United States Department of the Interior

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Cons. # 2-22-05-F-0501

S.E. "Lou" Woltering, Forest Supervisor
Lincoln National Forest
Federal Building
1101 New York Avenue
Alamogordo, New Mexico 88310-6992

Dear Mr. Woltering:

This document transmits the U. S. Fish and Wildlife Service's (Service) concurrence and biological opinion on the proposed U.S. Department of Agriculture Lincoln National Forest (Forest Service) Pumphouse and South La Luz Grazing Allotments and the issuance of 10-year term grazing permits and their effects on the endangered Sacramento prickly poppy (*Argemone pleiacantha* spp. *pinnatisecta*) (poppy) and the threatened Mexican spotted owl (*Strix occidentalis lucida*) (owl) and its critical habitat in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Your July 14, 2005, request for formal consultation was received on July 18, 2005.

The proposed action is to re-authorize a 10-year grazing permit for the Pumphouse. The 10-year permit would authorize up to 288 head months (64 head for up to 4.5 months) in Pumphouse Grazing Allotment. The following information for the Pumphouse Grazing Allotment on the owl and its critical habitat was provided in the BA or was otherwise available to the Service: 1) no human disturbance or construction activities would occur in Rawlins #5 protected activity center (PAC) during the breeding season, 2) livestock grazing and management activities within PACs will be managed to provide woody and herbaceous vegetation necessary for owl prey species, and 3) herbaceous vegetation utilization would be limited to 30 to 40 percent within key areas. We find that your proposed action and associated activities would conform with the Mexican Spotted Owl Recovery Plan (U.S. Fish and Wildlife Service 1995) because owl prey habitat would be retained or only temporarily impacted. For these reasons, the Service concurs with your determination for the Pumphouse Grazing Allotment that the proposed action "may affect, is not likely to adversely affect" the owl.

We anticipate insignificant effects to the primary constituent elements of owl critical habitat in the Pumphouse Grazing Allotment because utilization levels of 30 to 40 percent in key areas would be maintained. Therefore, the Service concurs with your determination that the proposed action "may affect, is not likely to adversely affect" designated critical habitat for the owl.

This biological opinion is based on information provided in the July 14, 2005, biological assessment, telephone conversations with Forest Service Staff, comments provided by the applicant/allotment permittee and other sources of information. A complete administrative record of this consultation is on file at the New Mexico Ecological Field Office, Albuquerque New Mexico.

BIOLOGICAL OPINION

CONSULTATION HISTORY

Informal consultation began on June 22, 2004, when the Forest Service and the Service met to discuss range consultations. The Forest Service submitted their biological assessment (BA) on July 14, 2005, requesting formal consultation with the Service. The Service in a letter dated August 1, 2005, acknowledged the request for formal consultation. The Service provided draft biological opinions on January 3 and September 8, 2006. The applicant/allotment permittee responded with comments on the January 3, 2006 draft biological opinion to the Forest Service on February 5, 2006. The Forest Service responded with comments to the January 3, 2006 draft biological opinion on August 11, 2006, and to the September 8, 2006 biological opinion on November 28, 2006.

DESCRIPTION OF THE PROPOSED ACTION

The Sacramento Ranger District is proposing to re-authorize grazing within the South La Luz Grazing Allotment (Allotment). The 10-year grazing permit will authorize up to 384 head months (64 head of livestock for up to 6 months) of use from November 8 through May 10. The Allotment will be managed for 45 percent utilization in key areas. New improvements include: 1) Replacing pads and troughs on the Mill Ridge and Mine trick tanks, 2) pipeline and troughs replaced within the Salado Pasture, and 3) the construction of livestock pens in the northeast corner of the Salado Pasture.

Action Area

The action area is defined as the South La Luz allotment, Sacramento Ranger District, Lincoln National Forest, Otero County, New Mexico. The South La Luz allotment contains 5,616 acres, 57 percent or 3,214 acres of which are usable grazing acres (U.S. Forest Service 2005). Approximately 2,602 acres within the South La Luz Allotment are not capable of sustaining livestock grazing due to steep topography, dense canopy cover of forest and woodland trees, areas of insufficient forage production because of natural site limitations such as rock, or inaccessibility because of private land holding (U.S. Forest Service 2005). On the South La Luz Allotment, the poppy occurs only within the Fresnal pasture.

