AT THE CROSSROADS
1976

A Report on
CALIFORNIA'S ENDANGERED AND RARE FISH AND WILDLIFE

January 1976

STATE OF CALIFORNIA

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E. C. Fullerton, Director

January 2, 1976

Honorable Edmund G. Brown Jr., Governor
State of California
Sacramento, California 95814

Dear Governor Brown:

Transmitted herewith is the third biennial report on the status of California's endangered and rare fish and wildlife.

This report describes the current status of California's 49 threatened forms of fish and wildlife, and summarizes what has been accomplished in the past 5 years to ensure the continued survival of these life forms and the ecosystems in which they evolved.

Sincerely,

E C Fullerton

Director

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MILESTONES

INTERNATIONAL

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

1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora extends, by treaty, international protection over the world's endangered species. (Ratified July, 1975.)

1973 Convention between the governments of the United States and Japan provides for the protection of migratory birds in danger of extinction and their environment. (Ratified June 1, 1974.)

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.

1973 Endangered Species Act of 1973 provides federal jurisdiction over endangered and threatened wildlife and plants, makes it a federal offense to take endangered or threatened wildlife, and makes all federal agencies responsive to the Act. In addition, provides for civil suit and grant-in-aid assistance to those states entering into a Cooperative Agreement.

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 species, 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 animal control programs.

1970 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.

1970 Environmental Protection and Research Act creates an Environmental Protection Program Fund by authorizing the expenditure of funds from the sale of personalized license plates for environmental protection projects.

1974 Native Species Conservation and Enhancement Account Act provides means by which funds can be donated for nongame wildlife programs to be administered by the department through a Native Species Conservation and Enhancement Account.

1974 Conservation of Wildlife Resources Act defines State policy regarding wildlife conservation.

1974 Legislature appropriates $1,000,000 from the General Fund to reimburse the Department for 1974-75 fiscal year nongame species management and protection programs.

1975 Budget Bill amendment provides $1,000,000 from the General Fund to reimburse the Department for 1975-76 fiscal year nongame species management and protection programs.

EVENTS

STATE

This report to the Governor and the Legislature is pursuant to the California Species Preservation Act of 1970:

> "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."

On May 21, 1971 the California Fish and Game Commission, under the authority of the California Endangered Species Act of 1970, declared 43 animals endangered or rare. On January 1, 1972 the Department of Fish and Game, in response to the California Species Preservation Act, submitted its first biennial report, "At the Crossroads - a report on California's endangered and rare fish and wildlife." This report described the nature of the 43 forms of wildlife threatened with extinction or possible endangerment and made recommendations directed toward their protection and preservation.

On December 7, 1973 the Commission added 6 additional animals to the listing of endangered and rare fish and wildlife. The second biennial report, "At the Crossroads 1974 - a report on California's endangered and rare fish and wildlife" was also submitted to the Governor and the Legislature. This report included recommendations for the survival of these 49 animals and listed for each species the efforts accomplished on their behalf.

Although Congress had earlier enacted endangered species legislation (the Endangered Species Preservation Act of 1966 and the Endangered Species Conservation Act of 1969), the California Legislature was the first to provide protective legislation prohibiting the importation, taking, possession and sale of endangered and rare species. The Legislature required the wildlife agency of the state to assume responsibility for inventorying the state's threatened species and to report to the Governor and Legislature biennially on the status of these species and measures taken for their preservation. Congress subsequently recognized the shortcomings of previous federal endangered species legislation and the inability of many states and nations to enact programs of protection and preservation for the world's endangered life forms and enacted a far-reaching act.

NATIONAL

On December 28, 1973 the Federal Endangered Species Act of 1973 became Public Law 93-205. This law extends federal authority over both migratory, resident and foreign species of plants and animals declared endangered or threatened by the Secretary of the Interior. The previous "Marine Mammal Protection Act of

1972" had preempted authority of the states over marine mammals and placed their jurisdiction under the Secretary of Commerce. Both of these acts were strengthened by ratification of the "Convention on International Trade in Endangered Species of Wild Fauna and Flora" on July 1, 1974. Congress has defined wildlife as the animal kingdom encompassing all such forms of life, including insects. In addition, provision is made for identifying and declaring the world's plants endangered and threatened. In doing so, Congress has recognized that the basis of the preservation of nature is the ecosystem; i.e. the plant and animal community.

The term "endangered species" has been redefined and "threatened species" has replaced the federal designation of "rare."

> Endangered species means any species which is in danger of extinction throughout all or a significant portion of its range, other than a species of Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.
>
> Threatened species means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Following are the California animals and those in offshore waters on the federal listing of endangered or threatened species:

Salt marsh harvest mouse	California clapper rail
Morro Bay kangaroo rat	Yuma clapper rail
San Joaquin kit fox	Light-footed clapper rail
Pacific right whale	California least tern
Gray whale	Santa Barbara song sparrow
Blue whale	Blunt-nosed leopard lizard
Finback whale	San Francisco garter snake
Sei whale	Santa Cruz long-toed salamander
Humpback whale	Desert slender salamander
Sperm whale	Colorado River squawfish
California brown pelican	Mohave chub
Aleutian Canada goose	Owens River pupfish
Southern bald eagle	Tecopa pupfish
American peregrine falcon	Unarmored threespine stickleback
California condor	

Lahontan cutthroat trout (Threatened)
Paiute cutthroat trout (Threatened)

A severe penalty for those convicted of violating provisions of the Act can be imposed and a reward system is provided. A person, other than a state or federal official, who gathers evidence leading to conviction can be rewarded a maximum of $2,500. A person also can commence a civil suit enjoining any person or governmental agency from violating provisions of the Act. All federal agencies are instructed to utilize their authorities to carry out programs for conservation of endangered and threatened species and to take action to assure that their programs do not jeopardize the continued existence of endangered or threatened species or result in the destruction or modification of critical habitat.

ACCOMPLISHMENTS

The species accounts that follow illustrate the actions taken by the Department of Fish and Game to fulfill the intent of the Legislature and Congress pursuant to endangered species legislation.

At stake is the preservation of the natural ecosystems in which these animals exist -- ecosystems threatened by a rapidly changing state. The salt marsh harvest mouse, for example, is only a small part of the natural community of plants and animals in the tidal marshlands of the San Francisco Bay. But if the survival of this unique animal can be assured, a wide diversity of wildlife equally dependent on this habitat can be preserved. In short, endangered species preservation is habitat preservation.

Since 1970 the Department of Fish and Game has been acquiring critical habitat and preserving important natural ecosystems. Examples have been the system of ecological reserves throughout the state and the preservation of coastal wetlands such as Upper Newport Bay and Bolsa Chica Marsh in southern California and Bair Island and other tidal marshlands in the San Francisco Bay area. Much of this has been accomplished through funds provided by the Environmental Protection Act (personalized license plates) and special appropriations from the Legislature.

Other agencies of state government have also been responsive to the needs of wildlife. The Department of Parks and Recreation has established natural reserves within the park system for the California least tern and the yellow-billed cuckoo. Habitat important to the survival of the Morro Bay kangaroo rat and the Peninsular bighorn sheep has been added to the Montana De Oro and Anza Borrego state parks. And the establishment of the Morro Rock Ecological Reserve has given protection to the endangered peregrine falcon.

The Department of Transportation assisted in restoring Valencia Lagoon for the Santa Cruz long-toed salamander, and the Division of Forestry of the Department of Conservation is supporting efforts to protect endangered species through the Forest Practices Act.

Federal agencies such as the U. S. Fish and Wildlife Service, U. S. Forest Service, National Park Service, Bureau of Reclamation and Bureau of Land Management have made substantial contributions since 1970. Among these have been the establishment of Humboldt Bay, South San Francisco, San Pablo Bay, Anaheim Bay and Hopper Mountain national wildlife refuges.

In addition, federal agencies have set aside critical habitat as Natural Research Areas and similar environmental protection units. Examples are the West Anacapa Island Natural Research Area for the California brown pelican, Hi-Mountain-Huff's Hole Endangered Species Habitat Area for the peregrine falcon and California Bighorn Sheep Zoological Area.

Contributions have also been made by county and city planning departments and local governments. An example is the preservation of the Palo Alto Marsh by the City of Palo Alto through its Baylands Nature Interpretative Center.

Conservation organizations and concerned citizens' groups have provided additional impetus to natural area preservation. The California Natural Areas Coordinating Council compiled an inventory of 2,300 natural areas...The California Native Plant Society has published its "Inventory of Rare and Endangered Vascular Plants of California"...The University of California has established a "Natural Land and Water Reserves System"...The National Audubon Society, Nature Conservancy and National Wildlife Federation are among conservation organizations prominent in preserving natural areas in California through acquisition and contributions of funds.

This is not to say that all has been accomplished. Much remains to be done, but with continuing and increased financial support and public interest, the State will be able to move ahead in providing protection and conserving the habitat essential to the preservation of California's endangered and rare fish and wildlife. The next five years of this decade will determine to a great extent our legacy to future generations.

This report has been prepared by:	Howard R. Leach Wildlife Management Branch	Birds and Mammals
	Stephen J. Nicola Inland Fisheries Branch	Fishes
	John M. Brode Inland Fisheries Branch	Amphibians and Reptiles

E N D A N G E R E D W I L D L I F E

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 species (or subspecies) under consideration is declared endangered:

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

...Is it incapable of adapting to environmental change?

...Is its habitat threatened by destruction or serious disturbance?

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

...Does environmental pollution threaten its survival?

MORRO BAY KANGAROO RAT (Dipodomys heermanni morroensis) ENDANGERED

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

DISTRIBUTION: In 1957 it was reported to occur only within 12.4 km^2 (4.8 mi^2) of sandy soil on the south side of Morro Bay. Its range is now 4.4 km^2 (1.7 mi^2).

STATUS: Endangered. Continual growth of Los Osos and Baywood communities, reduction in escape cover, and predation by house cats threaten continued survival. The total population of this subspecies now numbers approximately 3,000.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... Montana De Oro State Park boundary extended to Shark Inlet by Department of Parks nd Recreation land acquisition.

... Dune buggy and other vehicular traffic in habitat area prohibited.

... Habitat evaluation study completed by Department of Fish and Game in 1973.

RECOMMENDATIONS:

... Acquire and establish as an ecological reserve critical habitat adjacent to Montana De Oro State Park.

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

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

REFERENCES:

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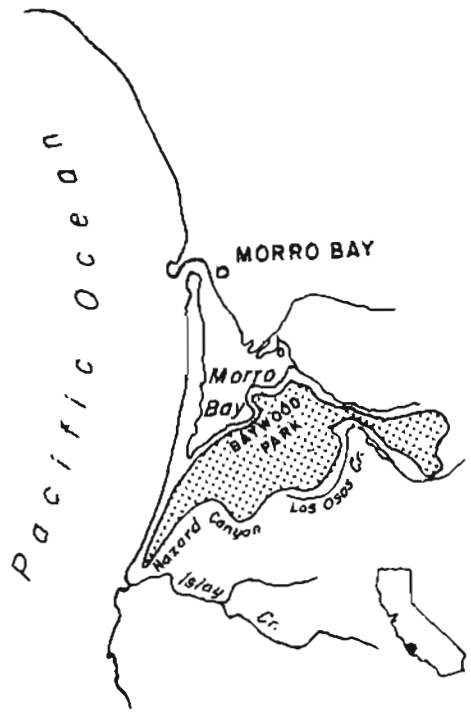

SALT MARSH HARVEST MOUSE (Reithrodontomys raviventris) ENDANGERED

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

DISTRIBUTION: Formerly found throughout 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.

ACTIONS:

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

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

... Acquisition of Tubbs Island, North San Pablo 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 a National Audubon Sanctuary.

... South San Francisco Bay and San Pablo Bay National Wildlife Refuge established by Congress.

... Portions of Bair Island, Coon Island, and Hayward Shoreline acquired by the State.

... Bay fill proposals subject to approval by the Bay Conservation and Development Commission.

... State Lands Commission transfers portion of San Pablo Bay marshlands to Department of Fish and Game.

... U. S. Fish and Wildlife initiates a study of the biology and habitat requirements of this species for the purpose of preparing and implementing a recovery plan designed to remove it from the endangered list.

RECOMMENDATIONS:

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

REFERENCES:

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Wondolleck, J. T. et. al. 1973. A population study of the harvest mouse in the Palo Alto salt marsh. Univ. of San Francisco, Dep. of Biol. Sci. 13 pp.

CALIFORNIA CONDOR (*Gymnogyps californianus*) ENDANGERED

DESCRIPTION: This is a huge black vulture with white underwing patch and bare orange head. It is North America's largest land bird, having a wing-span of over 2.7 m (9 ft).

DISTRIBUTION: A relict of the Ice Age, the California condor once ranged over much of western North America from British Columbia to lower 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. Nesting apparently is now confined to the Coast Range Mountains in San Luis Obispo, Ventura and Santa Barbara counties.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

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

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

... Coldwater Canyon, Green Cabins, and Squaw Flat properties acquired through State, Federal and National Audubon Society efforts.

... The 1800 acre Hopper Ranch acquired by U. S. Fish and Wildlife Service and established as the Hopper Mountain Wildlife Refuge.

... 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.

... A California Condor Recovery Team develops a California Condor Recovery Plan to restore the condor to the nonendangered status.

RECOMMENDATIONS:

... Implement the California Condor Recovery Plan.

REFERENCES:

California Recovery Team. 1974. California Condor Recovery Plan. U. S. Fish Wildl. Serv., Washington, D. C. 63 pp.

Carrier, D. 1971. Habitat management plan for the California condor. U. S. Forest Service, Dep. of Agr., San Francisco, Calif. 51 pp.

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Miller, A. H., I. I. McMillan, and E. McMillan. 1965. The status and welfare of the California condor. Nat. Audubon Soc. Res. Rep. 6. 61 pp.

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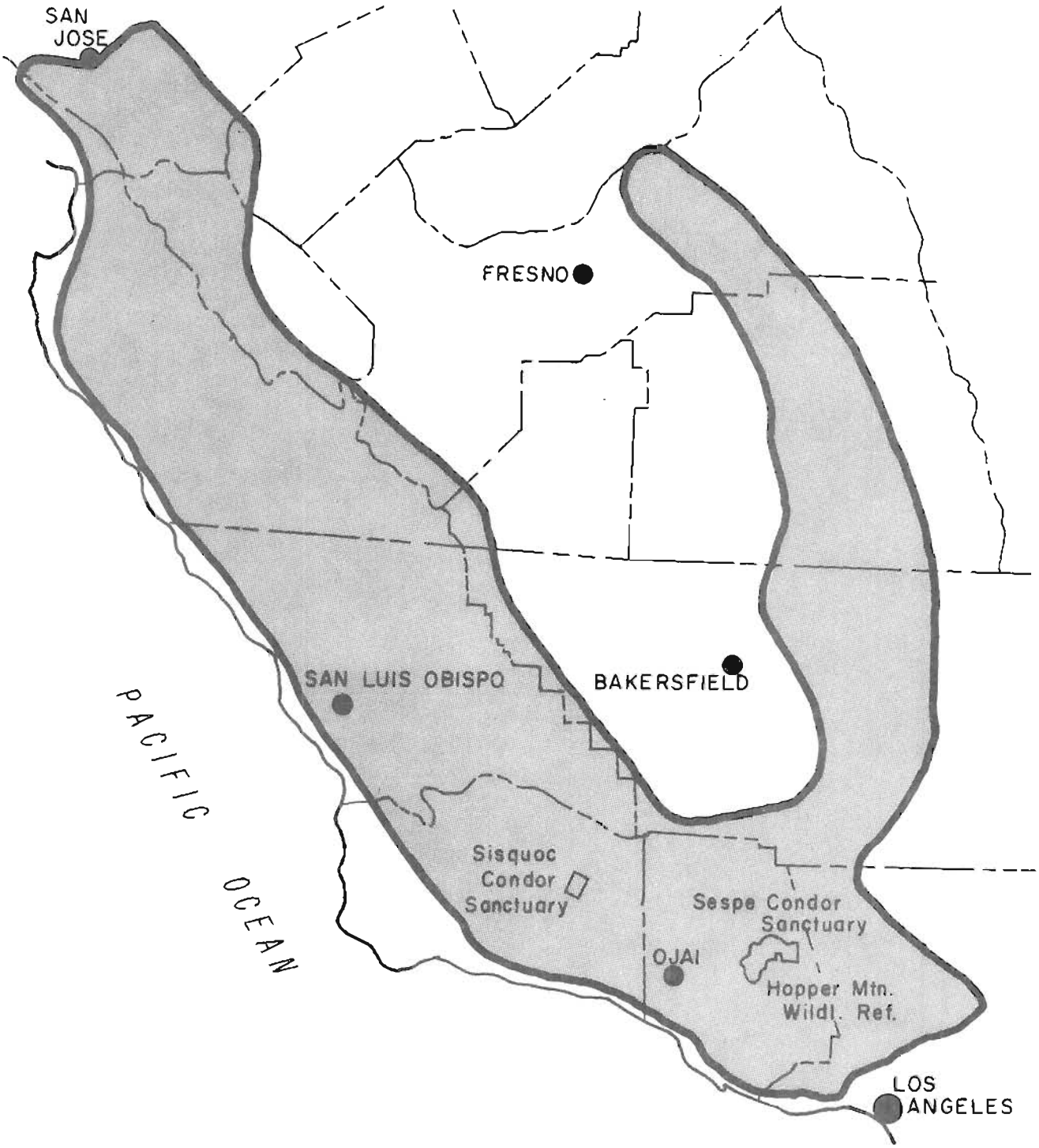

California Condor Range

AMERICAN PEREGRINE FALCON (*Falco peregrinus anatum*) ENDANGERED

DESCRIPTION: Commonly called the duck hawk, this is a medium sized blue-gray hawk with long pointed wings. It is 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--breeds in California along the coast and in higher mountains inland.

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. In the 1940's the breeding bird population in California was 100 pairs. By 1970 this population had declined to 10 birds, of which 2 pairs produced 4 young. In 1975, encouragingly, 8 pairs were found; 6 of which fledged 14 young.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

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

... All peregrine and prairie falcons in captivity in California registered and identified by a nonremovable numbered leg band.

... Statewide survey made in 1975 of peregrine nesting in California.

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

... Environmental Protection Agency banned most use of DDT in the United States in December 1972.

... Morro Rock Ecological Reserve for the peregrine falcon established by the California Fish and Game Commission and placed under surveillance.

... Hi-Mountain-Huff's Hole Endangered Species Habitat Area established by U. S. Forest Service.

... Captive raptor breeding projects authorized by California Fish and Game Commission.

... Pacific Coast American Peregrine Falcon Recovery Team constituted to restore the peregrine to nonendangered status.

RECOMMENDATIONS:

... 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.

... Establish a program to reintroduce the American peregrine falcon at historical nest sites through release of propagated birds.

... Develop a Recovery Plan for the American peregrine falcon.

REFERENCES:

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U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.

SOUTHERN BALD EAGLE (*Haliaeetus leucocephalus leucocephalus*) ENDANGERED

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

DISTRIBUTION: This is the only eagle restricted to North America. Occurs statewide, particularly along the coast and in interior California about large lakes, reservoirs, and wetlands. Nests in vicinity of large lakes, rivers and reservoirs from Fresno County north.

STATUS: Endangered. Historically, bald eagles nested in abundance on the Channel Islands and along the coast; present nesting is limited to the Sierra Nevada, Cascade, and Klamath mountains. Twenty one territories were occupied in California in 1974, when 18 pairs produced 17 young. An influx of northern birds is evident in winter months. Reasons for its decline include irresponsible shooting, removal of nest trees, human encroachment into nesting and feeding areas, power line electrocution, environmental pollution and contamination of the food chain by persistent pesticides.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

... Declare endangered by the Secretary of the Interior.

... Amended Bald Eagle Protection Act extends federal jurisdiction over all North American eagles, and establishes a maximum penalty of $5,000 and 1 year imprisonment for persons convicted of killing an eagle.

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

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

... Conservation agencies and private and public utilities are coordinating efforts to minimize accidental power line electrocution of eagles.

... A Southern Bald Eagle Working Group formed to develop programs to restore the southern bald eagle to nonendangered status.

RECOMMENDATIONS:

... Protect from human intrusion during the nesting season all known bald eagle nests.

... Protect nest sites on private lands through acquisition, easement, or memorandum of understanding with landowners.

... Increase public education programs to reduce illegal shooting.

... Undertake studies to more fully ascertain the degree of pesticide contamination in the bald eagle and its effects on reproduction.

REFERENCES:

Mallette, R. D. 1972. Raptor Survey. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. 18 pp.

