COACHELLA VALLEY NATIONAL WILDLIFE REFUGE

THOUSAND PALMS, CALIFORNIA

ANNUAL NARRATIVE REPORT

CALENDAR YEAR 1992

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVAL

COACHELLA VALLEY NATIONAL WILDLIFE REFUGE

THOUSAND PALMS, CALIFORNIA

ANNUAL NARRATIVE REPORT

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E Clark Bloom
Refuge Manager

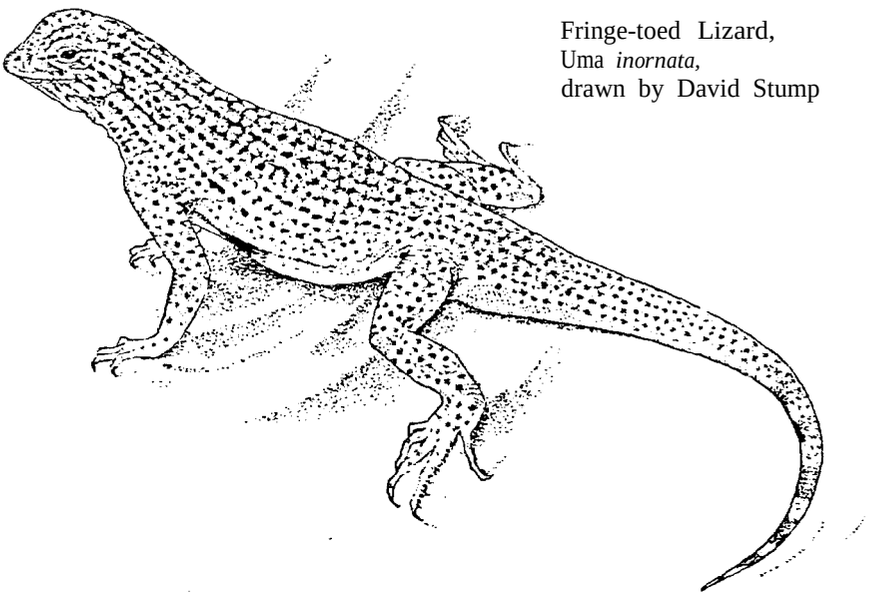
4/26/93
Date

Refuge Supervisor Review

Date

Regional Office Approval

Date

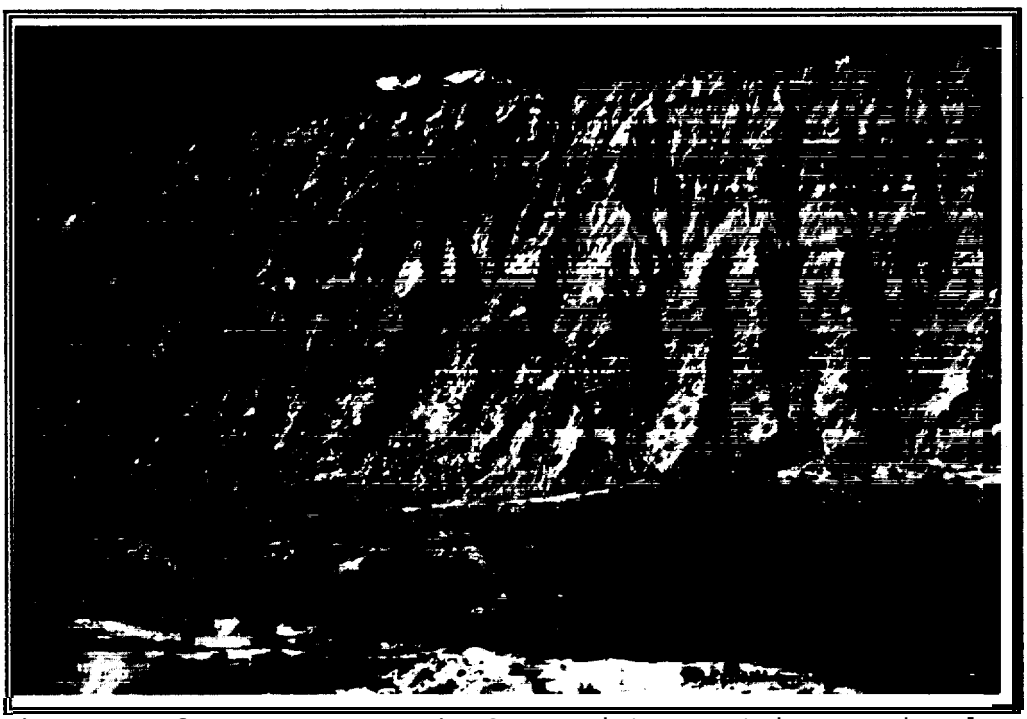


Fringe-toed Lizard,
Uma *inornata,*
drawn by David Stump

INTRODUCTION

The 3,254-acre Coachella Valley National Wildlife Refuge is located about ten miles east of Palm Springs in the heart of southern California's rapidly developing Coachella Valley. In passing the Endangered Species Act of 1973, Congress recognized that threatened and endangered plants and wildlife have educational, scientific, recreational, historical, and aesthetic values and should be preserved as part of the nation's natural heritage. Established in 1985 as part of the 19,000-acre Coachella Valley Preserve, the refuge protects critical habitat vital to the survival of the federally threatened Coachella Valley fringe-toed lizard (Uma inornata), an animal having an extremely restricted geographic range.

The Preserve is jointly managed by the U.S. Fish and Wildlife Service, Bureau of Land Management, California Department of Fish and Game, California Department of Parks and Recreation, and The Nature Conservancy (TNC), with each of these organizations owning various parts of the Preserve. Much of the day-to-day management of the area is performed by a Preserve Director funded by TNC, with management directions provided by a Management Committee made up of representatives from each of the agencies mentioned. Policies governing a given part of the Preserve are ultimately the responsibility of the agency or association owning that parcel of land.



The 11,000-foot, snow capped, San Jacinto Mountains are barely visible beyond a portion of the San Andreas Fault, which bisects the Preserve and provides water to support numerous palm oases wetlands. 01/23/91 WRR

Because of the expanding human population in the valley, the Preserve is essential in protecting an array of desert ecosystems threatened by human development. The Preserve's ecosystems include native palm oasis woodlands, perennial desert pools and streams, and wind-blown sand dunes. The numerous palm oases are sustained by water made available through fractures in the bedrock along the San Andreas Fault, which bisects the Preserve. Impervious clay layers hold some of this water on the desert surface, providing habitat for federally endangered desert pupfish (Cyprinodon macularius) and numerous other species. Periodic flash floods from the Little San Bernardino Mountains provide waterborne sediments which are then sorted by the wind to create an extensive system of sand dunes. It is these isolated dunes which are necessary for the survival of the fringe-toed lizard. In addition to the Coachella Valley fringe-toed lizard and the desert pupfish, the Preserve provides habitat for several federal candidate species and a wide array of plant and wildlife species.

Although legally protected, Preserve lands remain threatened by flood control issues and illegal activities such as off-road vehicle use, equestrian use, indiscriminate shooting, and dumping. As one of the few desert "open areas" remaining in the Coachella Valley, the Preserve attracts significant visitor use, some of which is not compatible with refuge objectives. There are many recreational opportunities in the Preserve, however, because the Preserve encompasses lands under the jurisdiction of several agencies, rules and regulations concerning recreational and other activities vary from one area to the next. As a result, activities allowed in other parts of the Preserve may not be allowed on refuge lands.

G. WILDLIFE

H. PUBLIC USE

I. EQUIPMENT AND FACILITIES

J. OTHER ITEMS

PAGE

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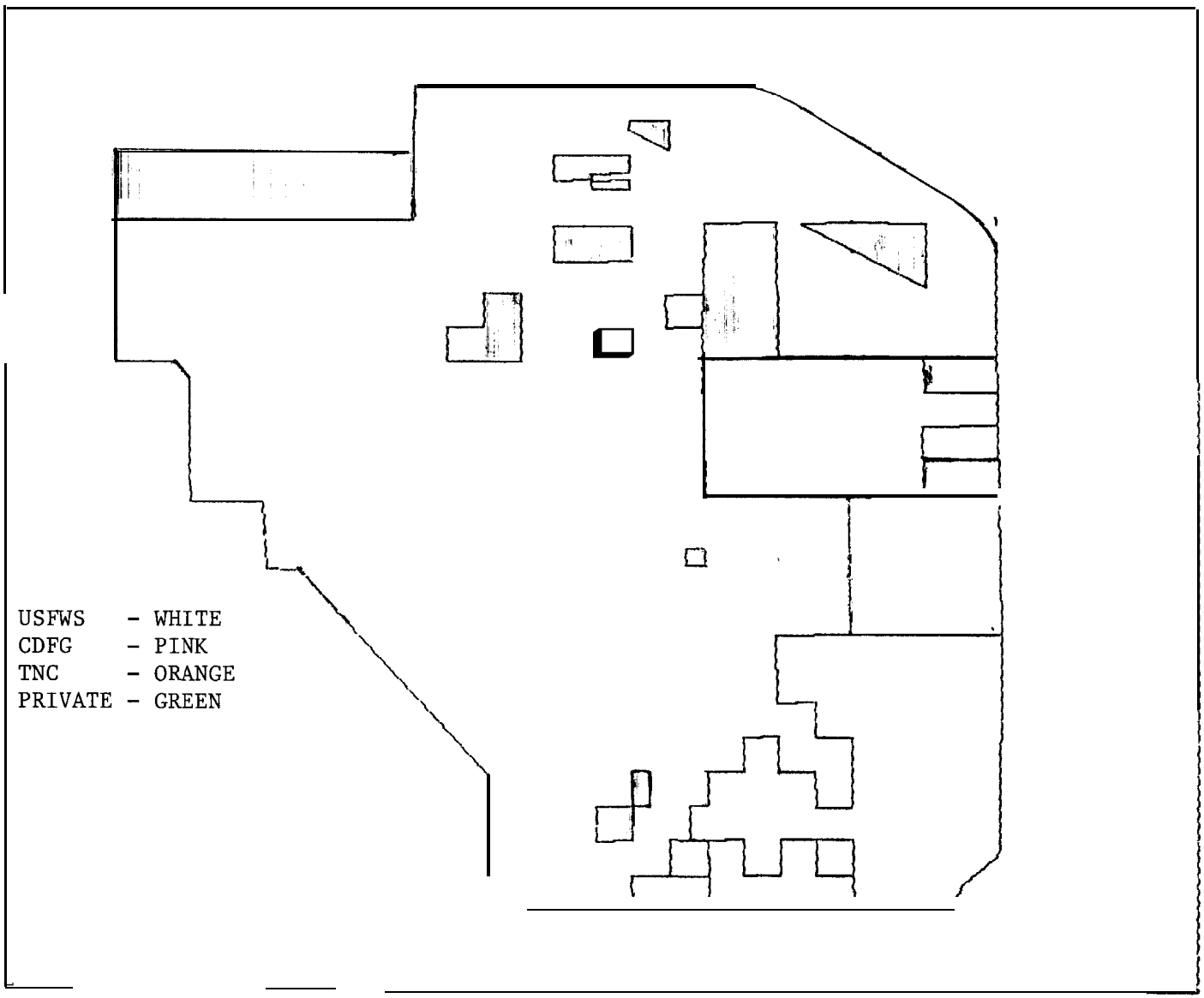


A. HIGHLIGHTS

Major land acquisitions are realized in December. (Section C.l) page 2.

The Service chairs the Coachella Valley Management Committee during 1992. (Section D.2) page 6.

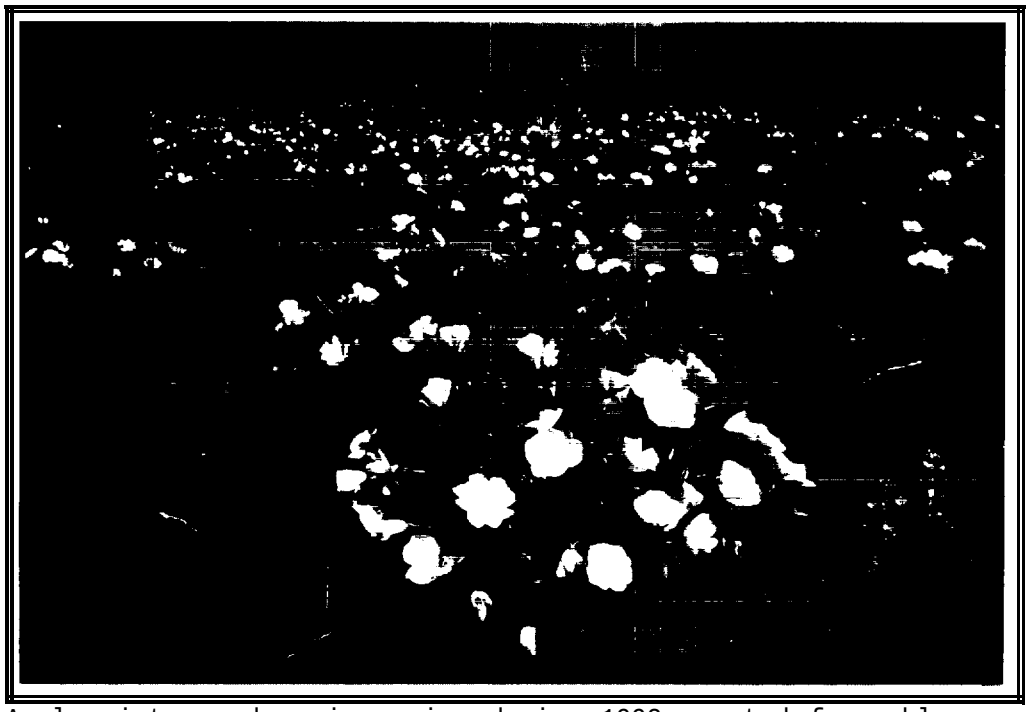
Del Webb begins construction of Sun City Palm Springs adjacent to the refuge. (Section D.6) page 16.

The Coachella Valley Fringe-toed Lizard Habitat Conservation Plan begins to receive scrutiny and evaluation by the Service. (Section D.6) page 17.

Fifty jojoba bushes are finally removed from the refuge after extensive negotiations with trespass agricultural owner Jerold Segall. (Section H.17) page 36.

The Imperial Irrigation District Power Division pays the Service $50,000 as part of a settlement agreement after trespassing on the refuge. (Section H.17) page 39.

B. CLIMATIC CONDITIONS



Ample winter and spring rains during 1992 created favorable conditions for many desert animals and plants, such as these evening primroses. 04/11/92 WRR

Weather conditions in the Coachella Valley are typical of the southern interior desert with mild winters and extremely hot summer temperatures normally exceeding 110°F. The hottest temperature of the year was 117°F on July 18 and the coldest temperature was 27°F on December 20. Rainfall for the year totalled 5.11 inches, a full 130% greater than the 33 year long term average of 3.94 inches per year. December through March are usually the wettest months in the Coachella Valley. Two major earthquakes, measuring 7.4 and 7.0 occurred on June 28, and were centered within 30 miles of the refuge. The table below summarizes weather data for the year.