Conservation Measures

The Forest Service proposes the following activities that will be implemented as part of the proposed action:

1. Prior to range improvement construction or reconstruction projects the Forest Service will survey and avoid impacts to the poppy. In addition, the permit holder is familiar with this plant and its occurrences in the riparian corridor of the allotment and will also avoid any impacts to the poppy.

2. The removal of livestock from the Fresnal Pasture in late January; the use of the Mill Ridge portion of the Fresnal Pasture, which does not contain poppy habitat; and the care to be taken during removal of the livestock from the allotment in May will minimize potential effects on the poppy. The absence of livestock in the Fresnal Pasture during late winter, spring and summer will reduce the period of possible trampling and allow vulnerable seedlings and young plants that may be present to put on growth and root storage without damage to photosynthetic tissue.

3. Driving livestock in mid-May, from the Salado Pasture to private land will be done along ridgelines or the road. This would reduce the potential for herbivory on plants in the riparian corridor and lower benches.

STATUS OF THE SPECIES

Species Description

The poppy was first described in George Ownbey's monograph of the North and Central American species of *Argemone* (U.S. Fish and Wildlife Service 1994). The botanical description of the poppy is based on a specimen collected by George and Findley Ownbey, on August 12, 1953, 9.6 miles west of Cloudcroft, at an altitude of 6,600 feet, in Otero County, New Mexico. The poppy is endemic only to several canyons in the Sacramento Mountains of Otero County, in south-central New Mexico (U.S. Fish and Wildlife Service 1994).

The Service listed the poppy as an endangered species under the Act, on August 24, 1989. No critical habitat has been proposed for the poppy. The Sacramento Prickly Poppy Recovery Plan (Recovery Plan) was signed on August 31, 1994. The poppy has a recovery priority of 3, based on the high degree of threat and high recovery potential for the subspecies (U.S. Fish and Wildlife Service 1994). The Act prohibits the malicious damage, destruction, or removal and reduction to possession of listed plants on areas under Federal jurisdiction. For all other areas, the Act prohibits removing, cutting, digging up, damaging or destroying listed plants in knowing violation of any State law or regulation, or in the course of any violation of a State criminal trespass law. The Act and the Lacey Act also prohibit any person subject to the jurisdiction of the United States from selling, offering for sale, importing, exporting, or transporting in interstate or foreign commerce in the course of a commercial activity, any listed plant species. The poppy is a New Mexico state endangered plant species listed in New Mexico Natural Heritage Program Rule 85-3 of the New Mexico State Endangered Plant Species Act. The law

prohibits the taking, possession, transportation and exportation, and selling or offering for sale any listed plant species (U.S. Fish and Wildlife Service 1994).

Distribution and Abundance

The poppy is limited both in numbers of individuals and locations of occurrence. Populations occur, or have occurred historically, from the lower edge of the ponderosa pine belt down through the piñon/juniper zone into the Chihuahua Desert, or from approximately 7,100 feet down to 4,300 feet. It is found only on the west face of the Sacramento Mountains escarpment between La Luz Creek and Escondido Canyon where it occurs in seven canyon systems (U.S. Forest Service 2005). The Forest Service is the principal land management agency within the range of the poppy and 1,135 plants have been documented from Forest Service lands and an additional 45 plants on private land (U.S. Fish and Wildlife 1994). The poppy is also known from Bureau of Land Management and private lands, Oliver Lee State Park, State of New Mexico and Otero County road rights-of-way, and City of Alamogordo water pipeline rights-of-way (U.S. Fish and Wildlife Service 1994).

