

BIOLOGICAL OPINION SUMMARY

Issuance of an Endangered Species Act

Section 10(a)(1)(B) Permit for the

Lazy K Bar Ranch

Date of opinion: November 16, 1998

Action agency: U.S. Fish and Wildlife Service

Proposed Project: Issuance of an Endangered Species Act section 10(a)(1)(B) permit for the Lazy K Bar Ranch in association with a Habitat Conservation Plan.

Location: Pima County, Arizona

Listed species affected: Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), endangered with no critical habitat.

Biological opinion: Not likely to jeopardize the continued existence of the cactus ferruginous pygmy-owl (no critical habitat has been designated).

Incidental Take Statement:

Anticipated Take Take, in the form of harassment due to habitat loss and noise disturbance, may result of up to two cactus ferruginous pygmy-owls and their young. Exceeding this level may require reinitiating of formal consultation.

Reasonable and prudent measures (RPMs): Implementation of these measures through the terms and conditions is mandatory to be protected from section 9 violations. Reasonable and prudent measures are provided requiring that minimization, mitigation, and monitoring strategies identified in the Environmental Assessment and Habitat Conservation Plan be implemented. Reasonable and prudent measures begin on page 27 of this Biological Opinion.

Terms and conditions: Terms and conditions implement reasonable and prudent measures and are mandatory requirements. Terms and conditions begin on page 27 of this Biological Opinion.

Conservation recommendations: Three discretionary conservation recommendations are provided beginning on page 33 of this Biological Opinion.

United States Department of the Interior

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AESO/SE
2-21-98-F-334

November 16, 1998

MEMORANDUM

TO: Regional Director, Region 2, U.S. Fish and Wildlife Service, Albuquerque,
New Mexico

FROM: Field Supervisor

SUBJECT: Intra-service Biological Opinion regarding the Issuance of an Endangered
Species Act section 10(a)(1)(B) Incidental Take Permit for the Lazy K Bar
Ranch

This memorandum represents the U.S. Fish and Wildlife Service's Biological Opinion in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended. The Federal action under consideration is the issuance of a permit authorizing the incidental take of the endangered cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) (CFPO) under the authority of sections 10(a)(1)(B) and 10(a)(2) of the Act. LKB, LLC (Applicant) has submitted an application for an incidental take permit under the Act to take Federally-listed, endangered CFPOs. This permit would also be transferrable to the Applicant's successors of the property described in the Environmental Assessment/Habitat Conservation Plan (EA/HCP) for the life of the project.

Along with their application, the Applicant submitted an EA/HCP to the Service which has been reviewed for mitigation acceptability. The implementing regulations for section 10(a)(1)(B) of the Act, as provided for by 50 CFR §17.22, specify the criteria by which a permit allowing the incidental "take" of listed endangered species, pursuant to otherwise lawful activities, may be obtained. The purpose and need for the section 10(a)(1)(B) permit is to ensure that incidental take resulting from fulfillment of permit TE 003597-0 (formally TE 2796-0) will be minimized and mitigated to the maximum extent practicable, and will not appreciably reduce the likelihood of the survival and recovery of this Federally listed endangered species in the wild.

This Biological Opinion is based on information provided in the Lazy K Bar Ranch EA/HCP for the CFPO, published and unpublished data, field investigations, and other sources of information. Literature cited in this Biological Opinion does not represent a complete bibliography of all the literature on this species discussed within the opinion or on the effects of housing development on this species or its habitat. A complete administrative record of this consultation is on file in the Arizona Ecological Services Field Office (AESFO).

CONSULTATION HISTORY

The Service was initially contacted by a surveyor with Dames & Moore via facsimile on March 27, 1998, following detection of a CFPO on March 25 and March 27, 1998, at, and across the street from, the proposed project area. Service personnel held an initial meeting on April 7, 1998, with the Applicant, WestLand Resources Inc. (Consultant), the current property owner, and personnel from Dames & Moore. At that time, the Applicant indicated an interest in pursuing a HCP for the proposed project.

A subsequent meeting was held on April 23, 1998, at which site plans were provided to the Service, and a schedule for the HCP process was discussed. An additional meeting was held on May 5, 1998, at which building envelopes (area occupied by a building or other improvement), horse facilities, and avoidance of xeroriparian and wash habitat were discussed. Monitoring requirements of the HCP process were also discussed. At a conference call on May 18, 1998, the Service, Applicant, and Consultant discussed average lot sizes, replacement of saguaros removed during construction, lot buffer zones, and grading envelopes (area that is grading and vegetation removed). Figures and text were provided via facsimile to the Service by the Applicant for this conference call. Additional figures were faxed to the Service on May 22, 1998, detailing proposed lot layouts and protected areas. At the Applicant's request, the Service provided a letter, dated May 27, 1998, indicating concurrence with the proposed lot layout for the proposed project.

On June 18, 1998, the Applicant submitted a draft EA/HCP to the Service. A meeting was held on June 24 to discuss the draft EA/HCP. In addition to Service personnel from the AESFO, personnel from the Service's Regional Office and the Regional Solicitor's offices were also present. Compliance and effect and effectiveness monitoring were discussed at this meeting, along with funding sources, public involvement, adaptive management, and the "No Surprises" policy. Additional discussions regarding monitoring took place between the Applicant and Service personnel on July 1, 1998. Monitoring details were provided via fax to the Consultant on July 1, 1998, and a conference call was held on July 2, 1998. This conference call focused on the likelihood of legal challenges and monitoring. Concerns were expressed at that time regarding whether or not the proposed action could be considered a "low effect" HCP. Specific monitoring requirements under the transitional and residential phases of the proposed project were discussed, as well as access to the property.

On July 6, 1998, the Service provided a letter to the Consultant regarding unforeseen circumstances and the Migratory Bird Treaty Act of 1918 as amended, and how these topics should be addressed in the draft EA/HCP. Revised sections of the draft EA/HCP were provided to the Service by the Applicant on July 8, 1998. On July 10, 1998, the Service provided a draft monitoring proposal, and an additional conference call was held with the Consultant to discuss the Applicant's concern with surveying and monitoring requirements. At that time, the Consultant indicated that the Applicant had concerns with the first two years of monitoring and with unidentified costs associated with monitoring that would extend over the length of the permit. The Service indicated that we could not commit to completing this component of the monitoring due to funding and staff uncertainties in future years. Additionally, the Service noted that effect and effectiveness monitoring is generally the responsibility of the Applicant, whereas compliance monitoring is the responsibility of the Service.

On July 22, 1998, an additional conference call was held with the Consultant, during which concerns were again expressed regarding monitoring commitments. The Service committed to providing additional monitoring recommendations, which were submitted on July 24, 1998. A conference call was held on July 29, 1998, during which the Consultant indicated that the Applicant believed monitoring requirements were too stringent for the proposed project. On August 3, 1998, the Service submitted final recommendations for monitoring and low effect. On August 5, 1998, the Consultant noted that the final recommendations were unacceptable to the Applicant, and that the draft EA/HCP would be submitted to the Service's Regional Office without the monitoring recommendations of the AESFO. A draft Biological Opinion was prepared on August 6, 1998.

On August 17, 1998, the AESFO received the draft EA/HCP, signed application for an Incidental Take Permit, and application fee from the Consultant, which were forwarded to the Regional Office. On September 2 and 8, 1998, the Service's Regional Office and the Consultant had conference calls, during which monitoring, reporting, and permit duration were discussed. On September 9 and 10, 1998, the Applicant, Consultant, and the Service met to finalize these issues. The Applicant agreed to include appropriate effect and effectiveness monitoring and reporting provisions in the HCP on September 9, and finalized their draft EA/HCP on September 10, 1998. The draft EA/HCP was submitted to the Service on September 10, 1998 for their review. This draft EA/HCP was published in the *Federal Register* on October 1, 1998 for a 30-day public comment period which ended on November 2, 1998. During the public comment period, the Applicant held two open houses which neighbors and interested parties asked questions, provided comments, and discussed details of the plan. On November 6, 1998, the Applicant (with concurrence of the Service), resubmitted to the Service the revised EA/HCP and revised figures on November 10, 1998. This final Biological Opinion was prepared on November 16, 1998 and submitted to the Region 2 Director as part of the Applicant's section 10(a)(1)(B) permit package.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The preferred alternative is described in greater detail in the EA/HCP referenced in the previous section, which is incorporated herein by reference. A summary of the preferred alternative is provided below.

Project Site

The preferred alternative, includes but is not limited to, the purchase of the Lazy K Bar Ranch by the Applicant from its current owner. The property encompasses approximately 160 acres and is located at Township 12 South, Range 12 East, Section 29, northwest of Tucson, Pima County, Arizona (Figure 1 of EA/HCP). This site is located within the Arizona Upland Subdivision of the Sonoran Desert (Brown 1994). Portions of the project site have been previously cleared, developed, or otherwise disturbed with buildings, roadways, corrals, and horse grazing pastures. Roadways, structures, and corrals currently cover approximately 18.3 acres (11.4 percent) of the property and pastures include approximately 18.8 acres (11.8 percent) of the property. The majority of these developed areas occur within the center of the property, although a pasture is also located in the eastern half of the property.