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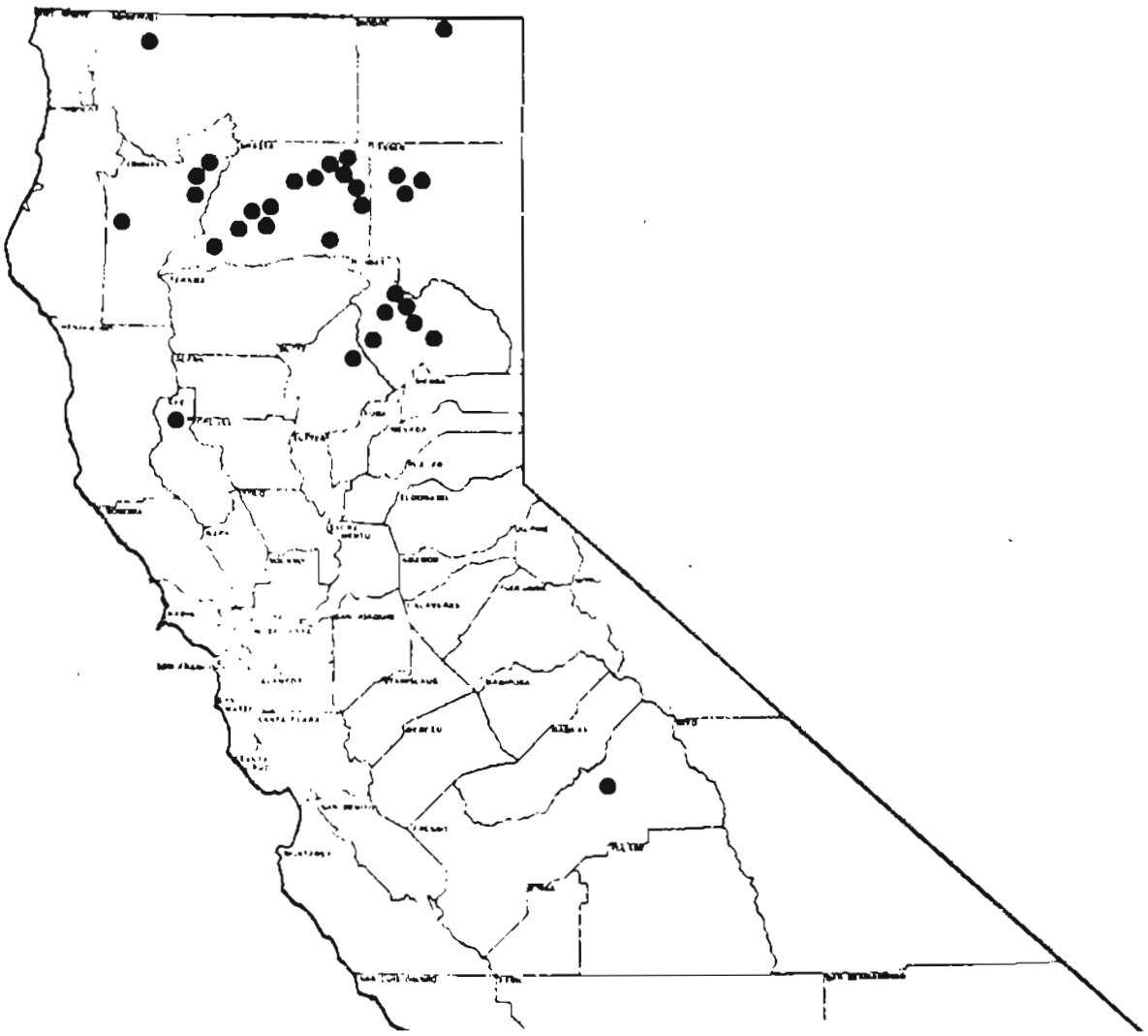
Thompson, R. A. 1974. Bald eagle nesting surveys in California. U. S. Fish Wildl. Serv. Portland, Ore. 35 pp.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.



Bald Eagle Nesting Territories - 1972-73.

CALIFORNIA BROWN PELICAN (Pelecanus occidentalis californicus) ENDANGERED

DESCRIPTION: This is a large grayish-brown coastal bird with a long, pouched bill. It flies with its neck and head folded back on the shoulders, and with alternate wing flapping and sailing. Adults have white heads and necks, whereas immatures are dark-headed.

DISTRIBUTION: This subspecies occurs on the Pacific Coast from Canada to Mexico. It nests on California's Channel Islands, on the coastal islands off Lower California, and in the Gulf of California.

STATUS: Endangered. A 1972 survey indicated that the total population approximates 100,000 birds with 20,000 pelicans frequenting California's coast from August through November. California's only remaining nesting colony on Anacapa Island, currently numbering 400 pairs, is incapable of maintaining itself. Reproductive failure is due to collapse of thinshelled eggs during incubation, attributed to the effects of pollutants on breeding birds. In 1971 only 7 young were produced in 600 nesting attempts. Encouragingly, reproduction in 1974 and 1975 was 305 and 256 young respectively. A portion of the Anacapa Island colony nested on an islet adjacent to Santa Cruz Island in 1972, 1974 and 1975.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... Anacapa Island breeding colony placed under surveillance by enforcement personnel and biologists of the Department of Fish and Game, U. S. Bureau of Sport Fisheries and Wildlife, and National Park Service.

... Public access to West Anacapa Island is prohibited during the nesting season.

... West Anacapa Island declared in 1975 a Research Natural Area by National Park Service.

... A 5-year study of the ecology of the California brown pelican conducted by the U. S. Fish and Wildlife.

... Environmental Protection Agency bans most uses of DDT in United States in December 1972.

RECOMMENDATIONS:

... Continue protection and surveillance of Anacapa Island nesting colony.

... Urge Federal Government to enter into a cooperative program with Mexico to protect nesting islands in Gulf of California and Pacific Ocean.

REFERENCES:

Anderson, D. W. and J. J. Hickey. 1970. Oological data on egg and breeding characteristics of brown pelicans. Wilson Bull. 82:14-28.

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Blus, L. J., R. G. Heath, C. D. Gesh, A. A. Belisle, and R. M. Prouty. 1971. Eggshell thinning in the brown pelican: implication of DDE. Bio-Science 21(24):1213-1215.

Gress, F. 1970. Reproductive status of the California brown pelican in 1970 with notes on breeding biology and natural history. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 70-6. 21 pp.

Jehl, J. R., Jr. 1970. Is thirty million years long enough? Pac. Discovery 23:16-23.

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. Nat. Res. Conf. 15 pp.

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

_____., and R. W. Risebrough. 1972. Studies of the brown pelican. I. Status of brown pelican populations in the United States. Wilson Bull. 84:119-135.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.

CALIFORNIA LEAST TERN (*Sterna albifrons browni*) ENDANGERED

DESCRIPTION: Smallest of the terns, this 9-inch long bird is recognized by its white body, gray wing, black wing tips, black-capped head, and black-tipped yellow bill. Its quick wing beats and hovering action help distinguish it from the larger terns.

DISTRIBUTION: Migratory. From April to September it occurs along the Pacific coast from San Francisco Bay to central Baja California; breeding colonies are distributed discontinuously along the coast. Wintering area is not known although it may include coastal areas of Central or South America.

STATUS: Endangered. Threatened with extinction because of continuing destruction of few remaining feeding and nesting habitats, and human disturbance and animal predation. Nesting colonies require flat areas characterized by complete or nearly complete lack of vegetation, loose substrate, freedom from disturbance, and nearness to an estuary with a good supply of small fish. About 25 colonies have nested in recent years in California. Statewide breeding population was estimated at 624 pairs in 1973; 582 pairs in 1974; and, 600 pairs in 1975. About 80 percent of nesting occurs in San Diego County.

ACTIONS:

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

... Declared endangered by Secretary of the Interior.

... State Park and Recreation Commission established Least Tern Natural Preserve at Huntington Beach State Park in 1975.

... Santa Margarita River Tern Sanctuary established and a program of protection and habitat enhancement implemented at U. S. Marine Corps Base, Camp Pendleton.

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

... Seal Beach National Wildlife Refuge established by Congress and a program implemented to enhance area for least tern nesting.

... Bair Island in San Francisco Bay acquired under state and federal ownerships.

... Crown Point Least Tern Sanctuary established by City of San Diego in 1974, and a temporary sanctuary is maintained at south end of Mission Bay.

... Least tern sanctuary established at Naval Training Center, San Diego in 1975.

... California Least Tern Recovery Team established to develop programs to restore this tern to the nonendangered status.

... Annual population surveys conducted by Department of Fish and Game and U. S. Fish and Wildlife Service.

RECOMMENDATIONS:

... Develop and implement the California Least Tern Recovery Plan.

REFERENCES:

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Gill, G. E., Jr. 1972. South San Francisco Bay breeding bird survey, 1971. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 72-6. 68 pp.

Massey, B. W. 1971. A breeding study of the California least tern, 1971. Calif. Dep. Fish Game Wildl. Mgmt. Admin. 71-9. 22 pp. (mimeo).

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_____. 1975. California least tern census and nesting survey, 1975. U. S. Fish and Wildlife Service, Portland, Oreg. 5 pp.

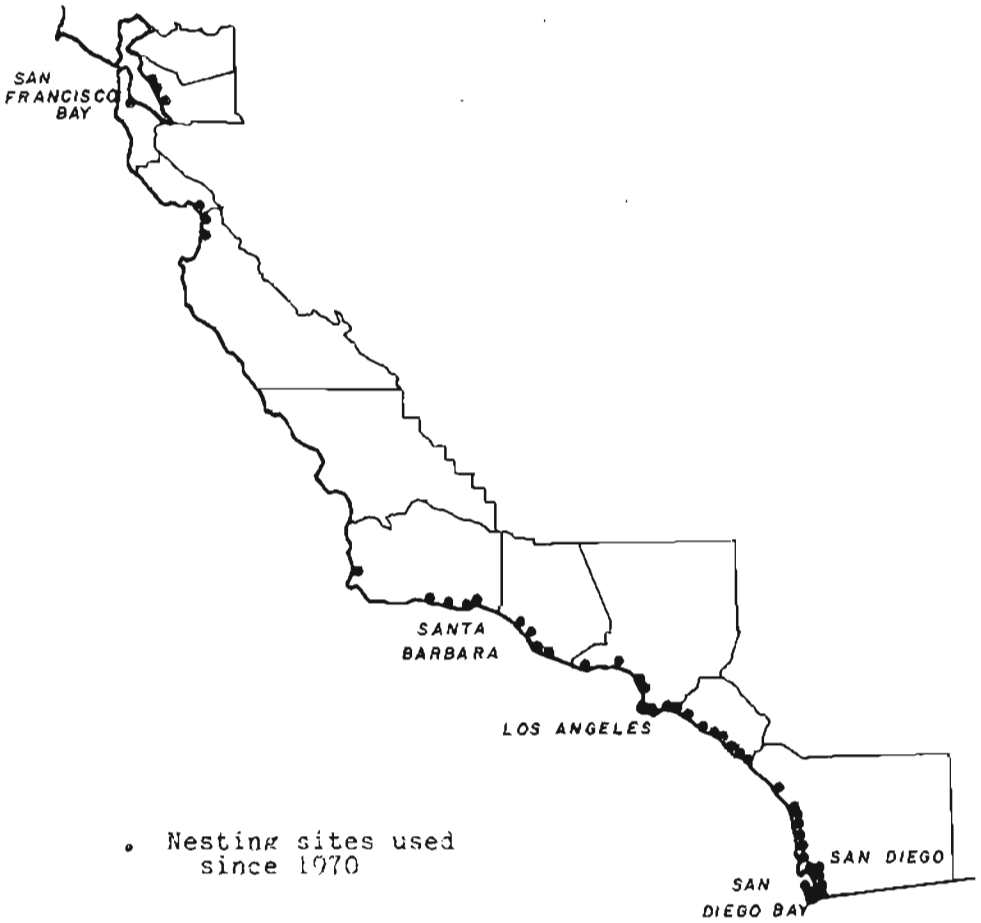
Swickard, D. K. 1972. Status of the least tern at Camp Pendleton, California. Calif. Birds 3:49-58.

_____. 1974. An evaluation of two artificial least tern nesting sites. Calif. Fish Game 60(2):88-90.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.

Wilbur, S. R. 1974. The literature of the California least tern. Bur. Sport. Fish and Wildl. Spec. Sci. Report-Wildl. No. 175. Washington, D. C. 18 pp.

CALIFORNIA LEAST TERN (Continued)



CALIFORNIA CLAPPER RAIL (Rallus longirostris obsoletus) ENDANGERED

DESCRIPTION: This is a 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: It is resident in salt marshes of San Francisco Bay, San Pablo Bay, Napa Marsh, and Elkhorn Slough, and a casual visitor to Bolinas and Tomales Bays. It has also been sighted at Humboldt Bay.

STATUS: This rail is highly specialized and apparently incapable of adapting to environmental change. Major populations occur in salt marshes bordering South San Francisco Bay and in the Napa Marshes. Smaller populations exist in San Pablo Bay and Elkhorn Slough. They are absent as a breeding species from the Suisun Marsh and many other brackish marshes along the north and central coast. Populations over preferred habitat appear to fluctuate tremendously from year to year. Marsh reclamation as well as industrial pollution and the introduced old-world rat are threatening their existence. However, with the recent establishment of the San Francisco Bay National Wildlife Refuge Complex and preservation of key habitat areas, the status of this rail is less tenous.

ACTIONS:

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

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

... South San Francisco Bay and San Pablo Bay Refuges established by Congress.

... Portions of Bair Island, Coon Island, and Hayward Shoreline acquired by the State.

... Portions of Greco Island and Mowry Slough in South San Francisco Bay established as a National Audubon Sanctuary.

... Acquisition of Tubbs Island, North San Pablo Bay, and Knapp Property, South San Francisco Bay, by the Nature Conservancy.

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

... Bay fill proposals subject to approval by the Bay Conservation and Development Commission and the U. S. Army Corps of Engineers.

... State Lands Commission transfers portion of San Pablo Bay marshlands to Department of Fish and Game.

... Annual survey of rail populations and distribution conducted by Department.

CALIFORNIA CLAPPER RAIL (Continued)

RECOMMENDATIONS:

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

... Preserve the Petaluma Marsh and Napa Marsh in San Pablo Bay through acquisition, easement, or memorandum of understanding with landowners.

... Establish a marsh restoration and mitigation plan for former rail habitat deemed restorable.

REFERENCES:

Gill, R. E. 1971. South San Francisco Bay breeding bird survey, 1971. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 72-6. 68 pp.

Gould, G. 1973. California clapper rail survey, 1973. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. 6 pp.

Milton, W. C. 1972. A breeding survey of the California clapper rail in the Emeryville Crescent. Dep. Nat. Res. Cons., Univ. Calif., Berkeley. 8 pp.

Oberholser, H. C. 1937. A revision of the clapper rails (Rallus longirostris broddaert). Proc. U. S. Nat. Mus. 84(3018):313-353.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish Wildl. Resource Publ. 114. 289 pp.

Varoujean, D. H. 1972. A study of the California clapper rail in Elkhorn Slough. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. 11 pp.

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

YUMA CLAPPER RAIL (Rallus longirostris yumanensis) ENDANGERED

DESCRIPTION: This is the smallest of the clapper rails in California. It is the only clapper rail inhabiting freshwater marshes in southeastern California from April to November.

DISTRIBUTION: This rail nests along the Colorado River from Gulf of California, Mexico, to Davis Dam above Needles, at Salton Sea, and Gila River, Arizona. It occurs mostly in areas of dense cattails and tules.

STATUS. Endangered. Channelization and phreatophyte removal along the Colorado River threaten its survival. Its numbers are believed to be in excess of 900 individuals along Colorado River. Thirty one birds have been found at the Salton Sea, principally on the Wister Unit, Imperial Wildlife Management Area.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... A Yuma Clapper Rail Recovery Team established to provide programs to restore the Yuma clapper rail to the nonendangered status.

... Extensive surveys in 1973 and 1974 of 515 km (320 mi) of Colorado River identified areas inhabited by clapper rails.

... A study of clapper rail biology and habitat requirements conducted by the Department.

... A three-year study by Arizona State University, funded by the U. S. Bureau of Reclamation, documented the important wildlife communities along the Colorado River from Davis Dam to Mexican border.

... Federal programs of preservation and management of clapper rail habitat enacted for Havasu Imperial and Cibola National Wildlife Refuges.

RECOMMENDATIONS:

... Develop and implement a recovery plan designed to achieve the measures necessary to remove this rail from its endangered status.

... In cooperation with Mexico, determine status of the Yuma clapper rail in Mexico; particularly, along the Colorado River from Morales to the Gulf of California.

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

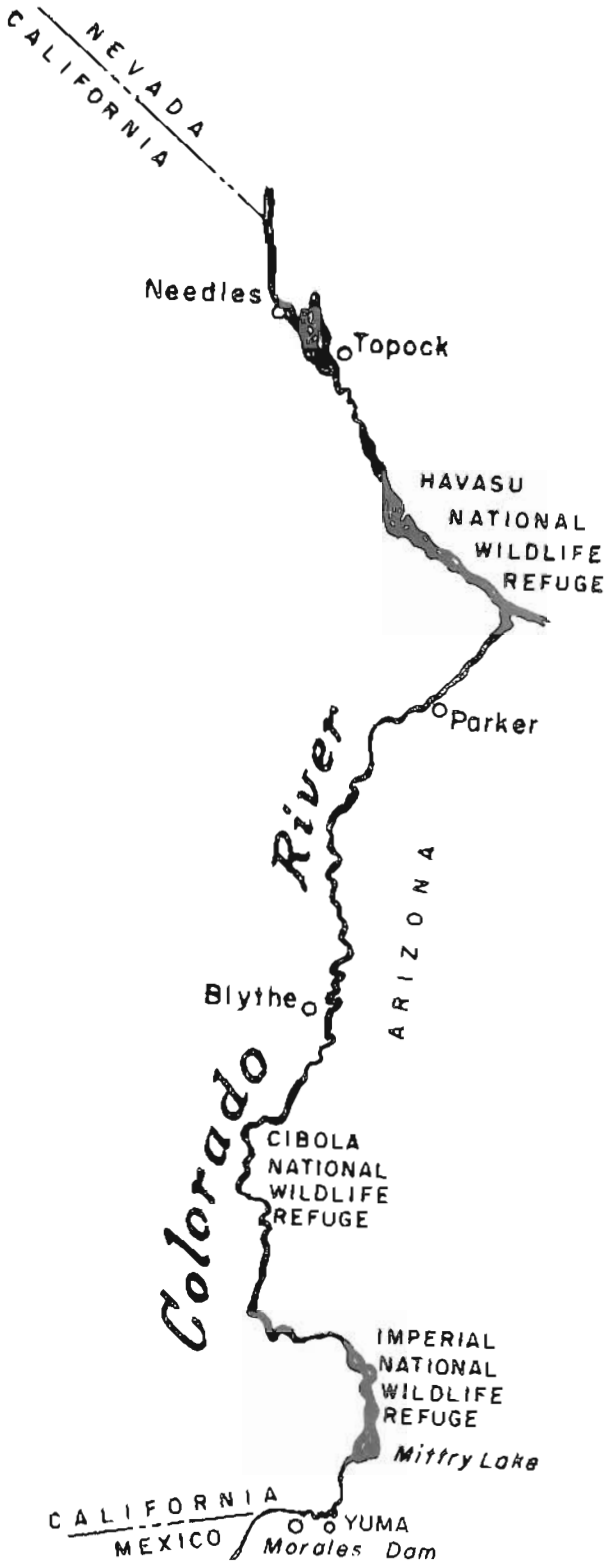
REFERENCES:

Banks, R. C. and R. E. Tomlinson. 1974. Taxonomic status of certain clapper rails of southwestern United States and northwestern Mexico. The Wilson Bull. 86(4):325-335.

Gould, G. I. 1974. Yuma clapper rail study, Censuses and habitat distribution 1973-74. Calif. Dep. Fish and Game, Wildl. Mgmt. Admin. Rep. No. 75-2, 27 pp.

Oberholser, H. C. 1937. A revision of the clapper rails (Rallus longirostris broddaert). Proc. U. S. Nat. Mus. 84(3018):313-353.

Todd, R. L. 1969. Arizona Game and Fish Department Nongame Investigations, 1968-69. PR W-53-R-1 Compl. Rep., April 1969. 25 pp.



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

DESCRIPTION: This subspecies is slightly smaller and darker than the California clapper rail. It is the only clapper rail found in southern California coastal salt marshes.

DISTRIBUTION: It ranges from Goleta Slough, Santa Barbara County, south to San Quintin Bay, Lower California. Breeding populations in California are limited to Goleta Slough, Carpinteria Marsh, Mugu Marshes, Anaheim Bay, Upper Newport Bay, Los Penasquitos Lagoon, Tijuana Estuary and remnant salt marshes in Mission and San Diego bays.

STATUS: Endangered. Planned developments of Tijuana Estuary, South San Diego Bay, Los Penasquitos Lagoon, and other southern California coastal salt marshes threaten its survival. Only Tijuana Estuary supports more than a few dozen rails. Total population in California in 1975 was estimated to be 250 birds.

ACTIONS:

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

... Declared endangered by Secretary of the Interior.

... Light-footed Clapper Rail Recovery Team established to provide programs to restore this clapper rail to nonendangered status.

... California Coastal Zone Commission established in 1973 to regulate development along coast.

... Study of habitat preference of clapper rails in Tijuana Marsh conducted by U. S. Fish and Wildlife Service in 1973-74.

... Upper Newport Bay and Bolsa Bay established as Ecological Reserves.

RECOMMENDATIONS:

... Acquire for public ownership the Tijuana River marshlands.

... Place Carpinteria Marsh in the Natural Land and Water Reserve System of the University of California.

... Develop and implement the Light-footed Clapper Rail Recovery Plan.

REFERENCES:

Jorgensen, P. D. 1975. Habitat preference of the light-footed clapper rail in Tijuana Marsh, California. U. S. Fish Wildl. Serv., Portland, Oreg. (Unpubl.).

Sexton, C. W. 1972. Clapper rails at Upper Newport Bay, California. Dep. Pop. Env. Biol. Univ. Calif. Irvine, Calif. 13 pp.

Wilbur, S. R. 1974. The status of the light-footed clapper rail. American Birds 28(5):868-870.