Table l. Coachella Valley NWR Weather Summary 1992*

MONTH	PRECIPITATION (inches)	TEMPERATURE (°F)	
		Max	Min
January	.20	83	33
February	1.81	88	40
March	1.43	86	42
April	.31	104	50
May	.25	102	63
June	.oo	110	60
July	Trace	117	68
August	.oo	114	66
September	.oo	109	60
October	.15	106	55
November	.oo	90	33
December	.96	78	27

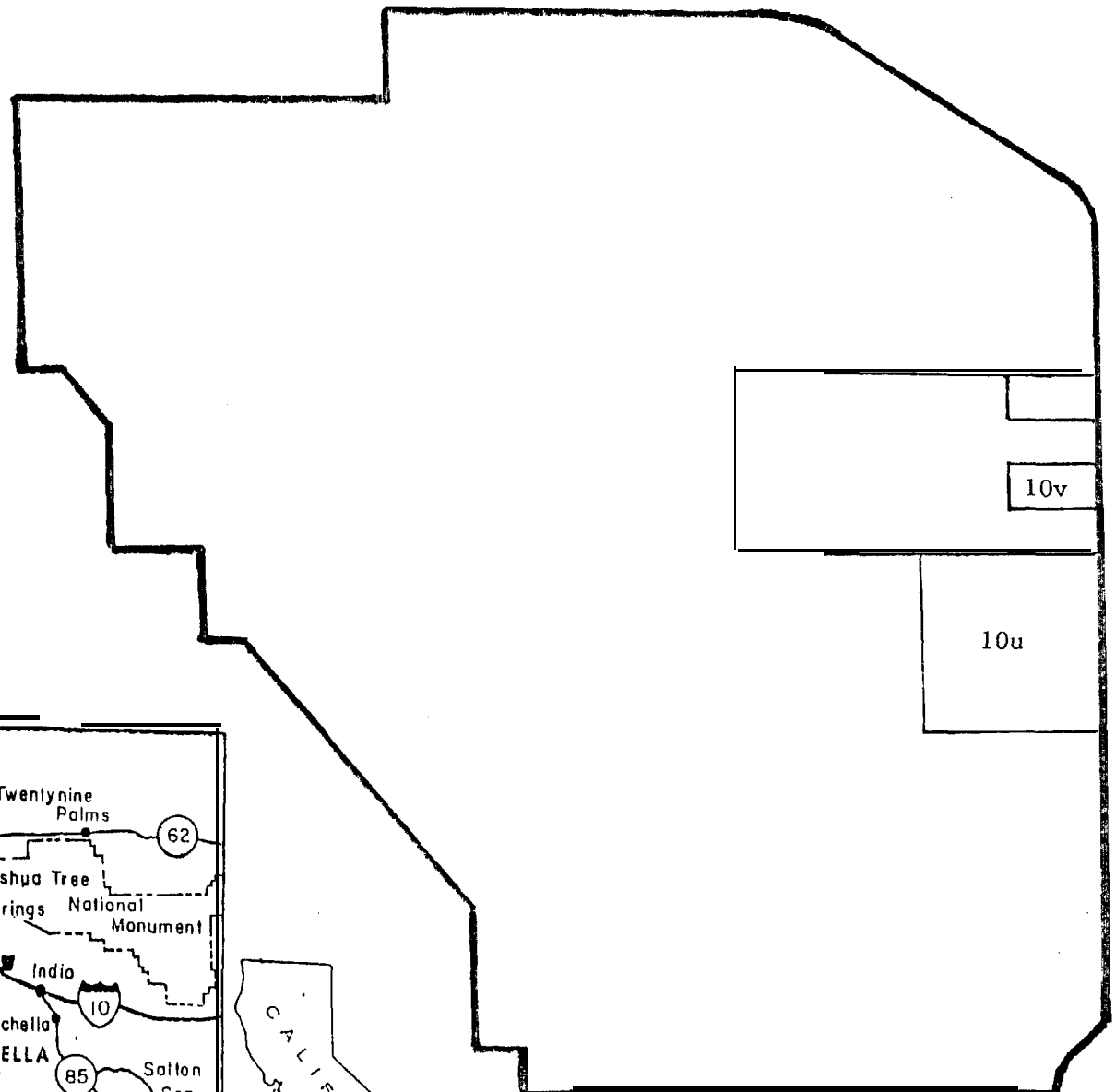
*Weather data taken at Indio City Fire Department Headquarters.

C. LAND ACOUISITION

1. Fee Title

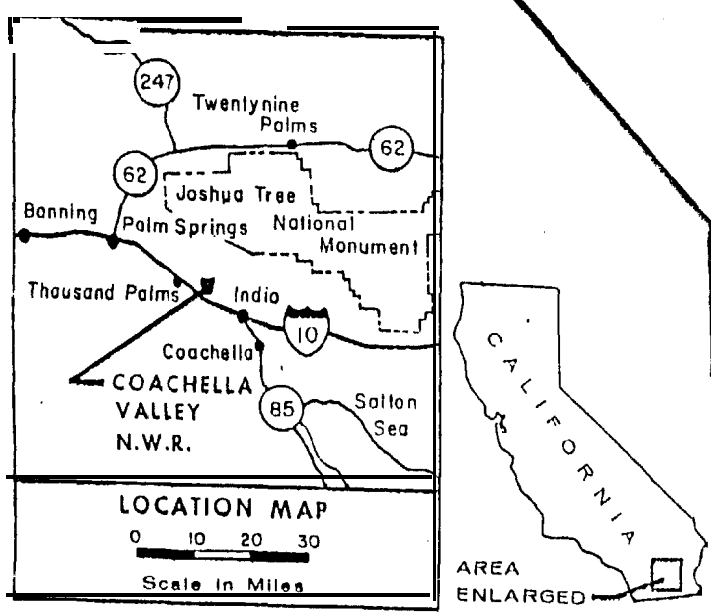
Refuge fee-title acres increased to 3,254 during 1992. In July, the Service and TNC hastened a process of active acquisition of properties within the approved refuge boundary. Acquisition funds have not kept pace with the continued rise of land prices in the Coachella Valley, and the Preserve Management Committee decided to establish acquisition priorities and escalate action to pick up lands on a willing seller basis before prices rose even higher. As a result, all property owners within the Preserve boundary were contacted, eventually resulting in two major land parcels being purchased during the year and transferred to the Service during December.

The 160-acre Washington Farms parcel was purchased for $1.4-million (down from an asking price of $2.5-million), and the 20-acre Marshall parcel was purchased for $240,000. Both of these properties lie along the eastern edge of the refuge and provide an important buffer to more productive fringe-toed lizard habitat within the refuge. The Washington Farms parcel, which once contained notworthey populations of flat-tailed horned lizards before being developed, contains 80-acres of remaining grape vineyards, and



1992 LAND ACQUISITIONS

Tract #	Owner	Acres
10u	Washington Farms	160
10v	Marshall	20
	TOTAL:	180



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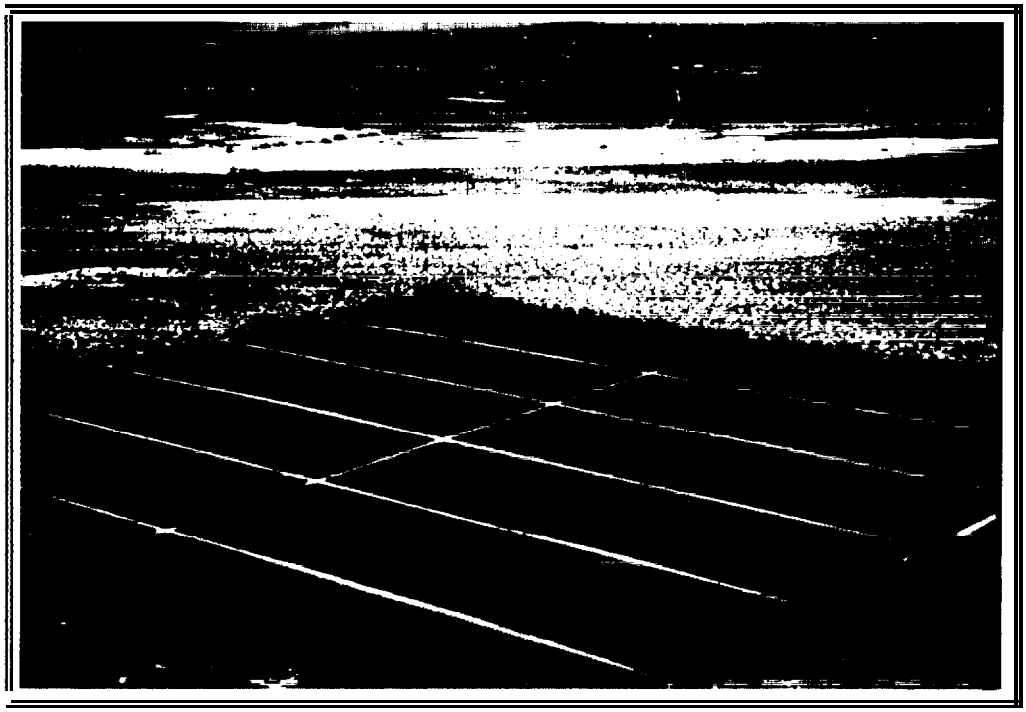
RIVERSIDE COUNTY, CALIFORNIA

provides an opportunity and challenge to restore desert habitat for native wildlife. The Marshall parcel contains largely undisturbed sandy plain and hummocks. Additional land purchases are currently being negotiated, and more acreage is slated for Service acquisition during the coming year.



The 160-acre "Washington Farms" parcel was acquired in December. Currently a vineyard, this area is scheduled for extensive work to restore native habitat. 02/24/92 WRR

Robert Soderburg contacted TNC in February concerning a potential land swap, saying he wished to provide five acres of occupied fringe-toed lizard habitat to the Service, and wanted to procure ten acres of refuge land which contains no occupied fringe-toed lizard habitat, but does provide a buffer to more important lands. Realty Specialist Judee Jacoby, Biologist Cathy Osugi, and Assistant Manager Dinkler met with Soderburg on May 15 to discuss the trade. Soderburg eventually lost interest when he learned that any trade would have to be acre for acre as no net loss to the refuge could be justified. Soderburg is currently heaping tons of debris on his "trade" property as he works to obtain a wood chipping permit from Riverside County (see Section D.4).

3. Other

Surveying Accomplishments

During 1992, Regional Office Land Surveyor Michael Richey surveyed property boundaries along the southwest portion of the refuge adjacent to lands currently owned by Segall, Soderburg, Hawn, and Ivey Ranch. Locating these

lines allowed accurate fencing and posting of the refuge, which should eventually result in fewer law enforcement interactions due to trespass.

DiMare Property Lease Renewal

The 260-acre DiMare property was purchased by TNC in 1986 contingent on a lease agreement which allowed Dimare to continue farming 80-acres of grapes, lo-acres of grapefruit, and varying amounts of other crops on the property at a rate of $50,000/year. This lease was up for renewal in October, and DiMare stated a wish to expand agricultural use of the property and extend the lease agreement. Following extensive discussion, the Preserve Management Committee ultimately agreed that this property must become a manageable part of the Preserve as soon as possible, Toward this effort, TNC chose not to extend the lease beyond the original terms, negotiated to buy out DiMare's option to build on the property, and establishment of additional crops on currently undeveloped portions of the property was discouraged. Lease money from this property will no longer be relied upon in the future, and the property will be restored back to wildlife habitat upon eventual transfer to the Service. Based upon these decisions, and upon current economics in the area, DiMare chose to default, and TNC is currently negotiating terms regarding Dimare's evacuation of the property and debris removal.

D. PUNNING

2. Management Plan

All management activities on the refuge are guided by a number of documents including the Coachella Valley National Wildlife Refuge Environmental Assessment (April 1985), the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan and Implementing Agreement (June 1985), the Coachella Valley Fringe-toed Lizard Recovery Plan (1984), and the Coachella Valley Preserve System Management Plan (July 1986).

The Coachella Valley Fringe-toed Lizard Recovery Plan was published by the Service in 1984. The primary objective of the plan is to minimize further decline of the species and habitat degradation by securing areas that maintain viable, self-sustaining populations. The recovery plan identifies the following actions needed to preserve the Coachella Valley fringe-toed lizard and its habitat: 1) Secure habitat for preservation of the species. 2) Study the biological requirements of the animal. 3) Monitor the fringe-toed lizard population to determine trends. 4) Study the effects of habitat modifications on fringe-toed lizards. 5) Study the feasibility of restoration of the animal's habitat through rehabilitation. 6) Develop and provide public information and education programs to further awareness and support for preserving fringe-toed lizards. 7) Enforce existing laws and regulations protecting these animals and their habitat.

The Coachella Valley Preserve Management Plan establishes guidelines for management actions to "insure protection of resources contained within the Preserve." When drafted by TNC and BLM personnel, this plan was supported

by the other members of the preserve management committee, and the ten long-term goals identified in the plan are as follows:

1) Maintain and enhance the natural condition of all lands within the Coachella Valley Preserve System.

2) Restrict vehicle access within the Coachella Valley Preserve System to the minimum number of routes needed to service authorized right-of-ways and private land.

3) Remove all exotic plant and animal species where and when feasible to the benefit of native species.

4) Restrict the use of firearms on all lands within the Coachella Valley Preserve System.

5) Remove abandoned buildings, vehicles, and debris.

6) Establish hiking and equestrian trail systems through the major habitats of the Coachella Valley Preserve system, and locate equestrian trails outside sensitive habitats such as palm oases and sand dunes.

7) Provide the public with information on the resources, origin, and cooperative nature of the Coachella Valley Preserve System.

8) Monitor the sensitive biological components contained within the Coachella Valley Preserve System.

9) Make the Coachella Valley Preserve System available for use by researchers.

10) Provide refugia for endangered species of native plants and animals which occur in similar habitats.

Management meetings with representatives from each agency were held four times during the year to coordinate activities on the Preserve. The chairmanship of the Management Committee rotates among all the agencies, with the U.S. Fish and Wildlife Service representative acting as chairman during 1992. The Service took an active role in this time-consuming effort and several important management committee decisions resulted. Following discussions with Riverside County Supervisor Patricia Larson during December 1991, Robyn Nagle from the Supervisor's office began attending management committee meetings to provide increased communication and allow a better dialogue for mutual problem analysis. For various reasons, Nagle attended only one meeting during 1992, and the Committee's hopes of creating a better rapport with Riverside County were never realized this year.