Undisturbed areas of Arizona Upland Subdivision habitat occur on approximately 105 acres of the property. The eastern half of the property is relatively level with silty/sandy substrates. This area supports triangle-leaf bursage (*Ambrosia deltoidea*), creosotebush (*Larrea tridentata*), prickly pear and cholla cacti (*Opuntia* spp.), foothill palo verde (*Cercidium microphyllum*), and mesquite (*Prosopis juliflora*).

The western half of the property contains gentle slopes with a gravelly/cobbly substrate. This area supports a higher density and diversity of vegetation. Common species include triangle-leaf bursage, foothill palo verde, saguaro (*Cereus giganteus*), ironwood (*Olneya tesota*), white ratany (*Krameria grayi*), brittlebush (*Encelia farinosa*), ocotillo (*Fouquieria splendens*), and prickly pear and cholla cacti. Portions of the property with north-facing slopes support predominantly triangle-leaf bursage, creosotebush, ocotillo, wolfberry (*Lycium* sp.), brittlebush, whitethorn acacia (*Acacia constricta*), foothill palo verde, mesquite, and desert ironwood. Saguaros are less common on north-facing slopes than on south-facing slopes.

Xeroriparian habitat within the property covers approximately 18.4 acres (11.5 percent). Generally, plant species composition along washes is similar to that in the adjacent uplands, but individual plants are typically larger and vegetation density is generally higher. The largest and most densely vegetated washes on the property occur within the north half of the parcel. Canopy species include foothill palo verde, blue palo verde (*C. floridum*), mesquite, desert ironwood, and whitethorn acacia. Mid-story vegetation includes graythorn (*Ziziphus obtusifolia*), Mexican crucillo (*Condalia warnockii*), desert broom (*Baccharis sarothroides*), catclaw acacia (*A. greggii*), and desert hackberry (*Celtis spinosa*).

Xeroriparian habitat in the southwest corner of the property is confined to a small wash system with similar species composition to that found in the northern half of the property. Vegetation in this portion of the property is of smaller size, and growth is generally less dense. Washes in the east-central and southeast portions of the property support a diverse assemblage of small-stature trees and mid-story shrubs. Canopy height along washes in this portion of the property are less than those in the northern portion of the property. Washes in the east-central and southeast portions of the property are dominated by foothill palo verde, mesquite, desert hackberry, and whitethorn and catclaw acacia. Creosotebush, wolfberry, desert broom, and blue palo verde are also present.

A variety of wildlife species commonly associated with the Arizona Upland Subdivision of the Sonoran Desert would be expected to occur on the property. These include, but are not limited to the following amphibian and reptiles: diamondback rattlesnake (*Crotalus atrox*), gopher snake (*Pituophis melanoleucus*), Sonoran desert tortoise (*Gopherus agassizii*), tree lizard (*Urosaurus ornatus*), Gila monster (*Heloderma suspectum*), Couch's spadefoot toad (*Scaphiopus couchii*), and red-spotted toad (*Bufo punctatus*). Common bird species would likely include: northern mockingbird (*Mimus polyglottos*), Gambel's quail (*Callipepla gambelii*), ash-throated flycatcher (*Myiarchus cinerascens*), cactus wren (*Campylorhynchus brunneicapillus*), black-throated sparrow (*Amphispiza bilineata*), Gila woodpecker (*Melanerpes uropygialis*), black-tailed gnatcatcher (*Polioptila melanura*), house finch (*Carpodacus mexicanus*), and verdin (*Auriparus flaviceps*). Common mammals include: desert cactus mouse (*Peromyscus eremicus*), desert cottontail (*Sylvilagus auduboni*), desert mule deer (*Odocoileus hemionus crooki*), javelina (*Tayassu tajacu*), and coyote (*Canis latrans*).

Project Site

The project site is currently being used as a guest ranch, which has been in operation since 1936. The project includes issuance of a Section 10(a)(1)(B) permit to authorize incidental take associated with operation of a resort/guest ranch and ultimately its conversion into a low-density, residential area. The project involves both transitional and residential phases described below and in Section 4 of the EA/HCP.

Transitional Phase

The transitional phase would continue for as long as is financially reasonable, with a minimum timespan of two to five years. During this time period, the Applicant would continue to operate the guest ranch as an equestrian-focused, recreational facility. In addition, a 8,000 square-foot meeting hall and parking area for buses would be built to accommodate group meetings, activities, and functions. Both the meeting hall and the bus parking area would be built on those portions of the property that have been previously disturbed. Additionally, the project would involve the use of low-intensity landscape lighting along the path between bus parking and the meeting hall, and to accentuate cliff faces south of the meeting hall during evening events. Use of the meeting hall would vary, but it is anticipated that peak demand

would occur during the height of Tucson's tourist season (typically winter and early spring). Additional detail on use of the property during this transitional phase is included in Section 4 of the EA/HCP.

Residential Phase

During the residential phase, the property would be subdivided into up to 50, residential lots varying in size from 1.60 to 4.33 acres. The maximum allowable area of disturbance for grading and vegetation clearing associated with building and landscape features would be 17,500 square feet for each lot. All building pads, patio areas, pools, outbuildings, septic facilities, and other amenities would be placed within this building envelope. No horse facilities would be located on individual residential lots, however, up to four lots may be developed as a common equestrian facility. This equestrian facility area would be located in areas previously disturbed by guest ranch activities in the center of the property. Area disturbed for individual driveways are not included within the building envelope, but would be limited to maximum grading width of 18 feet, except for those lots on sloped areas where greater width would be required. A maximum grading width of 28 feet would apply to those driveways with steeper slopes. Driveway locations would be subject to review and approval by the project's Architectural Review Committee. The location of building envelopes would be determined by the lot purchaser, however, there would be "no grading" zones within each lot which would determine those portions of the lot that could not be developed. Total disturbance associated with housing, driveway, and infrastructure development would occur on up to a maximum of 27.1 acres of the 160 acre project property.

Minimization/Mitigation Strategy for Existing CFPO(s)

All incidental take of CFPOs associated with this permit issuance are in the form of harassment due to noise disturbance and temporal loss of habitat. To minimize the potential for, and extent of, this non-lethal form of take, the Applicant has committed to the measures described below. Additional detail for each of these measures is found in Sections 4 and 6 of the EA/HCP. These measures are summarized below for each phase of the project.

Transitional Phase

1. The development of the group meeting/venue facility and associated bus parking would occur in areas that have been previously cleared or otherwise disturbed by the existing guest ranch to avoid disturbance or loss of additional habitat.
2. Cavity inspections would be performed for any saguaros or large trees to be disturbed during infrastructure alterations or improvements to be made during the transitional phase. Should a CFPO be located in one of the cavities, construction activities would be curtailed in a 300-foot radius of the nest cavity during the nesting period (January 1 - July 15). Outside of this period, the nest tree or saguaro would be left in place, if practicable. If the

nest tree or saguaro should need to be removed after the nesting period, it would be salvaged and transplanted to an appropriate location in the same general area. If the nest tree or saguaro cannot be salvaged, the Applicant or developer/lot owner has the option to instead plant three 12-foot saguaros in the immediate area.

If no nesting is occurring, wire mesh or other appropriate materials would be used to cover nesting cavities to preclude nesting at that site and influence CFPOs to nest in other nearby saguaro or tree cavities. This step would be taken to ensure that CFPOs do not move into a construction area following cavity inspections and subsequently be subjected to construction disturbances.

Residential Phase

1. The Applicant has developed a site layout plan which ensures that the largest lots would be located in those areas with highest suitability for CFPOs, or where the individual owl was detected (refer to Figure 5 in the EA/HCP). This design would ensure that larger tracts of suitable CFPO habitat would be protected. Site design was also used to ensure that the average lot size for the 50 lots would be greater than three acres to approximate the housing density in other portions of Tucson where CFPOs are currently found. The majority of the lots (27 of 50) are 3.3 acres or greater in size. In addition, lots in the area near where the owl was detected vary in size from 2.33 acres to 4.29 acres, with an average lot size of 3.38 acres. Lots along the northern boundary of the property, where habitat quality is higher than on other portions of the lot, range from 3.33 to 4.33 acres in size, with an average lot size of 3.66 acres.
2. Any native trees greater than four inches basal diameter to be removed by the development would be salvaged and planted within the project area. If a tree is not salvageable, based on criteria within the EA/HCP, three native trees indigenous to the project area could be used to replace the removed tree.
3. Any saguaro five feet tall or greater that would be removed as part of the project would be salvaged and planted in the immediate area. The developer or lot owner may elect to plant three two- to five-foot tall saguaros in lieu of salvaging a saguaro. (This requirement is not applicable to salvaged saguaros that were previously used for nesting, as described in item 4 below).
4. Cavity inspections would be performed by permitted biologists for any saguaros or large trees to be disturbed during residential development. Should a CFPO be located, construction activities would be restricted during the nesting period (January 1 through July 15) on that lot. The nest tree or saguaro would be left in place, if practicable. If the tree or saguaro should need to be removed after the nesting period, it would be salvaged and transplanted to an appropriate location in the immediate area. If the tree or saguaro can not

be salvaged, the developer would plant three 12-foot or taller saguaros on the site.

