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# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Field Office
2730 Loker Avenue West
Carlsbad, California 92008

Memorandum

May 2, 1996

To: Assistant Regional Director-Ecological Services
Region 1, Portland, Oregon

From: Field Supervisor, Carlsbad, California

Re: Intra-Service Section 7 Consultation on Fish and Wildlife Service Issuance of an Incidental Take Permit for the Long-term Stephens' kangaroo rat Habitat Conservation Plan. (1-6-95-FW-27)

This Biological Opinion is prepared pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act), concerning the Fish and Wildlife Service's (Service) proposed issuance of an incidental take permit under section 10(a) of the Act. The purpose of the permit is to allow for take, incidental to otherwise lawful activities, within the plan area in western Riverside County. At issue are the direct, indirect, and cumulative effects the issuance of this permit to the Riverside County Habitat Conservation Agency (applicant) would have on the federally listed endangered Stephens' kangaroo rat (*Dipodomys stephensi*; SKR).

This biological opinion was prepared using the following information: 1) the Final Environmental Impact Statement (EIS), Long-term Habitat Conservation Plan, and Implementation Agreement (IA) for issuance of the proposed permit; 2) the biological references (see below, "literature cited and references"), 3) the EIS Potrero Valley Specific Plan and Draft HCP, and 4) information contained in the Carlsbad Field Office Service files.

## BIOLOGICAL OPINION

After reviewing the current status of the Stephens' kangaroo rat, the environmental baseline for the action area, the effects of the proposed project associated with the issuance of an incidental take permit, and the cumulative effects, it is the Service's biological opinion that the issuance of an incidental take permit under section 10(a)(1)(B) of the Act, based on the HCP and the execution of an Implementation Agreement for the proposed action, is not likely to jeopardize the continued existence of the SKR. Critical habitat has not been designated for this species; therefore, none will be affected.

## DESCRIPTION OF THE PROPOSED ACTION

The proposed action is to issue an incidental take permit under section 10(a)(1)(B) of the Act. The incidental take permit would authorize the Riverside County Habitat Conservation Agency

to establish a regional mechanism through which otherwise lawful activities resulting in the loss of 15,000 acres occupied by SKR can be permitted without having to secure individual permits. The purpose of the project is to replace the existing Short-term incidental take permit with a Long-term permit and to establish a permanent reserve system within the plan area. The proposed project is located within the plan boundaries in western Riverside County (see figure 1).

The area covered by the Long-term SKR HCP encompasses 533,954 acres within eight jurisdictions of western Riverside County, including the cities of Corona, Hemet, Lake Elsinore, Moreno Valley, Perris, Riverside, Temecula, and Murrieta. Within the plan area, the proposed permit would allow for the 'take' of 15,000 acres of occupied SKR habitat, approximately half of the occupied habitat within the plan area. The 'take' would occur in connection with otherwise lawful activities, including but not limited to:

- Residential, commercial, industrial development;
- Property improvements by individual landowners;
- Ongoing agricultural operation, and;
- The provision of public facilities, public services, and utilities.

Activities explicitly identified in the plan as being covered by the permit and agreement include:

1) Land disturbances in the plan area that are within the authority of the RCHCA member agencies to approve;

2) Bona fide ongoing agricultural operations; as determined by the Riverside County Agricultural Commissioner;

3) Fire prevention activities, including the clearance of flammable vegetation around structures, establishment of fire breaks along property lines, and other actions identified in the agreement adopted in 1994;

4) Emergency response activities, including actions necessary to protect public health, safety, and welfare in the event of natural and manmade disasters and actions necessary for the repair of public facilities damaged or destroyed as a result of such events;

5) Operation and maintenance of existing infrastructure facilities, including but not limited to public roads and rights-of-way; flood control facilities; existing landfills; and related operations; public buildings; schools; water storage, treatment, and transmission facilities; reclaimed water storage and transmission facilities; public parks; and gas, electric, and other public utility facilities;

6) Construction of public facilities, including but not limited to roadways and other public facilities and projects identified in adopted general plans, capital improvement programs

or transportation improvement programs, and cooperative programs undertaken among public agencies for public health, safety, and welfare purposes; and

7) Subject to case-by-case approval and 1:1 mitigation requirements, projects outside the plan area.

In general, the RCHCA, with the assistance of the State and Federal governments, is intending to offset this take by funding and establishing seven Core Reserves within western Riverside County, which shall contain when completed, at least 15,000 acres of occupied SKR habitat, in other words 50% of the SKR habitat within the plan area. This reserve system will be permanently set aside, maintained, managed and funded either by Federal, state or local governmental entities for the conservation, preservation, restoration and enhancement of the SKR and its habitat. The details of the mitigation are adequately described in Chapter 2 of the FEIS/EIR pages 32-56 and Chapter 5 of the HCP.