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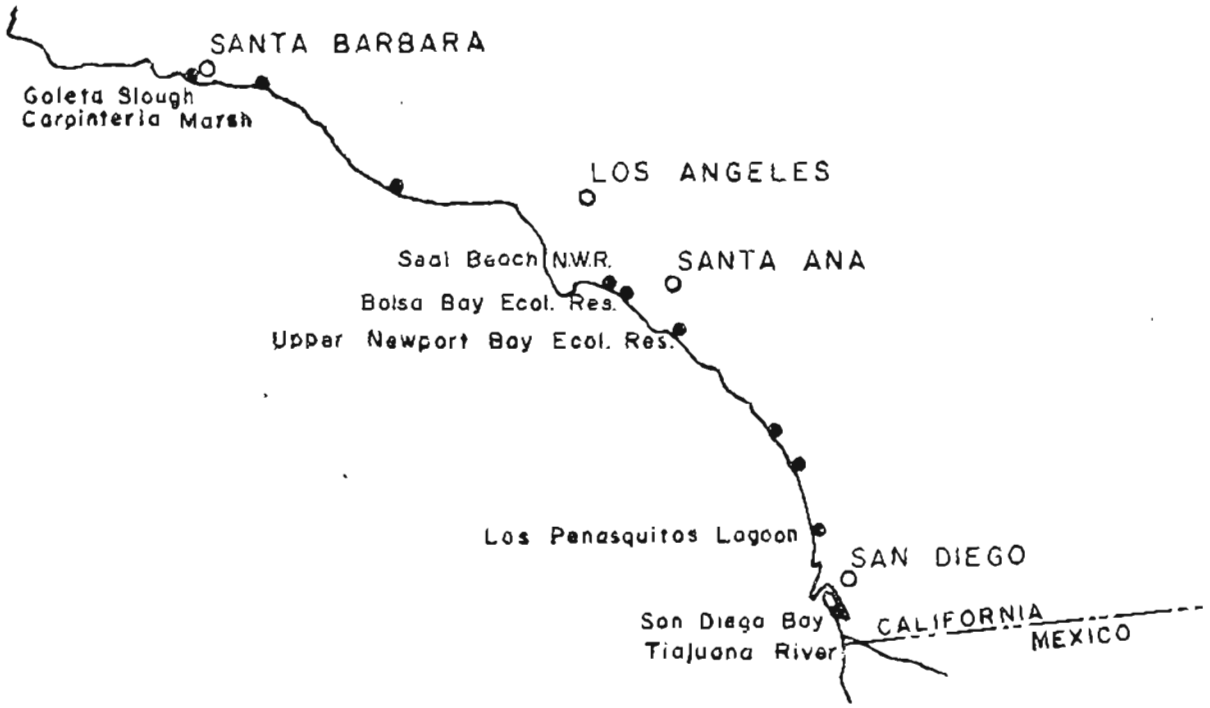


BELDING'S SAVANNAH SPARROW (*Passerculus sandwichensis beldingi*) ENDANGERED

DESCRIPTION: This subspecies is distinguished from other savannah sparrows by its darker coloration, lack of distinct crown stripe, heavy streaking on throat, breast, and sides, and restricted distribution.

DISTRIBUTION: The Belding's savannah sparrow occurs as a resident in the tidal estuaries of southern California and lower California, Mexico. It is closely associated with pickleweed habitat subject to tidal influence. Surveys made in 1973 revealed that only 11 breeding sites exist from Goleta Slough, Santa Barbara County, to Imperial Beach, San Diego County.

STATUS: Endangered. Planned developments of Tijuana Estuary, Los Penasquitos Lagoon, and other southern California coastal salt marshes threaten its survival. Approximately 1,100 breeding pairs were located at 11 active breeding sites in California in 1973.

ACTIONS:

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

... Seal Beach National Wildlife Refuge at Anaheim Bay established by Congress.

... California Coastal Zone Commission established in 1973 to regulate development along the coast.

... Upper Newport Bay and Bolsa Bay established as Ecological Reserves.

... Long-term study of breeding ecology and behavior being conducted under supervision of California State University, Long Beach.

RECOMMENDATIONS:

... Acquire for public ownership Tijuana Estuary and Marsh.

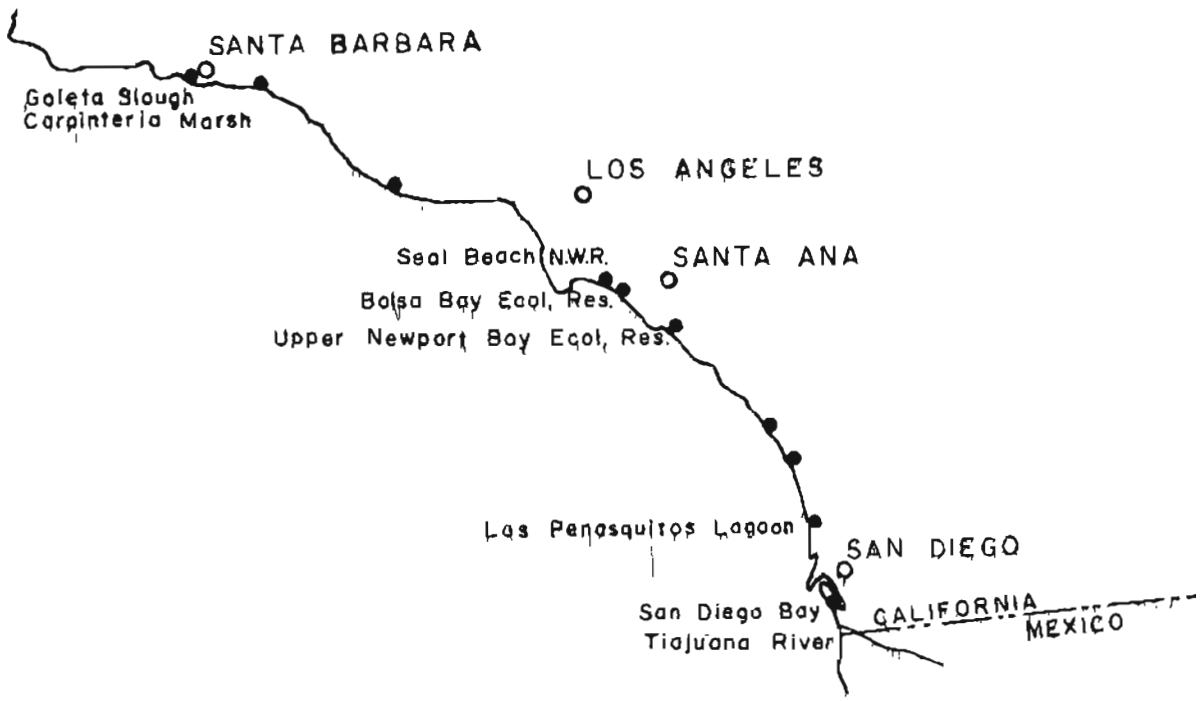
... Place Carpinteria Marsh in the Natural Land and Water Reserve System of the University of California.

REFERENCES:

Bradley, R. A. 1973. A population census of the Belding's savannah sparrow. Western Bird Bander 48(3):40-43

Grinnell, J. and A. H. Miller. 1944. The distribution of the birds of California. Pac. Coast Avifauna 27:485-486.

BELDING'S SAVANNAH SPARROW (Continued)



BLUNT-NOSED LEOPARD LIZARD (Crotaphytus silus) ENDANGERED

DESCRIPTION: This is 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 spotted with gray. Breeding females have orange or reddish spots on sides. Length from snout to vent in adults is 89-127 mm (3½-5 inches).

DISTRIBUTION: This species was originally found throughout 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 in the eastern portions of the Coast Range foothills and Carrizo Plain. 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. Subdivisions, water control, and increasing agricultural developments 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. Off-road vehicle recreation is damaging habitat in some nonagricultural areas. Good habitat still remains on the Naval Petroleum Reserve near Taft, and on the Kern and Pixley National Wildlife refuges.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... The Department has conducted preliminary surveys and has initiated cooperative studies with the U. S. Forest Service, the University of California at Berkeley and several colleges to further determine the distribution and status of this lizard.

... The U. S. Forest Service will manage an 800-acre tract of grassland near Pixley for this species.

... An official recovery team has been formed to provide needed coordination and to prepare a recovery plan.

RECOMMENDATIONS:

... Continue surveys and other studies throughout the range of the blunt-nosed leopard lizard to determine the extent and status of existing populations and to delineate critical habitat.

... Protect remnants of the habitat on public lands, such as the Naval Petroleum Reserve near Taft, the Kern and Pixley National Wildlife refuges, Los Padres National Forest, and National Resource Lands.

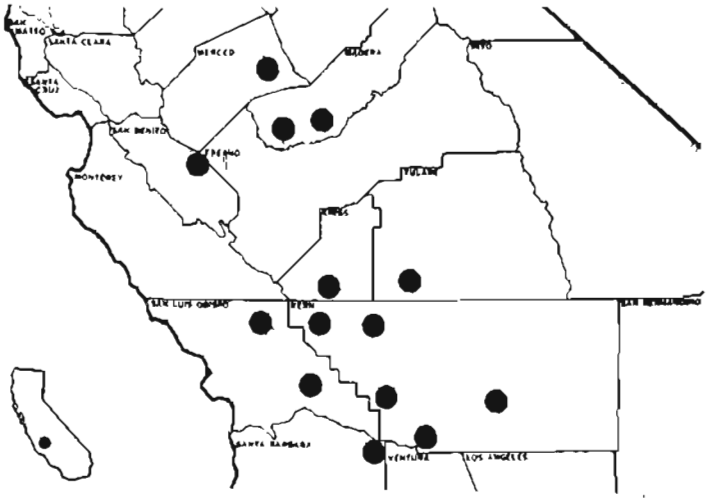
... Preserve critical habitat on private lands through acquisition or agreement with landowners.

BLUNT-NOSED LEOPARD LIZARD (Continued)

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.



SAN FRANCISCO GARTER SNAKE (Thamnophis sirtalis tetrataenia) ENDANGERED

DESCRIPTION: This is one of the most strikingly beautiful snakes of North America. The top of the head is red. There is a wide middorsal stripe of greenish-yellow edged with black, and broad red stripes on each side bordered with black. The red stripe may be broken or divided anywhere along the body. The ventral side is turquoise blue. Adult females grow to 122 cm (4 ft).

DISTRIBUTION: Occurs from northern San Mateo County southward along the east slope of the Santa Cruz Mountains to the Santa Clara County line, 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 are especially favored.

STATUS: Endangered. Fewer than 20 populations are currently known. Most populations are composed of less than 50 adults, and there is high mortality in newborn young. The snake was formerly abundant at a few ponds near Daly City, but housing construction has eliminated these populations. Less than 5% of the present habitat is on protected land.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... The San Francisco Water Department has been advised of the presence of this snake on the peninsular watershed, which includes the San Francisco State Fish and Game Refuge.

... A study with the University of California at Davis on the taxonomy, distribution, and status of this snake has been completed.

RECOMMENDATIONS:

... Improve management practices on the San Francisco peninsular watershed to insure the snake's survival on these lands.

... Preserve critical habitat on private lands through acquisition or agreement with landowners.

... Carefully plan any new construction in San Mateo County to avoid disturbing the remaining San Francisco garter snake habitat.

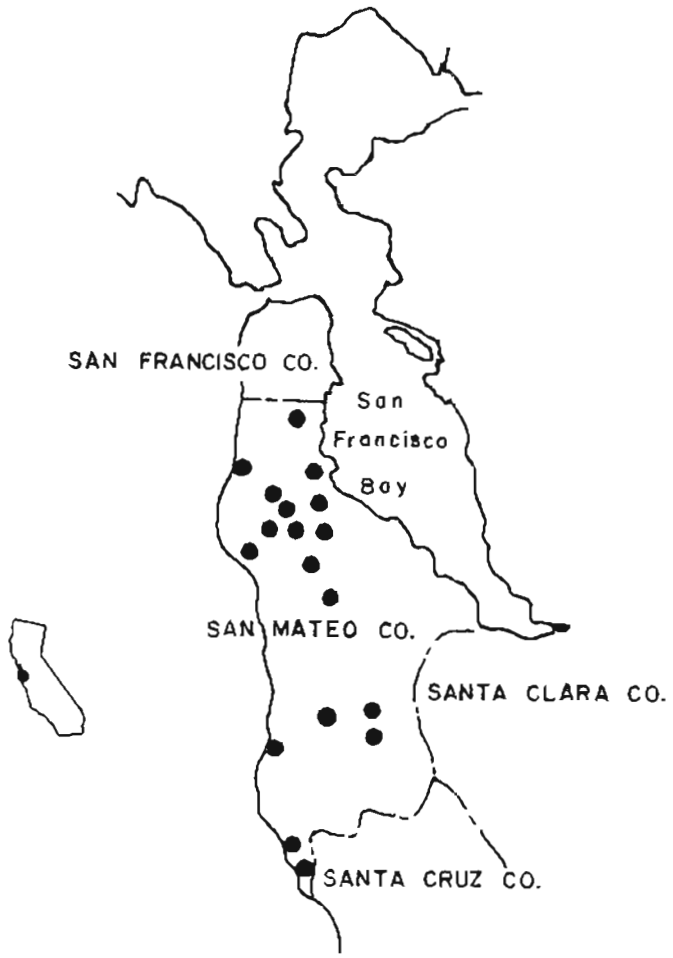
... Provide strict enforcement of protective laws to prevent collection of this snake.

... Establish official recovery team and prepare recovery plan.

REFERENCES:

Fox, W. 1951. The status of the garter snake, Thamnophis sirtalis tetrataenia. Copeia 1951(4):257-267.

SAN FRANCISCO GARTER SNAKE (Continued)



SANTA CRUZ LONG-TOED SALAMANDER ENDANGERED
(Ambystoma macrodactylum croceum)

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 row across the roof of the mouth. Adults grow to about 127 mm (5 inches).

DISTRIBUTION: Originally known from only 2 locations in Santa Cruz County - Valencia Lagoon near Aptos and Ellicott Station 6.4 km (4 miles) northwest of Watsonville. A third locality was discovered in 1973, in Monterey County, 1.6 km (1 mile) north of Moss Landing. A fourth locality was discovered near Valencia Lagoon in 1975. This salamander is associated with temporary ponds in which it breeds in winter. During the dry months the salamanders take refuge in mammal burrows in chaparral and wooded areas.

STATUS: Endangered. The Valencia Lagoon habitat was drastically altered by freeway construction, and the habitat in Monterey County is threatened by agricultural development. The Ellicott Station location represents the only remaining relatively undisturbed habitat for this salamander.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... An artificial, temporary breeding pond was constructed at Valencia Lagoon in 1970 by the California Department of Transportation and was enlarged in 1974.

... The Department has purchased 18.6 ha (30 acres) of critical habitat at the Ellicott Station locality and the remaining undisturbed portion of Valencia Lagoon with funds from the Environmental Protection Program (personalized license plates). These areas became the Santa Cruz Long-toed Salamander Ecological Reserve by action of the Fish and Game Commission.

... The U. S. Fish and Wildlife Service is acquiring additional habitat at the Ellicott Station locality.

... An official recovery team was organized in early 1975, and a recovery plan is being prepared.

... A fish and wildlife management plan for the Santa Cruz Long-toed Salamander Ecological Reserve was completed and recommendations are being carried out.

... Studies of population size, distribution, movements, and general ecology are continuing through the cooperative efforts of the University of California at Berkeley and Cabrillo College, Aptos.

RECOMMENDATIONS:

... Monitor populations at all localities to determine reproductive success and population size. Attempt to locate other populations.

SANTA CRUZ LONG-TOED SALAMANDER (Continued)

... Develop a plan with the California Department of Transportation to rehabilitate Valencia Lagoon.

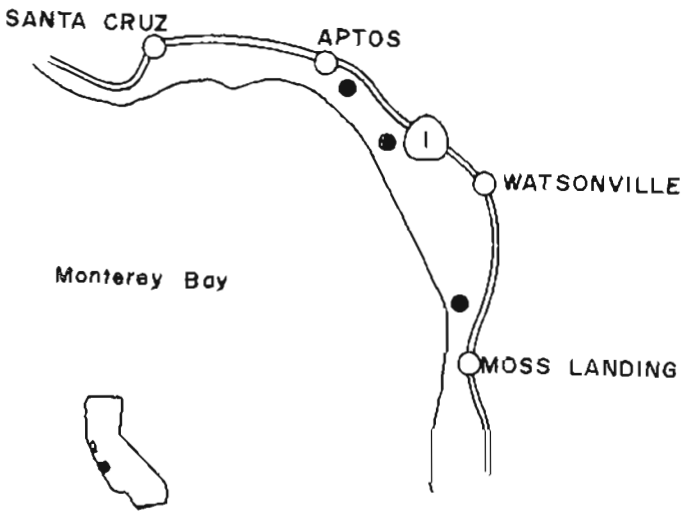
... Purchase additional terrestrial habitat critical to the survival of this salamander.

... Complete recovery plan and implement management recommendations.

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.



DESERT SLENDER SALAMANDER (Batrachoseps aridus) ENDANGERED

DESCRIPTION: This is 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 102-114 mm (4-4½ inches).

DISTRIBUTION: Known only from Hidden Palm Canyon, a tributary of Deep Canyon, about 16 km (10 miles) south of Palm Desert, Riverside County. It is found in crevices between limestone sheets and under limestone slabs and other rocks along the base of cliffs where continuous water seepage occurs. During the late winter and early spring, these salamanders may also be found beneath dirt clods, rocks, and other objects on the floor of the canyon.

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

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... The Department has purchased 54.4 ha (134½ acres) which comprises the critical habitat of this salamander with funds from the Environmental Protection Program (personalized license plates), and is monitoring the population and habitat. It was officially designated the Hidden Palm Ecological Reserve by the Fish and Game Commission.

... An interim recovery team was formed to provide needed coordination and the transition to an official recovery team. The team completed a fish and wildlife management plan for the Ecological Reserve and some recommendations have been carried out.

... Nearby springs in the Santa Rosa Mountains are being checked for the possible occurrence of this species.

RECOMMENDATIONS:

... Study the hydrology of the spring seepage to determine the source, quality, and quantity of water supplying the salamander habitat. Institute measures to insure its protection.

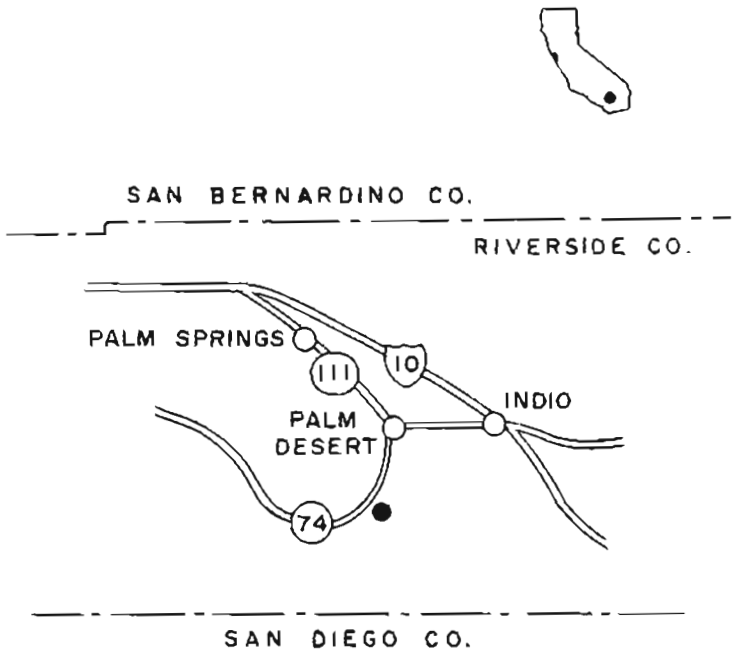
... Install an informational plaque at the Bighorn Sheep Lookout.

REFERENCES:

Boynton, K. L. 1971. The singular salamander. Desert Magazine 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.

DESERT SLENDER SALAMANDER (Continued)



COLORADO SQUAWFISH (Ptychocheilus lucius) ENDANGERED

DESCRIPTION: This is a large, 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, with 80 to 90 in the lateral line, which is strongly decurved anteriorly. It is the largest of the American minnows, reportedly growing to 150 cm (5 ft) and 36 kg (80 lb).

DISTRIBUTION: Originally abundant throughout the Colorado River and major tributaries in deeper water and strong currents, it is now present only in a few localities in the upper drainage. It has not been seen below Glen Canyon Dam in northern Arizona since 1968.

STATUS: Endangered. Endangered throughout entire range. May be extinct in California since it has not been collected here since 1952. Extensive habitat alterations, including channelization, the construction of large reservoirs, the lowering of river water temperatures, flow reductions, increasing salinity of the lower Colorado River, and the introduction of exotic fishes have probably prevented successful reproduction and recruitment in the lower river.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... An interagency and interstate recovery team formed in 1975 to determine existence and status of the squawfish population in the Colorado River, and to determine what measures are necessary for its survival and replenishment. The team is rearing a broodstock of squawfish in Willow Beach Federal Hatchery, Arizona, for a planned restocking program for the lower river states. Artificial propagation or a spawning channel may be needed to restore this species in California.

RECOMMENDATIONS:

... Cease channelization and further environmental degradation of the Colorado River.

... Complete recovery plan and implement recommendations.

REFERENCES:

Beland, R. D. 1953. The effect of channelization on the fishery of the lower Colorado River. Calif. Fish Game 39(1):137-139.

Dill, W. A. 1944. The fishery of the lower Colorado River. Calif. Fish Game 30(3):109-211.

Holden, P. B., and C. B. Stalnaker. 1975. Distribution and abundance of mainstream fishes of the middle and upper Colorado River basins, 1967-1973. Trans. Amer. Fish. Soc. 104(2):217-231.

La Rivers, I. 1962. Fishes and fisheries of Nevada. Nev. Fish and Game Comm., Reno, Nevada. 782 p.

Minckley, W. L. 1973. Fishes of Arizona. Ariz. Game and Fish Dep., Phoenix, Arizona. 293 p.

Vanicek, C. D., and R. H. Kramer. 1969. Life history of the Colorado squawfish, Ptychocheilus lucius, and the Colorado chub, Gila robusta, in the Green River in Dinosaur National Monument, 1964-1966. Trans. Amer. Fish. Soc. 98(2):193-208.

Winn, H.E., and R. R. Miller. 1954. Native postlarval fishes of the lower Colorado River basin, with a key to their identification. Calif. Fish Game 40(3):273-285.

THICKTAIL CHUB (Gila crassicauda) ENDANGERED

DESCRIPTION: This is a stocky chub with a very deep and thick caudal peduncle. The head is short and cone-shaped. There is a pronounced hump in the dorsal outline just behind the head. Color is dark above, grading to silvery on the belly. The scales are large, with 49-60 in the lateral series.

DISTRIBUTION: This fish was formerly common in lowland waters of the Central Valley from near Redding southward to Bakersfield; it also occurred in Clear Lake and in Coyote Creek, tributary to south San Francisco Bay. It was the third most abundant native fish species in midden samples from an aboriginal fishing village in the lower Sacramento Valley.