If no nesting is occurring, wire mesh or other appropriate materials would be used to cover the nesting cavities present to preclude nesting at that site and influence CFPOs to nest in other nearby saguaro or tree cavities. This step would be taken to ensure that CFPOs do not move into a construction area following cavity inspections or subsequently be subjected to construction disturbances.

5. No horses would be allowed on individual residential lots in order to avoid further disturbance to vegetation through trampling and grazing. A central equestrian facility may be developed, but would be located in previously disturbed areas in the center of the property.
6. Maximum allowable size of disturbance on each lot would be limited to 17,500 square feet for all building pads, patio areas, pools, outbuildings, septic facilities, and other amenities. Additionally, each lot has standard setbacks or buffers along its perimeter, and no-grading zones may be part of individual lots. No-grading zones have been developed to protect resource values such as riparian habitat. Driveway grading envelopes within individual lots would not exceed 18 feet in width unless a greater width is required by topographic constraint (for those lots with steeper slopes). At no time would driveway grading widths exceed 28 feet. Every effort shall be made to minimize the amount of vegetation cleared to the maximum extent practicable.
7. Landscaping would follow plant palettes provided in Appendix D of the HCP. Each residential lot would be divided into oasis, drought tolerant, and natural zones. Oasis zones would be those areas within 30 feet of residential structures, and within the 17,500 square foot building envelope. There would be no vegetation restrictions for the oasis zone. The drought tolerant zone consists of highly visible locations such as driveway entrances. Landscaping efforts within the natural zone would be limited to habitat restoration efforts using those plants indigenous to the Tucson Mountain area.
8. Roadways and common areas disturbed by construction would be reseeded with species native to the Tucson Mountains.

STATUS OF THE SPECIES

The CFPO is a small bird, averaging 6.75 inches in length. The average weight of a male CFPO is 2.2 ounces, while the average weight of a female CFPO is 2.6 ounces. The CFPO is reddish-brown overall, with a cream-colored belly streaked with reddish-brown. The crown is lightly streaked, and paired black-and-white spots on the nape suggest eyes. The CFPO has no ear tufts. Eye color is yellow. The tail is reddish-brown with darker stripes, and is relatively long for an owl.

The CFPO, from the Order Strigiformes, Family Strigidae, is one of four subspecies of the ferruginous pygmy-owl. CFPOs are known to occur from lowland central Arizona south through western Mexico to the States of Colima and Michoacan, and from southern Texas south through the Mexican States of Tamaulipas and Nuevo Leon. It is unclear at this time if the ranges of the eastern and western populations of the pygmy-owl merge in southern Mexico. However, genetic information indicates that eastern and western populations of the CFPO may be genetically dissimilar, as described below.

South of the area described above, *G. b. ridgwayi* replaces *G. b. cactorum*, and throughout South America, *G. b. brasilianum* is the resident subspecies (Fisher 1893, van Rossem 1937, Friedmann *et al.* 1950, Schaldach 1963, Phillips *et al.* 1964, de Schauensee 1966, Karalus and Eckert 1974, Oberholser 1974, Johnsgard 1988). Additionally Konig and Wink (1995) have identified a fourth subspecies of pygmy-owl, *G. b. stranecki*, from central Argentina.

The CFPO was described by van Rossem (1937) based on specimens from Arizona and Sonora. Its shorter wings, longer tail, and generally lighter coloration distinguish it from *G. b. ridgwayi* and *G. b. brasilianum* (van Rossem 1973, Phillips *et al.* 1964). *G. b. cactorum* occurs in several color phases, with distinct differences between regional populations (Sprunt 1955, Burton 1973, Tyler and Phillips 1978, Hilty and Brown 1986, Johnsgard 1988). Some investigators (*e.g.*, Van Rossem 1937, Tewes 1993) have suggested that further taxonomic investigation may be needed. However, *G. b. cactorum* is widely recognized as a valid subspecies (Friedmann *et al.* 1950, Blake 1953, Sprunt 1955, Phillips *et al.* 1964, Monson and Phillips 1981, Millsap and Johnson 1988, Binford 1989). The American Ornithologists' Union (AOU) recognized *G. b. cactorum* in its 1957 Checklist of North American Birds (AOU 1975). Subsequent AOU lists did not address subspecies (AOU 1983). The Fish and Wildlife Service, based on the publications of the above authorities, accepted *G. b. cactorum* as a subspecies in 1991 (56 FR 58804), and again in 1993 (58 FR 13045).

Limited genetic work has been completed to date for the CFPO. One genetic study compared extracted deoxyribonucleic acid (DNA) from 20 CFPOs in Texas with extracted DNA from CFPOs in Tamaulipas. Data obtained from that study indicated that there is very little genetic difference between CFPOs in Texas and those in eastern Mexico (Zink *et al.* 1996). In addition, the data indicated that there is a low level of genetic variation in the CFPO. Low genetic variation in a species is a cause of concern for future stability of that species. Generally, populations without genetic variation are considered imperiled due to either the effect of low population numbers, increased chances of inbreeding, or both (Soule 1986).

Although based on a small sample size, studies comparing DNA of CFPOs from Arizona versus those from Texas indicated that there is a one percent variation in the genetic makeup of CFPOs in Arizona versus those in Texas. This difference is considered significant (G. Proudfoot, Texas A & M University, pers. comm. 1997), suggesting the eastern and western populations of CFPOs are genetically dissimilar.

Life History

The CFPO is crepuscular/diurnal, with a peak activity period for foraging and other activities at dawn and dusk. CFPOs can often be heard calling throughout the day, but most activity is reported between one hour before sunrise to two hours after sunrise, and late afternoon/early evening from two hours before sunset to one hour after sunset (Collins and Corman 1995).

CFPOs are known to use a variety of habitat types. Within Arizona, the CFPO is known to occur in riparian woodlands, mesquite bosques, and Sonoran desertscrub communities. While plant species diversity differs between these communities, there are certain unifying characteristics in each of these occupied habitat types. These unifying characteristics include the presence of vegetation in a fairly dense thicket or woodland, the presence of trees or cacti large enough to support cavity nesting, and elevations below 4,000 feet. Historically, the CFPO was associated with riparian woodlands in central and southern Arizona. Plants present in these riparian communities include cottonwood (*Populus* spp.) and willow (*Salix* spp.). Cottonwood trees are suitable for cavity nesting, while the density of mid- and lower-story vegetation provides necessary protection from predators and an abundance of prey items for the carnivorous CFPO. Mesquite bosque communities are dominated by mesquite trees, and are described as mesquite forests due to the density and large trees.

The Arizona Upland Subdivision of the Sonoran Desert provides an over-story of mature saguaros which are suitable for cavity nesting, as well as large mesquites and other trees which may additionally be used for nesting. Saguaro cavities are also used for roosting, perching, and caching food (H. Smith, OPCNM *in litt.* 1996). The mid- and lower-stories are comprised of a variety of mesquite, palo verde, ironwood, acacia, graythorn, bursage, cholla, prickly pear, and annual and perennial grass species. As in riparian habitat, the larger trees provide perches for foraging and protection from predators. Adequate vegetation in mid- and lower-stories are important in providing protection from predators and a higher density of prey items including lizards, small birds and mammals, and insects.

While there are numerous areas supporting large numbers of foothill palo verde and saguaro cacti, the presence of medium and large ironwood trees in varying densities has been identified as a unique feature present in most areas occupied by CFPOs (Collins and Corman 1995, H. Smith, OPCNM *in litt.* 1996). Ironwoods have been present at almost every detection site within Sonoran desertscrub (Collins and Corman 1995). Ironwoods are distributed within the United States in southeastern California and southern Arizona. In Arizona, they are generally found from sea level to 2,500 feet in elevation or along gravelly or sandy mesas or rocky foothills. However, at recent CFPO nests sites, ironwoods were either limited or absent.