The RCHCA will implement a conservation program having four primary components. Funding for these components will be provided by the following sources: RCHCA will provide total cash on hand of $10.1 million towards this plan and will supplement the sum with an additional $1.6 million, providing a total of $11.7 million; and the Federal government will provide a contribution of $3.6 million made available to the BLM within three years to be utilized for land acquisition (approximately $300,000 of which may be in the form of reserve management of the expanded Core Reserves). The total projected revenues for plan implementation amounts to $15.3 million. The following provides a brief summary of the RCHCA proposed measures to minimize and monitor the impacts of incidental take:

1) Establish and complete the Core reserves pursuant to the HCP, containing 12,460 acres containing at least 41,221 acres.

The RCHCA will ensure, through acquisition, in fee or by conservation easement, in perpetuity, or other mechanisms acceptable to the Service that the conservation of the remaining privately owned lands in the Core Reserves that are not covered by existing plans, agreements, or programs, approximately 1,153 acres. (See Appendix C, Profile of the Core Reserves, FEIS/R)

The RCHCA will execute agreements with Western Waste Industries concerning land dedication and other mitigation measures for the proposed expansion of the El Sobrante Landfill adjacent to the Lake Mathews Core Reserve.

2) The RCHCA, in conjunction with BLM and the State, will provide for ongoing adaptive management of the reserve system to assure the permanent conservation, preservation, restoration, and enhancement of SKR and SKR habitat within the reserves.

The RCHCA will provide non-wasting Endowments for the permanent management of the Core Reserves. The management Endowments paid to the Reserves include $2,500,000 dollars to the

Lake Mathews Core Reserve; $500,000 to the Southwestern Riverside County Multiple Species Habitat Management Committee; $300,600 to the Motte-Rimrock Reserve; $500,000 to the Sycamore Canyon Reserve (in addition the RCHCA is providing $100,000 to the City of Riverside to prepare a reserve management plan);

BLM will conduct and fund management for the Steele Peak Core Reserve, the Potrero Core Reserve and half of the Lake Mathews Core Reserve. This translates to a Federal contribution for reserve management of approximately $225,000 per year: $125,000 per year for Lake Mathews Core Reserve, $60,000 per year for Steele Peak, and $40,000 per year for the Potrero ACEC.

CDFG and CDPR will provide management of state lands in the San Jacinto-Lake Perris Core Reserve, providing an estimated $212,000 per year towards annual reserve management costs.

The RCHCA will establish the Reserve Managers Coordinating Committee for inter-reserve coordination and issues of regional importance to the plan. The RMCC will be comprised of all agencies responsible for managing the individual reserves, as well as the RCHCA, County, and the Service. A detailed description of activities provided by the group can be found on pages 164-169 of the HCP.

Upon termination of the incidental take permit the endowments will be distributed to such entity or entities as directed by the Service for continued management of the Reserves.

3) Protect conserved SKR habitat by limiting the projects within the reserves.

Surveys for SKR will be required for projects inside Core Reserves. Projects within the reserves will be subject to case-by-case review with the Service and require a 1:1 habitat replacement for take within the reserves.

The RCHCA will work with the Service and the applicant to determine appropriate minimization and mitigation measures for individual projects inside the Core Reserves. Within the reserves impacts to SKR habitat will be minimized and avoided to the maximum extent practicable.

4) The Agency will use its best efforts to expand the current reserve configuration by 2,540 acres through acquisition, in fee or by conservation easement or other mechanisms acceptable to the Service, and will utilize those lands owned by the BLM as described in Appendix A of the HCP. In particular, 8,156 acres of BLM land will be exchanged for the same acreage within the Lake Mathews Core Reserve, releasing the BLM parcels for sale. The completed Core Reserves will incorporate 15,000 acres of occupied SKR habitat.

In addition RCHCA will require projects covered by the permit to comply with the following terms and conditions.

- Require 1:1 habitat replacement outside the Core Reserves until such time as the 1,153 acres of inholdings have been acquired and the management endowments are in place.

- In order to monitor the take of SKR within the plan boundaries, biological surveys will be required before authorizing land disturbance. The exceptions include emergencies, secondary structures, agriculture, fire prevention, and operation/maintenance. Surveys will be required outside the Core Reserves until the acquisition of the 1,153 acres and the management endowments are in place.

- Prior to completing the Core Reserves, RCHCA shall report the location of disturbance, number of acres, amount of fee paid, and the number of occupied acres. An annual report will be generated by the RCHCA summarizing land disturbance, fees collected, disturbed occupied habitat and the amount and location of mitigation provided, habitat acquisition, and estimates of the current amount of occupied acres.

- Upon completion of the Core Reserves the aforementioned reports will only be generated for disturbance within the Core Reserves.