STATUS: Endangered. This species disappeared from Clear Lake by 1940. The last known specimen was collected in 1957 from Steamboat Slough in the Sacramento River Delta. It may be extinct now, since it has not been identified in extensive fish collections made throughout the Sacramento-San Joaquin Delta, and at the fish collection facilities of the Bureau of Reclamation and Department of Water Resources pumping plants. Draining of riparian marshes, together with diking, channelization, and other flood control measures, are largely responsible for loss of habitat. Predation by exotic game fishes may have contributed to decline, also.

ACTIONS:

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

... Completed survey of many waters in Central Valley.

RECOMMENDATIONS:

... Sample regularly in the remaining Central Valley riparian marshes to determine if specimens can still be found.

... Prevent further loss of riparian marshland.

... Allow riparian marshlands to flood in spring so that they may be utilized for spawning and as nursery areas.

REFERENCES:

Cook, S. F., Jr., R. L. Moore, and J. D. Conners. 1966. The status of the native fishes of Clear Lake, Lake County, California. Wasmann J. Biol. 24(1):141-160.

Miller, R. R. 1963. Synonomy, characters, and variation of Gila crassicauda, a rare Californian minnow, with an account of its hybridization with Lavinia exilicauda. Calif. Fish Game 49(1):20-29.

Rutter, C. 1908. The fishes of the Sacramento-San Joaquin basin, with a study of their distribution and variation. Bull. U. S. Bur. Fish. 27(1907):103-152.

Shultz, P. D., and D. D. Simons. 1973. Fish species diversity in a prehistoric central California Indian midden. Calif. Fish Game 59(2):107-113.

THICKTAIL CHUB (Continued)

TECOPA PUPFISH (Cyprinodon nevadensis calidae) ENDANGERED

DESCRIPTION: This fish is similar to other pupfishes, but has larger scales, a narrower interorbital, and more posteriorly placed pelvic fins, each with 6 rays. The dorsal fin is farther back than on the Owens pupfish. The caudal fin of males has a prominent black edge, but otherwise this species is similar in color to C. radiosus.

DISTRIBUTION: This subspecies was originally found only in the outflows of North and South Tecopa Hot Springs, Inyo County, from which it has been eliminated. A small population found in 1973 in a spring-fed ditch on a bluff near Tecopa Hot Springs does not appear to be a pure population of calidae. Two other populations of C. nevadensis have been discovered since then, but not enough fish have been examined for final identification.

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. Until March 1973, no populations potentially assignable to this subspecies were found.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

RECOMMENDATIONS:

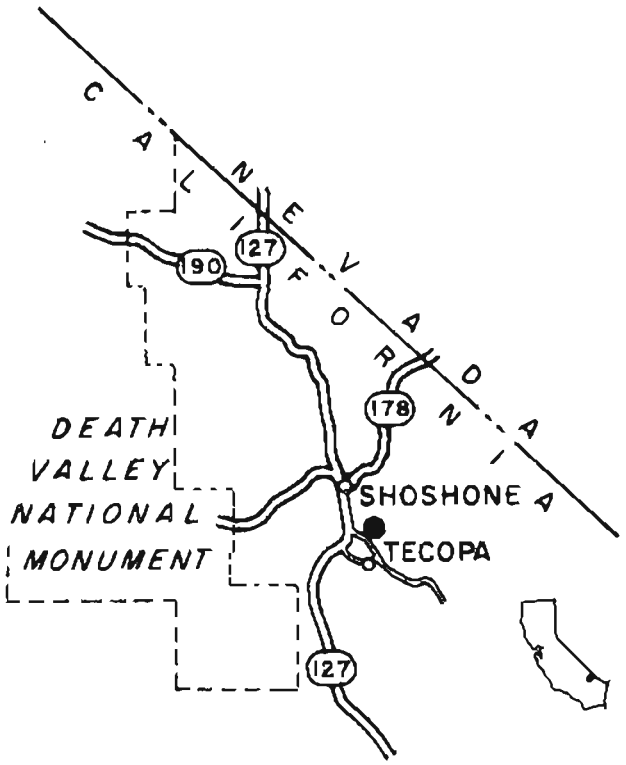
... Protect the surviving populations and their habitats.

... Continue searching for other existing populations.

... Develop a plan to introduce this fish into additional waters.

REFERENCES:

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


CALIFORNIA
NEVADA
127
90
178
DEATH
VALLEY
NATIONAL
MONUMENT
SHOSHONE
TECOPA
127

BONYTAIL (*Gila elegans*) ENDANGERED

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 61 cm (2 ft).

DISTRIBUTION: Historically, in the mainstream Colorado and the lower-gradient portions of its major tributaries. Now mostly confined to lower Yampa and Green rivers, with possibly only a remnant population persisting in lakes Mohave and Havasu and the California portion of the Colorado River.

STATUS: Endangered. This fish was associated with the warm, turbid stream flows, which have been drastically changed by the construction of large reservoirs. The dams are believed to have blocked access to major spawning areas.

ACTIONS:

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

... An interim interagency and interstate recovery team formed in 1973 to determine the abundance and distribution of the bonytail in the lower Colorado River, and to determine what measures are necessary for its survival and replenishment. Artificial propagation or a spawning channel may be needed to restore this species in California.

RECOMMENDATIONS:

... Cease channelization and further environmental degradation of the Colorado River.

... Prepare a recovery plan and implement management recommendations.

REFERENCES:

Beland, R. D. 1953. The effect of channelization on the fishery of the lower Colorado River. Calif. Fish Game 39(1):137-139.

Dill, W. A. 1944. The fishery of the lower Colorado River. Calif. Fish Game 30(3):109-211.

Holden, P. B., and C. B. Stalnaker. 1975. Distribution and abundance of mainstream fishes of the middle and upper Colorado River basins, 1967-1973. Trans. Amer. Fish. Soc. 104(2):217-231.

La Rivers, I. 1962. Fishes and fisheries of Nevada. Nev. Fish and Game Comm., Reno, Nevada. 782 p.

Minckley, W. L. 1973. Fishes of Arizona. Ariz. Game and Fish Dep., Phoenix, Arizona. 293 p.


ARIZONA
CALIFORNIA
Colorado
River

HUMPBACK SUCKER (Xyrauchen texanus) ENDANGERED

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 61 cm (2 ft) and 3.6-4.5 kg (8-10 lb). Also known as razorback sucker.

DISTRIBUTION: Formerly found throughout mainstem Colorado River and its major tributaries in association with Colorado squawfish and bonytail. Now found in reduced numbers above Lake Powell, with even smaller populations in lakes Mohave and Havasu. Occasionally taken in California portion of river.

STATUS: Endangered. Formerly one of the most abundant fishes in the lower Colorado River; its decline was probably the result of 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. Loss of spawning habitat appears to be most serious limiting factor.

ACTIONS:

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

... An interim interagency and interstate recovery team formed in 1973 to determine abundance and distribution in lower Colorado River, and to determine what measures are necessary for its continued survival and replenishment.

... Adult and juvenile suckers being reared at Willow Beach Federal Hatchery, Arizona, for restocking in lower river. Artificial propagation or a spawning channel may be needed to restore this species in California.

RECOMMENDATIONS:

... Cease channelization and further environmental degradation of the Colorado River.

... Prepare a recovery plan and implement management recommendations.

REFERENCES:

Beland, R. D. 1953. The effect of channelization on the fishery of the lower Colorado River. Calif. Fish Game 39(1):137-139.

Dill, W. A. 1944. The fishery of the lower Colorado River. Calif. Fish Game 30(3):109-211.

Douglas, P. A. 1952. Notes on the spawning of the humpback sucker, Xyrauchen texanus (Abbott). Calif. Fish Game 38(2):149-155.

Holden, P. B., and C. B. Stalnaker. 1975. Distribution and abundance of mainstream fishes of the middle and upper Colorado River basins, 1967-1973. Trans. Amer. Fish. Soc. 104(2):217-231.

La Rivers, I. 1962. Fishes and fisheries of Nevada. Nev. Fish and Game Comm., Reno, Nevada. 782 p.

Minckley, W. L. 1973. Fishes of Arizona. Ariz. Game and Fish Dep., Phoenix, Arizona. 293 p.

SHORTNOSE SUCKER (Chasmistes brevirostris) ENDANGERED

DESCRIPTION: This is a heavy-bodied sucker, nearly round in cross section, that may grow to 51 cm (20 inches). The mouth is terminal, oblique; the thin lips lack papillae. The triangular gill rakers are branched and bear five fringed teeth. Color is dusky above and pale below.

DISTRIBUTION: This fish has been collected in Copco Lake (Siskiyou County), Clear Lake Reservoir (Modoc County) and its tributary, Willow Creek (Modoc County). However, all specimens collected recently may be hybrids with Catostomus snyderi. It is also apparently found in pure form in the Lost River and upper Klamath River drainages in Oregon.

STATUS: Endangered. Spawning runs of this species and the Lost River sucker have declined considerably over the past years. Agricultural demands continue to increase in the Lost River watershed, further threatening the remaining habitat. Successful spawning occurs only in the main tributary streams above Clear Lake Reservoir in Modoc County. In the Lost River below Clear Lake Reservoir, suckers are lost annually when water releases from the reservoir are terminated. With the existing operation of the reservoir releases, hybridization occurs in the Lost River below the reservoir.

There are no minimum pool requirements in Clear Lake Reservoir. In a critically dry cycle, the remaining habitat in both the reservoir and Willow Creek could be eliminated.

ACTIONS:

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

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

... An interim interagency and interstate recovery team formed in 1973 to determine abundance and distribution in Klamath Basin, and to determine what measures are necessary for its continued survival and replenishment.

... Survey of Lost River drainage below Clear Lake Reservoir conducted in 1973.

... Survey of Lost River drainage above Clear Lake Reservoir conducted in 1975.

RECOMMENDATIONS:

... Continue studies of relative abundance, distribution, and ecology.

... Prepare a recovery plan and implement management recommendations.

... Investigate the possibility of a minimum pool reservation for fish life in Clear Lake Reservoir, a downstream minimum flow release from Clear Lake Reservoir, and the installation of fish screens in the Lost River system.

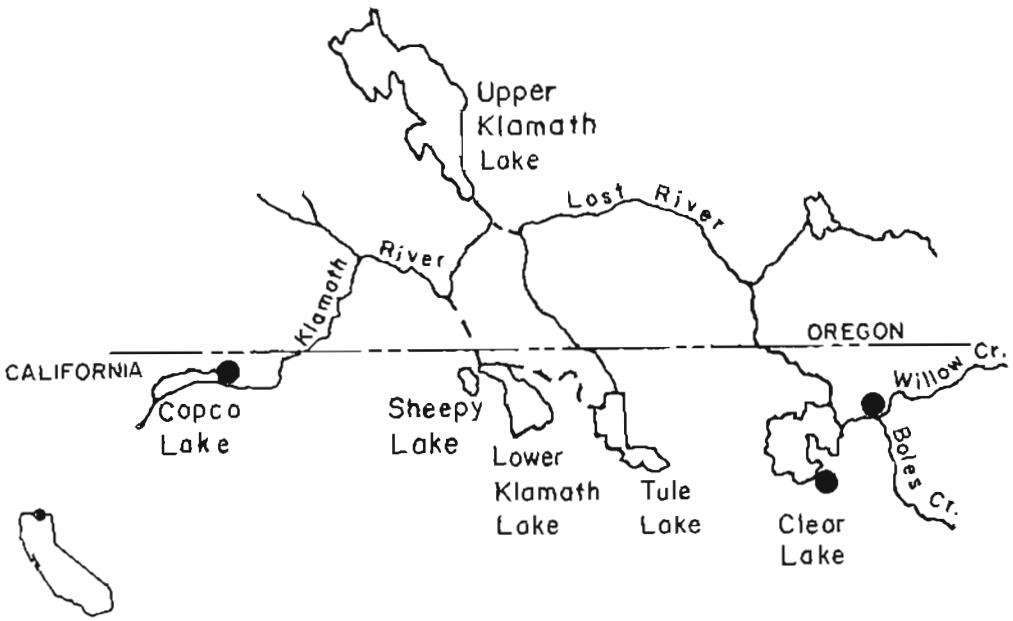
SHORTNOSE SUCKER (Continued)

REFERENCES:

Andreasen, J. K. 1975. Systematics and status of the family Catostomidae in southern Oregon. Ph.D. thesis, Oregon State Univ., Corvallis, Oregon. 76 p.

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

Koch, D. L, and G. P. Contreras. 1973. Preliminary survey of the fishes of the Lost River system. Univ. Nevada, Desert Res. Inst. Proj. Rep. 23, 45 p.



LOST RIVER SUCKER (Catostomus luxatus) ENDANGERED

DESCRIPTION: This is a large sucker, growing to 91 cm (3 ft). The head is long and slender. The mouth is subterminal and protrusible, 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: This species is native to the Lost River drainage and the Upper Klamath River. Historically, it has been reported from Copco, Tule, Lower Klamath, and Sheepy lakes. However, a 1973 survey found permanent unhybridized populations only in Clear Lake Reservoir, Modoc County. In Oregon, this species may be restricted to Upper Klamath Lake and the Lost River.

STATUS: Endangered. In California, this sucker appears to be restricted to Clear Lake Reservoir. Since no minimum pool reservations for the preservation of fish life are in effect in the reservoir, this species should be considered endangered. In a critically dry cycle, the remaining habitat in Clear Lake Reservoir and its tributaries could be eliminated.

ACTIONS:

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

... An interim interagency and interstate recovery team formed in 1973 to determine abundance and distribution in Klamath Basin, and to determine what measures are necessary for its continued survival and replenishment.

... Survey of Lost River drainage below Clear Lake Reservoir conducted in 1973.

... Survey of Lost River drainage above Clear Lake Reservoir conducted in 1975.

RECOMMENDATIONS:

... Continue studies of relative abundance, distribution, and ecology.

... Prepare a recovery plan and implement management recommendations.

... Prevent further habitat alteration or destruction associated with water development in the Lost River and upper Klamath River basins.

... Investigate the possibility of a minimum pool reservation for fish life in Clear Lake Reservoir, a downstream minimum flow release from Clear Lake Reservoir, and the installation of fish screens in the Lost River system.

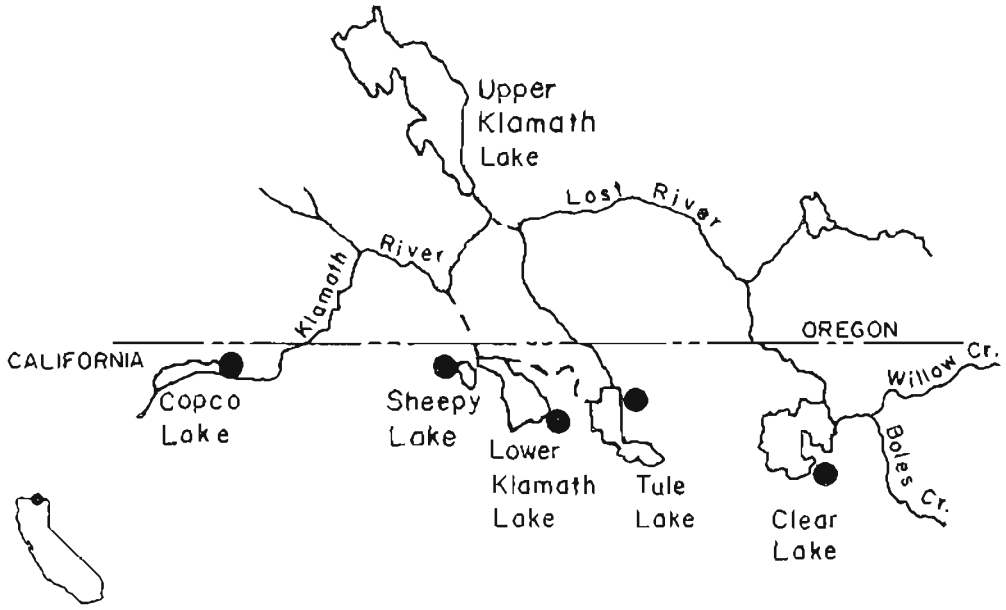
REFERENCES:

Andreasen, J. K. 1975. Systematics and status of the family Catostomidae in southern Oregon. Ph.D. thesis, Oregon State Univ., Corvallis, Oregon. 76 p.

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

Koch, D. L, and G. P. Contreras. 1973. Preliminary survey of the fishes of the Lost River system. Univ. Nevada, Desert Res. Inst. Proj. Rep. 23, 45 p.

LOST RIVER SUCKER (Continued)



UNARMORED THREESPINE STICKLEBACK ENDANGERED
(Gasterosteus aculeatus williamsoni)

DESCRIPTION: Three sharp erectile spines precede the soft dorsal fin. Pelvic fins are sharp spines. The body is without scales, but may have 1-4 plates on the sides, though the average number is fewer than 1. 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 76 mm (3 inches). This subspecies has fewer lateral plates, shorter and weaker spines, and more rounded pectoral and caudal fins than the other subspecies of G. aculeatus.

DISTRIBUTION: Formerly found in the Los Angeles, San Gabriel, Santa Ana, and Santa Clara rivers, the unarmored form is now known only from the Soledad Canyon portion of the upper Santa Clara River, Los Angeles County, and San Francisquito Canyon, a small tributary below Soledad Canyon. It has probably hybridized with G. a. microcephalus in the lower Santa Clara River, where it was once 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, and by hybridization with G. a. microcephalus, and the introduction of exotic predators.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... An interim interagency recovery team formed in 1973 to determine abundance and distribution in Santa Clara River, and to determine what measures are necessary for its survival and replenishment.

... The U. S. Forest Service has acted to protect its land in Soledad Canyon from human disturbance.

RECOMMENDATIONS:

... Prevent further habitat alteration of the Santa Clara River in Soledad Canyon.

... Survey streams in south coastal area for possible transplant sites.

... Reestablish this subspecies in as many locations as possible throughout its former range.

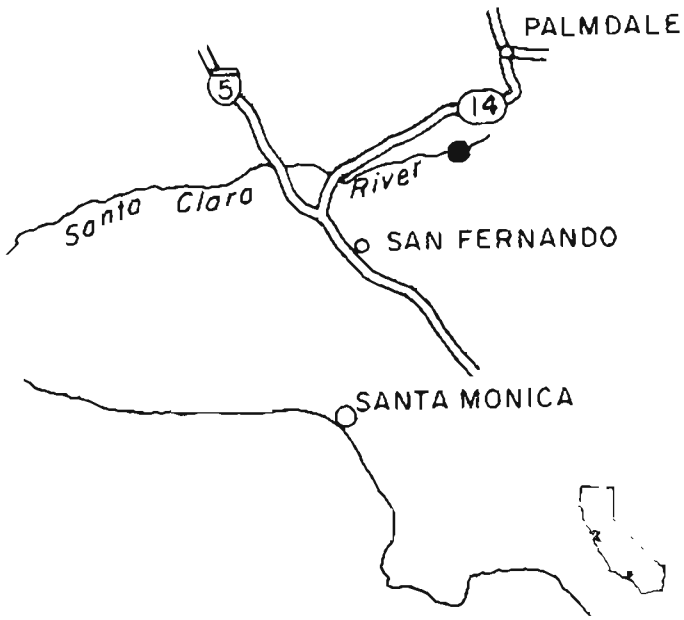
REFERENCES:

Hagen, D. W., and L. G. Gilbertson. 1973. The genetics of plate morphs in freshwater threespine sticklebacks. Heredity 31(1):75-84.

Miller, R. R. 1960. The type locality of Gasterosteus aculeatus williamsoni and its significance in the taxonomy of California sticklebacks. Copeia 1960(4):345-350.

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.

Ross, S. T. 1973. The systematics of Gasterosteus aculeatus (Pisces: Gasterosteidae) in central and southern California. Natur. Hist. Mus. Los Angeles Co. Contr. Sci. 243:1-20.



OWENS TUI CHUB (*Gila bicolor snyderi*) ENDANGERED

DESCRIPTION: This subspecies usually has from 52 to 58 lateral line scales which possess lateral as well as apical radii, 7 anal rays, and 10 to 14 gill rakers. In life it is dusky olive above and whitish below, with blue and gold reflections along the side. There is considerable gold on the side of the head, often strongest along the margin of the preopercle. The fins are generally washed with olive-brown or reddish brown; the pelvics and anal becoming pale posteriorly, but lacking a definite whitish border.

DISTRIBUTION: Formerly found throughout the Owens River basin in Mono and Inyo counties, the only pure population now known is located in a 13-km (8-mile) section of the Owens River channel below Crowley Lake dam. A few individuals were transplanted into Owens Valley Native Fish Sanctuary in 1974, but the success of this transplant has not yet been evaluated.

STATUS: Endangered. The population below Crowley Lake is small and vulnerable to further environmental degradation and/or hybridization with *Gila bicolor obesa*, a nonendemic tui chub illegally introduced into Crowley Lake by bait fishermen.

ACTIONS:

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

... Introduced into Owens Valley Native Fish Sanctuary.

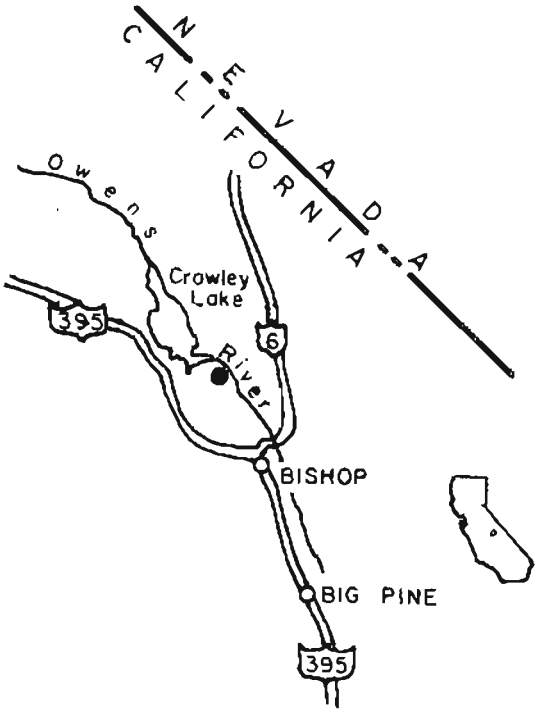
RECOMMENDATIONS:

... Evaluate success of transplant to Owens Valley Native Fish Sanctuary.