While the majority of CFPO detections in the last five years have been from the northwest Tucson area, CFPOs have also been detected in southern Pinal County, at Organ Pipe Cactus National Monument (OPCNM), on the Buenos Aires National Wildlife Refuge, and on the Coronado National Forest. CFPOs at OPCNM have been detected in Sonoran desertscrub

habitat dominated by creosotebush, saguaro, velvet mesquite (*P. velutina*), palo verde spp., cat-claw acacia, ironwood, triangle-leaf bursage (*A. deltoidea*), and white brittlebush. Small washes in the area support canyon ragweed (*A. ambrosioides*) and salt cedar (*Tamarix pentandra*). In addition, relatively large mesquite bosques are present in some areas (Collins and Corman 1995). On the Buenos Aires National Wildlife Refuge, CFPOs were located within riparian habitat in semi-desert grassland communities. Vegetation in these riparian areas included netleaf hackberry (*C. laevigata*), velvet mesquite, Arizona ash (*Fraxinus velutina* var. *velutina*), acacia, and Mexican elderberry (*Sambucus caerulea*).

Non-migratory Status

CFPOs are considered non-migratory throughout their range, and have been reported during the winter months in several locations, including OPCNM (R. Johnson, unpubl. data 1976, 1980, T. Tibbitts, pers. comm. 1997). Major Bendire collected CFPOs along Rillito Creek near Camp Lowell at present-day Tucson on January 24, 1872. The University of Arizona Bird Collection contains a female CFPO collected on January 8, 1953 (University of Arizona 1995). Similarly, records exist from Sabino Canyon documenting CFPOs as present on December 3, 1941, and December 25, 1950 (U.S. Forest Service, unpubl. data). These winter records demonstrate that CFPOs are found within Arizona throughout the year, and do not appear to migrate to warmer climates to the south during the winter months.

Nesting

CFPOs nest in a large cavity in a tree or large columnar cactus. These cavities may be naturally formed (e. g. knotholes) or excavated by woodpeckers, and nest lining material may or may not be used. Researchers in Texas noted that one pair of CFPOs removed material from a cavity prior to laying eggs one year, but laid eggs on nest material the following year (Proudfoot *et al.* 1994). Breninger (1898) noted that no nest lining was used at one observed nest. Whether or not a nest lining is constructed, it is likely that prey remains, including feathers and other materials, build up on the nest cavity floor over its use.

CFPOs begin nesting activities in late winter to early spring. Breninger (1898) noted that nesting along the Salt and Gila rivers began about the 20th of April. An additional record indicates that five eggs were collected on the 12th of April (USNM 1996). Bent (1938) noted that George Sennett took one egg and an adult female at Canon del Caballeros near Victoria, Tamaulipas, Mexico on May 2, 1988.

With respect to current research, much of the specific timing of CFPO nesting chronology is unknown due to limited opportunities for study and the secretive nature of the CFPO. Data generated from nest box studies in Texas indicated that CFPOs lay eggs from mid- to late-April. Eggs were laid asynchronously, with one egg laid every 32 to 39 hours until the entire clutch of four to five eggs has been laid (Proudfoot 1996). Incubation continued for 21 to 23 days, with eggs hatching asynchronously at a rate of one egg hatching every 20 to 26 hours. Fledging occurred 26 to 28 days after hatching was complete (Proudfoot 1996).

Applying this information to the 1996 nest in Arizona, along with observed copulation and fledging dates, the Arizona Game and Fish Department (AGFD) determined a nesting chronology for Arizona CFPOs. Copulation was observed on March 31, and egg laying was estimated to have taken place from April 6 to April 11, with the onset of incubation estimated to have taken place from April 7 to April 12. Hatching was estimated at May 9. Fledging was confirmed on June 4 (Abbate *et al.* 1996). While the intermediate dates are estimates, the copulation and fledging dates are confirmed, and provided recent, confirmed starting and ending dates for nesting chronology in Arizona. Information from a nest located in 1995 confirms that fledging occurred on July 29. Working backwards and using information gained from additional CFPO nests, it was estimated that egg laying took place around May 31 to June 5, with the onset of incubation at June 1 to June 6, and hatching from June 30 to July 3. The difference between fledging from these two nest sites is approximately two months. As with other avian species, this may be the result of a second brood or a second nesting attempt following an initial failure (Abbate *et al.* 1996).

In both Texas and Arizona, observations indicate that the female incubates the eggs and attends hatchlings, while the male provides food to the female and young. In Texas, studies noted that males provided all of the food collected for the females and the young for approximately the first week following hatching of the young (Proudfoot 1996). In Arizona, the majority of hunting activity and prey captures by male CFPOs were conducted away from the nest site and, consequently, out of sight of nest observers (Abbate *et al.* 1996).

Dispersal

According to studies conducted in Texas, juveniles remained within approximately 165 feet (50 meters) of adults until dispersal. Dispersal occurred approximately 63 days after the young first left the nest. One juvenile monitored throughout its dispersal traveled approximately 4.3 miles (6.5 kilometers) from its natal site before establishing its own territory (Proudfoot 1996). One banded juvenile from Arizona was observed approximately two miles from its nest site following dispersal (S. Richardson, AGFD pers. comm. 1997). Preliminary radio telemetry studies conducted by AGFD in the Tucson basin in 1998 have shown dispersal distances of young fitted with transmitters to be up to six miles (measured horizontally), typically occurring from July through September (S. Richardson AGFD pers. comm. 1998).

Prey

The CFPO's diverse diet includes birds, lizards, insects, and small mammals (Bendire 1888, Sutton 1951, Sprunt 1955, Earhart and Johnson 1970, Oberholser 1974) and frogs (Proudfoot *et al.* 1994). Bendire (1888) indicated that CFPOs were known to carry off young chickens. Recent studies in Texas confirmed that CFPOs take prey from a variety of animal classes, with the highest number of prey items from the Insecta and Reptilia classes (Proudfoot *et al.* 1994). Prey items by the female at the nest site included house finches, black-tailed gnatcatchers, lizards, and cicadas. Studies in both Texas and Arizona indicate that lizards are the

predominant prey item for CFPOs. Proudfoot noted that while insects make up a higher number of individual prey items, lizards constitute the largest percentage of the biomass (G. Proudfoot, Texas A & M University, pers. comm. 1997, S. Richardson, AGFD pers. comm. 1997). Abbate *et al.* (1996) noted that, of 84 prey items either captured near or delivered to the nest, 60 percent were lizards, while birds accounted for 8.3 percent, and mammals for 4.8 percent. Cicadas were the only insect large enough to be identified during nest monitoring, and represented 4.8 percent of total prey items. The remainder of the prey items could not be identified through observation.

Home Range

Based on visual and auditory detections of an adult pair and one fledgling at a 1996 nest site, Abbate *et al.* (1996) estimated a home range size for CFPOs in Arizona. By following the adult female and the fledgling, it was noted that the size of the area used by the female and fledgling expanded as the fledgling grew older. In fact, the fledgling was observed at the northern and southernmost points in the home range area. In contrast, the adult male appeared to be using the same size area during incubation as he did during the nestling stages. The adult female was observed to use an area approximately 0.5 acres in size during the pre-fledgling and nesting stages. However, this area expanded to approximately 35 acres post-fledgling, and the 35-acre area was also used by the fledgling. Following dispersal of the fledgling, it was believed that the area used by the adult CFPOs expanded beyond the 35-acre area (Abbate *et al.* 1996). An additional pair of CFPOs was found in the late fall of 1997. Researchers indicated that this pair used approximately 160 acres (S. Richardson, AGFD pers. comm. 1997).

Studies at OPCNM have indicated that CFPOs occupy a home range varying from three to 20 acres during the breeding season. Researchers at OPCNM have also noted that CFPOs habitually use a central area within that acreage (T. Tibbitts, OPCNM pers. comm. 1997).

Recent data from Proudfoot (1996) gained through radio telemetry determined that the area used by adult male CFPOs during the incubation period ranged in size from 3 to 21 acres, with a mean size of 10 acres. Proudfoot (1996) further determined that CFPOs of unknown sex used an area ranging from 48 to 287 acres, with a mean of 172 acres in late fall. Additionally, Proudfoot (1996) notes that, while CFPOs used between 3 and 21 acres during the breeding season, they would defend areas up to 279 acres, indicating that their total territory may encompass an area at least 279 acres in size. Proudfoot (Texas A & M University, pers. comm. 1997) has stated that his data indicate that the acreage necessary to successfully raise young is approximately 98.8 acres. Proudfoot (1996) hypothesizes that the decreased availability of prey items such as insect and reptiles during the colder months may mean that CFPOs forage over larger areas during the winter in order to access a suitable forage base.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Past and present Federal, State, and private activities in the area of the preferred action include establishment and management of Saguaro National Park West, which is managed by the National Park Service, but there are also small State Trust and private land in holdings within the Park boundaries. The proposed project would be located one-half mile northwest of Saguaro National Park West, which includes approximately 24,000 acres of Sonoran desertscrub that is potentially suitable for CFPO occupancy. Saguaro National Park West is managed by the National Park Service. Tucson Mountain Park is located immediately to the south of Saguaro National Park West. Tucson Mountain Park is managed by Pima County, through their Parks and Recreation Department, and encompasses 16,968 acres of Sonoran desertscrub with potentially suitable habitat for CFPOs. The creation and management of both Saguaro National Park West and Tucson Mountain Park provide protection of habitat potentially suitable for CFPOs in close proximity to the project area.

