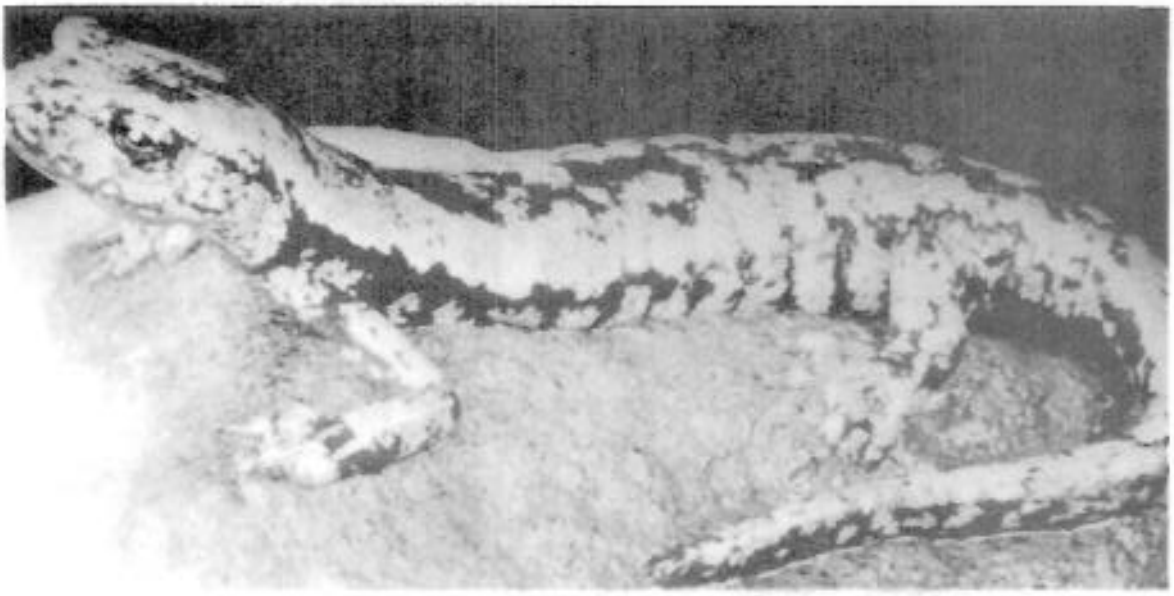
REFERENCES:
Gorman, J. 1954. A new species of salamander from central California. Herpetologica 10(4):153-159.
Stebbins, R. C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 p.

(Distribution map overleaf)

LIMESTONE SALAMANDER (distribution map)



SHASTA SALAMANDER (Hydromantes shastae) RARE



Nathan W. Cohen

DESCRIPTION: This species is very similar to the limestone salamander, except that the coloration on the dorsal side is gray-green, beige, tan, or reddish, and usually with yellow on the tail. The ventral surface is dark with white flecks or blotches. The young are gray-green, olive, tan, or reddish on the body and yellowish on the tail. Adults grow to 3-4 inches.

DISTRIBUTION: Inhabits limestone formations in several areas on the northern side of Shasta Lake, between the McCloud and Pit River arms. They are found in moist limestone fissures and caves, and under rocks in the open during wet weather in mixed pine-hardwood stands.

STATUS: Rare. This species is present in limited numbers in only several known localities associated with limestone outcrops.

PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Encourage the U. S. Forest Service to establish a Federal Research Natural Area in the Hosselkus Limestone Formation. This would protect a portion of the range of this species.