## STATUS OF THE SPECIES/ENVIRONMENTAL BASELINE

Stephens' Kangaroo Rat

Stephens' kangaroo rat is a distinct species of kangaroo rat endemic to the Perris and San Jacinto valleys of western Riverside County, with slight extensions into south/central San Bernardino County and northern San Diego County.

The Stephens' kangaroo rat feeds on both green vegetation, seeds, and, to a limited extent, insects. The spring growing season and increased availability of food coincide with the Stephens' kangaroo rat's reproductive peak. It is a cryptic species, emerging at night to forage in areas around its burrow and returning to the burrow to store food it has gathered into its cheek pouches. Its movement is impeded in thickly vegetated areas including areas with matted perennial grasses. This species will create its own burrow system in areas with sandy soils and use existing burrow systems of gophers and ground squirrels in areas of compacted soils. Field surveys and literature review by O'Farrell and Uptain (1989) documented 132 populations sites over the entire range of the Stephens' kangaroo rat, including previously known (77), new (47), and potential (8) populations. Of those previously identified in the California Department of Fish and Game 1973 Stephens' kangaroo rat survey report, 45 had been extirpated. Population disappearances were attributed to natural population fluctuations, natural succession and maturation in plant communities, and habitat destruction associated with agricultural and urban development.

Population studies indicate seasonal and annual variations in the number of animals occupying a given area. These variations have been linked to the amount of rainfall and subsequent seed

production. There is a positive linear relationship between precipitation and Stephens' kangaroo rat population levels. Observations of Stephens' kangaroo rat populations by Price and Endo (1989) at locations separated by approximately 12 miles indicate that Stephens' kangaroo rat populations in western Riverside County can show greater than tenfold temporal density fluctuations in response to regional rainfall patterns.

Historically, habitat suitable for Stephens' kangaroo rat was probably dominated by native annual forbs. Open, herbaceous plant communities undoubtedly occurred naturally in patches distributed throughout the Perris and San Jacinto valleys. The patchy distribution of this habitat type probably depended on soil type, fire regime, influence of native grazing mammals, occurrence of perennial plant communities, and other factors. The distribution and size of these suitable habitat patches most likely varied throughout the range of the species from year to year.

Today, the Stephens' kangaroo rat is found almost exclusively in open, often disturbed, nonnative grasslands or in sparse shrublands with areal cover of approximately less than 30 percent (Hogan 1981). Stephens' kangaroo rat has been found on 36 types of well-drained soils, and more than 125 soils are thought to be potentially suitable for the species. Potentially suitable soils include those types capable of supporting annual grasses mixed with forbs and shrub species. Additionally, soils must exhibit compaction characteristics suitable for the establishment of burrows. Soils not considered suitable for Stephens' kangaroo rat include heavily alkaline or clay soils, generally in floodplains, highly rocky soils, shallow soils less than 50 centimeters deep, soils in areas exceeding 25% slope, and soils above approximately 3,000 feet in elevation. Specific soil and slope associations are indicated in the most current draft of the long-term Stephens' kangaroo rat HCP.

The patchy distribution of the Stephens' kangaroo rat appears to depend on soil type, vegetative stage, and slope (O'Farrell and Uptain 1989). These authors hypothesized that the species is adapted for existence in intermediate vegetative seral stages. Areas disturbed by farming and subsequently allowed to go fallow, allow invasion by weedy species and rodents such as the Botta's gopher that facilitate colonization of the area by the Stephens' kangaroo rat. Apparently, without some process that maintains relatively open grass or forb lands, eventual succession or maturation of vegetative communities render habitat unsuitable for the Stephens' kangaroo rat.

Much of the habitat over the range of the species was historically converted to agriculture. Since about 1984, urban expansion has increased dramatically. These two land use changes have contributed to the decline and fragmentation of Stephens' kangaroo rat populations and remain the primary threat to the continued existence of the species. The Stephens' kangaroo rat was federally listed as endangered in September 1988 (*Federal Register* 53(190): 38465).

The factors effecting the listing of this species, mainly urbanization in the core of the species range, western Riverside, are still increasing. Although this trend has been moderated by a slowed local economy and the Federal listing, fragmentation and loss of potential habitat has continued throughout the range of the species. Within the plan area of western Riverside

County, the Short-term permit has protected the largest contiguous blocks of SKR habitat while still allowing development outside designated Study Areas to proceed. Since the listing of the SKR as a federally endangered species and the approval of the Short-term HCP approximately 2,000 acres have been authorized for 'take' under the terms and conditions for the Short-term HCP.