A 320-acre parcel of State Lands is located approximately one-half mile directly south of the project site. At present, this land is not developed. However, State Lands may be sold or exchanged and could be used by future owners for development.

Private lands in the immediate vicinity of the project area have been converted to high density housing developments as part of the Continental Ranch and Twin Peaks developments. Presumably, Federal Clean Water Act permits were issued by the Corps of Engineers as part of proposed project development. Continental Ranch and Pima Farms Specific Plans have been filed for development of numerous square miles immediately north of the proposed project area. These areas are currently zoned as trailer home site, rural homestead or low density residential with limited commercial and agricultural use; and residential with a minimum lot size of 36,000 square feet.

At this time, there are no proposed Federal activities in the action area that have previously undergone formal or early section 7 consultation.

Summary of the Status of the CFPO Throughout its Range

In December of 1994, the Service published a proposed rule to list the CFPO as endangered in Arizona with critical habitat, and as threatened in Texas. A final rule listing the CFPO as endangered in Arizona without critical habitat was published in the *Federal Register* in March of 1997 (62 FR 10730). The Service determined that the CFPO in Arizona was endangered because of the following three factors:

1. present or threatened destruction, modification, or curtailment of its habitat or range;
2. inadequacy of existing regulatory mechanisms; and
3. other natural or manmade factors, which included low genetic variability.

Low genetic variability can lead to a lowering in reproductive success and environmental adaptability. Caughley and Gunn (1996) further note that small populations can become extinct entirely by chance even when its members are healthy and the environment favorable.

The Service believes that the past and present destruction, modification, or curtailment of habitat and range is the primary reason for the decrease in population levels of the CFPO. During the public comment period on the CFPO listing, the Service was made aware of five specific housing and development projects operating or in the planning stages that would affect habitat where the majority of CFPOs in Arizona are currently known to exist. Additionally, the AGFD (D. Shroufe, AGFD *in litt.* 1996) noted that an estimated 54,400 acres of suitable habitat exists in the northwest Tucson area where the highest density of CFPOs are found. Surveys covering 17 square miles of this area were completed in 1996. Sixty percent of this land is in State Trust or Bureau of Land Management ownership. However, the remaining 40 percent supported all of the known CFPOs at that time. Projects for the private land in this area include three churches, numerous large housing subdivisions, road widening projects, a post office, and a large shopping mall. Since the listing, housing construction does not appear to have been reduced. During the month of May 1998, 620 permits were issued for single-family homes in the Tucson area (Arizona Daily Star 1998). The Service has received and continues to receive notification of numerous housing subdivisions as well.

All known CFPO locations in the Tucson basin, with one exception, are in areas of low-density housing where abundant native vegetation separates human structures from one another. Additionally, these areas are adjacent to large tracts of undeveloped land. CFPOs appear to use non-native vegetation to a certain extent, as they have been observed perching in non-native trees in close proximity to individual residences. However, the persistence of CFPOs in areas with an abundance of native vegetation indicates that a complete modification of natural conditions likely results in unsuitable habitat conditions for CFPOs.

While development activities are occurring in close proximity to occupied habitat, overall, noise levels in occupied areas are low. Housing density is low, and as a result, human presence is also generally low. The majority of the roads in the area are dirt or two-lane paved roads with low speed limits which minimizes traffic noise. The low density of housing further decreases traffic noise by reducing the number of vehicles traveling through the area.

Riparian bottomland forests and bosques, which historically supported the greatest abundance of CFPOs have been extensively modified and destroyed by clearing, urbanization, water management, and hydrological changes (Willard 1912, Brown *et al.* 1977, Rea 1983, Szaro

1989, Bahre 1991, Stromberg *et al.* 1992, Stromberg 1993). Cutting of trees for domestic and industrial fuel wood was so extensive throughout southern Arizona that, by the late 19th century, riparian forests within tens of miles of towns and mines had been decimated (Bahre 1991). Mesquite was a favored species because of its excellent fuel qualities. The famous, vast forests of "giant mesquites" along the Santa Cruz River in the Tucson area described by Swarth (1905) and Willard (1912) fell to this threat, as did the "heavy mesquite thickets" where Bendire (1888) collected CFPO specimens along Rillito Creek, a Santa Cruz River tributary, in present-day Tucson. Only remnant fragments of these bosques remain.

Because of its hard wood, ironwood has also been harvested extensively for firewood and decorative souvenirs. Although it was once a common and characteristic feature of the Sonoran Desert, ironwood and ironwood snags have decreased in number due to their harvesting for firewood and artwork (Bowers 1993). Burquez and Quintana (1994) noted that ironwood is one of the most ancient living organisms on earth, with some individuals dated at more than 1,200 years old. They noted that recruitment of new ironwood trees is low, and also that young ironwood trees are narrow and tall, while only older trees show a broader morphology that would be more attractive to nesting owls.

Cottonwoods also were harvested for fuel wood, fenceposts, and for bark which was used as cattle feed (Bahre 1991). In recent decades, the CFPO's riparian habitat has continued to be modified and destroyed by agricultural development, woodcutting, urban expansion, and general watershed degradation (Phillips *et al.* 1964, Brown *et al.* 1977, State of Arizona 1990, Bahre 1991, Stromberg *et al.* 1992, Stromberg 1993). Sonoran desertscrub has been affected to varying degrees by urban and agricultural development, woodcutting, and livestock grazing (Bahre 1991).

In addition to clearing woodlands, the pumping of groundwater and the diversion and channelization of natural watercourses are also likely to have reduced CFPO habitat. Diversion and pumping result in diminished surface flows, and consequent reductions in riparian vegetation are likely (Brown *et al.* 1977, Stromberg *et al.* 1992, Stromberg 1993).

Channelization often alters stream banks and fluvial dynamics necessary to maintain native riparian vegetation. The series of dams along most major southwestern rivers (e. g., the Colorado, Gila, Salt, and Verde) have altered riparian habitat downstream of dams through hydrological and vegetational changes, and have inundated former habitat upstream.

Livestock overgrazing in riparian habitats is one of the most common causes of riparian degradation (Ames 1977, Carothers 1977, Behnke and Raleigh 1978, Forest Service 1979, GAO 1988). Effects of overgrazing include changes in plant community structure, species composition, relative species abundance, and plant density. These changes are often linked to more widespread changes in watershed hydrology (Brown *et al.* 1977, Rea 1983, GAO 1988), and are likely to affect the habitat characteristics essential to the CFPO.

According to early surveys in the literature the CFPO, prior to the mid-1900s, was "not

uncommon," "of common occurrence," and a "fairly numerous" resident of lowland central and southern Arizona in cottonwood forests, mesquite-cottonwood woodlands, and mesquite bosques along the Gila, Salt, Verde, San Pedro, and Santa Cruz rivers and various tributaries (Breninger 1898 in Bent 1938, Gilman 1909, Swarth 1914). Bendire (1888) noted that he had taken "several" along Rillito Creek near Fort Lowell, in the vicinity of present-day Tucson, Arizona. Records indicate that the CFPOs were initially more common in xeroriparian habitats (very dense thickets bordering dry desert washes) than more open, desert uplands (Monson and Phillips 1981, Johnson and Haight 1985a, Johnson-Duncan *et al.* 1988, Millsap and Johnson 1988, Davis and Russell 1990). The CFPO was also noted to occur at isolated desert oases supporting small pockets of riparian and xeroriparian vegetation (Howell 1916, Phillips *et al.* 1964).

The historic use of Sonoran Desertscrub habitats by CFPOs is not as clear. A disproportionately low number of historical records from desertscrub habitats may be due to the focus of early collection efforts along rivers where humans tended to concentrate, while the upland areas received less survey. An additional hypothesis is offered by Johnson and Haight (1985a), who suggested that the CFPO adapted to upland associations and xeroriparian habitats in response to the demise of Arizona's riparian bottomland woodlands. It is also possible that desertscrub habitats simply are of lesser quality for CFPOs and have always been occupied by CFPOs, but at lower frequency and density (Johnson and Haight 1985b, Taylor 1986). Historical records of CFPOs do exist for Sonoran desertscrub in areas such as the Santa Catalina foothills and in "groves of giant cactus" near New River, north of present-day Phoenix. Kimball (1921) reported one CFPO in a mesquite tree in the foothills of the Santa Catalina Mountains. Fisher (1893) took two CFPO specimens near New River, and observed "several others" in mesquite and large cacti.