... Seek additional refugia for transplants.

REFERENCE:

Miller, R. R. 1973. Two new fishes, *Gila bicolor snyderi* and *Catostomus fumeiventris*, from the Owens River basin, California. Univ. Mich. Mus. Zool. Occ. Pap. 667:1-19.


NEVADA
CALIFORNIA
Owens
Crowley Lake
395
6
River
BISHOP
BIG PINE
395

OWENS PUPFISH (Cyprinodon radiosus) ENDANGERED

DESCRIPTION: This is a small (less than 51 mm), 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, it is 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 marshes through export of water. This species also has been eliminated from some areas by competition from introduced fishes. However, through the cooperative efforts of state, federal, and local officials, they have now become reestablished in large numbers in Fish Slough. The original 8 ha (20 acres) Owens Valley Native Fish Sanctuary, a part of Fish Slough, was expanded in 1973 with the acquisition of another 34 ha (84 acres). These areas were designated as an Ecological Reserve by the Fish and Game Commission, and the acquisition of additional land within the Slough is being sought. Once the remaining private land (81 ha) is acquired in public ownership, adequate protection will exist to warrant removing this species from an endangered status.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... Owens Valley Native Fish Sanctuary established in Fish Slough and designated as an Ecological Reserve.

RECOMMENDATIONS:

... Continue to reestablish this species in as many locations as possible throughout its former range.

... Acquire last remaining private land in Fish Slough.

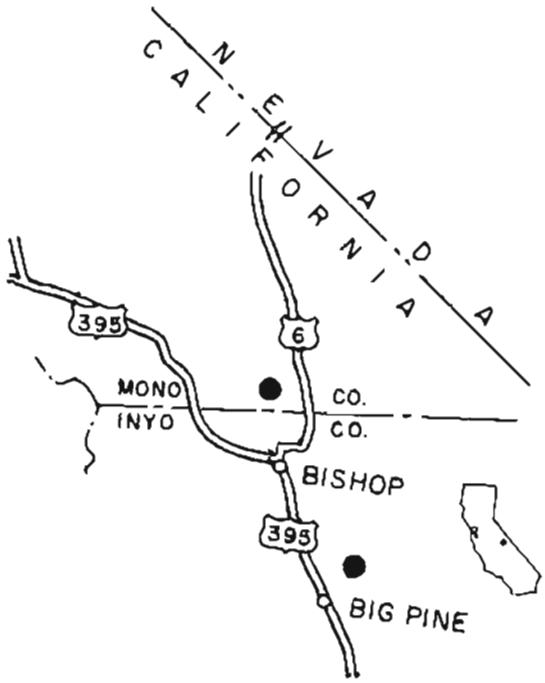
... Monitor existing populations to keep abreast of any changes or possible problems.

REFERENCES:

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

_____. 1961. Man and the changing fish fauna of the American southwest. Pap. Mich. Acad. Sci. Arts 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.



MOHAVE CHUB (Gila mohavensis) ENDANGERED

DESCRIPTION: Its 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. It has only apical radii on its scales, typically 8 anal rays, and from 18 to 29 gill rakers. Miller (1973) has placed mohavensis as a subspecies of G. bicolor.

DISTRIBUTION: This subspecies was originally found in the Mojave River from above the junction of the east and west forks downstream to Soda Lake. In its native habitat, it is now restricted to Lake Tuendae and nearby springs at Fort Soda (formerly the Zzyzx Mineral Springs Resort) on the west side of Soda Lake near Baker, San Bernardino County. It has been successfully introduced into four ponds in southern California.

STATUS: Endangered. A related species (Gila orcutti) was introduced into the Mojave River and has hybridized with the Mohave chub in all areas except near Baker. As additional populations become established, a change in status to rare may be warranted.

ACTIONS:

... Take, possession, and sale prohibited by state and federal laws.

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

... Introduced populations are regularly monitored and new transplant sites are being sought.

RECOMMENDATIONS:

... Establish additional populations.

... In cooperation with the U. S. Bureau of Land Management, continue to monitor populations at Fort Soda and the transplant locations to keep abreast of developments or impending problems.

REFERENCES:

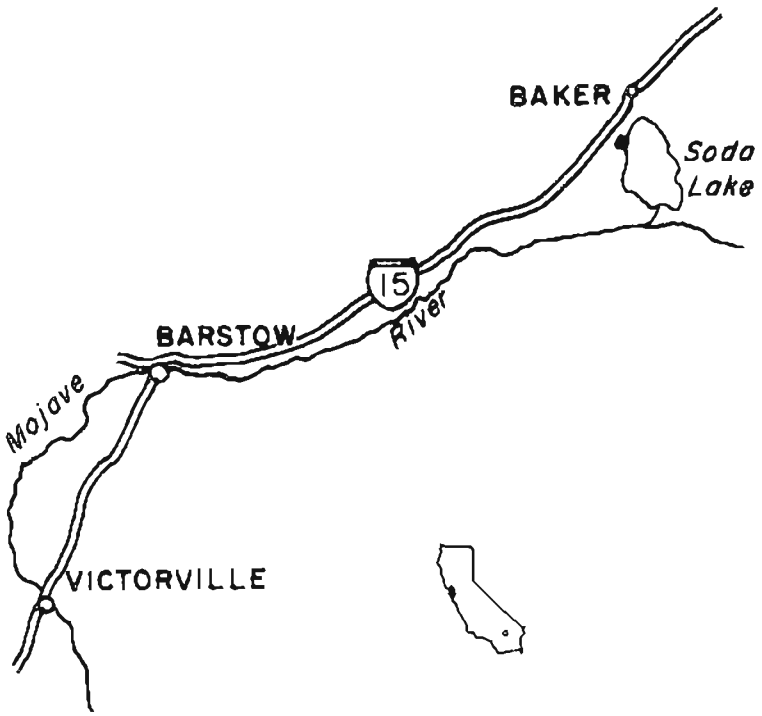
Hubbs, C. L., and R. R. Miller. 1943. Mass hybridization between two genera of cyprinid fishes in the Mohave Desert, California. Pap. Mich. Acad. Sci. Arts Let. 28(1942):343-378.

Miller, R. R. 1968. Records of some native freshwater fishes transplanted into various waters of California, Baja California, and Nevada. Calif. Fish Game 54(3):170-179.

_____. 1973. Two new fishes, Gila bicolor snyderi and Catostomus fumeiventris, from the Owens River basin, California. Univ. Mich. Mus. Zool. Occ. Pap. 667:1-19.

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

MOHAVE CHUB (Continued)



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 species (or subspecies) under consideration is declared rare:

...Is it 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 it nowhere abundant?

...Is it 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 it become endangered?

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

DESCRIPTION: This is a small, grizzled gray fox weighing 1.8 - 2.7 kg (4 - 6 lb) with large ears, long legs, and a round black-tipped tail.

DISTRIBUTION: This subspecies of kit fox occurs from the Tehachapi Mountain foothills surrounding the southern end of the San Joaquin Valley, north along the foothills of western San Joaquin Valley to Byron, Contra Costa County, and on the eastern edge of the valley north to Visalia.

STATUS: Rare. It is largely restricted to areas of native vegetation supporting kangaroo rats. Conversion of valley lands to irrigated agriculture is reducing its range, confining it to valley areas unsuited to agriculture, and to rolling foothills and canyons. A 1974-75 survey revealed that the population numbers approximately 10,000 animals with 3,800 occurring in the foothills.

The foothill population is currently not threatened by land use practices. However, the native habitat on the valley floor is rapidly changing reducing the kit fox to marginal existence.

ACTIONS:

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

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

... Night hunting prohibited by Fish and Game Commission within major range of the San Joaquin kit fox.

... Use of materials toxic to predatory animals prohibited on Federal lands by presidential order.

... Interagency policy established between the Department of Fish and Game, the Department of Food and Agriculture, and the California Agricultural Commissioners Association to review rodent control in areas inhabited by rare or endangered species, including the San Joaquin kit fox.

... Current San Joaquin kit fox distribution and abundance determined by 1974-75 survey.

... A San Joaquin Kit Fox Recovery Team established to provide programs to restore this kit fox to nonendangered status.

RECOMMENDATIONS:

... Develop and implement a Recovery Plan.

... Critical habitat areas be immediately identified and measures be taken to assure preservation of such areas.

... Initiate a study to determine relationship of San Joaquin kit fox to agricultural activities.

... Night hunting be prohibited throughout San Joaquin kit fox range.

REFERENCES:

Laughrin, L. 1970. San Joaquin kit fox - its distribution and abundance. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 70-2. 20 pp.

Jensen, C. 1972. San Joaquin kit fox distribution. Bur. Sport Fish Wildl., Dept. of the Interior, Sacramento, Calif. (Mimeo).

Morrell, S. 1971. Life history of the San Joaquin kit fox. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 71-10. 31 pp.

_____. 1975. San Joaquin kit fox distribution and abundance in 1975. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 75-3. 27 pp.

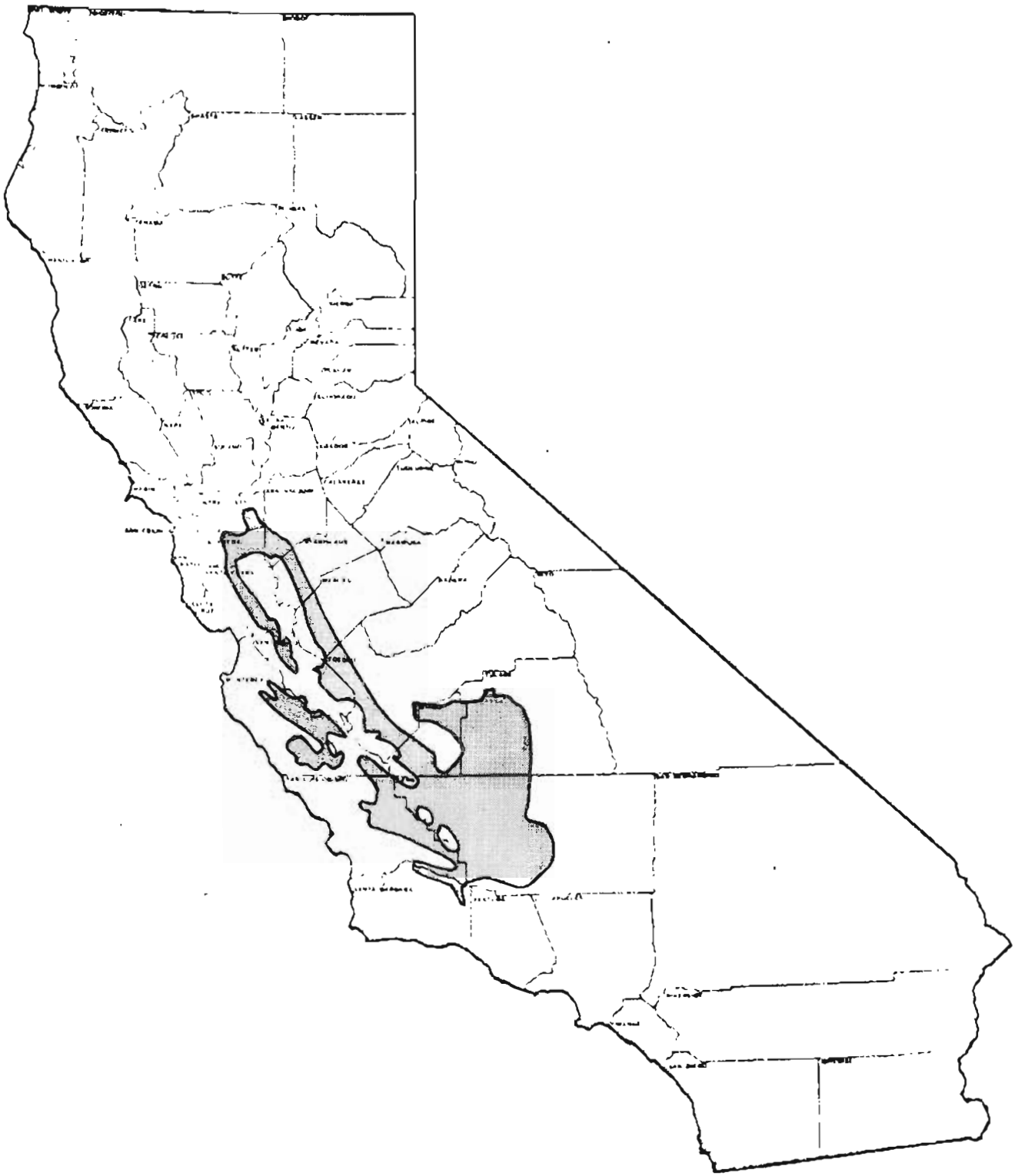
Swick, C. 1973a. Determination of San Joaquin kit fox range in Contra Costa, Alameda, San Joaquin and Tulare Counties, 1973. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. W-54-R. 15 pp.

_____. 1973b. San Joaquin kit fox--an impact report of secondary hazards of aerial application of 1080 grain baits for ground squirrel control in San Luis Obispo County. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. W-54-R. 14 pp.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.

Waithman, J. and A. Roest. 1975. A taxonomic study of the kit fox (Vulpes macrotis). Calif. Poly. State Univ. Obispo (In Press).

SAN JOAQUIN KIT FOX (Continued)



San Joaquin Kit Fox Range - 1975

ISLAND FOX (Urocyon littoralis) RARE

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.

STATUS: Rare. The remoteness of the Channel Islands and access control by the military and private landowners provide protection. A survey conducted in 1972-73 revealed that all populations, with the exception of Santa Catalina Island, appear stable and at carrying capacity. A 1975 survey of Santa Catalina Island determined fox population not to be endangered.

ACTIONS:

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

... Status of the island fox determined by 1972-73 and 1975 surveys.

... U. S. Navy provides added fox protection on San Nicolas Island.

RECOMMENDATIONS:

... Initiate a study to determine the status of the San Clemente Island fox population.

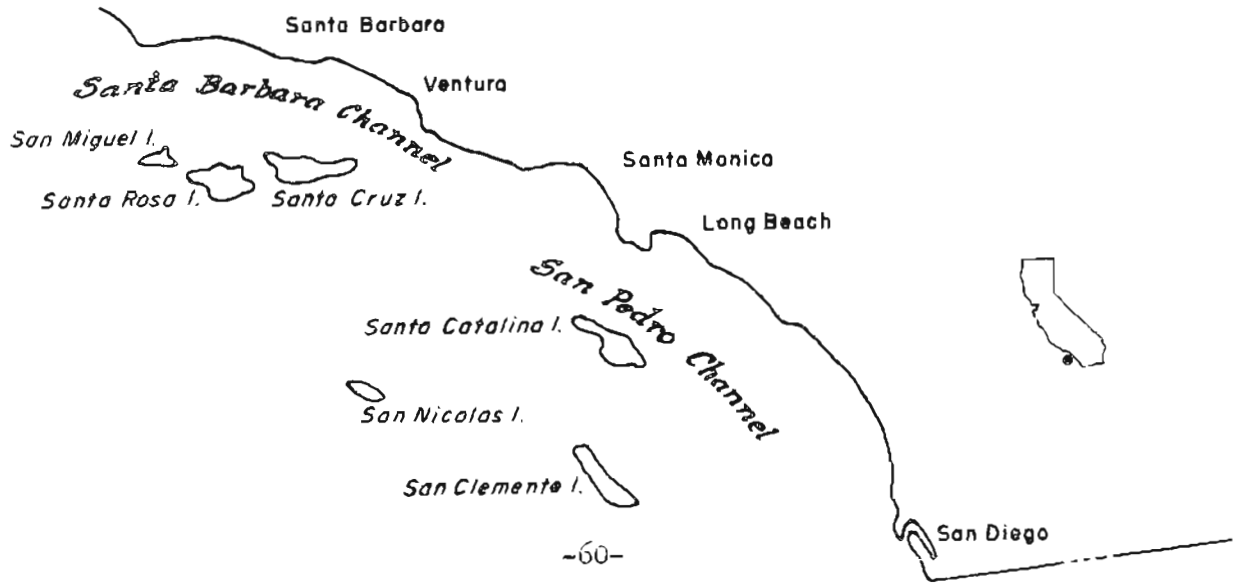
... Continue surveillance of populations on all islands.

REFERENCES:

Grinnell, J., J. Dixon, and J. Linsdale. 1937. Furbearing mammals of California. Vol. 2. University of California Press, Berkeley, Calif. pp. 377-777.

Laughrin, L. 1971. California island fox survey, 1973. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 73-3. 43 pp.

Propst, B. 1975. A population survey of the Santa Catalina Island fox. Calif. Dep. Fish Game Nongame Wildl. Invest. W-54-R Job Final Rep. 8 pp.



WOLVERINE (Gulo luscus luteus) RARE

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

DISTRIBUTION: Wolverine range extends from Del Norte and Trinity Counties pastward through Siskiyou and Shasta Counties and southward through the Sierra Nevada Mountains to Tulare County. They generally occur from 488 m (1,600') to 2,015 m (4,800') in the Coast Range to 1,311 m (4,300') to 4,537 m (10,800') in Sierra Nevada Mountains.

STATUS: Rare. Because of its secretness it is only rarely seen. Since 1950 there have been 87 wolverine sightings recorded; 27 of which were reported since 1970. Available information suggests wolverine numbers are increasing in California.

ACTIONS:

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

... Survey made in 1974 of wolverine sightings in national parks and national forest lands.

RECOMMENDATIONS:

... Continue statewide wolverine survey.

... Initiate a wolverine study directed to determining its habitat needs.

REFERENCES:

Grinnell, J., J. Dixon, and J. Linsdale. 1937. Furbearing mammals of California. Vol. 1. University of California Press, Berkeley, Calif. 376 pp.

Sumner, L., and J. Dixon. 1953. Birds and mammals of the Sierra Nevada. University of California Press, Berkeley, Calif. 484 pp.

Schempf, P. F. and M. White. 1974. A survey of the status of seven species of carnivores on National Park Service lands in California. Univ. of Calif., Dep. Forestry and Conservation Publ. Berkeley, 129 pp.

_____. 1975. Occurrence of six furbearer populations in U. S. National Forest lands of California. Univ. of Calif., Dep. Forestry and Conservation, Berkeley (in press) 140 pp.

Yocom, C. F. 1973. Wolverine records in Pacific coastal state and new records for northern California. Calif. Fish Game 59(2):207-209.

Wolverine Sightings - 1960-74.

CALIFORNIA BIGHORN SHEEP (Ovis canadensis californiana) RARE

DESCRIPTION: This is a subspecies similar to the peninsular and desert bighorn sheep; however, this race tends to have smaller horns and is highly restricted in its distribution.

DISTRIBUTION: It occurs in the Sierra Nevada Mountains from the vicinity of Mammoth Lake south to Mt. Langley. It ranges in elevation from 1,219 m (4,000 ft) to 3,658 m (12,000 ft) with the largest population in the Mt. Baxter and Mt. Williamson area.

STATUS: Rare. This subspecies appears to be declining due to increased human use of high-mountain areas. The population of this subspecies numbers only 195.

ACTIONS:

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

... Inyo National Forest has set aside a 16,564 ha (41,000 acres) ecological area for the California bighorn.

... California bighorn successfully transplanted from British Columbia into Lava Beds National Monument.

... U. S. Forest Service initiates an intensive two year California bighorn study.

RECOMMENDATIONS:

... Develop and implement a recovery plan designed to remove this animal from its rare status.

... Continue programs of field research and reintroductions for the purpose of reestablishing bighorn sheep within their historic range.

REFERENCES:

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

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

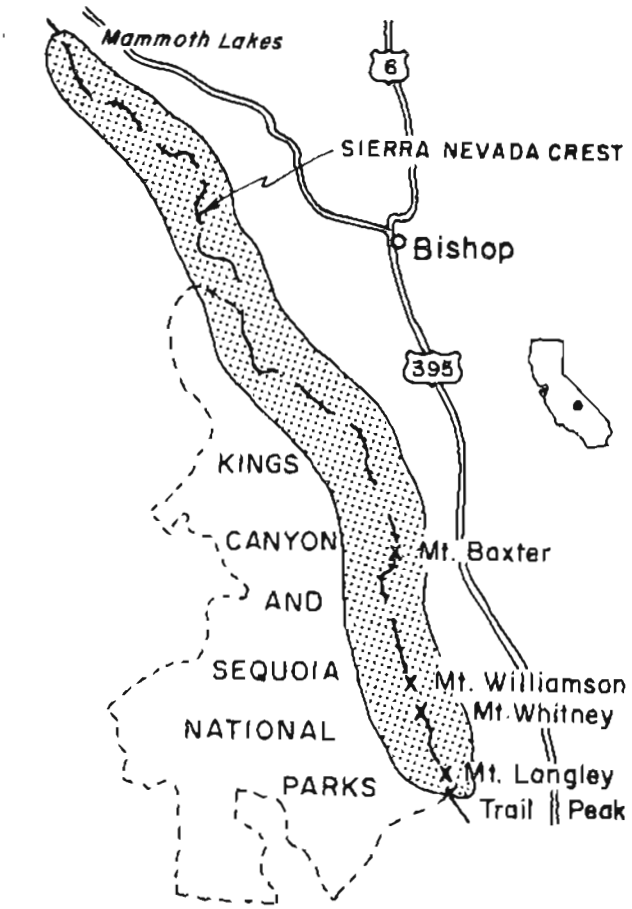
Jorgensen, P. D., and D. B. Schaub. 1972. California bighorn sheep survey, Mt. Langley herd unit. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. W-54-R. 7 pp.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.

Weaver, R. A. 1972a. California bighorn in the Sierra Nevada Mountain Range. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 72-7. 17 pp.

_____. 1972b. Conclusion of the bighorn investigation in California. Desert Bighorn Council, Trans. 1972:56-65.

Wehausen, J. D. 1975. Sierra Nevada Bighorn Research. Research meeting Yosemite National Park. 1975. (Unpubl.).