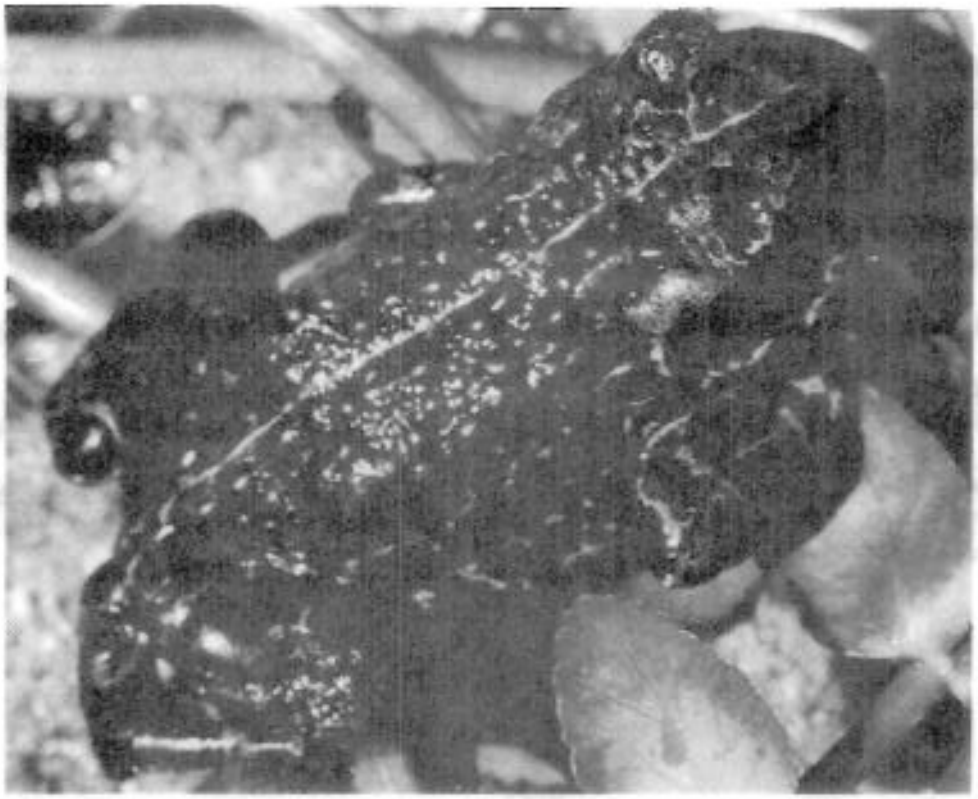
REFERENCES:
Bury, R. B., G. M. Fellers, and S. B. Ruth. 1969. First records of Plethodon dunni in California, and new distributional data on Ascapus truei, Rhyacotriton olympicus, and Hydromantes shastae. Jour. Herpetology, 3(3-4):157-161.

Gorman, J. 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.

(Distribution map overleaf)

SHASTA SALAMANDER (Distribution map)

BLACK TOAD (Bufo boreas exsul) RARE



David Dunaway

DESCRIPTION: This small subspecies of the common western toad rarely exceeds 3 inches. The smooth dorsal surface often appears as a shining lacquer black. There is a narrow white or cream dorsal stripe. The underside is white or cream with dense mottling and marbling of black. The throat is often spotted with dark markings.

DISTRIBUTION: This toad is found only in and around Deep Springs (Buckhorn Springs) and Antelope Springs in Deep Springs Valley, Inyo County. It inhabits only watercourses and marshes adjacent to the springs. Adults are mostly aquatic.

STATUS: Rare. Population sizes vary but appear to be adequate for maintenance of this form. The range is extremely restricted, amounting to only a few acres.

PROTECTIVE MEASURES TAKEN:
... Fully protected amphibian under state law.

... Declared endangered by the Secretary of the Interior and rare by the International Union for the Conservation of Nature and Natural Resources.

(Continued overleaf)

BLACK TOAD

... Officials of Deep Springs College, which owns the property at Buckhorn Springs, have been apprised of the legal status of this form. An area has been fenced to exclude livestock, and water manipulation will be done to minimize damage to the habitat.