The range of the CFPO in Arizona extends from the International Border with Mexico north to central Arizona. The northernmost historic record for the CFPO is from New River, Arizona, approximately 35 miles north of Phoenix, where Fisher (1893) reported the CFPO to be "quite common" in thickets of intermixed mesquite and saguaro cactus. The Museum of Vertebrate Zoology contains a clutch of four eggs collected by G.F. Breninger on May 18, 1898 in Phoenix, Maricopa County. One additional record exists for this northern portion of the CFPO's range, and is filed under R.D. Lusk with the United States National Museum Smithsonian Institution. This record indicates that five eggs were collected at Cave Creek on April 12, 1895 (USNM 1996). CFPOs were also detected in central Arizona at the Blue Point Cottonwoods area, at the confluence of the Salt and Verde rivers, in 1897, 1949, 1951, and 1964 (AGFD unpubl. data, Phillips *et al.* 1964). Additionally, CFPOs were detected at Dudleyville on the San Pedro River as recently as 1985 and 1986 (AGFD unpubl. data, Hunter 1988).

The easternmost record for the CFPO is from 1985 at the confluence of Bonita Creek and the Gila River. Other records from this eastern portion of the CFPO's range include a 1876 record from Camp Goodwin (current day Geronimo) on the Gila River, and a 1978 record

from Gillard Hot Springs, also on the Gila River. CFPOs have been found as far west as the Cabeza Prieta Tanks in 1955 (Monson 1998).

Over the past several decades, CFPOs have been primarily found in Sonoran Desertscrub communities in southern and southwestern Arizona consisting of palo verde, ironwood, mesquite, acacia, bursage, and columnar cacti (Phillips *et al.* 1964, Davis and Russell 1984 and 1990, Monson and Phillips 1981, Johnson and Haight 1985a, Johnsgard 1988).

Regardless of past distribution in riparian areas, it is clear that the CFPO has declined throughout Arizona to the degree that it is now extremely limited in distribution in the state (Davis and Russell 1984, Johnson *et al.* 1979, Monson and Phillips 1981, AGFD 1988, Johnson-Duncan *et al.* 1988, and Millsap and Johnson 1988, Monson 1998).

Hunter (1988) found fewer than 20 verified records of CFPOs in Arizona for the period of 1971 to 1988. Although CFPOs are diurnal and frequently vocalize in the morning, the species was not recorded or reported in any breeding bird survey data in Arizona (Robbins *et al.* 1986). Formal surveys for the CFPO on OPCNM began in 1990, with one located that year. Beginning in 1992, survey efforts conducted in cooperation with the AGFD, three single CFPOs were located on the Monument (Fish and Wildlife Service and National Park Service, unpubl. data 1992).

In 1993, surveys were conducted at locations with CFPO sightings from 1970 or later. These areas included the lower San Pedro River from Cascabel to Winkelman, northwest Tucson, east Tucson from Sabino Canyon to Tanque Verde Wash, the lower elevations of Saguaro National Park, Rincon Mountain District, Rincon Creek from the X-9 Ranch to Thunderhead Ranch, and the confluence of the Verde and Salt rivers. Only one CFPO was detected during these survey periods, and it was located in northwest Tucson (Felley and Corman 1993).

Surveys were again conducted in 1994 at Catalina State Park north of Tucson; Winkelman, the Aravaipa Creek confluence, near Mammoth, and at Bingham Cienega along the lower San Pedro River, Cabeza Prieta National Wildlife Refuge, Picacho Reservoir, Sycamore Canyon in the Pajarito Mountains, and at the confluence of the Salt and Verde rivers. These surveys yielded no CFPO detections (Collins and Corman 1995).

In 1996, AGFD focused survey efforts in northwest Tucson and Marana and detected a total of 16 CFPOs, two of which were a pair, and two of which were fledglings. Three additional CFPOs were detected at OPCNM in 1996. There were also three additional but unconfirmed reports of CFPOs from OPCNM (H. Smith, OPCNM, *in litt.* 1996).

In 1997, survey efforts of AGFD located a total of ten CFPOs in the Tucson Basin study area, which is roughly bounded on the north by the Picacho Mountains on the east by the Santa Catalina and Rincon Mountains, on the south by the Santa Rita and Sierrita Mountains, and on the west by the Tucson Mountains. Eight of the ten CFPOs were found in the northwest Tucson area, and remaining two were found on the western bajada of the Tortolita Mountains.

Of the eight CFPOs documented from northwest Tucson in 1997, one pair successfully fledged four young. The remaining three CFPOs included a single adult in the northwest Tucson area and the two CFPOs found on the western bajada of the Tortolita Mountains. Nine of the CFPOs were located during the nesting season, while three were located in the fall. Of the three CFPOs located in the fall, two were known CFPOs from the nest site. It is unknown if the third CFPO located in the fall was from the known nest site for that year. This CFPO was located more than two miles from the nest site, and was counted as the tenth CFPO for 1997 (AGFD, unpubl. data 1997). Two adult males were also located at OPCNM 1997, with one reported from a previously unoccupied area (T. Tibbitts, OPCNM, pers. comm. 1996).

In 1998, a total of 35 CFPOs were observed, including 11 juveniles in the Tucson basin, and five juveniles at OPCNM (S. Richardson, AGFD, pers. comm., M. Richardson, USFWS, unpubl. data, T. Tibbitts, OPCNM pers. comm., D. Bieber, Coronado National Forest, pers. comm.). Three adults were found along xeroriparian drainages in semi-desert grassland in southern Arizona, and two adults were also located in Pinal County. One adult was located in eastern Tucson as well (USFWS unpubl. data). The Service believes that the increase in the number of observed owls in 1998 is largely due to increased survey effort from previous years, and location of successful nest sites.

Within the project area, a single CFPO was heard calling on two separate occasions. The first CFPO detection was documented on March 24, 1998 from the eastern portion of the property. The CFPO was heard calling from the northeast, off of the subject property. On March 27, 1998 the site of the previous detection was revisited. CFPO calls were subsequently heard coming from the southwest, on the subject property.

Two additional recent records of CFPOs have been documented within the same Township as the subject property, although both are several miles to the east. In addition, there is also an unconfirmed sighting of a CFPO along Scenic Drive within the project area vicinity.

EFFECTS OF THE PREFERRED ACTION ON THE CFPO

Direct and Indirect Effects

After the mitigation for the temporal loss of approximately 27 acres of Sonoran desertscrub habitat and noise disturbance associated with infrastructure and housing construction, the Applicant would implement the transitional and residential phases of the proposed activity as described previously. The project implementation may result in the incidental take of CFPOs through harassment.

Noise disturbance: Currently, all known CFPOs within the Tucson area are located in areas containing low-density housing developments that are adjacent to undeveloped tracts of land. On average, there is one house per 3.3 acres in those subdivisions (zoned as suburban ranch [SR]) that are occupied by CFPOs. Based on survey data collected to date, it appears this

species may be tolerant of certain noise disturbances associated with human occupancy of an area including human voices, large trucks, horses and other livestock, dogs, children, and construction equipment. However, the threshold between noise levels and types of activities that an owl can tolerate versus those that would cause an owl to leave an area are not clearly known at this time. Individual CFPOs may react differently to noise disturbance, with some individuals exhibiting less tolerance than others. Additionally, the frequency of noise disturbances and the time of year may also have an influence on whether CFPOs may be habituated or more sensitive to some noise disturbances. These relationships are not well understood at this time.

With respect to CFPOs and noise disturbance at the project site, it is noted that human use of the site is on-going. Current activities include vehicular traffic, visitor use of guest ranch facilities including housing, horse maintenance activities, trail rides, and facilities management activities. The project would result in additional noise disturbance, but it would not be creating noise disturbances in a previously undisturbed area. CFPOs using this site in 1998 would appear to be tolerant of some noise level as they were located at the site when it was already in use as a guest ranch, and bordered by an existing road. During the transitional phase, noise disturbances to CFPO that could result in harassment would be due to:

- 1) noise construction related to infrastructure development
- 2) noise disturbance associated with construction of the group meeting facility

3) noise disturbance associated with use of a group meeting facility, including bus traffic
Noise disturbance related to infrastructure and group meeting facility construction would be short-term. Additionally, the Applicant would conduct cavity inspections and avoid any occupied cavity and a 300-foot radius around that cavity during the CFPO nesting period (June 1 -July 15). Noise disturbance associated with the group meeting facility would be of a limited nature. However, while human use of the site currently occurs, large meetings, especially those held outside, could produce noise levels beyond those associated with the existing guest ranch. Similarly, while there is existing vehicular use of the site, bus traffic would likely increase noise levels beyond those currently occurring at the site. The effects of lighting the cliff faces, if any are not known at this time. It is possible that lighting could benefit the CFPO by enhancing their ability to capture prey.