The present geographic range of Stephens' kangaroo rat includes the Anza, Perris, and San Jacinto Valleys and other areas of western Riverside and northwestern San Diego Counties. This geographic range is estimated to encompass approximately 287,000 hectares (708,641 acres), which is unusually small for rodents in general and kangaroo rats in particular. Merriam's kangaroo rat, for example, which is the smallest kangaroo rat in the United States, has a range covering portions of six states. The vast majority of the Stephens' kangaroo rat's range occurs in western Riverside County, with the only other significant populations found at Camp Pendleton Marine Corps Base, the adjacent Fallbrook Naval Weapons Station, and sites around Lake Henshaw in northern San Diego County. The present distribution of SKR does not indicate the abundance of the species; it only indicates the limits of its occurrence.

Reported densities of SKR range between 3 and 23.7 individuals per acre during the summer months (Bleich 1973 and Thomas 1975). Fall and winter densities range from 2 to 6 individuals per acre (Price and Endo 1989). According to O'Farrell and Uptain (1989), most of the currently occupied habitat contains populations of low (less than 2 individuals per acre) or medium density (2 to 4 individuals per acre), and only a few areas contain a high population density (greater than 4 individuals per acre).

Table 1 lists the current estimates of occupied habitat throughout the species range. Based on the O'Farrell and Uptain (1989), as updated by more recent surveys within the plan area (database maintained by Riverside County GIS), an estimated 30,000 acres out of 49,000 acres (61%) of occupied SKR habitat of the total population of SKR habitat currently existing. Within the plan area known patches of SKR occupied habitat generally are concentrated in the Study Areas established under the Short-term HCP. The largest blocks of habitat occur south of Lake Mathews Core Reserve, in the Lake Perris State Recreation Area, and in the Multi-species Reserve at Lake Skinner.

Table 1. Current Distribution and Amount of Occupied Stephens' Kangaroo Rat Habitat throughout the Species Range.

| Location | Area (acres) |
|---|---|
| Camp Pendleton | 2,162 |
| Fallbrook | 2,764 |
| Warner Ranch/Lake Henshaw | 10,000 |
| Norco Hills | 1,000 |
| Potrero/Badlands | 2,500 |
| Cahuilla/Anza | 392 |
| HCP area | 30,000 |
| TOTAL | 48,818 |

Additional habitat occurs in three areas outside the HCP plan area in western Riverside County: the Norco Hills, Potrero/Badlands, and the Anza/Cahuilla valley. These populations represent an additional 9% of the SKR population. Thus, western Riverside represents 70% of the SKR habitat currently existing.

Genetic relationships of populations of SKR throughout its remaining range are the subject of ongoing research at the University of California at Riverside (Dr. Metcalf, pers com.). Preliminary results of this research suggest that genetic characteristics in the northernmost population localities are older than the populations in the southern portion, suggesting closer similarities between these populations. The San Jacinto population appears to have the least amount of derived genetic characteristics, suggesting this population is the stock population.

The Norco Hills SKR population was discovered in 1990, and is the most northern population currently remaining (Montgomery pers. comm.). The threats to this population are high due to the adjacency of current and future development in the area. The Service has issued, to date, three incidental take permits for portions of this population, leaving less than 1,000 acres of occupied habitat. These projects, while authorizing a limited amount of take, included provisions for on-site preservation contributing towards a future Reserve for this population. Conservation of a viable population in this area would contribute to the recovery of the species by maintaining the full range of genetic diversity of the current range of the species.

Little information is known about the population of SKR in the Anza/Cahuilla Valley. This population currently exists on the federally recognized Cahuilla Indian Reservation. A large scale survey effort has not been completed to determine the extent of occupied habitat. A

minimum of approximately 400 acres of occupied habitat has been documented on the Reservation. However, based on habitat characteristics it is likely that additional areas within the Reservation are also occupied. Future actions affecting this population may involve consultation with the Service.

The Badlands/Potrero SKR populations are scattered throughout the eastern edge of the San Jacinto Valley, with the largest contiguous population located in the Potrero Valley (approximately 2,000 acres of occupied habitat). The remaining badlands area has at least an additional 500 acres of occupied habitat. The Potrero Valley represents the northeasterly range of the current distribution of the species. This 2,000 acres of occupied habitat is one of the largest remaining contiguous blocks of occupied habitat occurring at a relatively higher elevation than other populations within western Riverside County. Currently this population is the least affected by surrounding development, as it is adjacent to large tracts of Federal land managed for natural resources. The Potrero Valley SKR population is unique in that it represents the only population remaining which is naturally protected due to the terrain surrounding the valley, providing a true island of protection from surrounding development. The size of this population should allow for the dynamic natural process of population expansion and contraction with minimal risk of local extirpation. Additionally, this area is connected with the core population in the San Jacinto Core Reserve, and may represent a stock population to recolonize the valley should a catastrophe occur. The SKR population at Potrero is extremely important in maintaining genetic diversity and minimizing risk of extinction due stochastic events (USFWS 1993).