RECOMMENDATIONS:

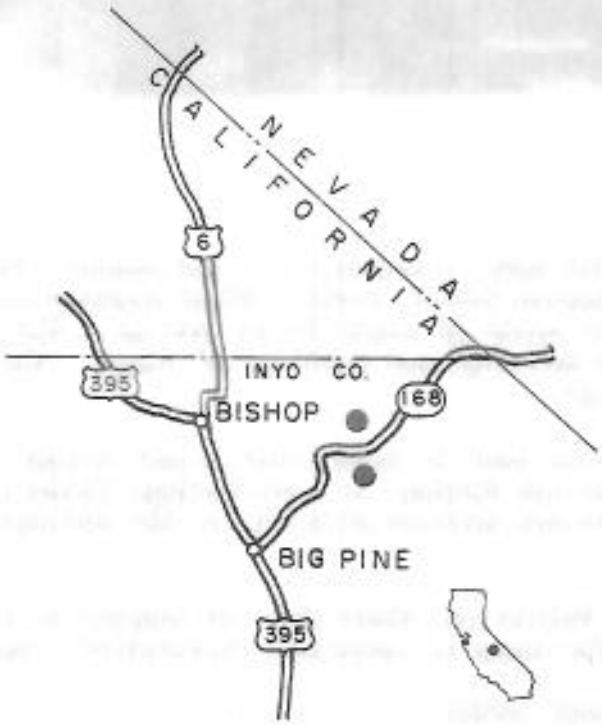
... Protect the habitat around Antelope Springs.

... Establish a monitoring program to insure the perpetuation of this animal.

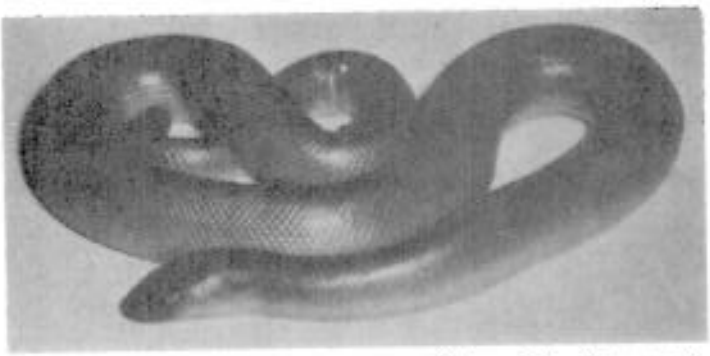
REFERENCES:

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.

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.



SOUTHERN RUBBER BOA (Charina bottae umbratica) RARE



Glenn R. Stewart

DESCRIPTION: This is a stout-bodied snake with a short, blunt tail that resembles the head. The skin is smooth and shiny. The scales on top of the head are large and symmetrical. Color is olive or yellowish-brown dorsally and pale yellow below. There is no pattern, but there may be a few dusky flecks on the lower sides. Adults grow to about 20 inches.

DISTRIBUTION: This snake has been collected from near Lake Arrowhead and near Idyllwild, Riverside County, and has been reported from Mt. Pinos, Kern County.

STATUS: Rare. Only a few specimens have been collected, indicating low population levels where present. It is threatened by increased recreation use of the forested areas where it occurs.

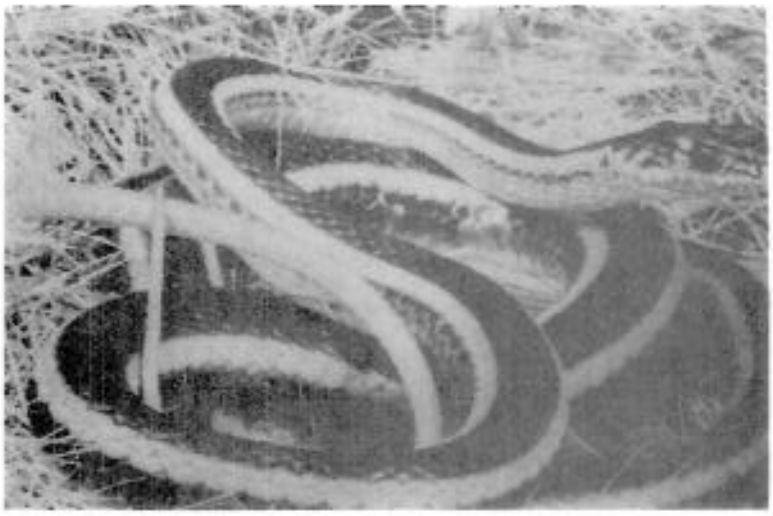
PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Provide strict enforcement of protective laws to prevent collection.