During the residential phase, disturbances to CFPOs would be in the form of:

- 1) construction of individual residences
- 4) increased vehicular use of the area
- 3) increased human presence in the area
- 4) temporal habitat loss of approximately 27 acres

Construction of individual residences: A permitted biologist on behalf of the Applicant or developer/lot owner would conduct cavity searches prior to initiating home construction on

each lot. Should a CFPO be found, no building would occur on that lot during the nesting period (January 1 - July 15). While there is existing use of the project site by humans, and existing vehicular traffic, it is anticipated that human presence and vehicular traffic would increase over time as lots are sold, developed, and occupied.

Habitat loss: It is anticipated that habitat losses resulting from project implementation would be offset over the long-term by the revegetation of portions of existing grazed pastures with native species. As noted in the EA/HCP, under the worst case scenario, if all 50 lot owners were to develop each lot to the maximum extent allowable under this HCP (maximum of 17,500 square foot building envelopes), as much as 27.1 acres of Sonoran desertscrub may be cleared and developed during project implementation. However, it is also estimated that approximately 21.2 acres of currently disturbed areas would be revegetated. In addition, approximately 10.6 acres of currently disturbed areas would also be allowed to revegetate. As a result, a long-term net increase of 4.7 acres of natural vegetated habitat would be present within the project site in the future compared to the current condition. However, due to the slow rate of rehabilitation of Sonoran desertscrub communities, restoration efforts in areas currently disturbed would yield long-term net benefits, rather than short-term results.

The temporal loss of up approximately 27 acres of CFPO habitat on this 160-acre site is, in part, offset by habitat surrounding the project site. The project area is in close proximity to, suitable habitat at Saguaro National Park West, Tucson Mountain Park, and undeveloped State Lands. While lands to the east of the project site are considered marginal CFPO habitat, one of the owl detections in 1998 was from the extreme western edge of this area. This area remains undeveloped at this time, however, some degree of development is likely to occur in the future.

As noted previously, two CFPO detections were made at or immediately adjacent to the Lazy K Bar Ranch in March of 1998. The exact use of the property by CFPOs is not known at this time. It is not clear if an owl or owls nested at this site, used the site only for foraging, or used the site as a core part of its territory. However, those portions of the site supporting the highest quality habitat would be protected in perpetuity by no-build zones along xeroriparian corridors and by larger lot sizes that would effectively minimize clearing of vegetation in these key areas.

Summary

The issuance of a section 10(a)(1)(B) permit would authorize the incidental take associated with the preferred action as described in the EA/HCP, which includes the harassment of up to two CFPOs and their young. Issuance of the permit and harassment of up to two CFPOs and their young is conditioned upon implementation of this HCP, which the Service believes would minimize the likelihood of take and could contribute to CFPO recovery by developing the property in a way which is consistent with other areas currently occupied by successfully nesting CFPOs in the Tucson basin.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local, or private actions that have no Federal connection, and that are reasonably certain to occur in the action area considered in this consultation. Future Federal actions are subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

The Service is aware that the project vicinity in general is subject to ongoing residential development pressures. State, local, or private actions currently planned for this area include potential expansion of Continental Ranch and Pima Farms developments. These developments are located to the north and east of this project, and would not affect any of the habitat described in previous sections of this Biological Opinion nor would those occurring in Saguaro National Park West or Tucson Mountain Park, or any of the undeveloped State Lands in the project vicinity. The area due east of this project may in the near future be under consideration for development as a moderate- to high-density residential project. However, specific plans for that project are not known at this time. In addition, Pima County has developed a draft Sonoran Desert Conservation Plan (1998) which identifies areas within the County that are environmentally, culturally, or of historical importance. They have expressed interest to the Service that this plan may be used as a basis to develop a regional multispecies HCP for the county addressing the CFPO in their planning efforts.

CONCLUSION

After reviewing the current status of the CFPO, the environmental baseline for the action area, the effects of the proposed action/preferred alternative and the cumulative effects, it is the Service's Biological Opinion that the issuance of a section 10(a)(1)(B) permit authorizing take incidental to the development of the Lazy K Bar Ranch is not likely to jeopardize the continued existence of the CFPO.

INCIDENTAL TAKE

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. *Harm*, an act which “actually kills or injures listed wildlife” is further defined to include significant habitat modification or degradation that results in death or injury to listed species by “significantly impairing behavioral patterns such as breeding, feeding, or sheltering” (50 CFR §17.3). *Harass* is defined as “an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering” (50 CFR §17.3). *Incidental take* is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant section 10(a)(1)(B) of the Act.

Under the terms of section 7(b)(4) and section 7(o)(2), 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 HCP and its associated documents clearly identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All conservation measures described in the HCP, together with the terms and conditions described in any associated Implementing Agreement and any section 10(a)(1)(B) permit or permits issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR §402.14(I). Such measures described are non-discretionary, and must be implemented for exemptions under section 10(a)(1)(B) and section 7(o)(2) to apply. The amount or extent of incidental take anticipated under this proposed HCP, associated reporting requirements, and provisions for disposition of dead or injured animals are as described in the HCP and its accompanying section 10(a)(1)(B) permit[s]. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service: (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document; and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

AMOUNT OR EXTENT OF TAKE

The Service anticipates that two CFPOs and their young could be taken as a result of this action. The incidental take is expected to be in the form of harassment due to habitat loss and noise disturbance. Because of the small size of habitat disturbance relative to baseline habitat conditions, the fact that there will be a long-term net habitat gain, and because the nature of the harassment in the form of noise disturbance during construction which is relatively short in duration, the Service believes that the proposed permit issuance and subsequent project development would result in harassment of up to two CFPOs and their young in any given year, but it is not expected to occur every year.

If, during the course of the action, the amount or extent of the incidental take anticipated is exceeded, the Service must reinitiate consultation immediately to avoid violation of section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking would cause an irreversible and adverse impact on the species, as required by 50 CFR §402.14(I).

EFFECT OF THE TAKE

In the accompanying Biological Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The reasonable and prudent measures (RPMs), with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. The Service believes the following RPMs are necessary and appropriate to minimize take:

1. Minimize the removal of suitable habitat areas associated with project development.
2. Avoid disturbance of breeding CFPOs and loss of nest trees or saguaros while being used by CFPOs.
3. Minimize habitat disturbance and loss of key habitat components during project development.
4. Monitor the effects of the proposed project on habitat quality over time, and ensure adherence to HCP criteria.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Service is responsible for ensuring that the Applicant complies with the following terms and conditions, which implement the RPMs described above. These terms and conditions are nondiscretionary. Additional detail for each of these measures can be found in Section 6 of the EA/HCP.

Terms and conditions necessary to implement Reasonable and Prudent Measure 1:

- a. Develop the group meeting facility and associated bus parking in areas that have been previously disturbed by the existing guest ranch to avoid disturbance or loss of additional CFPO habitat.
- b. Utilize the lot layout plan described in Section 4.1 of the EA/HCP, which ensures that the largest lots are located in those areas with highest suitability for CFPOs, or where the individual CFPO was detected.
- c. Limit horse facilities to the central area that has already been previously disturbed by existing guest ranch limited to lots 8 through 16 shown in Figure 4 of the EA/HCP.
- d. Areas identified in Figures 6 through 8 of the EA/HCP as no-grade zones shall not be impacted at any time except from those lineal areas used for driveways or utilities.
- e. Develop Covenants, Conditions, and Restrictions (CC&Rs) that address these terms and conditions.

Terms and conditions necessary to implement Reasonable and Prudent Measure 2:

- a. Have a qualified biologist (with a valid permit from the Service to do such work) conduct cavity inspections during the nesting period (January 1 through July 15) for all saguaros eight feet in height or greater and all large trees six inches dbh or greater (trunk diameter measured at 4.5 feet above the ground) with cavities suitable for nesting that might be disturbed during infrastructure alterations or improvements during the transitional phase. Should a CFPO be located in one of these cavities, construction activities shall be restricted within a 300-foot radius of the nest cavity during the nesting period as defined above. Cavity inspection reports shall be submitted to the AESFO within ten days of completion.
- b. Have a qualified biologist (with a valid permit from the Service to do such work) conduct cavity inspections during the nesting period (January 1 through July 15) for all saguaros eight feet in height or greater and all large trees six inches dbh or greater (trunk diameter measured at 4.5 feet above the ground) with cavities suitable for nesting that might be disturbed during residential development. Should a CFPO be located, construction activities shall be restricted during the nesting period (January 1 through July 15) on that entire lot. Cavity inspection reports shall be submitted to the AESFO within ten days of completion.
- c. Leave nest trees or saguaros in place, if practicable. If the tree or saguaro should need to be removed after the nesting period, it shall be salvaged and transplanted to an appropriate location in the same lot. If the nest tree or saguaro can not be salvaged, three saguaros at least 12 feet in height must be planted as replacements in the immediate vicinity of the removed saguaro. Salvage and planting of nest trees and saguaros are the responsibility of the Applicant during the transitional phase and of the developer/property owner during the residential phase.
- d. Place a wire mesh or other appropriate material over the nest cavity, if after a cavity inspection by a qualified biologist (with a valid permit from the Service to do such work) has determined that no nesting is occurring in a saguaro or tree. This will be done in order to preclude nesting at that site and influence owls to nest in other nearby saguaro or tree cavities. Materials used to cover cavities shall be placed in a manner that does not injure the plant, and all material used to cover cavities shall be removed at the completion of building activities in that lot. This term and condition shall be the responsibility of the Applicant during the transitional phase and of the developer/property owner during the residential phase.
- e. Each homeowner shall appropriately restrain their dogs and/or cats within the confines of an enclosed yard.
- f. Develop CC&Rs that address these terms and conditions.