## EFFECTS OF THE PROPOSED ACTION

### Direct Effects

The plan proposes ultimately to conserve 15,000 acres (50%) of the remaining SKR habitat, within the plan area. The Long-term HCP supersedes the Short-term HCP and incorporates portions of the reserves established under the Short-term HCP. Currently the reserves contain 11,307 acres of occupied SKR habitat. As proposed in the Long-term HCP, the Core Reserves will include 12,460 acres of occupied habitat. The HCP proposes to expand these Core Reserves with an additional 2,540 acres of occupied habitat. This will be accomplished throughout the 30-year time frame of the permit through the BLM Assembled Land Exchange agreement which allows the exchange of 8,156 acres of BLM lands with the RCHCA. Based on the acquisitions completed during the Short-term HCP, an average of three acres of land were purchased for every one acre of occupied SKR habitat acquired. Therefore, the expansion will likely require the acquisition of approximately 7,500 acres. The BLM land exchange should be sufficient to cover this difference, if all land offered by the BLM is marketable and generates enough revenue. In total, the Long-term HCP proposes to add 3,693 acres of occupied habitat, or approximately 10,000 total acres to the existing Reserve system of 39,968 acres.

In 1988 when the SKR was listed, the Service determined that the lands held in public ownership

were not sufficient to ensure the maintenance of the species in perpetuity. Since the implementation of the Short term SKR plan, several reserves have been established and are now in public ownership, including the Lake Mathews Core Reserve and the Skinner Core Reserve. The conservation of the these two reserves includes a combined total of 25,397 acres which includes 6,252 acres of occupied SKR habitat. The majority of the remaining reserves proposed in the HCP were in public, Federal, State and/or local ownership at the time of the SKR listing. These reserves encompass 6,341 acres of occupied SKR habitat; however they were not specifically managed to maintain SKR.

Issuance of the permit will allow the permanent loss of 50% of SKR occupied habitat within the plan area and the loss of 31% of the occupied habitat rangewide. The number of SKR that corresponds to this level of habitat loss is difficult to accurately quantify due to fluctuating population sizes. These fluctuations are a natural consequence of environmental variability, including climatic conditions, grazing regimes, fire, etc.

These impacts are proposed to be minimized and mitigated through: 1) establishing and completing Core Reserves of 12,460 acres (including the commitment to conserving the remaining 1,153 acres of inholdings); 2) expanding the Core reserves until a total of 15,000 acres of occupied SKR habitat are acquired through cooperative efforts between the RCHCA and BLM; 3) restricting take within the Core Reserves, and requiring 1:1 mitigation ratio for incidental take within the Reserves; 4) ensuring that endowments or in kind services from Federal and State agencies are used for ongoing management and monitoring of SKR habitat in the reserves pursuant to the HCP; and 5) establishing the Reserve Management Coordinating Committee to coordinate management efforts throughout the Reserve system.

The HCP provides that take within the Core Reserves requires Service approval. New facilities will have to mitigate at a 1:1 ratio and avoid and minimize to the maximum extent practicable. Current operation facilities will have to minimize and avoid to the maximum extent practicable.

Recreational activities may result in a reduction in the SKR population. However, based on personal observation of trails through Southwestern Multiple Species Reserve (Skinner Core Reserve), SKR actually utilize trails and dirt parking areas due to their open nature. Pedestrian and horse trampling may occur with public access entering areas that were previously off limits due to private ownership. Trail systems, however, will be consistent with the reserves through the RMC, in which the Service will be a participant.

The Gilpin model, used to evaluate the probability of persistence of the SKR in the plan area, was originally created to weigh the differences in possible Reserve designs. To analyze the proposed HCP, the PVA was used as a tool in conjunction with other evaluations of Reserve design, including current conservation principles. The model test runs predicted a 95% probability of persistence to 100 years. Yet, the model is only a statistical tool using probabilities and estimates or assumptions based on the biology of kangaroo rats in general. As an example of the model's limitations, the results of the model tell us only that one individual

SKR may be alive after 100 years, and not whether a stable population exists. The apparent drawback to use of the PVA, is the public's perception that the results are predictive of the future. The proper use of PVA's in general can help to identify critical factors for study, management, and monitoring.