4. Compliance with Environmental and Cultural Resource Mandates

Evaluation of Habitat Conservation Plan

There is a perception of various problems relating to the evaluation and implementation of the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan (see Section D.6). This led to a major meeting on February 5 between Enhancement biologists, Refuge personnel, TNC, BLM, and various persons originally involved in drafting the plan back in 1985. The meeting allowed discussion between those who originally had a vision of protecting Coachella Valley wildlife, and those currently managing the preserves and implementing the plan. Some of the original authors attending included Dr. Allen Muth, Gail Kobetich, Keith Downs, and Jan Windhausen. When the HCP was drafted, limited information was available concerning the dynamics of sand ecosystems or the ecology of fringe-toed lizards, yet major decisions needed to be made to protect habitat. Unfortunately, many of the questions which faced these original authors still remain unanswered. The meeting was valuable in assuring that current managers are on track with the objectives originally envisioned, and helped in making decisions relating to acquisition priorities and research needs. Other results of the meeting included recognition that both an HCP audit and a biological assessment of the HCP are necessary (see Section D.6).

Pegasus Riding Academy Conditional Use Permit

During 1992 Robert Soderburg applied to the Riverside County Planning Department for a conditional use permitting to establish the Pegasus Riding Academy (CUP 3152, EA 36054). While the concept of a riding academy appeared to be a positive use of the area, the Service was concerned that the project, immediately adjacent and upwind of the Preserve, could contribute exotic vegetation, high levels of nutrients and/or contaminants, or other substances which may impact fringe-toed lizards and other wildlife.

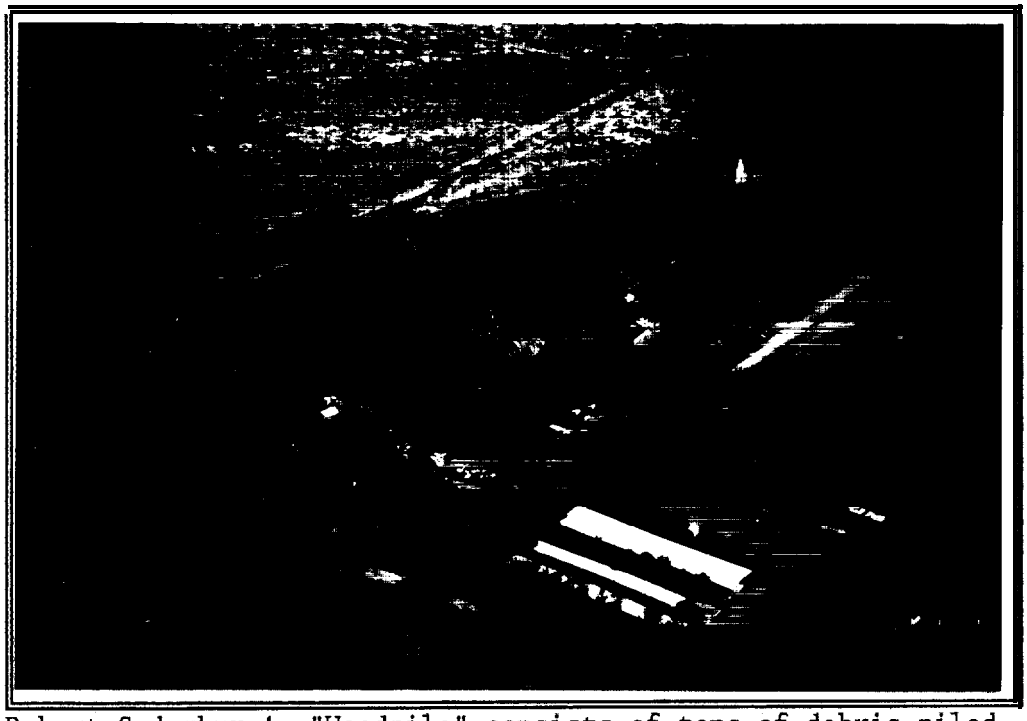
In addition, Soderburg's fenceline did not follow the accurate property line and was inadequate to prevent access into the refuge. This was complicated by the deposition of tons of debris on the project area by Soderburg, some of which was deposited unlawfully on refuge land. The Service asked that the boundary fence be properly aligned and debris removed from the refuge prior to CUP approval. The Service also requested a barrier between the project and the refuge to prevent drainage onto the refuge, prevent tumbleweeds or other exotic vegetation and their seeds from being transferred from the "landfill" site on the project area onto the refuge, and prevent horses, dogs, and humans from readily crossing into the refuge.

Part of the proposed project contained unaltered desert habitat prior to 5/24/91, when portions of the area were disturbed and/or altered during Fegasus construction activities, apparently in anticipation of a favorable CUP application. Although the work has already been done, Soderburg has failed to pay the required $600/acre mitigation fee established by the HCP, and the Service asked that this fee be paid prior to CUP approval.

Riverside County ultimately approved the Pegasus Riding Academy, who has worked with the Service to resolve most of our concerns.

The Woodpile Conditional Use Permit

During August, Robert Soderburg applied to Riverside County to operate a "proposed" wood products enterprise (CUP 3161/EA 36326), which has actually been in operation since June 1991. The project site is located next to the Pegasus Riding Academy on the western boundary and upwind of the refuge. The Service's concerns with the "proposed" project related primarily to Habitat Conservation Plan requirements, potential run-off, deposition of debris, and continuing trespass which has yet to be acted upon by Soderburg. In addition, the proposed project is a potential fire hazard immediately adjacent to Critical Habitat for a threatened species. If fire were to spread from the proposed project onto the refuge and resulted in the "take" of threatened wildlife, those responsible for the fire could be held liable for Endangered Species Act violations.



Robert Soderburg's "Woodpile" consists of tons of debris piled adjacent to the refuge at an illegal dump which has been in operation since June 1991. 11/16/92 WRR

As a result, the Service requested assurance that the required $600/acre mitigation fee be paid prior to altering the area, and that a barrier between the project area and the refuge be constructed to prevent potential windblown or waterborne contaminants from impacting the refuge, This barrier must prevent exotic vegetation and their seeds from being transferred from the project area onto refuge land, and prevent equipment,

personnel, domestic animals, and also fire from readily crossing into the refuge. The Service asked that Mr. Soderburg deal with these issues and concerns in good faith before receiving CUP approval from the County. The County has so far denied Soderburg the permit, but the application has been appealed.

5. Research and Investieations

During 1992, members of the Preserve Management Committee formed a subcommittee to identify and list research needs and priorities which can be provided to universities and other researchers in an effort to enlist outside assistance to the preserve system. The top priority research need is for additional studies to better understand the dynamics of the sand delivery system in the Coachella Valley and its effect on the long-term management of the preserve system and the fringe-toed lizard. Other research needs include: 1) a better knowledge of habitat parameters of the fringe-toed lizard and other endemic sand dependent species, 2) inventories of sensitive plant and animal species, 3) hydrological data for the preserves, 4) habitat enhancement and rehabilitation techniques, and 5) development of plant and animal reintroduction techniques in suitable areas.

Beneath a Dicoria plant, a fringe-toed lizard peers out of a cavity just excavated for egg laying. While many lizards manage to hatch, few seem to survive the first few months of life.

05/29/92 WRR

Coachella Valley NR90 - "Survival and Population Recruitment of Hatchling Coachella Valley Fringe-toed Lizards on Coachella Valley NWR" (11632-9001)

The Coachella Valley Preserve System Management Plan identifies a need to determine fringe-toed lizard habitat needs, reproductive needs, reproductive success, causes for population fluctuations, and population status. To help investigate these questions, Wildlife Biologist W. Radke and TNC Southern California Area Manager Cameron Barrows initiated a research project in 1990 to further identify the population dynamics of the Coachella Valley fringe-toed lizard. Objectives are to: 1) evaluate fringe-toed lizard population dynamics and viability, 2) determine survival and recruitment of hatchling fringe-toed lizards and identify predation pressures or other mortality causes, and 3) determine population dynamics in various habitat types.

Methods involved counting lizards on two refuge transects and one transect at the Willow Hole Preserve, each surveyed six times between 9/25 - 10/12. The ratio of adults/hatchlings during autumn will be compared with next year's springtime ratio to determine hatchling recruitment. A better knowledge of fringe-toed lizard population densities and appropriate carrying capacities of various habitats will be useful in managing refuge lands for this species.

The fall 1992 censuses revealed a substantial reduction in hatchlings per adults. This was surprising as there was significant herbaceous vegetation resulting from winter rains. However, this apparent high food availability may have been misleading due to the extreme density of exotic vegetation. Several hypotheses may account for the lower than expected number of hatchlings. For example, soil moisture, due to the timing of spring and summer rains, may have been insufficient for optimal hatching success. Another possibility is that predator pressure, responding to an abundance of food, was high enough to dampen an otherwise good reproductive year for lizards. Circumstantial evidence supports this idea, as there were more predators or predator tracks observed during 1992 than in any previous year, and more lizards were observed with re-growing tails than in prior years. It is also possible that other dune inhabitants were also at peak numbers, potentially competing with fringe-toed lizards for food resources. What we do know is that the long-term population status of this lizard requires additional study in order to interpret year-to-year trends. The following two tables depict the results of autumn population surveys conducted since 1990.

Table 2. Number of CVFTL Adults/Hatchlings During Autumn 1992,

TRANSECT	ADULTS	HATCHLINGS
Willow Hole	11	12
CVP #2	75	64
CVP #4	36	71
TOTALS	122	147

Table 3. Average Adults/Hatchlines Comparison

TRANSECT	1990 Adult/Hatch	1991 Adult/Hatch	1992 Adult/Hatch
Willow Hole	0	5.4/8.6	2.2/2.4
CVP #2	1.3/4.2	5.8/28.6	12.5/10,6
CVP #4	4.1/1.5	3.8/12.2	6.0/11.8

6. Other

Coachella Valley Fringe-toed Lizard Habitat Conservation Plan

On September 25 1980 (Federal Register 45:188), the Service listed the lizard as threatened under the Endangered Species Act. In a similar action, the California Department of Fish and Game (CDFG) listed the lizard as endangered in June of 1980 but has since proposed downlisting the species to threatened - perhaps prematurely. The federal Endangered Species Act prohibits "taking" of threatened and endangered species. "Take" means to pursue, hunt, shoot, wound, kill, trap, capture, collect, harass, or harm; or attempt any of these activities. Because the lizard is intimately associated with its habitat, virtually any activity which disturbs or destroys habitat will almost certainly destroy individual lizards. Such protection resulted in a conflict between Endangered Species Act objectives and local land use controls.

In 1983, a joint committee of federal, state, and local agencies was formed to work with developers and environmental groups to develop a strategy for addressing the problem. The Nature Conservancy (TNC) took the lead in bringing together all interested parties and developing a Coachella Valley Habitat Conservation Plan (HCP). The purpose of the HCP was to provide a comprehensive plan for the conservation of the fringe-toed lizard and establish conditions under which the local governments in the Coachella Valley could exercise traditional land use controls, yet remain in

compliance with the Endangered Species Act. In essence, the Plan divided the Coachella Valley into areas to be preserved for the fringe-toed lizard and remaining areas which can be developed. Acreage for three preserves was identified, of which an estimated 7,838-acres is occupiable habitat.

As directed by the HCP, the main goal of the preserve system is to provide a "permanently reserved habitat" for the preservation of the Coachella Valley fringe-toed lizard to assure that this species does not become extinct. Acquisitions of preserve lands were made through a combination of federal land exchanges and land purchases using the Federal Land and Water Conservation Fund, private donations, and a mitigation fee paid by developers in the Coachella Valley. The total proposed funding required for establishing the preserves is $25 million. Fifteen million dollars are projected to come from the federal government, $2.4 million from the state, $2 million from The Nature Conservancy, and $5 to 7 million from local mitigation fees.

Goals of the HCP also involved protection of the blowsand source and establishment of critical habitat, including a national wildlife refuge. The HCP protected wind corridors and sand sources outside preserve boundaries through county and city zoning actions. The HCP was signed by the Service, BLM, California Department of Fish and Game, TNC, Riverside County, and the cities of Desert Hot Springs, Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, and Coachella. The conflict was seemingly resolved when local governments adopted the HCP and the Secretary of the Interior granted an Endangered Species Act Section 10(a) permit to allow the incidental take of fringe-toed lizards conditioned on the implementation of the HCP. Through this permit, which was issued for a 30-year period, local government was allowed to continue their traditional regulatory authority over land use by approving development where incidental take of lizards would occur, yet still remain in compliance with the Endangered Species Act.

The Coachella Valley fringe-toed lizard HCP is often touted as a blueprint providing plans for a win:win solution serving as a model for similar confrontations throughout California and the west. However, it appears there have been a number of problems with interpretation and enforcement of the HCP and implementing agreement. Seven years following implementation of the HCP and the Section 10(a) permit, it appears that the intent of these agreements has not been adequately fulfilled.

As a stipulation of the Section 10(a) permit, developers are required to pay a $600/acre mitigation fee into an endowment fund for preserve acquisition prior to receiving a grading or building permit. The fee is required for any project or activity which will disturb land, however, parcels within the fee area which were already disturbed by urbanization or agriculture prior to August 1982 are not subject to the assessment. Also, parcels may be developed for agriculture without a fee being assessed, however, fees must be paid when these lands are converted from agriculture to another use. Because of the difficulty in setting an appropriate inflator and because the bulk of the acquisition program was expected to occur within the first few years, no inflator was proposed. Not only is

there no inflator, in fact, the opposite is true. After a total of $7 million is received, the mitigation fee drops from $600/acre to $lOO/acre

Biologists and managers representing the Service, BLM, and The Nature Conservancy view the Edom Hill/Willow Hole Preserve as they evaluate the success of the HCP. 02/05/92 WRR

Perhaps most serious is the lack of an adequate audit system to ensure payment of mitigation fees. Local land use authorities were supposed to demonstrate compliance with the terms of the permit by confirming that appropriate fees are paid, and in regulated areas, that actual land uses are in accordance with zoning. This information was to be provided through an annual report to the Service, however, it was recently determined that about half of these reports were apparently never done. This raises the question whether mitigation fees were ever actually paid for much of the recent development in the Coachella Valley. Another technique apparently used by some developers which may not have been adequately enforced by local governments was to pay a fee only for portions of a project which received structures. For example, mitigation fees may not have been paid for acreage formed into golf fairways, parks, or other "open" areas even though these areas removed lizard habitat from the valley. Lands have also been cleared and graded for supposedly agricultural purposes which are really nothing more than mitigation-free land speculation. All these activities have resulted in inadequate funding being made available soon enough to purchase lands within the three preserve boundaries. Coachella

Valley land prices have continued to rise, and because there was no mitigation fee inflator, lands become too expensive to purchase as part of the intended preserve. It is now abundantly clear that mitigation fees will not cover the purchase of remaining preserve lands, and unless other funding sources become available, total acquisition must be pursued through an HCP amendment process or some lands initially identified for preserve acquisition will need to be sacrificed to development.