PENINSULAR BIGHORN SHEEP (*Ovis canadensis cremnobates*) RARE

DESCRIPTION: Larger and more deer-like than domestic sheep, this subspecies is readily distinguished by its pale color and white rump patch. Both sexes bear true horns which are never shed; males have massive curled horns.

DISTRIBUTION: Peninsular bighorn occur in the San Jacinto and Santa Rosa Mountains, Riverside County, and southerly in mountain ranges in San Diego County and Lower California.

STATUS: Rare. Loss of habitat, drought, and human disturbance together with illegal shooting continue to threaten bighorn sheep. Surveys indicate a continuous decline in numbers despite increased protection. Bighorn sheep have disappeared from several areas within its historical range in California. Refined population estimates place the numbers of this subspecies at 1,170.

ACTIONS:

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

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

... Waterholes and highway bypasses for sheep are continually developed and maintained by department and other agencies.

... Interagency efforts undertaken to secure critical Santa Rosa mountain bighorn sheep habitat in public ownership.

... Hidden Palms Ecological Reserve in Riverside County acquired by state.

... Magnesia Spring Ecological Reserve in Riverside County acquired by state.

... The Anza Borrego Committee and Department of Parks and Recreation add 6,480 acres to Anza Borrego State Park.

... Wildlife Conservation Board acquires 4,743 acres of critical Santa Rosa Mountain bighorn habitat.

... The University of California at Riverside is conducting studies of the ecology of the Peninsular bighorn sheep.

RECOMMENDATIONS:

... Protect areas critical to the survival of this subspecies through acquisition, easement, or memorandum of understanding with landowner.

... Develop and implement a recovery plan designed to remove this animal from its rare status.

REFERENCES:

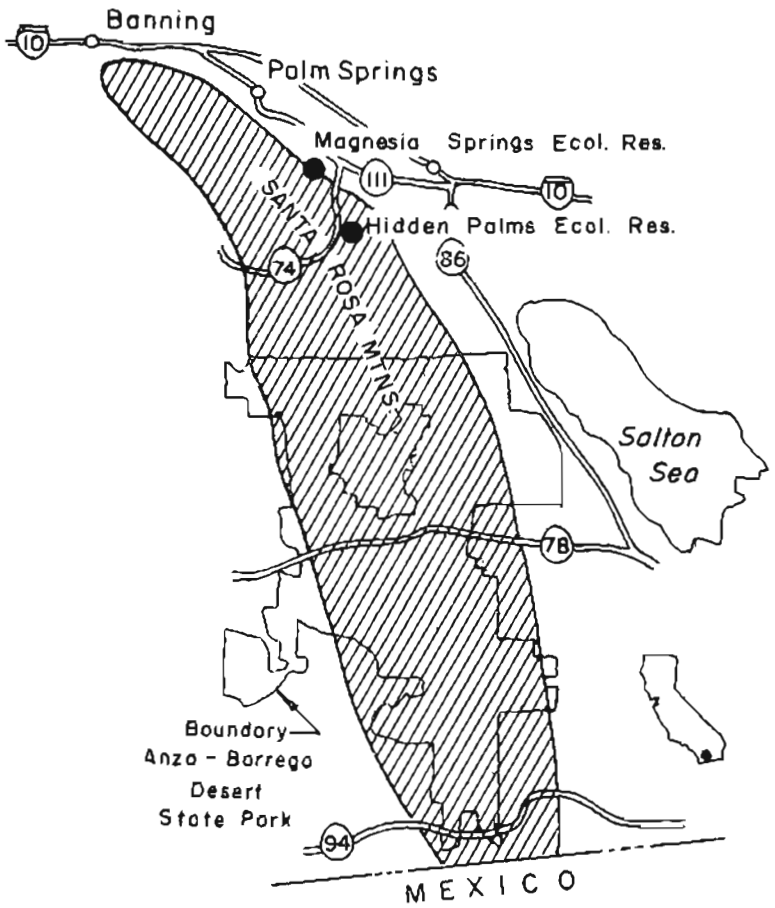
California Department of Fish and Game. 1970. Report on the status of bighorn sheep in California. Calif. Dep. Fish Game, Leg. Rep. 5CR #43 1968. 107 pp.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. of Sport Fish. Wildl. Resource Publ. 114. 289 pp.

Weaver, R. A. 1972. Conclusion of the bighorn sheep investigation in California. Desert Bighorn Council, Trans. 1972:56-65.

_____. and J. L. Mensch. 1970. Bighorn sheep study in Riverside County. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 70-5. 36 pp.

_____, and W. V. Faist. 1968. A survey of desert bighorn in San Diego County. Calif. Dep. Fish Game, Sacramento, Calif. 26 pp.



GUADALUPE FUR SEAL (*Arctocephalus townsendi*) RARE

DESCRIPTION: This seal is distinguished from the slightly longer sea lion and other eared seals by having a long pointed snout, low forehead, and soft, dense, plush, blackish-gray fur.

DISTRIBUTION: It occurred historically from the Farallon Islands west of San Francisco, south to San Benito Island, Lower California, Mexico. One or more Guadalupe fur seals seen at San Miguel Island as recent as June 1975.

STATUS: Rare. A breeding colony on Guadalupe Island, Mexico, is slowly increasing in numbers. Human disturbance and illegal shooting are responsible for the slow recovery of this species. The population numbered 600 in 1965.

ACTIONS:

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

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

... Human access to breeding grounds on Guadalupe Island restricted by Mexican government.

... An intensive survey of the fauna of the Southern California Outer Continental Shelf undertaken by Bureau of Land Management.

RECOMMENDATIONS:

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

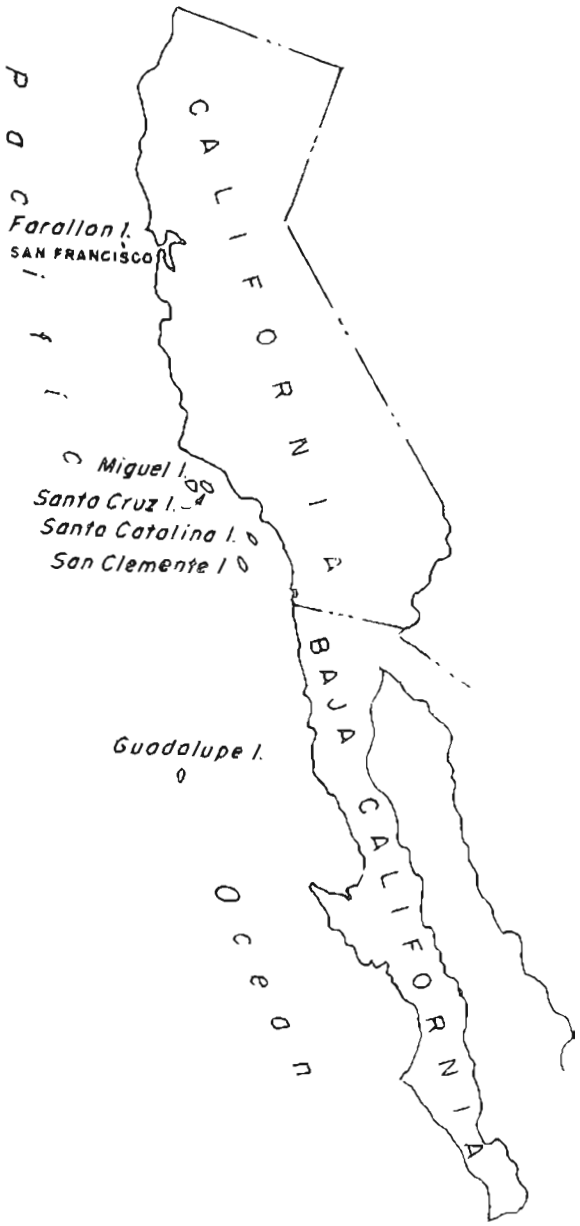
REFERENCES:

Bartholomew, G. A. 1950. A male Guadalupe fur seal on San Nicolas Island, California. J. Mammal. 31:175-180.

_____. 1952. Winter population of pinnipedia about Guadalupe, San Benito, and Cedros Islands, Baja California. J. Mammal. 33:160-171.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.

GUADALUPE FUR SEAL (Continued)



MOHAVE GROUND SQUIRREL (Spermophilus mohavensis) RARE

DESCRIPTION: The Mohave ground squirrel is a small, desert dwelling ground squirrel which is a uniform brownish-grey color above and cream-colored below. Close relatives are the antelope and round-tailed ground squirrels. The Mohave can be easily distinguished from the antelope ground squirrel, which has a single white stripe on each side of its body. Separation of the Mohave and round-tailed ground squirrels is more difficult without careful examination. The coloration is similar; however, the tail of the round-tailed ground squirrel is uniformly colored, longer and round; whereas the tail of the Mohave is short and flat, brownish grey above and white below.

DISTRIBUTION: Historically the Mohave ground squirrel occurred in the northwestern Mojave Desert from Haiwee Mesa in the north to Palmdale and Hesperia in the south. Recent trapping studies during 1974 and 1975 indicate it is still present in the northern half of the range: Haiwee Mesa, Indian Wells, Searles and Fremont Valleys, and the vicinity of Fremont Peak, Cuddeback and Harper Dry Lakes.

The Mohave ground squirrel occupies a wide variety of desert habitats at elevations ranging from 505 m(1,800') to 1,524 m (5,000'). Plant communities include alkali sink and saltbush; creosote bush scrub in valleys, hills and on rocky slopes; and Joshua tree woodland with creosote, with shadscale, and with blackbrush.

STATUS: Rare. This species is far less common than the antelope ground squirrel with which it coexists. Habitat is being destroyed at a rapid rate. Urbanization and agricultural developments are responsible for losses in the Mojave River Basin, and in Antelope, Fremont and Indian Wells Valleys. Off-road vehicle use is a serious problem in southern Searles Valley, Fremont Valley, in the Rand Mountains, Spangler and Rademacher Hills and near Fremont Peak.

ACTIONS:

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

... A natural resource survey made of El Paso-Red Mountain area of Western San Bernardino County by Bureau of Land Management reveals additional locations of Mohave ground squirrels.

RECOMMENDATIONS:

... Critical habitat areas for the Mohave ground squirrel on federal lands be designated Natural Areas and/or Research Natural Areas.

... A survey be made of the southern and eastern portions of the geographic range of the Mohave ground squirrel.

REFERENCES:

Bartholomew, G. W. and J. W. Hudson. 1961. Desert ground squirrels. Sci. Amer. 205(5):107-116.

Berry, K. H. and E. Wessman. 1975. A study of the distribution and habitats of the Mohave ground squirrel (Spermophilus mohavensis). In Press.

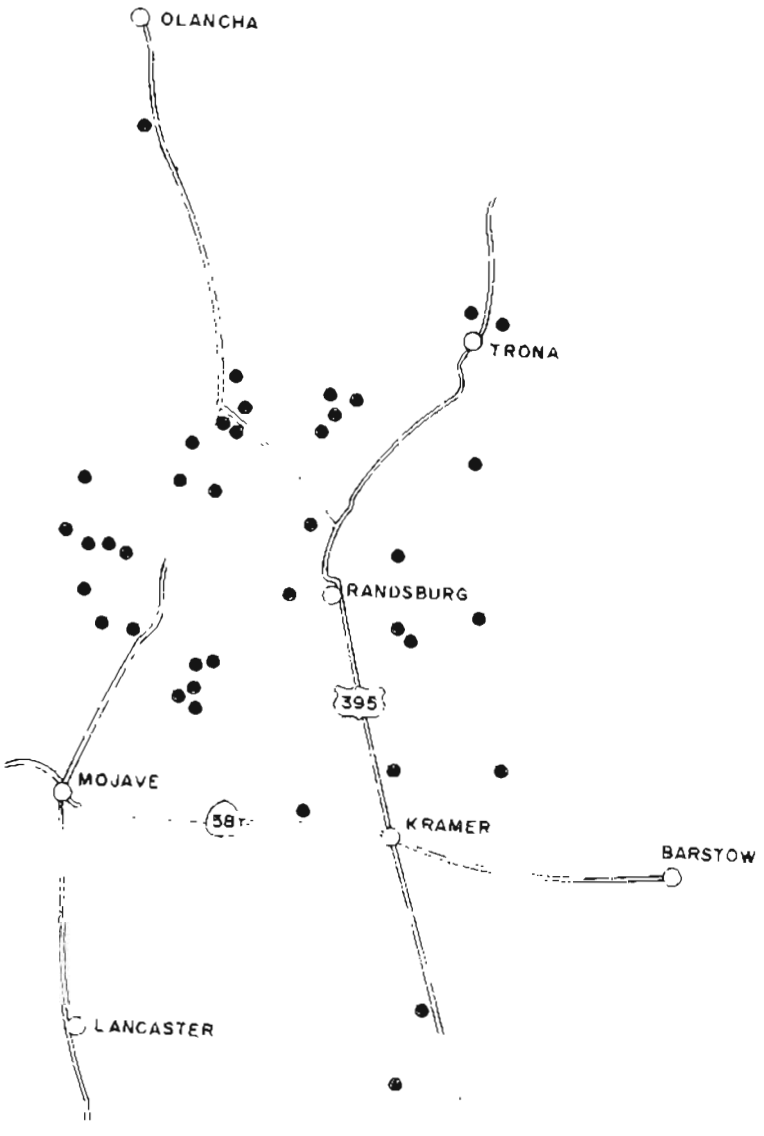
Burt, W. H. 1936. Notes on the habits of the Mohave ground squirrel. J. Mammal. 17(3):221-224.

Hall, E. R. and K. R. Kelson. 1959. The Mammals of North America. Ronald Press Co., New York. Vol. I, pp. 357-8.

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

Hoyt, D. F. 1972. Mohave ground squirrel survey, 1972. Calif. Dep. Fish Game Spec. Wildl. Invest. Prog. Rep. W-54-R. 10 pp.

Ingles, L. G. 1965. Mammals of the Pacific States. Stanford University Press, Palo Alto, Calif. 506 pp.



FRESNO KANGAROO RAT (*Dipodomys nitratoides exilis*) RARE

DESCRIPTION: This subspecies of the dark-colored San Joaquin Valley kangaroo rat is the smallest of the kangaroo rats. Confusion over its identity existed until a recent study confirmed its distinctiveness.

DISTRIBUTION: Long considered extinct after its first discovery in 1891 6.4 km (4 mi) north of a railway station in Fresno, the Fresno kangaroo rat was "rediscovered" in 1934 near Kerman. A systematic search in 1972-73 of its type locality within 24 km (15 mi) of Fresno revealed the presence of a small population near Raisin City which was subsequently destroyed. A 1974-75 survey identified locations of kangaroo rat populations west of Kerman. Less than 15,000 acres of native habitat remain in Western Fresno County.

STATUS: Rare. Irrigated agriculture and urbanization have destroyed most of its historical habitat. Now found to be restricted to the few remaining alkali-sink areas in Fresno County, the Fresno kangaroo rat should be declared endangered and immediate action taken to preserve habitat critical to its survival.

ACTIONS:

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

... Identity of this subspecies confirmed through taxonomic examination of museum and private collections and existing population.

... A 1974-75 survey revealed locations of Fresno kangaroo rat populations west of Kerman.

RECOMMENDATIONS:

... Protect areas critical to the survival of the Fresno kangaroo rat through acquisition, easement or memorandum of understanding with landowners.

... Establish an ecological reserve for the Fresno kangaroo rat.

REFERENCES:

Boolootian, R. A. 1954. An analysis of subspecific variations in *Dipodomys nitratoides*. J. Mammal. 35(4):570-576.

Culbertson, A. E. 1934. Rediscovery of *Dipodomys nitroides exilis*. J. Mammal. 15(2):161-162.

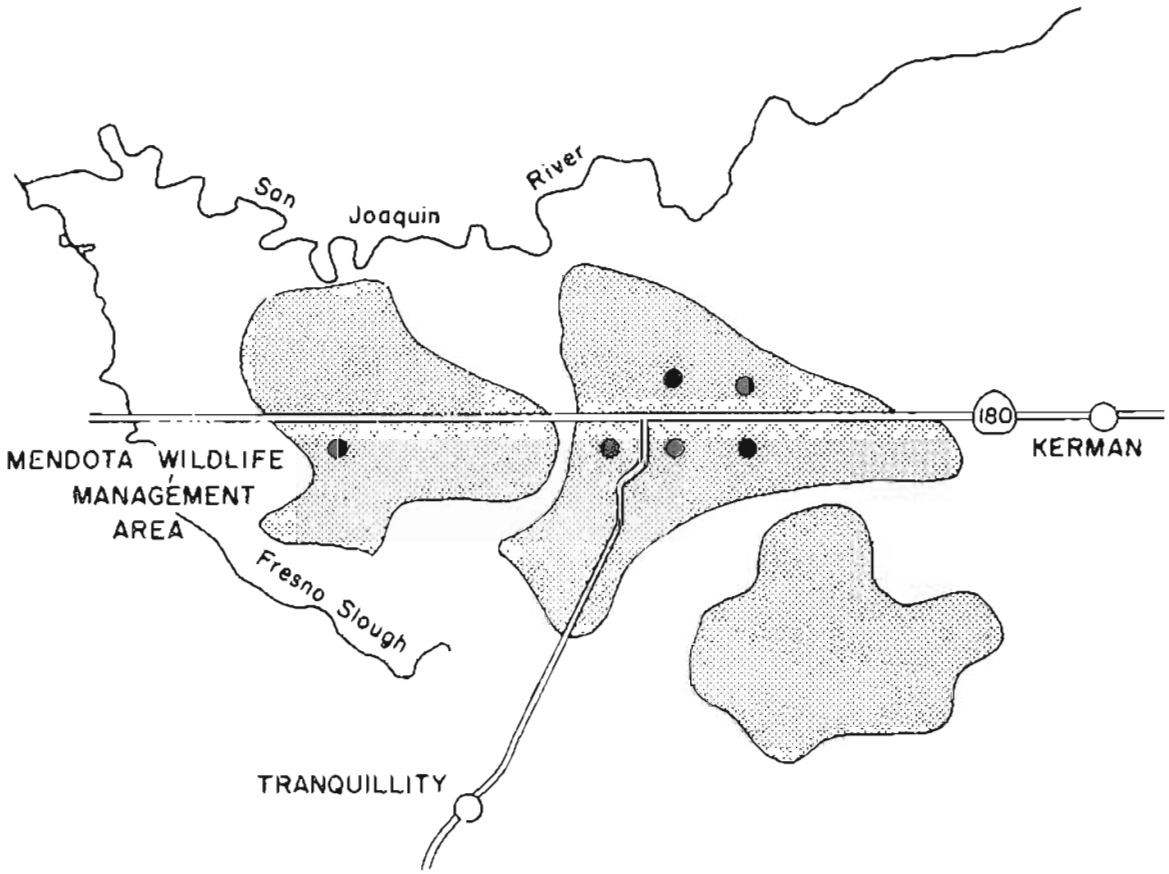
Grinnell, J. 1922. A geographical study of the kangaroo rats of California. Univ. Calif. Publ. Zool. 24(1):1-124.

_____. 1933. Review of the recent mammal fauna of California. Univ. Calif. Publ. Zool. 40(2):71-234.

Hoffman, W. M. 1973. The Fresno kangaroo rat study 1973. Calif. Dep. Fish Game Wildl. Mgmt. Admin. Rep. 73-6. 26 pp.

Knapp, D. K. 1975. The Fresno kangaroo rat study 1975. Calif Dep. Fish Game Nongame Wildl. Invest. W-54-R Job Final Rep. 21 pp.

FRESNO KANGAROO RAT (Continued)



STEPHENS KANGAROO RAT (Dipodomys stephensi) RARE

DESCRIPTION: This species is distinguished from other kangaroo rats by its restricted distribution, and characteristic tail markings and skull measurements.

DISTRIBUTION: Historically it was found in San Jacinto Valley, Riverside, County with small populations in extreme southern San Bernardino Valley, and northwestern San Diego County. A survey conducted in 1972-73 indicated the Stephens kangaroo rat occurs in only 15 isolated localities in Riverside County and 1 in San Diego County. Range extended to Fallbrook, San Diego County in 1974.

STATUS: Rare. Urbanization and land use change have destroyed most of its original habitat. Small populations appear to be persisting in localized areas of abandoned agriculture land succeeding to native vegetation. Urban and industrial developments now threaten the existence of this species.

ACTIONS:

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

... Distribution and abundance determined by 1972-73 survey and 1974 study by Bleich and Schwartz (1974).

RECOMMENDATIONS:

... Preserve critical areas through zoning, acquisition, easement, or memorandum of understanding with landowner.

... Conduct a life history study to determine biology and habitat requirements.

REFERENCES:

Bleich, V. C. and O. A. Schwartz. 1974. Western range extension of Stephens kangaroo rat (Dipodomys stephensi) a threatened species. Calif. Fish and Game 40(4):208-210.

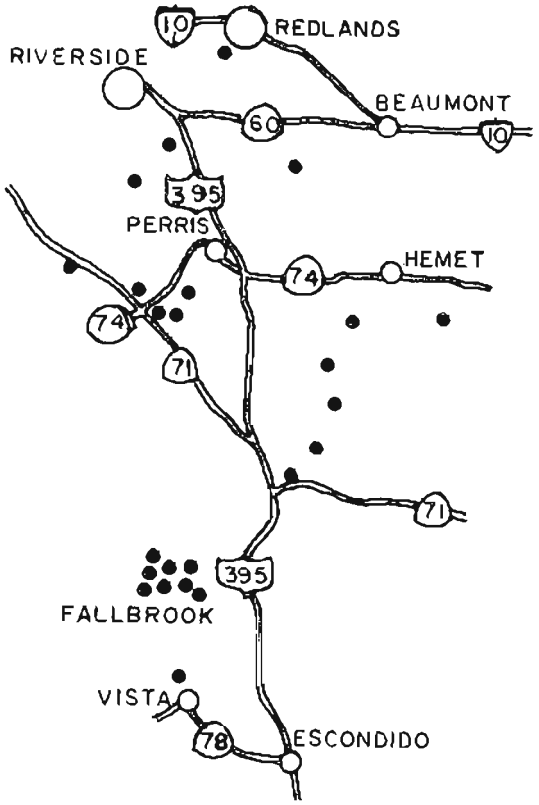
Grinnell, J. 1922. A geographical study of the kangaroo rats of California. Univ. Calif. Publ. Zool. 24(1):1-124.