As proposed, the HCP would complete the reserve system with 12,460 acres of occupied habitat, with a commitment but no assurances to achieve the 15,000 acre requirement. The RCHCA and BLM land exchange agreement is intended to acquire and conserve an additional 2,540 acres of occupied habitat. Given outstanding questions regarding price and marketability of BLM parcels scheduled for exchange, sales will be monitored to help ensure that the 15,000 acres is ultimately set aside. This involves tracking the BLM land exchanges to ensure that the amount of take within the plan area does not exceed the amount within the reserves, as the location of the additional 2,540 acres of occupied habitat is not currently identified within the HCP. The proposed HCP relies on this exchange agreement to ensure that habitat potentially contributing to the reserves is not lost to development prior to acquisition. Due to numerous administrative requirements, such as conducting real estate appraisals, as well as NEPA and cultural resources reviews, and marketing the properties, the participating agencies have not determined how quickly funds would become available to begin acquisitions needed to complete the reserve system. Meanwhile, the proposed HCP allows the signatory jurisdictions to permit development on lands needed to complete the 15,000 acres and maintain a viable Reserve design. The Service has consistently established that to avoid appreciably reducing the likelihood of survival and recovery of SKR the 15,000 acre reserve system must be completed.

Successful management of the reserves will be key in avoiding a decline in the SKR populations within the Reserve and within the plan area. Under the short term SKR plan, several studies were undertaken to determine the management needs of SKR (see Volume 2 of the HCP). The main objective of the management will be to monitor SKR populations on an annual basis, and adjust management activities according to population trends using habitat manipulation techniques that will be studied and established throughout the life of the permit. Management would simulate natural disturbance to set back plant succession. Based on current studies, these techniques might include prescribed burns, grazing, mowing, and/or hand clearing. As proposed in the HCP, the management of the Core Reserves at San Jacinto, Steele Peak, Potrero, and a portion of Lake Mathews, will depend on annual State and Federal appropriations in perpetuity. Given the early successional habitat requirements of SKR and volatile population fluctuations in response to annual and longer term environmental change, any lapse in management would place SKR at risk. Ultimately, the HCP proposes to offset the loss of half of the core population of the species within the plan area through intensive Reserve management. The Service concludes that this is possible so long as adequate funding is available to support management.

**Indirect Effects**

The largest effect of the proposed project will be the loss of connection between the individual populations within the plan area. The proposed 50% loss of SKR habitat will fragment residual open space into isolated patches. SKR appears to depend upon its ability to colonize relatively rapidly areas of habitat modified by natural factors, such as fire, drought, and habitat scouring in upper floodplains, as well as, anthropogenic factors, including fire, grazing, and clearing for, roads, agriculture, and other land uses. SKR will no longer be able to expand or collapse with fluctuating habitat conditions throughout its current range. However, the Reserve system captures many of the largest populations within the plan area, in particular the Lake Mathews, San Jacinto, and Lake Skinner Core Reserves. Within these reserves, populations will naturally fluctuate with environmental conditions, and may be able to maintain viable populations without intervention. Based on the analysis presented in the HCP, populations in the three large reserves have 76%, 76%, and 66% chance respectively of persistence to 100 years. The Gilpin model does not take into account active management for this species. The smaller reserves have substantially lower prospects for survival absent intensive management.

Current conservation strategies for Reserve design are modeled in part on theories of island biogeography. Generally, larger areas can support a higher diversity of species due to the amount of habitat niches available within larger areas. Reserve designs should encompass all aspects of the ecosystem, including connections between reserves for wide ranging species such as mountain lions and coyotes. As demonstrated in several studies, the loss of certain predators could cause the loss of other species within the reserves. Soulé (1988) demonstrated that the loss of coyotes in fragmented canyons throughout San Diego County resulted in the loss of many native resident bird species. Coyotes appear to control population levels of smaller predators that specialize in hunting birds. Thus, clustering of reserves and maintaining connections between them would allow for dispersal that contributes to the overall quality of the reserves (Schafer, 1990). Multiple connected reserves can maintain landscape diversity with the natural complement of species, accommodate distributional patchiness, and insure against demographic, genetic, and environmental stochasticity.

In looking at SKR, reserves that are well distributed across the SKR's native range will be more successful in preventing extinction than reserves confined to small portions of the range. Large blocks of habitat, containing large populations of SKR are superior to small blocks of habitat containing small populations. Small population sizes or low population densities in vertebrates can result in deleterious demographic and genetic effects. Habitat that occurs in less fragmented, contiguous blocks is preferable to fragmented habitat. Interconnected blocks of habitat are less fragmented and minimize edge-to-area ratios. Examples of the best remaining habitat should be included, as well as, some geographically isolated SKR populations to reduce the potential for Reserve system-wide catastrophic effects. The entire ecosystem required by SKR and other co-dependent species should be protected.

The Reserve system proposed in the HCP encompasses many of these conservation principles

regarding reserve design. The proposed Reserve system is comprised of seven different sized areas, with the three largest reserves encompassing over 10,000 acres each. These reserves contain large blocks of some of the best remaining SKR habitat, large contiguous populations, and include a variety of interspersed habitat types. The reserves contain riparian areas, coastal sage scrub, chaparral, grasslands and a variety of different microhabitats. The smaller reserves add to the Reserve system as a whole by decreasing the risks of stochastic events leading to extinction, and in providing possible 'stepping stone' areas for dispersal. However, the connectivity for dispersal within and between reserves is not guaranteed in this HCP. The proposed addition of 2,500 acres of occupied habitat will increase the size of the reserves and contribute to the overall viability of the Reserve system, however, the final configuration is unknown.