Terms and conditions necessary to implement Reasonable and Prudent Measure 3:

- a. Salvage and replant within the immediate vicinity any native trees greater than four inches basal diameter that would be removed by the development. If a tree is not salvageable, based on criteria within Section 6 and Appendix C of the EA/HCP, three native trees indigenous to the project area (including mesquite, palo verde, and ironwood) may be used to replace the removed tree. This substitution cannot be made for a nest saguaro or tree unless salvage is not practicable. If it must be removed, then three saguaros (at least 12 feet in height) shall be planted as replacements. This term and condition shall be the responsibility of the Applicant during the transitional phase and of the developer/property owner during the residential phase.
- b. Salvage and replant within the immediate vicinity of removal any saguaros in excess of five feet tall that would be removed as part of the proposed project. The developer or lot owner may elect to plant three two- to five-foot tall saguaros in lieu of salvaging a saguaro (this requirement is not applicable to salvaged saguaros that were previously used for nesting). This term and condition shall be the responsibility of the Applicant during the transitional phase and of the developer/property owner during the residential phase.
- c. Establish a maximum building envelope of 17,500 square feet in which all building pads, patio areas, pools, outbuildings, septic facilities, and other amenities are contained. Establish a maximum driveway grading envelope width of 18 feet, unless a greater width is required by topographic constraint (for these driveways, establish a maximum grading envelope width of 28 feet).
- d. Require that landscaping follow the instructions and plant palettes described in Section 6 and Appendix C of the EA/HCP, as appropriate.
- e. Reseed roadways and common areas disturbed by construction with species native to the Tucson Mountain Region.
- f. Develop CC&Rs that address these terms and conditions.

Terms and conditions necessary to implement Reasonable and Prudent Measure 4:

- a. The Applicant shall provide to the Service advanced copies of proposed venue plans used in obtaining building permits with a cover letter indicating the anticipated construction date. The plans shall include any modifications to existing roads and parking lots for bus traffic. Subsequent modifications of these plans, if any, must also be submitted to the Service for prior approval. The Service shall notify the Applicant of any perceived modifications from the HCP criteria regarding venue development, and will provide a written notice to the HCP file and the Applicant outlining its conclusion with respect to whether or not the proposed plans adhere to criteria in the HCP.

- b. The Applicant or Homeowners Association shall submit to the Service at its request the names and addresses of all residential lot owners. A short form may be developed to facilitate this reporting requirement.
- c. Prior to any infrastructural activities, all suitable cavities shall be inspected by a qualified biologist (with a valid permit from the Service to conduct such work) to determine if a CFPO nest site is present, as noted under RPM 2 and its terms and conditions above. If a CFPO is located, the surveyor, Applicant or developer/lot owner shall notify the Service within 24 hours. If no CFPOs are located, a written report will be submitted to the Service within ten days of completion of field work. Prior to any construction of individual homes, developer/lot owners will be responsible for ensuring that cavity inspections are carried out by qualified biologists with a valid permit from the Service to conduct such work. It is the responsibility of the Applicant to notify each developer/lot owner of this requirement at the time of lot purchase. Reporting requirements for residents are the same as those detailed within this paragraph for the Applicant.
- d. Saguaro cacti five feet or greater in height and trees exceeding four inches in basal diameter shall be replaced, as described in RPM 3 and its terms and conditions above. The Applicant or developer/lot owner shall submit to the Service with the annual monitoring reporting (by October 1 of each calendar year) how many trees and saguaros were salvaged or replaced, what species of trees were affected, and their survival rate at the end of this period. Prior to development of individual residences, the developer/lot owner shall be responsible for the salvage of large trees and saguaros on their property that would otherwise be destroyed by home construction. Reporting requirements for developer/lot owner are the same as those detailed within this paragraph for the Applicant. A short form may be developed to facilitate this reporting requirement.
- e. During the Transition Phase, the Applicant shall conduct CFPO surveys over the entire property in year one and two of the plan (currently estimated to be 1999 and 2000) to establish a CFPO baseline for the property. Surveys will include at least three complete visits per calendar year within the CFPO breeding season, (January 1 through June 30), and will follow the techniques described in Section 6.1.2.3 of the EA/HCP and as required by the Service's survey permit. All surveyors shall have a valid survey permit from the Service. AESFO shall be contacted a minimum of three days prior to initiation of surveys. An annual report will be submitted by the Applicant to the Service by October 1 of that calendar year, detailing when surveys were completed, the results, and any information gained on nesting status.
- f. If a CFPO is detected, additional monitoring (e.g. radio telemetry) may be implemented at the Service's discretion. The Service may conduct or have a third party conduct these studies, and will coordinate with the Applicant prior to initiation. The Applicant

shall fund these studies at up to \$1,000 per CFPO, for up to five birds. The total sum the Applicant would be responsible for this follow-up survey or telemetry work is \$5,000 for both the Transitional and Residential Phases of the project combined.

- g. The Applicant will provide to the Service a final plat depicting roadways, lot boundaries, no building zones, lot setbacks, and easements with a cover letter indicating the anticipated construction start date for infrastructure developed related to the Residential Phase at least 15 days prior to the initiation of construction activities. The Service will review the plan and notify the Applicant within 15 days of any perceived variances from criteria in the HCP, and will provide a written report to the Applicant and the project file indicating whether or not the proposed action adheres to criteria in the HCP.
- h. During the Residential Phase, the Applicant, their successors, or assigns shall conduct or fund CFPO surveys according to the survey protocol recommended by the Service during two stages in development. One year of surveys shall be conducted during the breeding season following attainment of 40 percent build-out, as defined when homes have been built on 20 of the residential lots. A second year of surveys shall be conducted during the breeding season following attainment of 80 percent build-out, as defined when homes have been built on 40 of the residential lots. Surveys conducted during each of these periods will include at least three complete visits per calendar year within the CFPO breeding season, (January 1 through June 30), and will follow the techniques described in Section 6.1.2.3 of the EA/HCP and as required by the Service's survey permit. All surveyors shall have a valid survey permit from the Service. An annual report shall be submitted by the Applicant, their successors, or assigns to the Service by October 1 of that calendar year when surveys were completed and the results, and any information gained on nesting status.
- i. If a CFPO is detected, additional monitoring may be implemented at the Service's discretion as described above.
- j. The Applicant shall provide to the Service in its annual report prior to disturbance, a native plant inventory identifying trees and saguaros that would be impacted by development activities, and a determination of their salvageability, and whether they will be salvaged or replaced at a rate of 3:1 ratio. This information may be supplemented with fixed-point photography of proposed construction sites showing before and after conditions in order for the Service to determine the effects of the proposed project on habitat quality resulting from project implementation.
- k. If the Applicant, their successors or assigns, developers/lot owners, or the Service become aware of any circumstances that may adversely affect the CFPO, or their ability to implement this HCP, then the party identifying them shall notify the other party within 48 hours.

1. The Applicant shall prepare and provide all terms and conditions of this permit, HCP, and all CC&Rs for each lot on or before buyers closing.

CONSERVATION RECOMMENDATIONS

Sections 2(c)(1) and 7(a)(1) of the Act directs 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.

1. The Service should fund additional survey work both in and outside of the Tucson basin to further determine the number and distribution of CFPOs remaining in Arizona.
2. Continue studies, using both monitoring and telemetry, to determine home range size, dispersal distance, and habitat needs of the CFPO to aid in future management decisions.
3. Facilitate the completion a regional HCP that provides for habitat protection on a large scale in and around the Tucson basin. Provide funding or identify funding sources to be used in the regional HCP process for acquisition of key CFPO habitat areas.

REINITIATION AND CLOSING STATEMENT

This concludes formal consultation on the proposed issuance of a section 10(a)(1)(B) permit to allow incidental take of CFPO resulting in the operation of a guest ranch and eventual 50 residential lot development. As required by 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;
3. in a manner or to an extent not considered in this opinion;
4. the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in the opinion; or
5. a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If there are any questions about this Biological Opinion or EA/HCP, please contact Mike Wrigley or Tom Gatz at 602/640-2720. All future communications on this project should refer to consultation number 2-21-98-F-334.

/s/ David L. Harlow

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