On August 24, 1989, the Final Rule indicated that approximately 1,313 poppy plants were documented from ten canyons on the west side of the Sacramento Mountains (U.S. Fish and Wildlife Service 1989). The Recovery Plan (U.S. Fish and Wildlife Service 1994) suggested that poppies less commonly occupied more densely vegetated areas. They also suggested that disturbed areas (after fire) with less vegetation created habitat favorable for the establishment of the poppy (U.S. Fish and Wildlife Service 1994). Plants were most commonly found on natural and man-disturbed sites with a significant water supply, including dry streambeds, stream banks, pipeline right-of-ways and roadsides. Most plants grew on relatively flat sites. Those on slopes primarily occupied north, northeast and northwest aspects (U.S. Fish and Wildlife Service 1994).

The Fresnal/La Luz/Salado Canyon population of the poppy has the second-largest population documented as of 1987, after Alamo/Caballero Canyon population (Malaby 1987, U.S. Forest Service 2005). It occurs on both National Forest System and other ownerships in the South La Luz Allotment. Occurrences are present in the Fresnal Canyon reach of this drainage, including four plants occurring as of the 1987 survey in lower Salado Canyon within the Fresnal Pasture (Malaby 1987). No plants have been located within the La Luz Canyon drainage above its junction with Fresnal Canyon. As of the 2003 season, the South La Luz Allotment in lower Fresnal Canyon had 62 plants on National Forest System lands, which can be compares favorably with the 80 plants reported in the Recovery Plan. The Fresnal/La Luz Canyon system has historically had perennial flows, but the flow has declined or disappeared through the recent drought period. Surveys indicate young plants occur primarily on open disturbed sites and that their recruitment is tied to moisture conditions (U.S. Forest Service 2005). Recruitment is typically limited (U.S. Fish and Wildlife Service 1994, U.S. Forest Service 2005).

Recent declines in poppy numbers are not completely understood and may involve the interaction of several factors, including livestock grazing, the effects of drought, flash floods,

disease, water diversion, pipeline repair and replacement, fungal infestation, and road construction and maintenance (U.S. Fish and Wildlife Service 2004).

Habitat

In Alamo and Caballero Canyons, Malaby reported that "Plants grew directly in the rocks and gravel of the stream bed, on vegetated bars of silt, gravel and rock, on the sides of cut away banks and occasionally up on the banks. Sites ranged from full exposure to 50-75 percent shaded." The report concludes that the poppy "grows most often in stream beds, along stream banks and by roads or pipelines. These findings agree with previous reports which describe the poppy's habitat as being disturbed and either semi-riparian or with a reliable seasonal provision of water" (Malaby 1987). The Recovery Plan states that the sub-species occupies areas varying from xeric upland to mesic sites, including arid canyon bottoms, old fields and dry terraces above riparian areas, roadsides, pipeline rights-of-way, north slopes, and along streams and stream banks, springs, seep areas, and side drainages. It describes the habitat as being disturbed and either semi-riparian or with a reliable seasonal provision of water. Sites that collect surface water are considered favorable for seedling establishment. Sivinski (1999) reported the "Sacramento prickly poppy occupies a very wide variety of habitats, but at very sporadic and widely spaced locations. An abundance of seemingly suitable habitat is unaccountably not occupied by this very rare plant." "Almost all of [the] plants observed during this study were in habitats that receive intermittent soil disturbance. This can be man-cause such as road cuts and cattle trails, or natural disturbances like drainages, slope erosion, and rodent mounds. Yet there is an abundance of moderately to severely disturbed habitats all around these prolifically seeding plants that remain unoccupied." "Apparently, there are very few sites in which this poppy can successfully become established, and for reasons that are not readily apparent" (Sivinski 1999).

Life History

The poppy is an early succession species, often occupying sites that have been disturbed and have enhanced soil moisture conditions. Occupied canyons have largely intermittent flows after large storm events, or springs that flow for a limited distance (U.S. Forest Service 2005). The poppy is an herbaceous sub-shrub that goes dormant and dies back to the root crown each year. The life cycle of the sub-species includes germination in fall, winter, or spring. Seedlings grow slowly, producing a juvenile plant rosette the first year (U.S. Forest Service 2005).