The Service will help direct the proposed expansion of the reserves to improve connections within the proposed reserves. For instance, the connection between the north and south portions of the Lake Mathews Core Reserve is tenuous. While future dedications associated with the proposed El Sobrante landfill expansion will provide a better connection, the time frame for completion of this landfill may extend past the 30 year time frame of the proposed permit action. In addition, the Steele Peak Core Reserve consists of several isolated parcels of Federal land. The viability of this Reserve as proposed is questionable due to this lack of connectivity.

Four of the proposed Core Reserves--Sycamore, Motte, Steele Peak and Potrero, have high edge to area ratios due to their configurations, and/or relatively small populations of SKR. As analyzed in the FEIS/R, approximately 90 to 95% of the SKR populations in these reserves are within 1,000 feet of the Reserve boundaries. To maintain SKR populations within these four smaller reserves, substantial monitoring and management will be required. The three larger reserves have substantially less, approximately 17 to 27%, of their SKR populations adjacent to or within 1,000 feet of the Reserve boundary. Approximately 96% of the unincorporated lands within 2,000 feet of the proposed Core Reserves are restricted to low density rural residential development, which suggests that edge effects may be relatively minor for the larger reserves. The proposed endowments are intended to provide sufficient funds to address the intensive management requirements of these smaller reserves.

Summary

The connectivity within and between the reserves is essential for the long-term maintenance of the ecosystem captured within the reserves. SKR is a small component of a larger community that needs to be preserved for the health and viability of a naturally functioning ecosystem. The Long-term HCP proposes to incidentally take half of the SKR habitat remaining in the core of its range. The measures to minimize the taking include conserving many of the largest remaining populations within the western Riverside portion of the range. The conservation strategy is to capture a large enough habitat base upon which SKR populations can naturally expand and contract in response to environmental variability within the Reserves. Proper monitoring and management will be the key to conserving SKR within the system of isolated reserves. The

reserves will be managed through a combination of Federal, State, and RCHCA funds. The RMCC should allow for consistent management between the reserves.

## CUMULATIVE EFFECTS

Cumulative effects include the effects of future, State, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered cumulative to the proposed action because they require separate consultation pursuant to section 7 of the Act.

The action area for this project is considered to be the entire western Riverside County portion of the species range since the HCP proposes to allocate take, with the Service's approval, outside the plan area if mitigation is provided at a 1:1 ratio within the plan area. Two of the three known Stephens' kangaroo rat populations outside western Riverside County occur on lands with Federal jurisdiction, and therefore, impacts to SKR would be addressed under future section 7 consultations. The population at Warner Springs resides on much of the watershed for Lake Henshaw Reservoir. Land use practices for this watershed are largely agricultural and could be compatible with long term management of SKR habitat. However, if practices that were detrimental to SKR were proposed, an incidental take authorization would be required either through section 7, if a Federal nexus were involved, or through section 10(a)(1)(B). The population in Norco Hills has already been the subject of section 7 and 10(a) incidental take permits in which on-site preservation was a component. In addition, the City of Norco General Plan incorporates an open space element in the area this population is present (PSBS 1995).

The main threat to the species outside the plan area is for development in the Potrero Valley. The owner of the Potrero Valley, Lockheed Martin Corporation, is in the pre-application phase of an individual 10(a)(1)(B) permit and habitat conservation plan for the take of this population. Service action on the forthcoming permit application will determine the extent of SKR effects.

The HCP plan area represents the core of the species range. With the loss of half of the SKR population proposed in the SKR HCP, the surrounding populations become increasingly more important to sustain the species in the future. The surrounding populations will be necessary to maintain the genetic diversity of the species and provide areas that could act as refugia during catastrophic events affecting the plan area populations.

## CONCLUSION

By eliminating 50% of the extant habitat in the planning area, issuance of the permit would reduce the SKR baseline to a level that may not withstand further reductions in western Riverside County. The loss of 15,000 acres of occupied habitat would exhaust the cushion of resources available for allocation to consumptive uses in western Riverside County, to the extent that additional losses would erode the viability of remaining populations. Although the anticipated loss of SKR habitat due to permit issuance reduces the viability of remaining populations, permanent management of the SKR habitat provides reasonable assurances that the SKR populations within the plan area will persist.