Because fringe-toed lizards are restricted to aeolian sand deposits, environmental changes to this ecosystem could be extremely damaging to the species. It was recognized by the HCP authors that a less than adequate area was being established through direct land acquisition to perpetuate the blowsand ecosystem on the preserves, and that the integrity of preserve lands must be protected through zoning. Zoning sets forth permitted uses, restricting the range of activities that can be lawfully conducted. Local cities established zoning categories which were to regulate land use to achieve the goals of the HCP, and Riverside County General Plan designations were also to regulate land use in ways that coincidentally achieved the goals of the plan. Zoning was to provide interim control of habitat which was within the designated preserve boundaries, but remained to be acquired. The General Plan was also to regulate portions of the blowsand ecosystem which are necessary to sustain the natural function of a reserve by assuring an open corridor for wind and sand movement. However, county zoning and land use designation inconsistencies in reality do little to protect wind corridors, and it appears that the county may not have acted in good faith to achieve the goals stated in the HCP. Very low density residential development was promised in areas to prevent shielding of sand source, however, some zone classifications have since been changed to allow extensive development even within designated critical habitat. The continuing reception of new sand is an indispensable ecological process as far as survival of fringe-toed lizards is concerned. It is clear that an unobstructed sand source upwind from preserve lands has been jeopardized through both city and county zoning failures.

Perhaps the easiest way for the Service to regain control over the HCP is through the 1986 Implementing Agreement. This agreement acts as a contract between the government agencies, other parties, and the Service to make provisions of the HCP explicit and enforceable. This agreement 1) establishes mitigation fees as a funding source to acquire, maintain, and manage preserve lands, 2) sets the amount and term of the mitigation fees stipulated in the HCP, 3) sets forth obligations and responsibilities of the local agencies, the Service, and TNC, and 4) sets forth the remedies available to all of the parties in the event of breach of the Section 10(a) permit, including the rights of the Service to suspend or revoke the overall permit.

Actual implementation of the HCP should include a process of management, compliance, enforcement, evaluation, and amendment to remain a viable procedure. Management of the HCP, although hampered by lack of funding, is progressive and ongoing. Preserve lands have been established and largely protected, wildlife populations are being monitored, and efforts continue to remove sand shielding barriers on preserve land. However, perhaps more

attention needs to focus on research needs, public information, and active habitat enhancement and restoration.

Compliance of the HCP and implementing agreement has generally received poor followup from both local agencies and the Service, but is necessary to monitor zoning changes, record mitigation fee assessmenfs, and supervise land use decisions. Although various entities worked together to complete the plan, there has been little attempt since that time to monitor compliance or establish an adequate tracking system. The Service is charged with evaluating the permit by conducting a periodic review to determine whether the HCP is functioning as it was intended to function, and whether the necessary protection for the lizard is being realized. Violations in compliance with the HCP need to be identified and addressed in a timely manner before the process worsens.

The "Safari Dunes" parcel acquired by the Service in 1991. While much of the critical habitat is now protected by federal ownership, numerous other problems continue to plague implementation of the HCP.
11/09/90 WRR

Enforcement of the HCP has been limited to Service enforcement of the provisions of the Endangered Species Act, including the Section 10(a) permit. Unauthorized damage to habitat, interference with sand transport to conserved areas, or failure to pay or require fees are all violations of the Section 10(a) permit. These violations must be corrected, or the

Service must at the very least implement the option to suspend or to revoke that portion of the permit which applies to the unlawful activities. Even though the Endangered Species Act should provide adequate protection for the Coachella Valley fringe-toed lizard, it is not without problems. Habitat may be destroyed, but unless the Service can prove that lizards were taken with the habitat, it is difficult to impose penalties. While legally, enforcement actions could be brought against all parties involved in an unlawful taking; the bulldozer operator, the land developer, and the city or county that permitted the action on land known to be occupied by Coachella Valley fringe-toed lizards, in reality, law enforcement has been slow or lacking.

Evaluation of the HCP has also been slow, but is now underway. Faced with the evidence of a continuing fringe-toed lizard population decline, and evidence that the implementing agreement is not being adequately fulfilled, the Service has now initiated the process of reviewing the Coachella Valley HCP. Options are currently being explored to identify additional audit or monitoring measures appropriate to assure the fiscal and biological integrity of this and any future HCPs.

In the absence of complete scientific data, the cautious approach is to adopt a conservative strategy, and because of this there was a process built into the HCP to amend the document as new information becomes available. However, there has been a reluctance to re-open "a can of worms" on the part of both local agencies and the Service. Amending the HCP to get it back on track may be an arduous process but one which may be necessary. Working in concert with the amendment process is perhaps the need to suspend or revoke the Section 10(a) permit until protection of the Coachella Valley fringe-toed lizard is again guaranteed.

Wildlife managers must learn from the Coachella Valley fringe-toed lizard Habitat Conservation Plan and improve upon it to design future plans which adequately protect wildlife. The HCP process can work, and should not be prematurely dismissed. At the same time, however, equal effort must be put into assuring the continued workability of an HCP as goes into the original design of the plan. Initially, responsible parties failed to assess whether the Coachella Valley HCP was working as it was designed, and it becomes obvious that the Service needs to renew its involvement and conduct periodic reviews to evaluate whether this, or any, HCP is functioning as it was intended. Managers need to assess, on a regular basis, whether the necessary protection envisioned for a particular species is actually being realized. In the case of the fringe-toed lizard, recovery of a threatened species is in question, and the Service must evaluate the status of the lizard, the status of land acquisition and other conservation programs, the results of scientific investigations, and the status of plan implementation by local jurisdictions. Based on this evaluation, the Service must decide whether or not the plan is working. If the process appears to be effective, then leave it alone. If problems are apparent, then the decision becomes one of either amending the existing HCP, or suspending/revoking the Section 10(a) permit. Some action is imperative, as the HCP process cannot continue to be effective under a policy of benign neglect.

Habitat Conservation Plan Audit

During 1991, an article by an investigative newspaper reporter raised questions regarding the collection of development fees in Riverside County. Since at least 1989, refuge personnel and others have recognized the need to evaluate the effectiveness and management of the fringe-toed lizard HCP, including a financial audit. Annual reports are required from local governments, but few of the reports are ever received by the Service. In an effort to obtain a complete inventory of these required annual reports, personnel from the Carlsbad Enhancement office contacted the Coachella Valley Association of Governments in late 1991 and found out that approximately half of the reports apparently were never done. Based on this information, the need for an audit became imperative, and the Service decided to establish a cooperative agreement with Riverside County to expand the scope of the County's contract with accounting firm Price Waterhouse to include a complete audit of HCP revenue collections. Price Waterhouse was, at the time, reviewing other County fee collections, and an audit overlap seemed both economical and efficient. The Service also decided to assign AFWE the responsibility to designate a staff person to manage the cooperative agreement and be the Service contact through the course of the audit. To meet this need, in January, Regional Director Plenert designated Dave Riley as the AFWE representative responsible for exploring options with Riverside County for auditing the fiscal management of the HCP. In addition, Riley was directed to review the Region's HCP endeavors to assure that HCPs are accomplishing their biological intent consistent with the purposes of the Endangered Species Act. Riley was further asked to investigate and identify any additional audit or monitoring measures which may be appropriate to assure both the fiscal and biological integrity of current and future HCPs. However, by the end of 1992, no agreement has been reached, and an audit remains to be accomplished.

Sun City Palm Springs

Residential development of the Coachella Valley continues at a rapid pace, and construction of "Sun City Palm Springs" is proceeding adjacent to the east boundary of the refuge. Covering 1,575 acres, this housing project and golf course is Del Webb Corporation's newest adult community. Ultimately, the project will include 5,800 homes where 10,000 residents are expected to live. The price of houses ranges from $125,500 for a 1,170 square foot home to $237,500 for a 2,416 square foot home. A homeowner association fee of $1,200 per household per year will cover membership and use of recreation facilities. Additionally, a community facilities district assessment of $495 per household per year will be used to construct improvements to the Washington Street/I-10 interchange. Compared to these costs, the one-time mitigation fee of $600/acre paid by Del Webb to allow "incidental take" of threatened fringe-toed lizards and habitat is sadly laughable. Initial grading of Sun City Palm Springs occurred in October 1991, when more than 5,500,000 cubic yards of occupied fringe-toed lizard habitat was moved to shape the base for new homes, golf courses, and recreational facilities. The new community had a grand opening on July 4, 1992 and residents began moving into homes during the fall, By the end of

the year, Del Webb's $10 million recreation center was open, and their first golf course was ready to play. Development of the project is expected to be completed within 8 to 12 years. The impact of 10,000 people living immediately adjacent to, and downwind from, Coachella Valley NWR is currently unknown.

One of the Coachella Valley's most recent developments, Sun City Palm Springs begins construction of the 5,800-home community immediately east of the Preserve. 11/16/92 WRR

Biological Assessment of the Habitat Conservation Plan

During 1992, Carlsbad Enhancement Biologist Art Davenport began the task of drafting a biological and regulatory analysis of the Coachella Valley Fringe-toed Lizard HCP. The Preserve Management Committee participated in this effort by providing comments and input. This biological assessment identifies and discusses many of the HCP deficiencies which have become apparent since its inception. Furthermore, it provides corrective measures for these deficiencies. The final objective of this effort is to develop measures of making the HCP work-as it was designed, and to implement any changes through an ammendment process. Biologist W. Radke, TNC Area Manager Barrows, and AFWE Supervisor Brooks Harper met with County Supervisor Patricia Larson on February 14 to discuss some of the HCP deficiencies. Regarding the mitigation fee and the need for an inflator to keep up with rising property values, Supervisor Larson was not receptive to

increasing the $600/acre fee, but felt that extending the length of time in which fees may be collected past the $lO-million goal would be a viable alternative. By year's end, the Draft Biological Assessment was receiving in-house review.

E. ADMINISTRATION

1. Personnel

Salton Sea NWR Complex **staff during 1992. Left to right, Front row:** 7, 6, 12 Middle row: 2, 3, 4 Back row: 13, 8, 10, 9.

1. Kenneth Voget · Project Leader GS-485-12 PFT (transferred to Desert NWR Complex 6/92)
2. **E. Clark Bloom · Project Leader GS-485-12 PFT (EOD 6/92 from Modoc NWR)**
3. Daniel Dinkler · Primary Assitant Refuge Manager GS-485-11 PFT
4. William Radke · Wildlife Biologist GS-486-11 PFT
5. Christian Schoneman · Refuge Operations Specialist GS-485-7 PFT (transferred to Pahranagat NWR 7/92)
6. Kathleen Arnett · Administrative Support Assistant GS-303-6 PFT

7. Sandi Harris - Office Automation Clerk GS-326-4 PFT (EOD 6/92)

8. Lee Laizure - Heavy Equipment Mechanic WG-5803-10 PFT

9. Richard Marquez - Engineering Equipment Operator WG-5716-10 PFT

10. Marcos Orozco - Engineering Equipment Operator WG-5716-9 PFT

11. Gaylord Schulz - Wildlife Biologist GS-486-7 TFT (terminated 4/92)

12. Marcia Radke - Wildlife Biologist GS-486-7 TPT

13. Mark Marquez - Maintenance Mechanic Helper WG-4749-5 TFT

14. Jeffrey Walker - Laborer WG-3502-3 TFT (terminated 8/92)

15. Lonnie Perry - Special Services Assistant GS-0186-5 (EOD 6/92 Terminated 8/92)

As a satellite to Salton Sea NWR, Coachella Valley Refuge is operated as a collateral responsibility by personnel working out of Calipatria. During 1992, Salton Sea Refuge personnel visited Coachella Valley NWR on 44 days, primarily for biological surveys, research activities, maintenance, and law enforcement. An additional 12 days were spent attending meetings specific to Coachella Valley NWR issues.

2. Youth Programs

The Salton Sea Youth Conservation Corps crew spent two days at Coachella Valley NWR during 1992 erecting about one-eighth mile of 3-strand barbed wire fence along the northwest portion of the previously acquired Hawn property on the western edge of the refuge. The crew also removed about one-quarter mile of interior fence near the same site.

4. Volunteer Program

TNC employees Cameron Barrows, Carol Jacobsen, David Mathews, and others assisted Service personnel in constructing l/2-mile of boundary fence along the newly aquired Washington Farms parcel and l/4-mile of fence along the west side of the previously acquired Brick property.

5. Funding

Salton Sea NWR received $7,000 for management of the Coachella Valley NWR from a management endowment fund managed by The Nature Conservancy for the Preserve (See Section D.4). This money is typically used for saltcedar removal and maintenance activities, law enforcement and research activities, biological monitoring and contaminant surveys, and to off-set administrative costs.

During 1992, the Service provided a total of 95 staff days by 13 staff members at a cost of $15,200. In addition, there was approximately $750 spent for fuel as well as an additional 25 days of staff time ($4,550) devoted to reports, data analyses, and related issues. This brings the grand total of funds expended by the Service at Coachella Valley NWR for 1992 to $20,400. Obviously, the funding provided by the management endowment does not meet overall refuge funds needed to meet Service commitments on the Preserve. The amount of funds to be spent at the refuge next year is expected to exceed the amount spent in 1992. This increase will result from active habitat restoration to be conducted on lands recently acquired by the Service. Increasing operational, maintenance needs, and refuge committments at Coachella Valley NWR really require staffing a position specifically for the refuge.

F. HABITAT MANAGEMENT

1. General

The Coachella Valley Preserve contains two major biological features: the large native fan palm (Washingtonia filifera) oasis, and a large portion of the major blowsand ecosystem. Portions have been disturbed by human activities, but both of these communities are viable and biologically productive. Some of the disturbed areas may be gradually restored through management actions. The southern portion of the Preserve contains about 4,120 acres of occupiable habitat for the fringe-toed lizard, which are currently readily observed on about 2,600 Preserve acres.

A combination of natural features including tall, steep mountains, meager precipitation supporting relatively little vegetation, and rainfall occurring in sudden bursts to create flooding, combine to wash sand and gravel from the surrounding hills into the valley. Periodic flash floods from the Little San Bernardino Mountains provide waterborne sediments which are then picked up by the valley's strong winds and sorted to create an extensive and dynamic system of sand dunes in the Coachella Valley. It is these isolated dunes upon which the Coachella Valley fringe-toed lizard and numerous other plants and animals depend. About 518 sq.km.(200 square miles) of suitable habitat once covered the Coachella Valley, however, this has been drastically reduced.

Within the Preserve, national wildlife refuge lands provide approximately 90% of the designated critical habitat for the lizard. Nearly all public use is precluded from refuge lands, with permitted activities restricted to research and investigation. Three major soil types with associated vegetative cover have been identified on refuge lands, and include sand dunes, sand hummocks, and sandy plains. These aeolian habitat types are present on the refuge in roughly the same proportion as they once occurred in the Coachella Valley.