... Authenticate reports of its presence in the Mt. Pinos area.

REFERENCES:
Klauber, L. M. 1943. The subspecies of the rubber snake, Charina. Trans. San Diego Soc.of Nat. Hist. 10(7):83-90.
Stebbins, R. C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 p.

ALAMEDA STRIPED RACER (Masticophis lateralis euryxanthus) RARE



Nathan W. Cohen

DESCRIPTION: This is a slender, fast-moving snake with a narrow neck and relatively broad head with large eyes. Color is black or dark brown above, with a distinct orange stripe down each side to or beyond the vent. The forward portions of the ventral surface are orangish, and the posterior portions are cream to pinkish. Adults grow to 3-4 feet.

DISTRIBUTION: This racer occurs in the valleys, foothills, and low mountains east of San Francisco Bay. It is usually associated with chaparral, but may occur in grassland, open woods, and rocky slopes.

STATUS: Rare. This is considered one of the rarest snakes in the East Bay region. The habitat has been greatly reduced in recent years by construction and development.

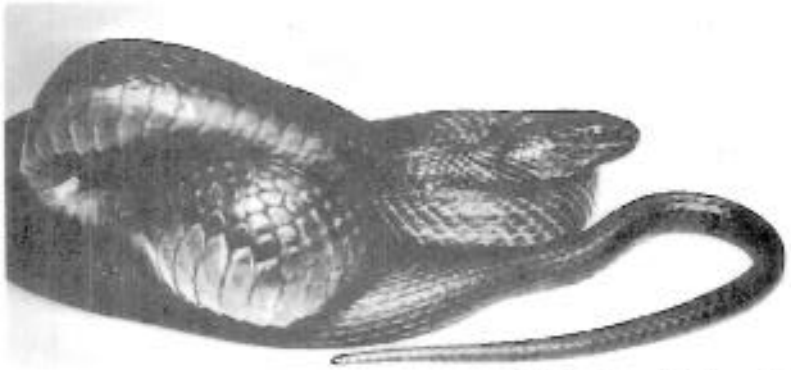
PROTECTIVE MEASURES TAKEN:
... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:
... Provide open space suitable for this snake in the East Bay area, if possible.

... Alert the public and operators of East Bay parks on the status of this snake so that protective measures will be more effective.

REFERENCES:
Reimer, W. J. 1954. A new subspecies of the snake Masticophis lateralis from California. Copeia 1954 (1):45-48.
Stebbins, R. C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. 279 p.

GIANT GARTER SNAKE (Thamnophis couchi gigas) RARE



John Van Denburgh

DESCRIPTION: This is one of the largest garter snakes, reaching 4½ feet. The basic color is dull brown with a checkered pattern of well separated black spots on the dorsal side. There is a dull yellow middorsal stripe, and the lateral stripes are often not developed. The head is elongate with a pointed muzzle.

DISTRIBUTION: This snake lives on the floor of the Central Valley from Sacramento and Antioch southward to Buena Vista Lake. It is one of the most aquatic of garter snakes and is confined to areas around permanent fresh water.

STATUS: Rare. Populations have been decimated or eliminated by land use changes and the filling of sloughs and draining of marshy areas. Heavy use of pesticides is also suspected of having detrimental effects on this form.

PROTECTIVE MEASURES TAKEN:

... Take, possession, and sale prohibited by state law.

RECOMMENDATIONS:

... Encourage managers of wildlife areas and private duck club operators to protect and retain habitat for this snake.

... Initiate a study to determine the current status of populations throughout the range.

REFRENCES:

Fitch, H. S. 1950. 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.

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