After reviewing the current status of the Stephens' kangaroo rat, the environmental baseline for the action area, the effects of the proposed projects mitigation measures associated with the issuance of an incidental take permit, and the cumulative effects, it is the Service's biological opinion that the issuance of an incidental take permit under section 10(a)(1)(B) of the Act and the execution of an Implementation Agreement for the proposed action, as set forth in the plan, is not likely to jeopardize the continued existence of the SKR. Critical habitat has not been designated for this species; therefore, none will be affected.

## INCIDENTAL TAKE

Section 9 of the Act prohibits taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to a listed species by significantly impairing essential behavioral patterns, including breeding feeding, or sheltering. Harass is defined as an act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise legal activity. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The reasonable and prudent measures and terms and conditions described below are non-discretionary. Failure to comply with these terms and conditions may cause the protective coverage of section 7(o)(2) to lapse.

**Amount and Extent of Take**

Although the exact amount of individuals proposed to be taken is difficult to accurately quantify, a rough estimate can be derived by assuming low density for the entire amount of occupied habitat on which taking under the permit would occur (2 individuals/acre x 15,000 acres). Therefore, the Service anticipates that 30,000 individuals could be taken as a result of the proposed action which involves the loss of up to 15,000 acres of occupied SKR habitat. The incidental take is expected to be in the form of harm and harassment.

**Reasonable and Prudent Measures**

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the SKR:

1. Any incidental take of the SKR must comply with all of the terms and conditions of the incidental take permit proposed to be issued under section 10(a) of the Act and its supporting Habitat Conservation Plan (HCP) and Implementing Agreement (IA).

2. The Service shall ensure that the construction of public facilities within the Core Reserves will be limited to the projects which will not have a significant adverse impact on SKR and will not have a significant adverse impact on the biological integrity of the Reserve.

3. The Service shall work cooperatively with the BLM and applicants to ensure that a final Core Reserve system including 15,000 acres of occupied habitat is acquired and effectively managed. To provide assurances that the Reserve system will be finished before key habitat is lost, the Service shall require that the habitat lost within the plan area is recorded and monitored until the final 15,000-acre Reserve system is in place.

4. The Service shall, at a minimum, use the 1:1 replacement provision in the HCP for all future 10(a) permit applications outside the permit planning area that propose to mitigate for take inside the plan area.

**Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, the Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure number 1, the Service shall comply with the following terms and conditions:

a. Administer and enforce the incidental take permit issued to the RCHCA, IA, and HCP.

b. Condition the permit to include provisions for disposition of dead or injured SKR.

2. To implement reasonable and prudent measure number 2, the Service shall comply with the following term and condition:

Review any proposed projects within the Core Reserve to determine whether the project would have a significant impact to the Core Reserve. If the proposed project would result in take of SKR, or adversely affect Reserve integrity, the Service will require and approve proposed measures to avoid, minimize, and offset such take to the maximum extent practicable, but at no less than 1:1 replacement of occupied habitat

3. To implement reasonable and prudent measure number 3, the Service shall comply with the following terms and conditions:

a. Provide comments on development plans adjacent to Core Reserves to minimize impacts to the reserves, and develop and implement a program for monitoring the status of the reserve expansion. The monitoring program shall be established within six months of the issuance of the permit. Should the Service determine, based on this monitoring, that the status of SKR has significantly changed for the worse, that completion of the reserves is being compromised, or not managed adequately to maintain stable populations the Service shall ensure that corrective actions are taken to realize the objective of the HCP pursuant to the Department of the Interior No Surprises Policy.

b. Condition the permit to allow the Service to track future habitat loss until such time as the 15,000 acres of occupied habitat and Reserve management endowments are in place: the RCHCA and member jurisdictions shall provide to the Service, on at least a semi-annual basis, a table including all projects, name, location, size of parcel, acreage of affected habitats, and proposed extent of grading for all projects that received grading permits. A map of the proposed project shall also be included.

4. To implement reasonable and prudent measure number 4, the Service shall comply with the following term and condition:

The Service shall require at a minimum use of the HCP 1:1 replacement provision of occupied habitat outside the planning area for all permit applications that mitigate for take inside the plan area, so long as mitigation in the plan area does not place viability of the source population at risk.

## CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs the Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service recommends that the following conservation measures be implemented:

The Service should work cooperatively with RCHCA, other agencies, and the public to implement a multiple species plan for western Riverside County.

## REINITIATION NOTICE

This concludes formal consultation on the proposed issuance of an incidental take permit to Riverside County Habitat Conservation Agency. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion; (4) a new species not covered by this opinion is listed or critical habitat designation that may be affected by the action; or (5) the provisions of the IA, HCP, and Incidental Take Statement herein are not complied with. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions concerning this biological opinion, please contact Michelle Shaughnessy of the Service's Carlsbad Field Office at (619) 431-9440.

Gail C. Kobetich

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