Sand texture of sand dunes is fine, and wind transport is active, resulting in a very dynamic system of sand dunes shifting position over time depending on wind direction. Dune heights reach 30 feet, and have sparse

vegetative cover (5-15%). Common vegetation includes honey mesquite (Prosopis glandulosa) creosote (Larrea divaricata), burrobush (Ambrosia dumosa), sandmat (Euphorbia polycarpa), wingscale (Atriplex canescens), dune primrose (Oenothera deltoides), and others. The sand dune soil/habitat type covers about 10% of the refuge.

federal candidate species, tne purple-rlowering Coachella Valley milkvetch, Astragalus 1entiginosus coachellae, grows throughout the refuge among more abundant Dicoria plants. 04/08/92 WRR

Sand texture in sand hummocks is varied, and wind transport is less active, with sand deposition and stabilization occurring in oblong "hummocks" associated with shrubs. These hummocks are usually from 2 to 5 feet high, 5 to 10 feet wide, and 10 to 20 feet long. Dominant plants include creosote, saltbush (Atriplex polycarpa), burrobush, cheesebush (Hymenoclea salsola), coldenia (Teauilia canescens), wingscale, and others. This soil/habitat type covers about 40% of the refuge.

The Coachella Valley Preserve encompasses portions of an entire ecosystem to provide the various components which create aeolian sand transport onto the refuge. 10/09/91 WRR

Sand texture of sandy plains is coarse and wind transport is minor. Relief is small and plant cover is high. Common plants of sandy plains include coldenia, creosote, croton (Croton californicus), dalea (Dalea mollis), sand verbena (Abronia villosa), Coachella milkvetch (Astraealus lentieinosus coachellae), and others. This soil/habitat type covers roughly 50% of the refuge.

Plant species of special concern which may occur on refuge lands include Wiggin's croton (Croton wigginsii), flat-seeded spurge (Euphorbia platysperma), and Coachella milkvetch.

Perpetuation of the fringe-toed lizard is dependent upon the continuing renewal of windblown sand. Invasive exotic vegetation, especially

saltcedar (Tamarix aphylla), abumashi (Schismus barbatus), and Russian thistle (Salsola australis) are serious habitat threats. Wind shielding, by establishment of tree rows or upwind development, acts to stabilize sand dunes and eventually prevents habitat renewal, eliminating the fringe-toed lizard population.

9. Fire Management

On May 19, while disposing of debris adjacent to the refuge, contractor Jesus Juarez Troche started a fire which ultimately burned 96-acres of land including five acres on the refuge. Troche had been contracted by Champagne Partners and Associates to remove a treerow from the refuge as per mitigation requirements dictated by a settlement agreement between the Service and Ivey Ranch (see Section H.17).

Managers Bloom and Voget, and Special Agents Palladini and Chang investigate the 96-acre burn which began as a controlled fire adjacent to the refuge. 05/21/92 WRR

Troche had a special use permit to enter the refuge for the purpose of removing salt cedar trees which were then to be disposed of off refuge. Troche did an excellent job removing the windbreak and following the special conditions of the permit, he also procurred the necessary burn permit from the county, however, he neglected to wait for a water truck to arrive before starting a fire to burn the huge pile of cut trees. Half an hour after lighting the pile, wind blew the fire across the firebreak and it quickly spread to adjoining grassland and treerows. California

Department of Forestry responded with eight firefighting vehicles and numerous personnel, and eventually controlled the blaze at noon. The refuge area burned was not occupied fringe-toed lizard habitat and little damage was caused by either the fire or by firefighters, who limited their control to firelines built by hand crews while on refuge land (critical habitat). Elsewhere, dozers were used to create firebreaks intersecting treerows. Two BLM rangers at the scene explained the sensitivity of the area along with Endangered Species Act requirements, which greatly assisted in the small degree of habitat damage created by the incident. No fringe-toed lizards were "taken" by the incident, though one desert iguana was found killed by the fire. Upon investigating the situation, the Service recognized a benefit from the wildfire through elimination of additional treerows adjacent to the refuge. As a result, the Service did not press charges for destruction of property. However, BLM did intend to charge Troche with various criminal penalties, and California Department of Forestry threatened to assess fire control costs on Troche. Troche, recognizing the potential liabilities, quickly relocated to Mexico,-but has since moved to Arizona where BLM reportedly served the violation notices.

G. WILDLIFE

1. Wildlife Diversity

California kingsnakes are just one or the 23 reptile species protected on the Preserve, and are most commonly seen in palm oasis wetlands. 06/23/92 WRR

Desert lands protected by the Coachella Valley Preserve support a surprising diversity of wildlife species. Many of the wildlife species are closely associated with unique habitats on the Preserve, while others are migrants taking temporary advantage of shade and perennial water associated with native palm oases. At least 180 bird species have been documented on the area, with at least 30 of these nesting here. In addition, at least 25 species of mammals, 23 species of reptiles, 4 species of amphibians, and 2 species of fish utilize the Preserve. A number of unique invertebrates also occur on Preserve lands.

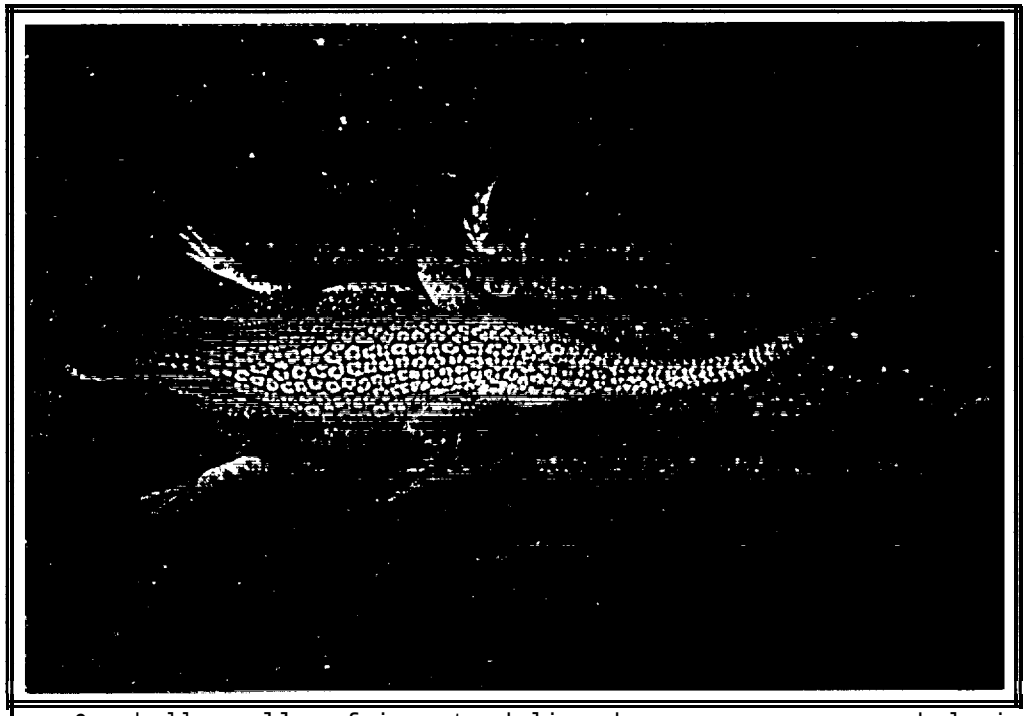
2. Endaneered and/or Threatened Species

State and federally endangered and/or threatened wildlife which occur on the Preserve include the Coachella Valley fringe-toed lizard (Uma inornata), the desert tortoise (Gonherus agassizi), and the desert pupfish (Cyprinodon maculariug). Federal candidate species include the flat-tailed horned lizard (Phrvnosoma mcallii). Species of special concern include the Palm Springs round-tailed ground squirrel (Spermophilus tereticaudus chlorus), giant red velvet mite (Dinothrombium Dandorae), and desert cockroach (Arenivaga investigata), all of which are sand dwelling species restricted to the Coachella Valley and found on refuge lands. The giant palm-boring beetle (Dinapate wriehtii) occurs only in palm groves.

Historically, the range of the Coachella Valley fringe-toed lizard was nearly all of the valley floor from San Gorgonio Pass to the Salton Sea and extended northeast to include a portion of the Indio Hills. Some 270 square miles once served as fringe-toed lizard habitat, but increasing development has drastically reduced the range of this species. Without immediate protection, it was reasoned that this species would become extinct within 50 years. As a result, the Coachella Valley fringe-toed lizard was federally listed as threatened on September 25, 1980 (Federal Register 45:188). In a parallel action, the state of California initially designated this lizard as endangered (but proposed to downlist the species to "threatened" during 1990). Currently, only about 4% of the original habitat suitable for the species occurrence exists in the Coachella Valley in the form of three preserves. The perpetuation of this highly specialized animal is dependent upon the continuing renewal of windblown sand. Wind shielding by development or tree rows stabilizes dunes and eventually prevents renewal of habitat, eventually eliminating the fringe-toed lizard population. Other threats to habitat include off-road vehicles, flood control projects, and invasive exotic vegetation.

The Coachella Valley fringe-toed lizard is one of five species of fringe-toed lizards in the world, three of which are found in the United States. The species are distinguished from one another based primarily on morphological and behavioral traits. The Coachella Valley fringe-toed lizard averages about 150 mm to 240 mm (6 to 9 inches) in total length, with the tail normally making up over half this length. Males are slightly larger than females. This fringe-toed lizard is whitish or sand-colored on both its back and belly surfaces with a pattern of darker eye-like markings forming longitudinal stripes over the shoulders and back. Small black dots may be present along the sides and diffuse black lines are present beneath

the lower jaw. There is a lack of side markings beneath the shoulder. The area surrounding the eye is bright orange, and during the breeding season, adults may have an orangish wash to the sides. Coachella Valley fringe-toed lizards usually have three internasal scales and fewer than 29 femoral pores.



The Coachella valley fringe-toed lizard has numerous morphological, physiological, and behavioral adaptations which allow it to compete favorably in a limited environment. Habitat destruction now threatens the animal with extinction. 04/20/90 WRR

Several investigators have long recognized the number of adaptations which the lizard has developed to survive in a dynamic and harsh environment. Adaptations to living among the dunes include the ability to run across the sand surface at high speed, dive into the sand, and move short distances below the sand surface. This activity is aided by the small, rounded scales on the lizard's skin which reduce the friction of its body against the sand and protect the body from abrasion. The lizard receives its name from its toes, which have a row of enlarged comb-like scales to increase the foot's surface area and improve traction when pushing against the sand. The fringe-toed lizard is able to partially close its nostrils and to blow sand out of its U-shaped nasal passages, allowing a completely buried lizard to breath the air between sand grains. The nose is wedge-shaped to facilitate rapid burying, and the lower jaw is shorter than the upper, preventing sand from entering the lizard's mouth when it dives. There is a flap of skin covering the ears, preventing sand grains from entering the ears during burrowing. The species has fringed eyelids, with two sets of

membranes covering the eye in opposite directions. Any sand entering the eye accumulates at the front corner where it is encased in mucus and expelled

The spotted leaf-nosed snake is an uncommon nocturnal animal which feeds primarily on banded geckos, but will also eat other lizards. 05/02/91 WRR

Although they are capable of digging, fringe-toed lizards often use the burrows of other animals for escape and thermoregulation. The lizard is active when its body temperature is between 26" and 45°C, with a mean of 38°C (100°F). It attains these temperatures by basking both on the sand surface or just below the surface. When external temperatures become too hot, the lizards spend most of the day below the surface and become active only in the early morning and late afternoon. Coachella Valley fringe-toed lizards normally enter winter dormancy from November through February when temperatures fall below the species activity range, however, they can become active for short periods during any month of the year if temperatures are favorable.

Individual fringe-toed lizards live for about five years. They seem to attain sexual maturity based on size rather than age, but are normally capable of breeding after two years. One clutch of eggs is normally laid during spring, but multiple clutches of eggs may be laid during a favorable season, with hatchlings appearing from late June to early September. It is probable that the amount of winter rainfall influences reproduction of this species. In years of low rainfall, annual plants may fail to germinate, in

turn reducing the normal insect population on which fringe-toed lizards feed. In response to the short food supply, reproduction of lizards may be depressed. Coachella Valley fringe-toed lizards are insectivorous, but will also eat plant material. Perhaps in response to drought conditions during the 1990 field season, fringe-toed lizards were observed feeding almost exclusively on harvester ants. Natural predators of fringe-toed lizards include leopard lizards (Gambelia wislizenii), whiptail lizards (Cnemidonhorus tigris), coachwhips (Masticophis flagellum), sidewinders (Crotalus cerastes), kestrels (Falco sparverius), roadrunners (Geococcyx californianus), ravens (Corvus corax), loggerhead shrikes (Lanius ludovicianus), and coyotes (Canis latrans). Fringe-toed lizards themselves are also at times cannibalistic.

While the taxonomy, adaptations, behavior, and physiology of the fringe-toed lizard are relatively well known, the population and ecology of the species has been little studied. Information pertaining to the population density throughout the valley, population size and reproduction from year to year, movement of individuals, barriers to movement, and contiguity of subpopulations throughout the valley remain largely undocumented.

In order to determine existing populations of fringe-toed lizards on the refuge, a monitoring program was initiated in May 1986. The methods for conducting the monitoring program are established in the Coachella Valley Preserve System Management Plan. The concept behind monitoring is to provide a means for managers to assess whether management actions and policies are accomplishing stated management objectives. Currently, four transects are each censused six times to establish trend information. Refuge transects were operated between May 26 and June 09 during the spring of 1992. Also, two transects were operated during autumn between September 25 and October 12 to help determine survival and recruitment of hatchling fringe-toed lizards (See Section D.5). Results of the spring monitoring efforts are depicted in the following three tables.

Table 4. CVFTL Cummulative Totals Observed on Transects During 1992

TRANSECT	ADULTS	JUVENILES
CVP #l	13	14
CVP #2	58	23
CVP #3	14	6
CVP #4	23	44
TOTALS	108	87

Table 5. Average Number of CVFTL Per Census 1986 - 1992.

TRAN-SECT	1986	1987	1988	1989	1990	1991	1992
CVP #1	3.7	2.0	1.0	1.3	1.2	.0	4.0
CVP #2	2.8	4.3	2.0	5.2	4.0	0.7	14.0
CVP #3	2.0	1.7	0.5	3.2	0.5	0.7	3.0
CVP #4	---	---	---	---	3.3	2.1	11.0

Table 6. CVFTL Adult/Juvenile Ratio 1986 - 1992.

TRAN-SCET	1986	1987	1988	1989	1990	1991	1992
CVP #1	0	1.4/l	0	1.0/l	0	0	1.0/l
CVP #2	1.8/l	0.6/l	0	1.4/l	3.8/l	0.4/l	2.5/1
CVP #3	11.0/1	0.4/1	0	0.9/1	0	0	2.3/1
CVP #4	---	—	—	—	9.0/1	6.0/1	0.6/1

A dramatic increase in the number of fringe-toed lizards observed during spring surveys resulted from high recruitment from the 1991 cohort. This is likely a result of abundant food and ample spring and summer rains which created appropriate soil moisture for incubation.

10. Other Resident Wildlife

The flat-tailed horned lizard is a level-2 candidate species for federal listing. Already having the smallest geographic range of any species of United States horned lizard, this animal has experienced rapid population declines in recent years. Presumably it has become another victim to habitat destruction or alteration through both urban and agricultural development, off-road vehicle uses, and sand or gravel mining activities. The continued expansion of human activities in Imperial and Riverside County deserts will unavoidably continue to destroy or degrade the habitat for this species.