_____. 1933. Review of the recent mammal fauna of California. Univ. Calif. Publ. Zool. 49(2):71-234.

Lackey, J. A. 1967. Biosystematics of Heermanni group kangaroo rats in southern California. Trans. San Diego Soc. Nat. Hist. 14(22):313-344.

Thomas, J. R. 1973. Stephens kangaroo rat survey, 1972-73. Calif. Dept. Fish and Game Wildl. Mgmt. Admin. Rep. 73-5. 56 pp.

STEPHENS KANGAROO RAT (Continued)



CALIFORNIA BLACK RAIL (Laterallus jamaicensis coturniculus) RARE

DESCRIPTION: This is a sparrow-sized slate gray rail with a small black bill, white-spotted back and sides and chestnut nape.

DISTRIBUTION: Historically it occurred in limited numbers in salt marshes from Tomales Bay south to northern Baja California, and in inland freshwater marshes, including portions of the Colorado River. Reported to nest in recent years along the Colorado River from Ferguson Lake to Laguna Dam, at West Pond, Imperial County, along the Coachella Canal, Imperial County and at Carrizo Marsh, Anza Borrego Desert State Park. Black rails winter in salt marshes bordering San Francisco Bay.

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 its existence. Its current distribution and numbers are as yet undetermined.

ACTIONS:

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

... A black rail survey of the Colorado River conducted in 1973-74 by U. S. Fish and Wildlife Service and Arizona State University.

... A rail survey of Coachella Canal conducted by California Department of Fish and Game, U. S. Fish and Wildlife Service and Bureau of Land Management in 1974-75.

RECOMMENDATIONS:

... Bring West Pond under management by the California Department of Fish and Game under a general plan approved by U. S. Fish and Wildlife Service.

... Conduct a statewide survey of the California black rail.

... Protect areas critical to the survival of the California black rail through acquisition, easement or memorandum of understanding with landowner.

REFERENCES:

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

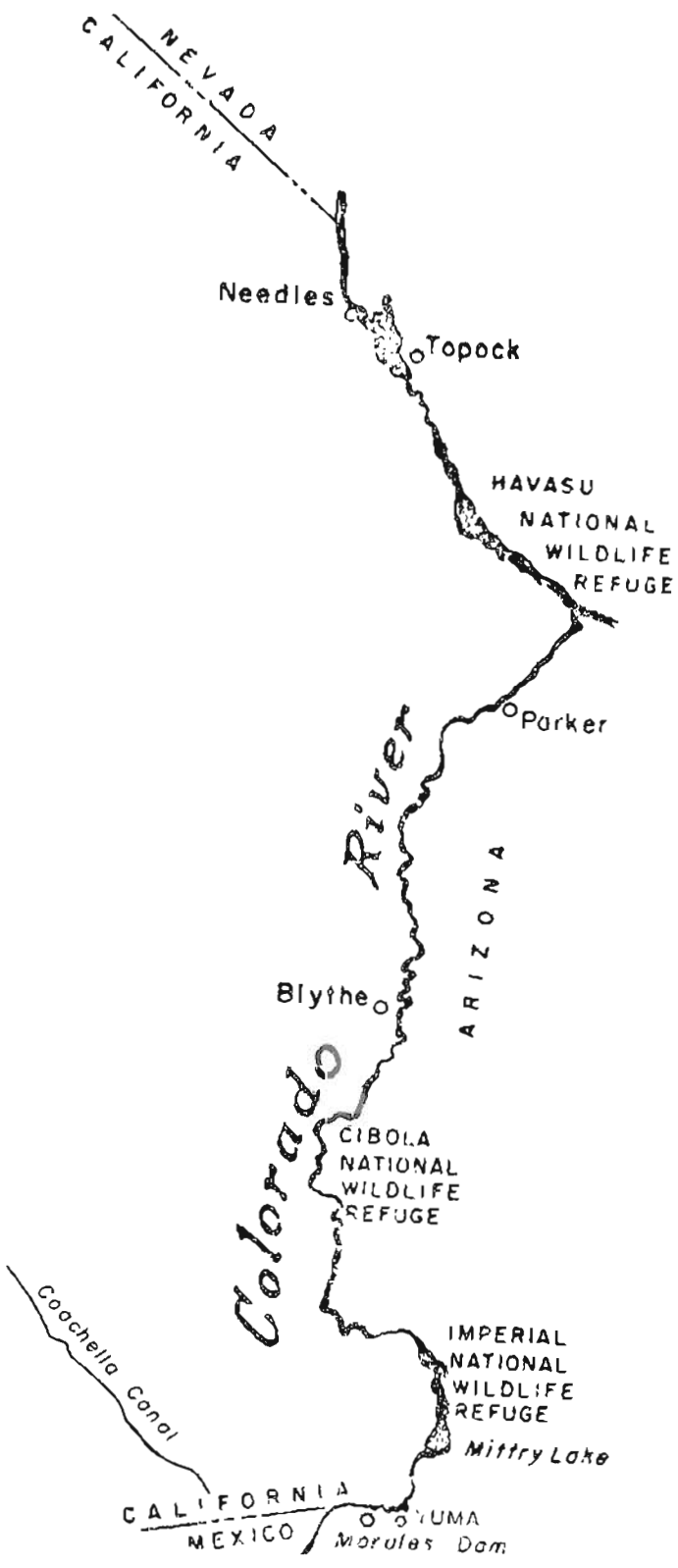
Jurek, R. M. 1975. Survey of Yuma clapper rails and California black rails along Coachella Canal, Imperial County, May 1975. Calif. Dep. Fish and Game, Nongame Wildl. Invest. W-54-R, Prog. 6 pp.

Repking, C. F., and R. D. Ohmart. 1974. Completion report on the density and distribution of the black rail (Laterallus jamaicensis), along the Lower Colorado River (Davis Dam to the Mexican boundary). Completion report to U. S. Fish and Wildlife Service under Contract No. 7625-575-15-8 (February 1974). Portland, Ore., 13 pp. (mimeo.).

Repking, C. F., and R. D. Ohmart. 1974. Progress report on the density and distribution of the black rail (Laterallus jamaicensis), along the lower Colorado River (Davis Dam to the Mexican boundary). Progress report to U. S. Fish and Wildlife Service under Contract No. 14-16-0008-724. (September 1974) Portland, Ore., 18 pp. (mimeo.).

Wilbur, S. R. 1973. The literature of the California black rail. U. S. Dept. of Interior, Fish and Wildlife Service Spec. Sci. Report--Wildl. No. 179. Washington, D. C. 17 pp.

U. S. Department of the Interior. 1973. Threatened wildlife of the United States. Bur. Sport Fish. Wildl. Resource Publ. 114. 289 pp.



CALIFORNIA YELLOW-BILLED CUCKOO (Coccyzus americanus occidentalis) RARE

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

DISTRIBUTION: Although never very numerous in California, the California yellow-billed cuckoo historically nested along river and streams from Shasta County to southern California and along the Colorado River. Sparse breeding populations are known now to occur along the Colorado River and the Sacramento River from Red Bluff to Colusa, and in the Butte Sink. Cuckoos arrive in late May and depart in September.

STATUS: Rare. Its habitat of dense streamside plant growth has been destroyed by the accelerated land and water use changes which have occurred throughout most of California. Twenty-five acres of suitable riparian vegetation is required to support 1 pair. In a 1973 survey, 47 cuckoos were observed at 32 localities on the Sacramento River, including the Butte Sink. Estimated Sacramento Valley population is 120 pairs. Nesting cuckoos sparsely distributed along the Colorado River from Morales Dam to Parker Dam.

ACTIONS:

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

... Survey of California yellow-billed cuckoo distribution and abundance in Sacramento Valley accomplished by Department of Fish and Game in 1973.

... Arizona State University conducted a comprehensive Colorado River study of riparian plant and animal communities.

... West bank of Woodson Bridge State Park declared a Natural Reserve by Department of Parks and Recreation.

RECOMMENDATIONS:

... Conduct a statewide survey of California yellow-billed cuckoo distribution and abundance.

... Protect key riparian habitat along the Sacramento and Colorado Rivers from the impact of flood control, channelization projects, and logging of soft wood.

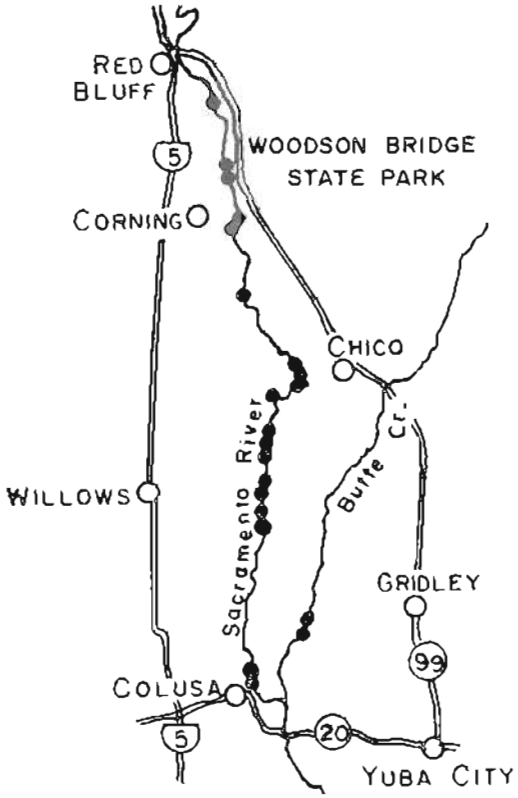
... Preserve other critical habitat areas in their natural state through acquisition, easement, or memorandum of understanding with landowner.

REFERENCES:

Gaines, D. 1973. Distribution, density and habitat requirements of the California yellow-billed cuckoo in the Sacramento Valley: 1972-73. Calif. Dep. Fish and Game, Nongame Wildl. Invest., W-54-R Prog. Rept. 20 pp.

Gaines, D. 1974. Review of the status of the yellow-billed cuckoo in California: Sacramento Valley populations. Condor 76(2):204-209.

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



GIANT GARTER SNAKE (Thamnophis couchi gigas) RARE

DESCRIPTION: This is one of the largest garter snakes, reaching 137 cm (4½ ft). 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 elongated with a pointed muzzle.

DISTRIBUTION: The original range of this snake was the San Joaquin Valley from the vicinity of Sacramento and Antioch southward to Buena Vista Lake. It appears that this snake has been extirpated from Buena Vista Lake and the Tulare Lake Basin. The present known distribution extends from the vicinity of Lodi, San Joaquin County, to the vicinity of Mendota, Fresno County. 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 snake.

ACTIONS:

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

... The Department is continuing field surveys to determine the status of this snake.

... The managers of several wildlife areas have been notified of the presence of this snake on their areas.

RECOMMENDATIONS:

... Complete survey work, identify critical habitat, and prepare status report and management plan.

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

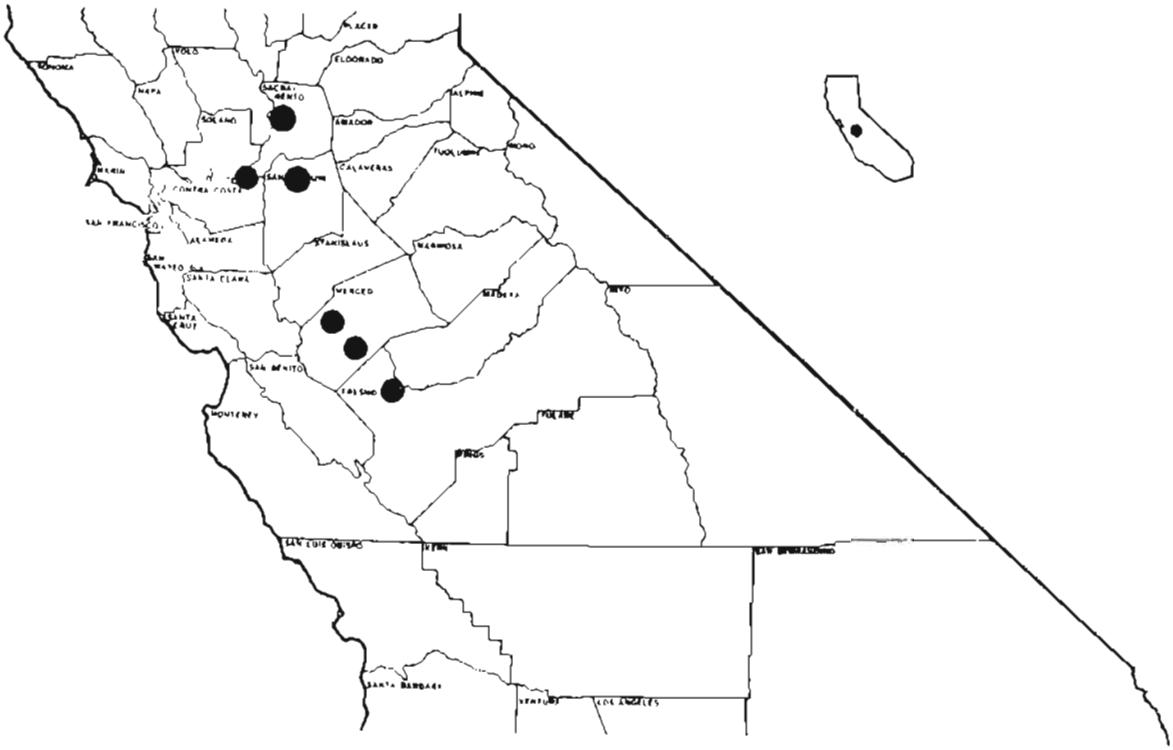
... Work with county planners, California Department of Transportation, and California Department of Water Resources to protect critical habitat from human encroachment.

REFERENCES:

Fitch, H. S. 1940. A biogeographical study of the ordinoides Artenkreis of garter snakes (genus Thamnophis). Univ. Calif. Publ. Zool. 44(1):1-150.

Fox, W. 1951. Relationships among the garter snakes of the Thamnophis elegans Rassenkreis. Univ. Calif. Publ. Zool. 50(5):485-530.

GIANT GARTER SNAKE (Continued)



ALAMEDA STRIPED RACER (*Masticophis lateralis euryxanthus*) RARE

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 lateral stripe is one and two half-scale rows wide. In the subspecies *lateralis*, the lateral stripe is yellow or cream and is only two half-scale rows wide. The forward portions of the ventral surface are orangish, and the posterior portions are cream grading to pinkish on the underside of the body and tail. Adults grow to a length of 91-112 cm (3-4 ft).

DISTRIBUTION: This racer occurs in the valleys, foothills, and low mountains of the Coast Range east of San Francisco Bay and west of the Central Valley in Contra Costa and Alameda counties. It is usually associated with chaparral, but may occur in grassland, open woods, and on rocky slopes.

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

ACTIONS:

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

... Operators of several East Bay parks have been notified of the status of this snake and its probable occurrence in the parks.

... The Department is continuing field surveys to determine the status of this snake.

RECOMMENDATIONS:

... Complete survey work, identify critical habitat, and prepare status report and management plan.

... Work with county planners to protect critical habitat from human encroachment.

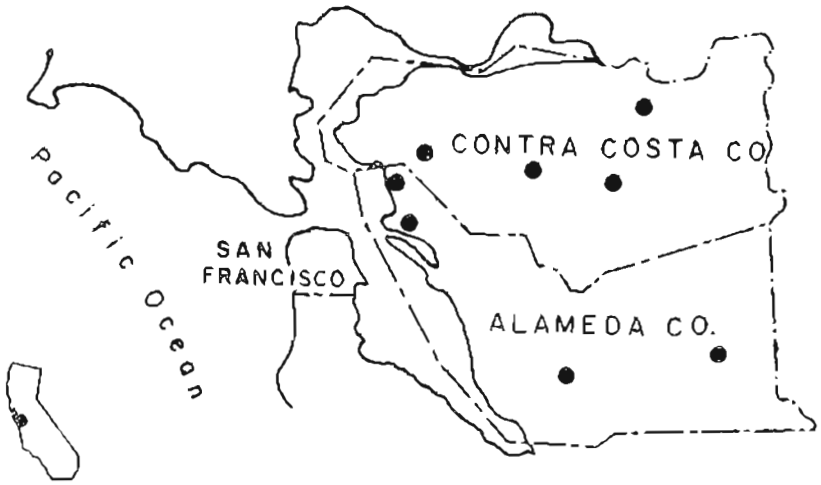
... Provide open space suitable for this snake in the East Bay area, if possible.

... Investigate the possible occurrence of this subspecies north of San Francisco Bay in Solano, Napa, and southern Sonoma counties.

REFERENCES:

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

ALAMEDA STRIPED RACER (Continued)



SOUTHERN RUBBER BOA (Charina bottae umbratica) RARE

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 sometimes asymmetrical. Color is olive or pale yellowish-brown dorsally and light yellow below. There is no pattern, but there may be a few dusky flecks on the lower sides. Adults grow to about 51 cm (20 inches).

DISTRIBUTION: This snake is known only from several localities in the San Bernardino Mountains, San Bernardino County; near Idyllwild, Riverside County; and Mt. Pinos, Kern County.

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

ACTIONS:

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

... The Department has initiated a cooperative study with the U. S. Forest Service and California State Polytechnic University, Pomona, to determine the distribution and status of this snake.

RECOMMENDATIONS:

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

... Investigate the possible occurrence of this snake in the San Gabriel Mountains, La Panza Range, and Sierra Madre Mountains.

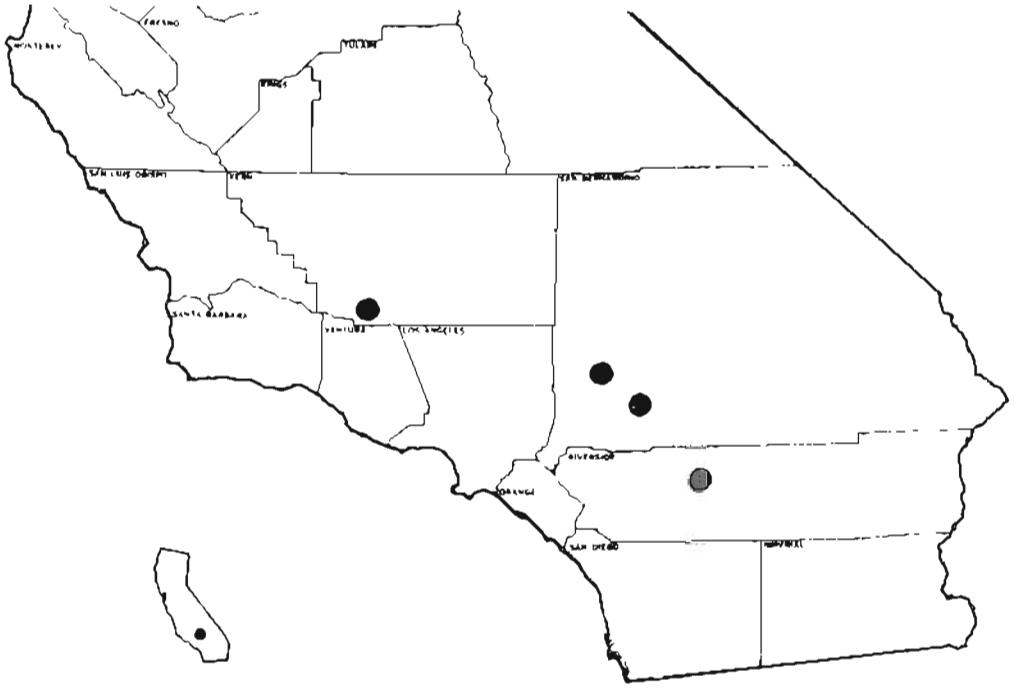
... Complete survey work, delineate critical habitat, and prepare status report and management plan.

REFERENCES:

Cunningham, J. D. 1966. Observations on the taxonomy and natural history of the rubber boa, Charina bottae. Southwest. Naturalist 11:298-299.

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

SOUTHERN RUBBER BOA (Continued)



BLACK TOAD (Bufo exsul) RARE

DESCRIPTION: This small toad rarely exceeds 76 mm (3 inches). The dorsal surface often appears shiny and 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.

ACTIONS:

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

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

... Officials of Deep Springs College, who own 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 will be manipulated to minimize damage to the habitat.

RECOMMENDATIONS:

... Preserve critical habitat on private lands through acquisition or agreement with landowner.

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

... Evaluate the need to control or eradicate carp at Buckhorn Springs.

... Determine the size and status of the Antelope Springs population.

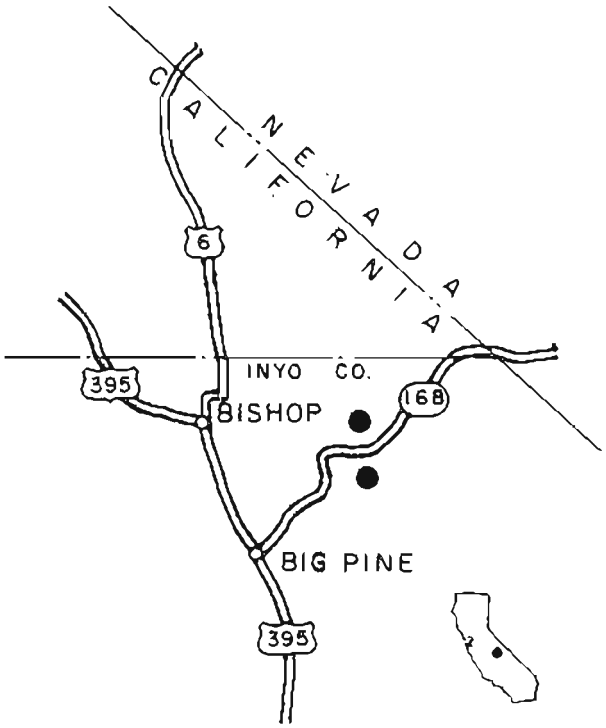
REFERENCES:

Myers, G. S. 1942. The black toad of Deep Springs Valley, Inyo County, California. Univ. Mich. Mus. Zool. Occ. Pap. 460:1-13.