Although little about these lizards on the refuge is known, researchers Allen Muth and Mark Fisher studied populations of flat-tails west of Brawley, California during the past three years. The following information is a result of their work.

Male and female flat-tails do not differ significantly in size, and sex ratios are essentially equal. The flat-tailed horned lizard occupies a home range averaging 19,200 square meters (209,280 square feet). In parts of their range, these horned lizards prefer Ambrosia sp. and Psorothamnus

sp., but seem to avoid Teauilia sp. and Larrea. sp. which were also abundant. The reason for this may be that the preferred plants are low-growing, densely branched shrubs having multiple stems. Such vegetation provides denser shade, and accumulates more sand than do single stem species.

Depending on temperature, flat-tails are obligate hibernators, and are essentially inactive from mid-November through mid-February. During this period of winter dormancy, adults occupy burrows which they dig up to 10 cm (four inches) deep. Most burrows are less than 5 cm deep, and the end of the lizard's dormancy period is correlated with the soil temperature at this depth, Some individuals, especially juvenile lizards, are occasionally active throughout the winter.

Flat-tailed horned lizards occur throughout the refuge in unknown numbers. The Service has been petitioned to list this animal as an endangered species. 06/29/90 WRR

The flat-tailed horned lizard's cryptic coloration closely matches the ground, and makes them very difficult to see. As a result, they respond to potential predators by flattening their body to the ground and remaining immobile rather than fleeing. There appears to be little or no mortality during winter dormancy. Instead, horned lizard survival is lowest during late spring and summer when the lizards are active and exposed to more encounters with predators. Flat-tails are active before sunrise and after sunset, and are therefore available to both nocturnal and diurnal

predators. Surprisingly, most predation occurs from round-tailed ground squirrels, however, other documented predators include various snakes, roadrunners, loggerhead shrikes, coyotes, and kit foxes.

Flat-tailed horned lizards are present in unknown numbers on the Coachella Valley Preserve. This species is generally considered difficult to find because of its cryptic coloration and behavior of remaining perfectly still or suddenly darting into a rodent burrow. During 1992 monitoring efforts, horned lizards were observed on transects 2 and 4, and were also found adjacent. to transects 1 and 2.

imilar to last year, many species of moths and butterflies, like this southern dog-face sulphur, had a banner year on the refuge in 1992. 04/30/92 WRR

Insect populations can vary greatly at Coachella Valley NWR from year to year. The conditions which bring about these population fluctuations are varied and are not completely understood, however, one of the greatest variables is rainfall, While some insect species are able to respond to high rainfall almost immediately, for others the response can be delayed for several years. During 1992, rains were nicely spaced and provided a lush growth of vegetation. Responding to this annual vegetation, painted lady butterflys (Vanessa cardui) and white-lined sphinx moths (Hyles lineata) were able to exponentially increase their populations, and were present by the billions. During wet years, these species breed in Mexico and migrate northward, laying eggs as they go. Many thousands fly north each day, stopping briefly to feed on flowering vegetation such as sand verbena or mesquite. Their larvae feed largely on cheeseweed, evening primrose, and other plants.

H. PUBLIC USE

1. General

The Coachella Valley is one of the fastest developing areas in the country. The human population increased 113% from 1980 to 1991, and the Coachella Valley Preserve receives an estimated 20,000 visitors each year. Most visitation occurs between November through April, with a high proportion of visitors wintering here from out of state. The Nature Conservancy owns and operates a rustic visitor center/office at the Thousand Palms Oasis which is open to the public sporadically and operated primarily by volunteers. Popular activities on the Preserve include hiking, birding, horseback riding, and photography. Because the Preserve encompasses lands under the jurisdiction of five different agencies, rules regulating public use vary dramatically from one area to another. This can be extremely confusing to the public, and also to agency law enforcement officers.

7. Other Interpretive Proerams

During February, Biologist W. Radke presented a paper at the 1992 Annual Conference of the Western Section of The Wildlife Society entitled "Continuing Threats to the Recovery of the Coachella Valley Fringe-Toed Lizard." During April, Radke presented this same slide show and discussion at a monthly meeting of the San Diego Herpetological Society. In August, Radke participated in the Regional biological diversity workshop in Corvallis, Oregon and discussed the importance of managing for biological diversity on a refuge essentially established for a single species.

16. Other Non-Wildlife Oriented Recreation

Currently, a 24-foot wide corridor designated for public hiking and equestrian use occurs along the west refuge boundary, and through the northern portion of the refuge (see attached map). Service regulations on the refuge are standard regulations governing all National Wildlife Refuges, with main objectives aimed at protection of designated critical habitat for wildlife threatened with extinction. Therefore, hiking and equestrian use were not expressly approved on Service lands when the refuge was established. However, in 1989, an Environmental Assessment was submitted to the Service by BLM to include a Public Equestrian and Hiking Trail System within the Coachella Valley Preserve, including refuge land.

A final Biological Opinion for this trail system was provided to BLM on June 29, 1990 by Service Enhancement biologists. It was the belief of the Service that a trail system, **as specified in the Biological Opinion,** was not likely to jeopardize the continued existence of the Coachella Valley fringe-toed lizard. The proposed action allowed establishment of 4.5-miles of trails on refuge land, analyzed the impacts, cumulative effects, and incidental take associated with the trail, established reasonable and prudent measures to be taken, and required specific terms and conditions

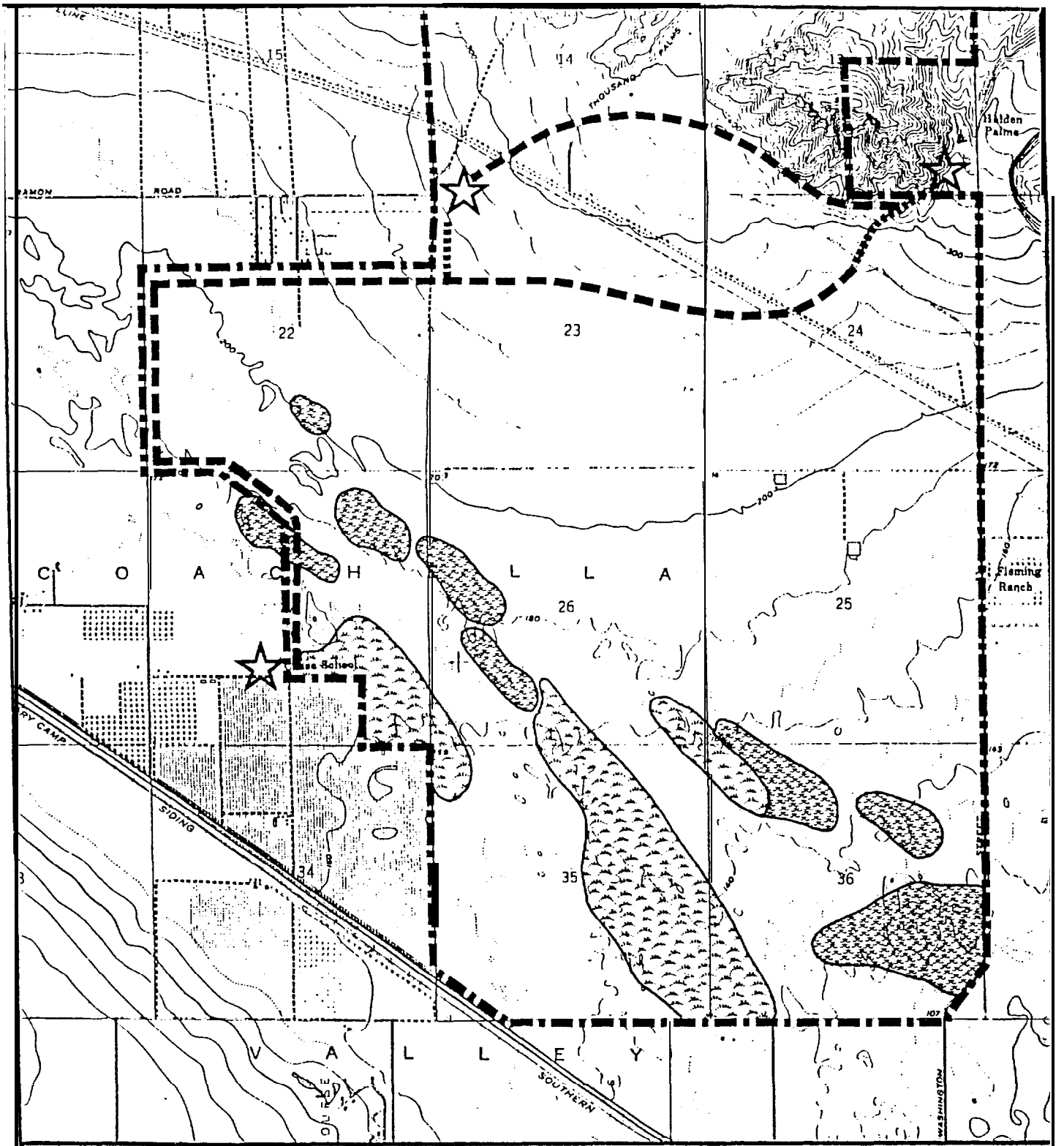


FIGURE 6- PREFERRAELDTERNAT(H/1E

which must be complied with. The Biological Opinion also set forth Conservation Recommendations relating to the issue of trail use. It is important to note that trail use may be suspended should monitoring efforts reveal that incidental take of fringe-toed lizards has exceeded the levels authorized by the Biological Opinion.

17. Law Enforcement

Refuge lands continue to remain threatened by a number of issues including flood control proposals and illegal activities such as off-road vehicle use, equestrian use, indiscriminate shooting, dumping, public hiking, general trespass, habitat destruction, photography, and collecting. While each of these issues is important, their collective impact is especially significant.

The Bureau of Land Management currently receives Preserve endowment funds totalling $16,000 each year, which help fund a law enforcement position for the area. As a result, BLM ranger Robert Judkins had the primary responsibility of patrolling the Preserve, including refuge lands. Because BLM did not have a delegated ranger until August, the Preserve went without adequate patrol for much of the year. Most violation notices are issued by BLM rangers because of their broader authority under CFR 43 to enforce laws on all public lands, and because the rangers have state authority granted them by the California Department of Fish and Game. Refuge officers enforce laws incidental to other duties on the refuge, and have taken the lead on enforcing Endangered Species Act violations. Additional patrol was conducted by refuge officers during dove hunting season, and due to BLM's personnel shortage, refuge officers patrolled the area more often. During 1992, BLM rangers conducted periodic patrols of refuge trails by horseback to help educate and change current attitudes concerning equestrian use on Preserve lands. BLM's horses were stabled adjacent to the refuge at the Robert Soderburg property, from which nearly all equestrian trespass emanates.

Winter rains provided a tremendous amount of exotic Brassica sp. on the refuge during 1992. This mustard produces abundant seed and created favorable habitat for mourning doves. Enormous numbers of doves attracted a proportional amount of hunters, many of whom paid little notice to Preserve boundary signs. For this reason, a large number of trespass tickets were written during the year. Problems with hot air balloons also increased during 1992. Balloonists, who take off elsewhere in the Coachella Valley, find the unobstructed desert provided by the refuge a safe place to land. Boundary fences are then cut to allow vehicle access to pick up the balloon. This activity normally occurs in the evening, and so far no balloonists have been caught in the act of trespassing. Another problem which increased during 1992 is the illegal removal of Preserve boundary signs. It appears that the "lizard signs" have become a collector's item.

Other violations on Preserve lands include off-road vehicle use, dumping, vandalism, and use of firearms. Law enforcement on the area has been largely a hit-or-miss situation, and most violators are never apprehended.

The following table depicts incidents investigated largely by BLM rangers during 1990, 1991, and 1992.

Table 7. Incidents Investigated on Preserve Lands Between 1990 · 1992,

VIOLATIONS:NUMBER OF CASES	1990	1991	1992
Trespass	14	3	5
Littering	2	0	0
Resource Collection	1	0	1
Removing Vegetation	2	2	0
Possession of Narcotics	1	1	0
Dumping	2	0	2
Vehicle Code Violations	1	4	3
Hunting/Shooting	1	2	8
Motion Pictures 27.71	0	0	1
Total:	24	12	20

Three cases initiated during past years continued into 1992. These cases, which are explained in detail on the following pages, involved Ivey Ranch Country Club, Jerold Segall, and the IID Power Division.

Ivey Ranch Issue

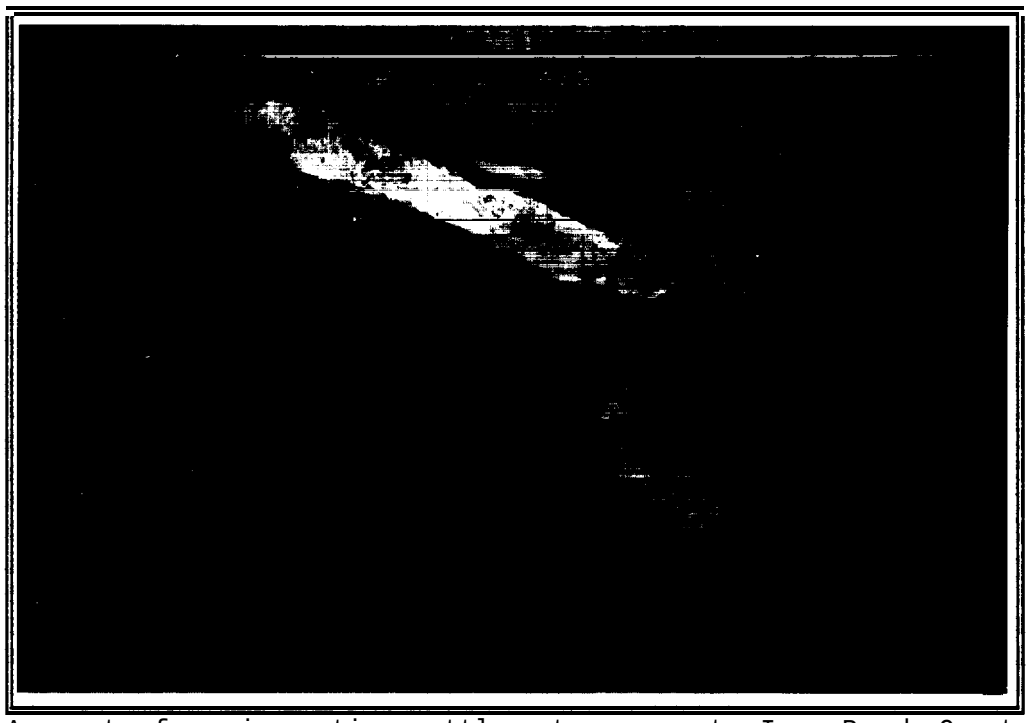
During June 1990, the Service began investigating an incident on the refuge in which about 1.5-acres of Critical Habitat had been severely impacted by heavy equipment operated by contractors of Ivey Ranch Country Club in Thousand Palms. Ivey Ranch had carelessly and flagrantly trespassed onto National Wildlife Refuge lands and bulldozed piles of debris onto the area. This debris was composed of logs, wood, wire, rubber tires, concrete, metal drums, and other assorted trash piled up to six feet high. The debris had clearly been pushed onto the refuge by bulldozer to dispose of material accumulated when clearing additional land for development at Ivey Ranch.

Potential federal laws/regulations involved in the action included violations of the Endangered Species Act and five violations of the National Wildlife Refuge Administration Act, including trespass, vehicle provisions, damage to plants and animals, destruction of property, and disposal of waste. Under the Endangered Species Act alone, criminal penalties can amount to jail time plus $100,000 per count.

At the time of the habitat destruction, there was no fence along this portion of the refuge boundary, though the approximate boundary was adequately posted with Preserve signs and regulations. Additionally, while the dune system which included the impacted area was perhaps the healthiest and most extensive fringe-toed lizard habitat on the Preserve, and contains some of the area's highest density of protected lizards, no dead lizards were ever recovered. While everyone agreed that "take" of a threatened

species likely occurred, the Service was reluctant to press the issue in federal court. Rather than pursue litigation, the Service began negotiations with Ivey Ranch and ultimately entered into a settlement agreement which resolved the dispute without Ivey Ranch admitting liability. The agreement, drafted by Service Biologists and Assistant U.S. Attorney Peter Hsiao, involved both restoration of the impacted site and mitigation for damages to fringe-toed lizard habitat.

Ivey Ranch eventually removed all debris bulldozed onto the Preserve, trucked 200 cubic yards of sand to the impacted site, provided 50 shrubs to revegetate the area, transferred title of 6.5-acres of desert land to the Service, and removed a l/8-mile saltcedar treerow northwest of the site. Removal of treerows allows sand to migrate over the area and enhance fringe-toed lizard habitat. Additionally, Ivey Ranch agreed to provide an educational sign about the Preserve, and remove another l/8-mile treerow to enhance habitat. The current management of Ivey Ranch Country Club, which became "Champagne Partners and Associates," which became "The Greens," inherited the settlement agreement and completed the requirements during 1992 by removing and disposing of the final l/8-mile treerow (and inadvertantly setting fire to the refuge · see Section F.9). This case was finally resolved June 8, 1992 when Champagne Partners provided an interpretive sign to the Service. Estimated costs incurred by Ivey Ranch/Champagne Parters/The Greens to complete the settlement agreement range up to $218,320. In consideration for completing the agreement, the Service released all legal claims against Ivey Ranch, including tort claims, injunctive relief, damages, and criminal or civil penalties.'



As part of an innovative settlement agreement, Ivey Ranch Country Club removed l/8-mile of saltcedar windbreak from the refuge to allow sand to begin migrating over the area and enhance habitat downwind. 01/13/93 WRR

Once the settlement agreement was fullfilled, the Riverside Press Enterprise ran an article on the issue on April 21, titled "Agreement Ends Trouble Over Dumped Debris." While lengthy negotiations, enforcement of the agreement's provisions, and monitoring the efforts toward completion of the agreement was time consuming and sometimes created major headaches, the results of this case were extremely valuable to the Service and directly benefitted the refuge and fringe-toed lizard habitat.

Jerry Segall Issue

What began in October 1990 as a routine public contact adjacent to the refuge to discuss a potential Endangered Species Act violation has steadily evolved into a major conflict between the Service and Palm Desert Realtor Jerold Segall. Segall owns 9.3-acres of land which were within the designated Coachella Valley Preserve boundary, and officially requested exclusion from the Preserve boundary in a letter to Regional Director Richard Myshak in 1985. At that time, the Service directed Segall to seek modification of the Preserve boundary through an amendment process, however, Segall never took the action any further.

During a property boundary survey initiated between the Service and an adjacent landowner in 1989, it was determined that Segall's jojoba farm trespassed on both the Hawn property and the adjacent Safari Dunes property, and Hawn notified Segall of the situation. It turned out that Segall had not adequately surveyed his property before he developed it for jojoba production in 1979. Based on the new, accurate property survey, Segall began clearing an additional 1.4-acres in October 1990, but made no attempt to adjust his original boundary errors. Refuge Officer W. Radke observed the clearing of previously undisturbed desert taking place on 10/5/90 and contacted Segall to see if he had acquired the necessary federal permits to allow incidental take of fringe-toed lizards. When it was determined that Segall had applied for no permits, a report of the incident was sent to personnel in both the Divisions of Fish and Wildlife Enhancement and Law Enforcement, who began investigating Segall for possible take of a threatened species.

On 2/25/91 the Service acquired the 50-acre Safari Dunes property located on the north and east side **of** Segall's jojoba farm, and thus inherited about 1.4 acres of trespass jojoba. To resolve the various problems he was having with the Service, Segall initiated a meeting held on 5/31/91 which was attended by U.S. Congressman Al McCandless, Regional Director Marvin Plenert, Senior Resident Agent Larry Farrington, Refuge Manager Ken Voget, Biologist Radke, and Segall. At the Congessman's suggestion, the Service proposed an acre-for-acre land swap to allow Segall continued use of mature jojoba bushes now growing on federal land. Toward this solution, Service Realty personnel spent considerable time and money conducting inspections, surveys, and appraisals.

While the boundary issue was seemingly being resolved, Refuge and Law Enforcement personnel were working to determine whether or not Segall's property was included in the Preserve boundary, designated by a 1986 Habitat Conservation Plan. The HCP precludes clearing and development

within the Preserve boundary, while establishing mitigation requirements for lands disturbed outside the Preserve. A review of records, statements, and recollections from individuals involved in the early HCP process determined that many people agreed at the time that Segall's property could be excluded from the Preserve boundary primarily because of its relatively small size. There is a tape recording from a 1985 Board of Supervisor's public hearing, and a letter from Riverside County Supervisor Patricia Larson which support Segall's statement that his property was intended to be excluded from the Preserve. The situation was complicated by the fact that records in the County Assessor's Map Book at the Bermuda Dunes office showed Segall's property as being inside the Preserve and restrictively zoned as Natural Asset. However, these records were in direct conflict with those at the Riverside office, which showed Segall's property as being outside the Preserve and more permissively zoned as W-2. Based on this information, the Service was reluctant to pursue an Endangered Species Act "take" violation because ample confusion existed to defend the opinion that Segall's property exists outside the Preserve boundary. Instead, Segall paid a $900 mitigation fee for destroying habitat, and the Regional Director mailed Segall a 7/10/91 letter recognizing his property as being excluded from the Preserve. Segall used this letter to begin seeking County support to change his land's zoning back to W-2, which would allow significant development including industrial use, and would increase the resale value of his land. Although the Service actively opposed this zoning change, Segall eventually was successful in obtaining support from the Riverside County Planning Department in a letter dated 11/13/91.

On October 21, 1991 a meeting was held between Realty Specialist Judee Jacoby, W. Radke, and Segall to discuss finalizing the land trade. During the meeting Segall stated that he ultimately intended to develop his property or sell the property for development, and was not willing to trade lands because his roadfront property was much more valuable than that overlaying refuge land, This was acceptable to the Service, and it was determined at the meeting and in a followup letter dated 11/21/91 from the Regional Director that Segall would remove jojoba bushes, dripline, and his existing chickenwire and rebar fenceline from refuge land. In turn, the Service would fence and post the correct property boundary. Fence construction began on 12/24/91 when corner braces and boundary signs were erected. Completion of the fence stalled for various reasons, and a courtesy letter was mailed to Segall on 11/24/92 reminding him of our agreement and fence construction plans. After receiving this letter from the Service, Segall rebuilt, reinforced, and posted an illegal fence across refuge land on 11/29/92.

While refuge personnel were fencing the refuge boundary on 11/30/92, they were approached by Segall, who rudely ordered them off of "his property," called them various uncomplimentary names, stated his intention to sue the Service, threatened to tear the fence down, and challenged whether Radke was "willing to give up his life" over this issue. When refuge personnel left the area temporarily to get additional fence materials, Segall removed the entire l/8-mile of fence, and later bragged about it, saying that if the Service rebuilt it he would tear it down again. While rebuilding the destroyed fence, refuge staff endured additional challenges and threats

from Segall, who continued in his attempts to escalate the confrontation. Though refuge personnel were fully aware that Segall could be cited or arrested for trespass, destruction of government property, construction of private structures on refuge land, and interference with persons engaged in authorized conduct, they did not intensify the conflict. Service staff instead chose simply to inform Segall of the ramifications of his actions, and finished fencing the boundary. Segall repeatedly stated his intent to tear down the fence within 24-hours, saying the Service would have to post a guard to prevent removal of the fence.

As Segall had threatened, the boundary fence was indeed cut within 24-hours of completion, and a section of fence had been removed to allow vehicle access from Segall's property to the refuge. Numerous irrigation driplines had also been reinstalled from Segall's property onto the refuge and wired in place on jojoba bushes.

Maintenance Worker Marquez, Refuge Officer Orozco, and Special Agent Petrula removing trespass jojoba bushes from refuge land.
01/13/93 WRR

In an attempt to gain support for his actions, Segall contacted the news media, and the Riverside Press Enterprise published an article on 12/02/92 headlined "Giants Downed as Jojoba War Rages." The article stated that the Service had cut down 100 eighteen-foot tall jojoba trees on property that Segall thought he owned, and also quoted Segall as saying the boundary

dispute had already cost him about $50,000 in labor, time, and legal fees, and that the fence has prevented him from harvesting his land. In truth, the Service actually removed eighteen small jojoba bushes on refuge land to allow safe construction of the boundary fence. Further investigations discovered that jojoba beans currently sell for about 75 cents/pound, but cost about one dollar/pound to harvest. It is noteworthy that Segall has harvested his jojoba crop only once since 1979.

After receiving a report of the latest incident from refuge personnel, the Division of Law Enforcement notified Segall by letter on 12/11/92 that the Service was investigating the situation and intended to prosecute with both civil and criminal penalties. This letter also explained that the Service planned to replace the fence on 12/17/92 and would not tolerate further interference. Segall once again contacted Congressman McCandless who, in turn, had one of his aids contact the Regional Office. After speaking with this aid, the Regional Office advised the refuge to cancel the fence reconstruction effort and renegotiate with Segall.

Refuge Manager Clark Bloom and Special Agent Diane Petrula met with Segall on 12/17/92 to rediscuss the problem and see if Segall wanted to proceed with the land trade which was suggested as a solution over a year ago. During the meeting, Segall again stated that he has no interest in swapping lands, but instead wanted an easement to move farm machinery on the refuge. Bloom explained that as the refuge is designated critical habitat for a threatened species, such an easement would be a conflicting use and was not possible. Segall said he "thanked God" that he did not have a gun at the time of the fence building incident as he was afraid he might have used it, and that he is being denied "due process" because the Service does not follow real estate laws. Bloom and Petrula explained that the Service intended to fence and post the refuge boundary. Segall was advised to cease all trespass and hostile actions against the Service, and was informed that the Service will be prosecuting him for his involvement in the 11/30/92 incident. Segall said he understood and will not offer any more resistance, but does not understand why all of this was happening simply to save a lizard.

Refuge Officers Bloom, Radke, and Marcos Orozco, and Maintenance Worker Mark Marquez met Agent Petrula at Coachella Valley NWR on l/13/93 where they proceeded to rebuild the fence for a third time, post the boundary, and remove the remaining 31 jojoba bushes, underground irrigation dripline, and trespass fenceline from the refuge. Segall did not make an appearance. This boundary will be closely monitored to document any additional problems and the legal cases against Segall are still pending completion.

Imperial Irrigation District Issue

On 11/5/91, Refuge Officers discovered that IID and its contractor had constructed an unauthorized roadway across the refuge and installed 21 power poles on the preserve. No wires were yet strung on the poles when they were discovered. An investigation showed that the construction, which impacted an estimated total of 1.5 acres of critical habitat, began on about 10/4/91. Numerous plants were crushed, buried, or removed during

this process. Refuge officers requested the immediate removal of poles from preserve land based on the assumption that all wildlife and vegetation had been unlawfully removed from the unauthorized work site as a result of road construction, watering, and equipment use, and that if the same exact corridor was utilized immediately to remove poles, no additional take would occur. IID complied by removing the poles within three days of the order.

Although no corpses of these small animals were located, it is likely that there was a take of fringe-toed lizards by direct mortality from crushing, through the cummulative actions of bulldozing the road, passage of vehicles and equipment, stockpiling gravel and other building materials, augering cavities for pole installation, framing poles with braces and groundwires, unloading powerpoles onto the ground, and backfilling holes with preserve soils. It is also likely that lizards were taken indirectly through harassment as lizards moved away from disturbances caused by many of the same unauthorized activities, including watering the roadway. Such harassment would give predators such as kestrels, shrikes, ravens, and coyotes an advantage in capturing lizards. In addition, construction of the roadway in a previously roadless area of the preserve will continue to impact fringe-toed lizards well into the future through increased harassment by illegal vehicles, ORVs, and increased unlawful debris disposal. Already, increased vandalism, fence destruction, and illegal entry by ORVs has become evident as a direct result of roadway construction.

Federal violations involved in this issue included:

16 USC	1538	The Endangered Species Act of 1973
16 USC	668 dd	National Wildlife Refuge Systems Act
50 CFR	26.21	Trespass of personnel
	27.31	Vehicle provisions
	27.51	Damaging plants and animals
	27.61	Destruction of property
	27.92	Construct private structures (powerpoles)
	27.94	Disposal of waste (waste gravel piles)

The case was investigated by Refuge Officers with cooperation and advice from the Division of Law Enforcement. While the case was well documented and IID even admitted guilt, the Service was once again reluctant to go to court and prove a "take" occurred because no squashed lizards were ever recovered from the impacted Critical Habitat on refuge land. Instead, Special Agent Marie Palladini worked with refuge personnel and IID to negotiate a very favorable settlement agreement in which IID agreed to provide $50,000 to the Service. In turn, the Service will release legal claims against IID, including tort claims, injunctive relief, damages, and criminal or civil penalties. By early 1993, this money was placed into an National Fish and Wildlife Foundation account to be used only for protection, habitat restoration, and research activities on Coachella Valley NWR.

I. EQUIPMENT AND FACILITIES

2. New Construction

About 1 l/8-mile of 3-strand barbed wire boundary fence were installed along the refuge boundary upon acquisition of Washington Farms and the Marshall property, and to fence parcels such as the Hawn property and the Bermuda Dunes property acquired last year. The map on the following page depicts those areas fenced during the year. Approximately l/2-mile of exterior refuge boundary still remain unfenced, and a major effort to complete this project is planned for 1993. Additional boundary fences need upgrading or realignment.