Schuierer, F. W. 1961. Remarks upon the natural history of Bufo exsul Myers, the endemic toad of Deep Springs Valley, Inyo County, California. Herpetologica 17(4):260-266.

_____. 1962. Notes on two populations of Bufo exsul Myers, and a commentary on speciation within the Bufo boreas group. Herpetologica 18(4):262-267.

_____. 1972. The current status of the endangered species Bufo exsul Myers, Deep Springs Valley, Inyo County, California. Herpetol. Rev. 4(3):81-82.


CALIFORNIA
NEVADA
6
INYO CO.
395
BISHOP
168
BIG PINE
395

SISKIYOU MOUNTAIN SALAMANDER (Plethodon stormi) RARE

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 102-152 cm (4-6 inches).

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

STATUS: Rare. This form is known only from the areas described and a short distance into Oregon. It is closely related to the Del Norte salamander (P. elongatus).

This salamander's known habitat in Oregon, including the type locality and many of its densest populations, would be flooded by the proposed Applegate Reservoir for which the U. S. Army Corps of Engineers is currently seeking construction funds.

ACTIONS:

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

... The U. S. Army Corps of Engineers has been informed of the occurrence of this salamander in areas which would be flooded by the proposed Applegate Reservoir. The Corps has funded a two-year study of the status and ecology of this species through the University of Michigan Museum of Zoology.

RECOMMENDATIONS:

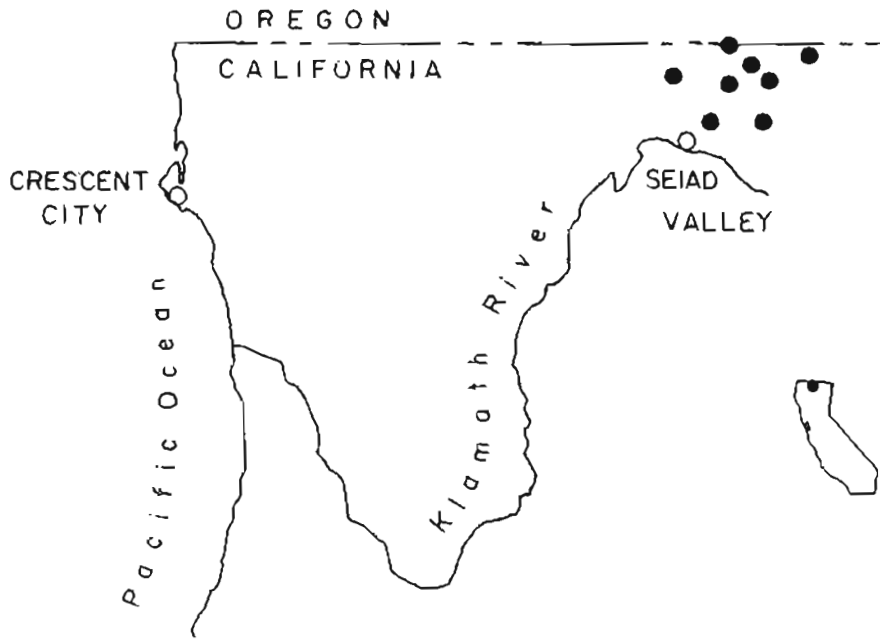
... Conduct studies to determine if additional populations occur in California.

... Initiate a cooperative management plan with the U. S. Forest Service to protect habitat for this salamander.

REFERENCES:

Brodie, E. D. 1970. Western salamanders of the genus Plethodon: Systematics and geographic variation. Herpetologica 26(4):468-516.

SISKIYOU MOUNTAIN SALAMANDER (Continued)



LIMESTONE SALAMANDER (Hydromantes brunus) RARE

DESCRIPTION: This salamander has webbed toes, a mushroom-like tongue with free margins, and a flattened body. Its 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 76-102 mm (3-4 inches).

DISTRIBUTION: Occurs in the vicinity of Briceburg and along Bear Creek, tributary to the Merced River, Mariposa County. It has also been found in Hell Hollow, about 6.4 km (4 miles) above Lake McClure, and at the confluence of Hell Hollow Creek with Lake McClure. As its 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 in 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 area marginal for salamanders.

ACTIONS:

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

... Results of surveys by the Department indicate that the habitat is in good condition.

... Environmental Protection Program funds were used to purchase 48 ha (120 acres) of critical habitat near Briceberg in 1974. In 1975 this became the Limestone Salamander Ecological Reserve by action of the Fish and Game Commission. An adjacent 32.4 ha (80 acres) of U. S. Bureau of Land Management land should be given special protection. A fish and wildlife management plan for the Reserve has been prepared.

RECOMMENDATIONS:

... Evaluate any proposed disturbance of the limestone outcrops at these localities to determine possible detrimental effects.

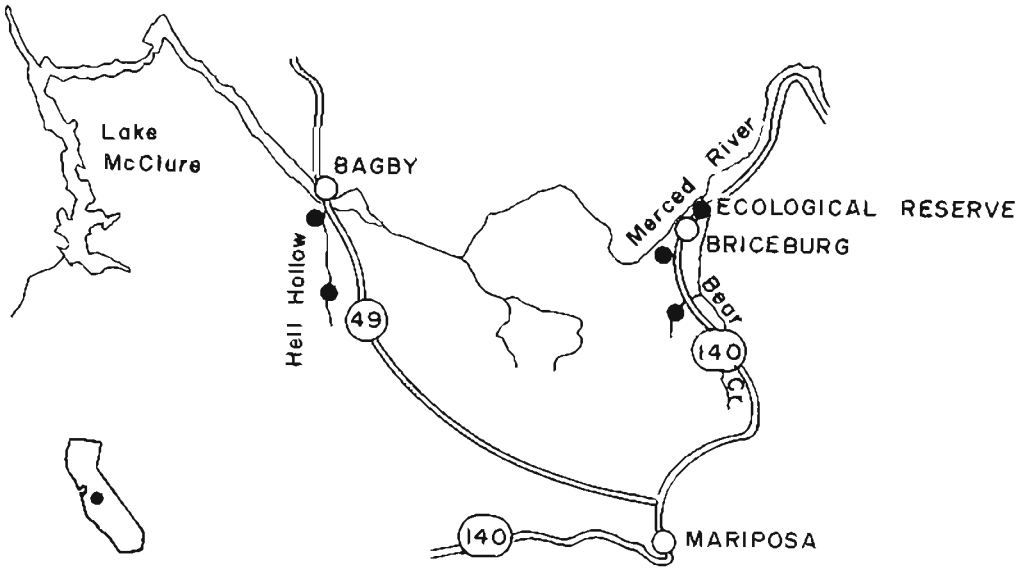
... Monitor Hell Hollow watershed for activities which might be detrimental to the stream flow or water quality.

... Continue 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.

LIMESTONE SALAMANDER (Continued)



SHASTA SALAMANDER (*Hydromantes shastae*) RARE

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 76-102 mm (3-4 inches).

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

STATUS: Rare. This species appears to be present in limited numbers in the few known localities associated with limestone outcrops.

ACTIONS:

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

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

... U. S. Forest Service and University of California at Berkeley are studying the distribution of this species.

RECOMMENDATIONS:

... The Hosselkus Limestone Formation should be administered by the U. S. Forest Service as a Research Natural Area.

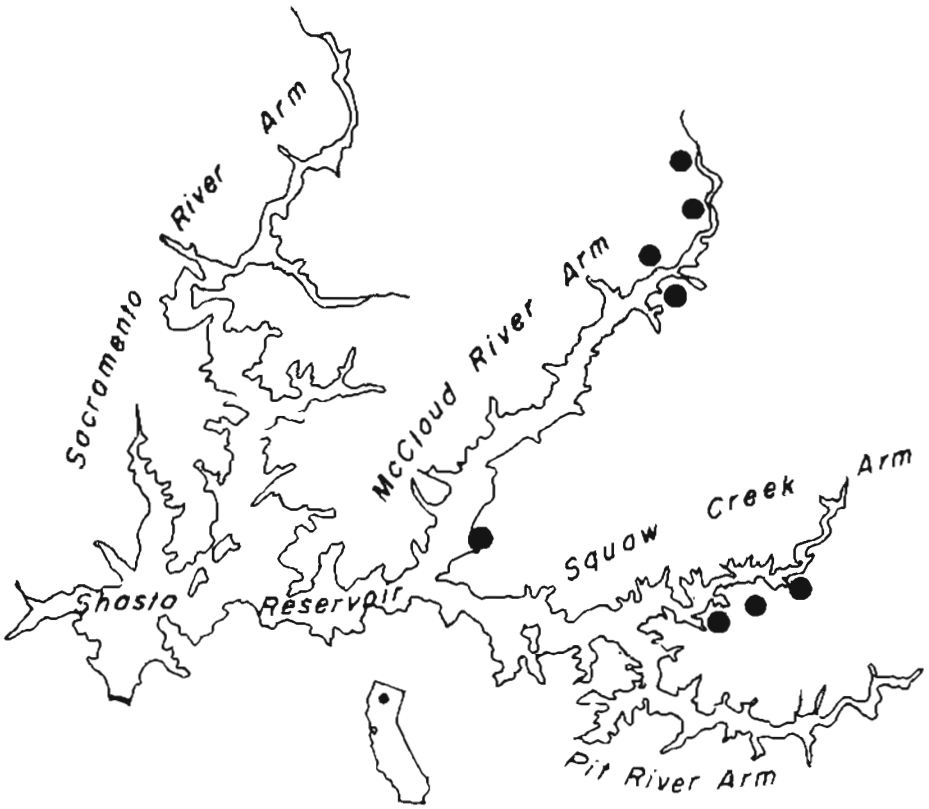
... Continue investigations of adjacent areas to determine if this species is more widespread than presently known.

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*. Herpetologica 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.

SHASTA SALAMANDER (Continued)



KERN CANYON SLENDER SALAMANDER (Batrachoseps simatus) RARE

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 114-127 mm (4½-5 inches).

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

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

ACTIONS:

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

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

... Results of surveys by the Department indicate that the habitat is in good condition.

... U. S. Forest Service and Los Angeles County Museum are studying the distribution of this species.

RECOMMENDATIONS:

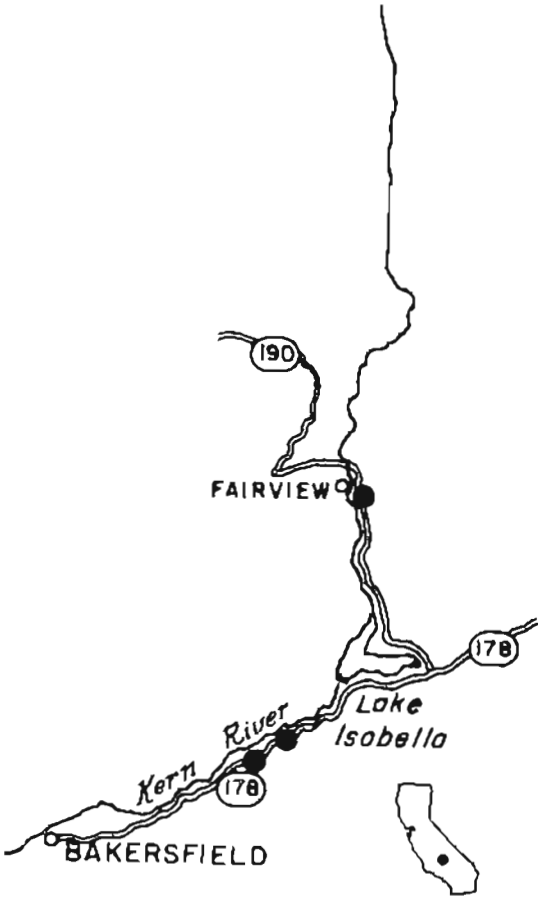
... Design future road construction in Kern River Canyon so as to minimize damage to the habitat of this species.

... 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.

KERN CANYON SLENDER SALAMANDER (Continued)



TEHACHAPI SLENDER SALAMANDER (Batrachoseps stebbinsi) RARE

DESCRIPTION: This is a large, robust member of the genus 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 black with small white flecks. The ventral surfaces are dark gray-black. Adults grow to about 127 mm (5 inches).

DISTRIBUTION: It has been collected from 5 small areas in the Piute and Tehachapi mountains east of Bakersfield, Kern County, and from one locality in Tulare County. The taxonomic status of specimens taken from the latter locality is uncertain. The area in the Tehachapis along State Highway 58 was damaged 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.

ACTIONS:

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

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

... Results of surveys by the Department indicate that the remaining habitat is in good condition.

RECOMMENDATIONS:

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

... Contact the U. S. Army Corps of Engineers concerning the possible effect of any future flood control projects on the habitat of this salamander in Caliente Creek Canyon.

... Conduct additional investigations to determine if this species occurs in other areas of the Tehachapi, Piute, and Sierra Nevada mountains.

... Collect additional specimens from Tulare County to confirm taxonimic status of this population.

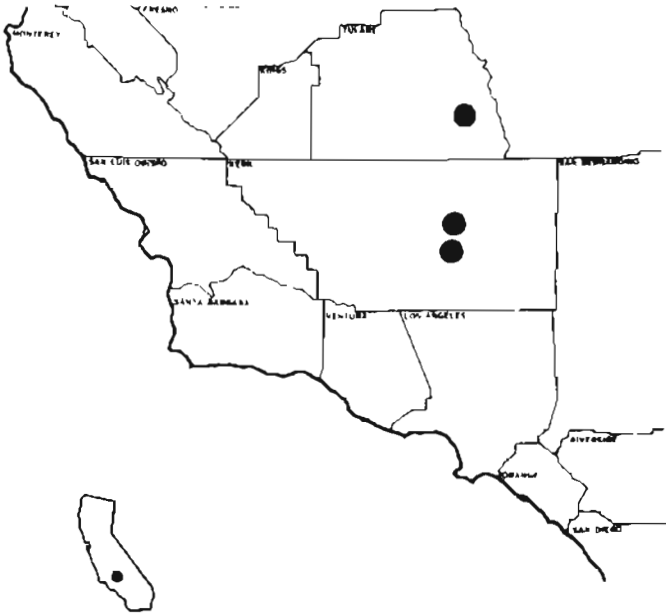
... Take action to assure protection of this species on National Resource Lands.

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.

Richman, J. B. 1973. A range extension for the Tehachapi slender salamander, Batrachoseps stebbinsi. HISS News-Journal 1(3):97.

TEHACHAPI SLENDER SALAMANDER (Continued)



MODOC SUCKER (Catostomus microps) RARE

DESCRIPTION: This is a small sucker, rarely reaching 35.6 cm (14 inches), with a short, conical head. The eyes and scales are small, and the short dorsal fin has 10 or 11 rays. The body is grayish above to white on the belly. Three dark vertical blotches may appear on the sides of freshly caught specimens. Spawning males have a distinct, red band on the sides, and are black on the back.

DISTRIBUTION: This species has been collected from Ash Creek, Lassen County, and Turner, Washington, Hurlburt, Johnson, and Rush creeks, Modoc County.

STATUS: Rare. The distribution of this species is apparently restricted, but fish seem abundant where present. Potential threats are from hybridization with the western sucker (Catostomus occidentalis), channelization, and competing uses of water. The total adult population probably numbers less than 5,000.

ACTIONS:

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

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

... A cooperative study of the distribution, abundance, and habitat requirements of this species was conducted in 1973 and 1974 by the Department and the University of California at Davis.

RECOMMENDATIONS:

... Prevent stream channel alteration and dewatering of those streams where it is found.

... Extend its range into other suitable waters in the upper Pit River drainage.

... Prepare and implement management plan.

REFERENCES:

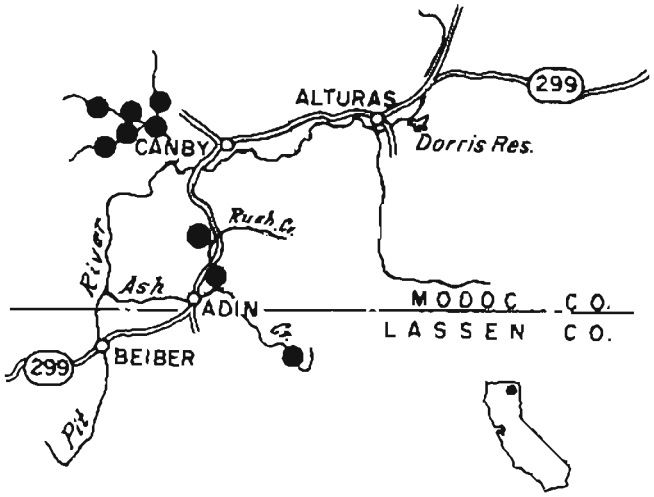
Martin, M. 1972. Morphology and variation of the Modoc sucker, Catostomus microps Rutter, with notes on feeding adaptations. Calif. Fish Game 58(4):277-284.

Miller, R. R. 1961. Man and the changing fish fauna of the American southwest. Pap. Mich. Acad. Sci. Arts Let. 46(1960):364-404.

Moyle, P. B., and A. Marciochi. 1975. Biology of the Modoc sucker, Catostomus microps, in northeastern California. Copeia 1975(3):556-560.

Rutter, C. 1908. The fishes of the Sacramento-San Joaquin basin, with a study of their distribution and variation. Bull. U. S. Bur. Fish. 27(1907): 103-152.

MODOC SUCKER (Continued)



ROUGH SCULPIN (Cottus asperrimus) RARE

DESCRIPTION: This is a slender sculpin that is olive brown to purplish above, with sides finely mottled with dusky and gray, the dusky color making 4-5 blotches. The ventral surface is speckled. Pelvic fins are colorless, but the others are barred. Lateral line does not extend beyond the base of the third-from-last dorsal ray. Dense prickles extend from pectoral fin posteriorly along body above the lateral line to a point below the middle of the soft dorsal fin.

DISTRIBUTION: The rough sculpin is found in the Pit River from Tunnel Reservoir upstream to Fall River Mills, the lower reaches of Hat and Burney creeks, and the Fall River and its tributaries, Shasta County.

STATUS: Rare. This fish has a restricted distribution, but is abundant where it occurs, especially in the Fall River.

ACTIONS:

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

... Initial survey of relative abundance and distribution completed in 1974, a cooperative effort between the Department and the University of California at Davis.

RECOMMENDATIONS:

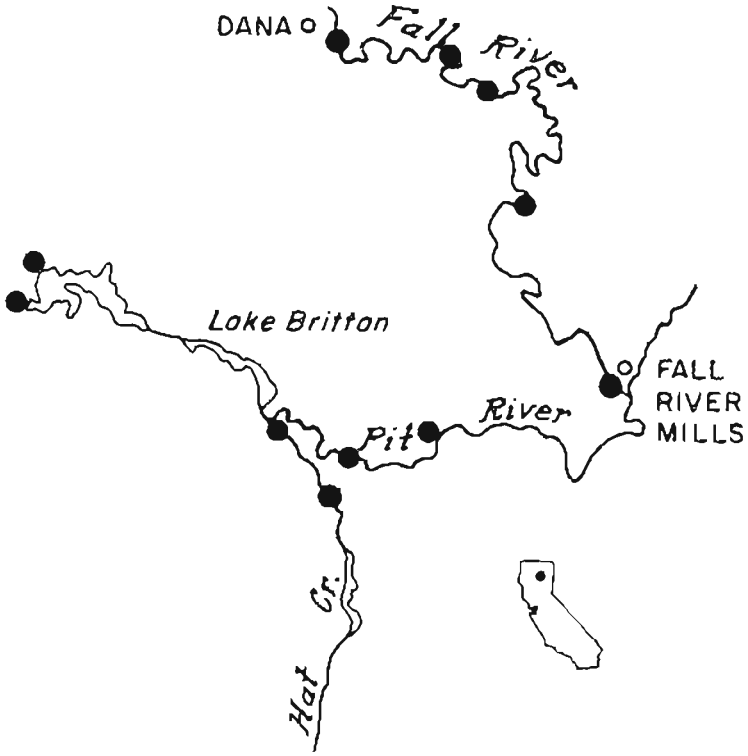
... In cooperation with the U. S. Forest Service, prepare and implement a management plan.

REFERENCES:

Robins, C. R., and R. R. Miller. 1957. Classification, variation, and distribution of the sculpins, genus Cottus, inhabiting Pacific slope waters in California and southern Oregon, with a key to the species. Calif. Fish Game 43(3):213-233.

Rutter, C. 1908. The fishes of the Sacramento-San Joaquin basin, with a study of their distribution and variation. Bull. U. S. Bur. Fish. 27(1907):103-152.

ROUGH SCULPIN (Continued)



COTTONBALL MARSH PUPFISH (Cyprinodon milleri) RARE

DESCRIPTION: This species is similar to other Death Valley pupfishes (C. salinus, C. nevadensis) in coloration and degree of sexual dimorphism. Individuals of both sexes have 7 or 8 vertical bars on the sides. The dorsal fin is blackened in males, and melanophore concentrations also occur at the distal margins of the pectoral, anal, and caudal fins. In live females the caudal, anal, and pectoral fins are clear. This species is distinguished from other pupfishes by having a shorter and narrower caudal peduncle, more scales, and pelvic fins reduced or absent.

DISTRIBUTION: C. milleri is known only from Cottonball Marsh, Death Valley National Monument, California.

STATUS: Rare. The small but stable population in Cottonball Marsh could easily be affected by any degradation of this extremely fragile habitat.

ACTIONS:

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

RECOMMENDATIONS:

... In cooperation with the National Park Service, monitor population at Cottonball Marsh to keep abreast of any developments that may affect its well-being.

REFERENCES:

LaBounty, J. F., and J. E. Deacon. 1972. Cyprinodon milleri, a new species of pupfish (family Cyprinodontidae) from Death Valley, California. Copeia 1972(4):769-780.

Naiman, R. J., S. D. Gerking, and T. D. Radcliff. 1973. Thermal environment of a Death Valley pupfish. Copeia 1973(2):366-369.