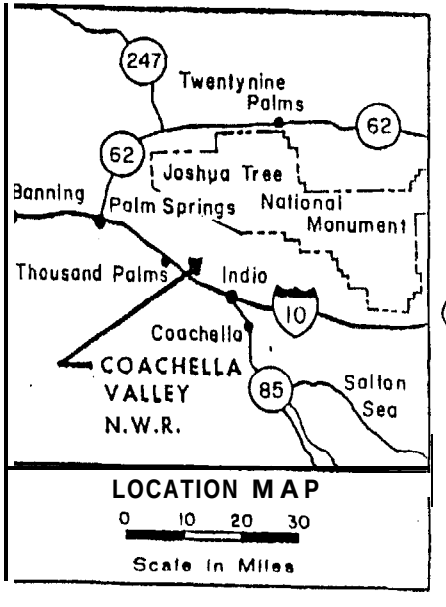
Equipment Operators Orozco and R. Marquez worked during June to obliterate a closed road adjacent to the IID powerline right-of-way at the north end of the refuge. The roadway was barricaded with large rocks and other natural materials.

Biologist Schulz, Maintenance Worker Marquez, and Laborer Walker using an auger to assist mass production of fence braces along the refuge's west side. 01/29/92 WRR

5. Communications Systems

Both handheld radios and radios in refuge vehicles were programmed to include several BLM frequencies during 1992. This will provide a safety

BOUNDARY FENCING ACCOMPLISHMENTS
DURING 1992



COACHELLA VALLEY NATIONAL WILDLIFE REFUGE

RIVERSIDE COUNTY, CALIFORNIA

measure by allowing communication between agencies in the field, and accesses a 24-hour dispatcher for any necessary law enforcement issues.

J. OTHER ITEMS

1. Coonerative Programs

Coachella Valley NWR is part of the Coachella Valley Preserve which is managed cooperatively between the U.S. Fish and Wildlife Service, the Bureau of Land Management, California Department of Fish and Game, California Department of Parks and Recreation, and The Nature Conservancy. Although managed following the general guidelines of the Preserve's Management Plan, Service lands remain a part of the National Wildlife Refuge System and must often be managed independently to meet Service objectives. However, the check-and-balance system of cooperative management toward attaining a common goal has generally been positive for all agencies involved.

2. Other Economic Uses

Because of its close proximity to glitzy, publicity-prone Palm Springs and because it is one of the last open desert areas in the Coachella Valley, the refuge is receiving increasing demand for what has traditionally been perceived as "nonconsumptive uses" such as photography and nature observation. Demands range from Hollywood film producers shooting movie or television footage, to photo agencies which "simply want to use the dunes as a backdrop" for their main subject, to commercial wildlife photographers who will stop at nothing to add fringe-toed lizards to their stock of endangered species photos, to a local family wishing to look at and photograph wildflowers.

Requests are carefully considered in regard to their individual and cummulative impact to plants and wildlife, particularly fringe-toed lizards. While some requests are denied, others are allowed only through the issuing of a Special Use Permit stating specific restrictions to prevent "take" of Coachella Valley fringe-toed lizards. The following table depicts SUPS issued during 1992:

Table 8. Special Use Permits Issued at Coachella Valley NWR During 1992.

Permit	Permittee	Purpose of Permit	Fee
55054	BFB Studios	Commercial Photography	$100
55056	Cathey Cronce	Personal photography	$25
55057	L.A. County Museum	Natural History Education	N/A
55061	Sarah Flick	Plant Inventory for TNC	N/A
55062	Champagne Partners	Remove treerow on refuge	N/A

4. Credits

William Radke wrote the report, Marcia Radke and Clark Bloom edited the report. Photographs are credited by initials.

K. FEEDBACK

There seems to be a revival within the Service concerning the importance of conserving biological diversity on refuges. While this renewed emphasis is welcomed by many, there are sometimes misunderstandings concerning management for biodiversity on areas which were essentially established as "single species" refuges for threatened or endangered wildlife.

It is extremely important to maintain various habitat components which may otherwise change due to human influences. Coachella Valley NWR protects critical habitat by cooperating with other agencies to preserve an entire ecosystem which provides the many components to create the blowsand upon which the fringe-toed lizards depend. In some cases it is not enough to simply protect native plant and animal species, rather, habitat components may need to be actively enhanced or restored. This is especially true in habitats which are already degraded. A program to protect native plants and animals while removing exotics is usually a key to any threatened and endangered species recovery.

It is often necessary to begin gathering information to provide answers before we even have the questions they pertain to, and this is the key to biodiversity management. Managers need to recognize the possibility that although each area may have specific outputs or objectives, that there are interactions among all species. Recognition and appreciation of this integral process should be incorporated into both management planning and day-to-day thinking. Biodiversity management should not be viewed as an innovative approach, but rather as an inherent part of all wise refuge decision making.

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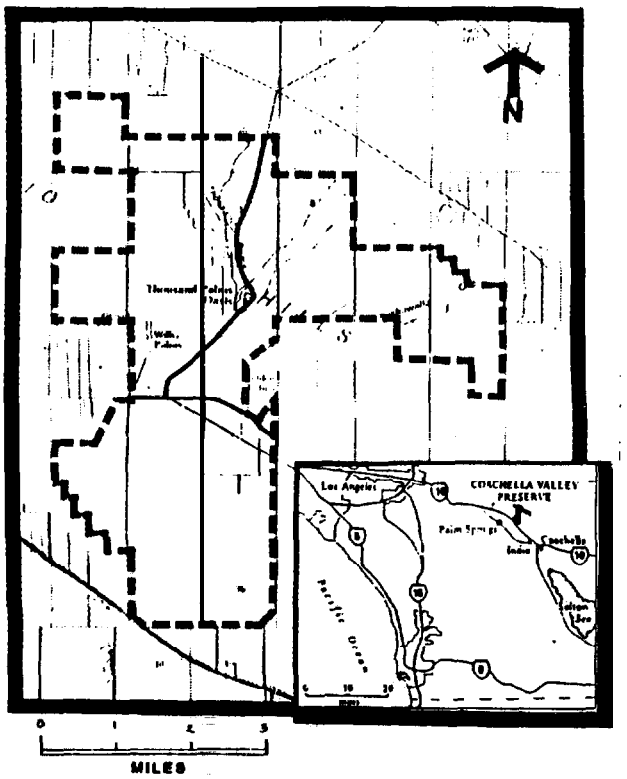
COACHELLA VALLEY PRESERVE



U.S. Fish and Wildlife Service
Lloyd 500 Building, Suite 1692
500 N.E. Mulinomah Street
Portland, Oregon 97232

U.S. Bureau of Land Management
Indio Resource Area
1900 E. Tahqultz-McCallum Way, Suite El
Palm Springs, California 92262
619/323-4421

Callfomla Department of Fish and Game
245 West Broadway, Suite 350
Long Beech, California 90802
213/590-5151

The Nature Conservancy
1800 North Kent Street
Arlington. Virginia 22209

Callfomla Nature Conservancy
785 Market Street
San Francisco, California 94103

Coachella Valley Preserve

WELCOME TO THE COACHELLA VALLEY PRESERVE

Crystal clear springs sheltered by lush greenery; endless sand dunes that fall away from ochre-colored bluffs and mesas of the Indio Hills -this is the Coachella Valley Preserve.

21,000

The 21,000-acre site lies 10 miles east of Palm Sprlngs In the Colorado Desert. It is the last undisturbed watershed In the Coachetta Valley.

At the heart of the Preserve Is the spectacular Thousand Palms Oasis fed by continuously flowing waters seeping along the San Andreas Fault. Also withln the Preserve are Willis and Indian Palms — habitats unequaled In beauty and vilelily. The oases support a remarkable concentration — over 1,200 - of natlve Californla fan palms.

In sharp contrast Is the surrounding desert. For ages torrential rains have washed sand and gravel down the sides of the Little San Bernardino Mountains and the Indio Hills, spreading the granite particles into broad alluvial fans. As strong wlnds Mow across the valley floor, the sand Is swept Into everchanglng dunes. Thls cycle of moving and blowing sand continually regenerates the desert system, provlding habitat for an extraordinary diversity of life.

HISTORY

Human history In the Coachella Valley dates back at least 11 thousand years ago to the Malpaisor Stone Mesa cullute. The most recent tribe to live in the valley was the Cahuilla. a great Indian nation which spread west from the Colorado River to the Pacific Ocean and encompassed much of Riverside and San Bernardinocounties. The various Cahuilla tribes gatheredand traded food from the upper and lower deserts. They hunted sheep, deer and pronghorn In the mountains, and rodents, rabbils and reptiles on the desert floor. Edibles from mesquite, agave and yucca were gathered to provide enough food to last throughout the year. In winter months the excess was stored In ollas and basket granaries. Some of the Cahuilla Indians still live near Palm Springs.

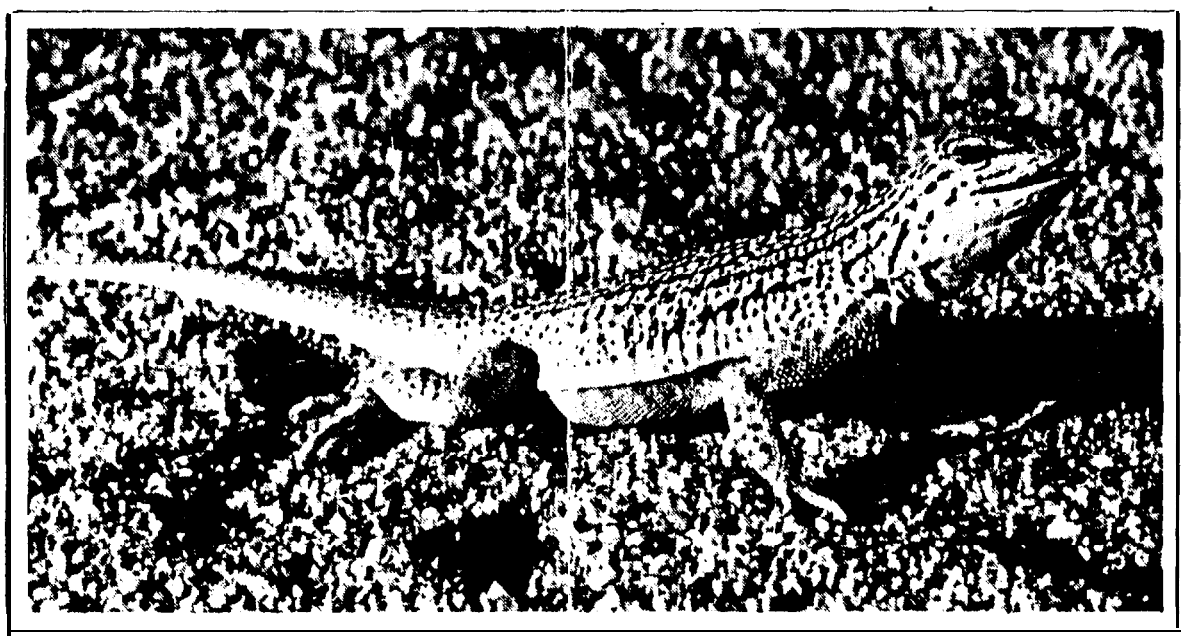
In 1996 Louis Wilhelm traded two mules and a wagon for 80 acres of Thousand Palms Canyon. In the 1940s. the rapid development of the Coachella Valley resulted in the eventual destruction of major corridors of wildlife habitat. In 1980 the lederat government listed the Coachella Valley fringe-toed lizard as threatened, an Indicatlonol how drastically thedesett ecosystems were changing. In April 1984, the California Nature Conservancy purchased 1.920 acres of the proposed Site, Including Thousand Palms Oasis, one of the largest groves of California fan palms In the state. Thls acquisition marked the beginning of a process Inwhich the State Department of Flsh and Game, the U.S. Fish and Wildlife Service, ths U.S. Bureau of Land Management. and the Nature Conservancy purchased the land which Is now the Coachella Valley Preserve.

GEOGRAPHY

The Preserve Is located in the heart of the 300-square-mile Coachella Valley, situated north of the Santa Rosa and San Jacinto mountains and south of the Little San Bernardino Mounlains. The Preserve straddles the Indio Hills and the San Andreas Fault. From the hills to the desert floor, It encompasses alluvial fans and isolated terraces of desert pavement dissected by wash areas In the north and extensive blowing sand fields and dunes in the south. Elevation ranges from 100 lo 1,000 feet above sea level. The largest alluvial fan begins at the southern end of the Indio Hills, at the mouth of Thousand Palms Canyon. Here, rocks and sand eroded from the Little San Bernardino Mountalns create a coarse, sandy cobblestone surface that Is broken by a network of narrow, sandy washes. The persistent westerly winds in the Coachella Valley move the finer particles and sand from the southern portion of fan into the ever-changing blow-sand fields.

FLORA AND HABITAT

The Coachella Valley contains two rare habitat types. The first, palm oasis woodland, is found In numerous groves within the Preserve. including Thousand Palms Oasis, In the center of the Preserve. The palm oases are sustained primarily by water made available through faulting and fracturing of underlying bedrock. Water flowlng underground from a hlgher efevatlon Is stopped by an intersecting fault block and rises to ground level, creating a unique aquatic environment. The second area, blow-sand fields, is created by a combination of surface water and wind transport processes. The sand fields are dependent upon periodic flooding that funnels sand originating in the northern half of the watershed through Thousand Palms Canyon. Sandy wash, rocky slopes, alluvial plains and other habitats are protected in the Coachella Valley Preserve. Creosote bush, encelia, burrobush, smoke tree, and desert lavender are the dominant shribs in these areas.



COACHELLA VALLEY FRINGE-TOED LIZARD

(Uma Inornata)

FAUNA

Wildlife of the Coachella Valley Preserve Is varied and abundant. Almost 180 species of animals have been recorded in the Preserve including a large population of resident and migratory birds. There are five rare animals occurring In the valley. Of these species, the Coachella Valley fringe-toed lizard (*Uma inornata*) is a threatened species inhabiting the blowing sand dunes. Learned biologists maintain that the Preserve is one of the few locations in the Coachella Valley still capable of supporting populations of these lizards.

Other rare species include the flat-tailed horned lizard, Coachella round-tailed ground squirrel, the giant red velvet mite and giant palm-boring beetle. Birds found on the Preserve include the cactus wren, hooded oriole, northern oriole, phainopepla, Gambel's quail. black-throated sparrow, American kestrel, greater roadrunner, black-tailed gnatcatcher, Say's and black phoebes, common yellowthroat, burrowing great-horned owl, long-eared owl, barn owl, screech owl, poorwill, lesser nighthawk, common raven, western bluebird, cedar wexwing. northern mockingbird, LeConte's thrasher and house finch.

MANAGEMENT

The Coachella Valley Preserve is jointly owned and managed by the Bureau of Land Management, the U.S. Fish and Wildlife Service, the California Department of Fish and Game and Nature Conservancy. The Conservancy hires a full-time Preserve director. This unique cooperative of public and private agencies to protect a threatened ecosystem is considered a model for future conservation efforts.

ACCESS

The Preserve is open every day from sunrise to sunset. Individuals and groups are welcome to visit the Preserve. For tours and information contact:

Coachella Valley Preserve
P.O. Box 188
Thousand Palms, CA 92276
(619) 343-1234