Second-year plants green-up in February at lower elevations, adult plants bloom after the plant bolts, generally the second year, if moisture availability has allowed for sufficient growth (U.S. Forest Service 2005). Observations in June of 2005, however, indicate that some of the plants that germinated in the fall of 2004 are flowering their first summer (U.S. Forest Service 2005). Flowers are present from May into September at the lower elevations. Fruits mature throughout the blooming season, shedding seeds at maturity.

In order to perpetuate the poppy populations, germination sites must have sufficient moisture for establishment of seedlings, conditions that likely require episodes of sufficient rainfall or semi-

riparian conditions (Malaby 1987), as the plant is not found associated with continuously saturated soils. Young plants must survive from germination, which can be as early as October, until the start of monsoon rains, usually in July (U.S. Forest Service 2005). Seedlings have been described as delicate and not tolerating disturbance well until they have had a chance to establish their taproot (Wood 1992). The New Mexico Rare Plant Technical Council reports that the number of plants "appears to have declined in recent years. The reasons are unknown; it is speculated plant establishment is very episodic" (New Mexico Rare Plants Technical Council 1999).

Fall germination was first documented in Alamo Canyon in mid-November 2004. Based on earlier photos of seedlings of known age, the Forest Service believes that the seedlings germinated in October (U.S. Forest Service 2005). The Forest Service (2005) has reported observations of the some 800 seedlings show that young plants generally are located within some 15-20 feet of the presumed parent. Scarification of the seed coat is likely not happening at these distances and is not believed to be necessary for germination (U.S. Forest Service 2005).

Observations on lifespan indicate that individual plants live at least seven to nine or ten years. Mature plants have been observed to be large and vigorous for years, and then to not re-grow in a subsequent year (Linda Barker, pers. obs.).

The method of seed dispersal is described as movement by surface water run-off. The Recovery Plan acknowledges a lack of agreement among botanists as to the level of disturbance that is beneficial to the poppy recruitment. Although some degree of disturbance is usually associated with recruitment, this species does not increase in response to disturbance to the extent that its co-geners do (U.S. Fish and Wildlife Service 1994).

The poppy produces an abundance of viable seed, so the population bottleneck is either in germination or seedling establishment (Sivinski 1999). Most likely, the relative rarity of this plant is caused by its frequent failure to become established after germination (Sivinski 1999). This is a vulnerable period when the young plant has insufficient roots to survive a prolonged dry spell (Sivinski 1999). Rare microhabitats that harvest runoff or have soils with better water holding capacities may be the only places where juveniles can survive to adulthood (Sivinski 1999). This could account for the sporadic distribution of this poppy.

Population Dynamics

A 100 percent survey conducted between May and July 1987 of 6,331 acres of Federal, State, City of Alamogordo and private land found 1290 plants (Malaby 1987). In the Fresnal/La Luz/Salado drainage, 167 plants were located. Seven plants in Mule Canyon in 1988, and 45 plants on private land in Escondido Canyon at Dripping Spring extended the geographic range of the species in 1989 (U.S. Forest Service 2005).

A contracted survey of all canyons historically reported as supporting the poppy, including Salado Canyon, but excluding Alamo/Caballero and Fresnal/La Luz Canyons, was conducted in

the summer of 2002 (U.S. Forest Service 2005). Only three plants were located, one in Dog Canyon and two in San Andres Canyon. No plants were located in Salado Canyon. As of 1987 there were 167 plants found in the Fresnal/La Luz drainage and 955 found in the Alamo/Caballero system (U.S. Forest Service 2005).

Poppies occur in the Fresnal Canyon reach of this drainage, including four plants occurring as of the 1987 survey in lower Salado Canyon within the Fresnal Pasture (Malaby 1987). No plants have been located within the La Luz Canyon drainage above its junction with Fresnal Canyon. As of the 2003 season, the South La Luz Allotment in lower Fresnal Canyon had 62 plants on National Forest System lands. The Fresnal/La Luz/Salado drainage continues to have the second largest population of this species on the forest.

Reasons for Listing/Threats to Survival

The primary threats to the poppy cited at listing in 1989 include surface-disturbing activities from water pipeline construction, flooding, livestock grazing, and road construction and maintenance activities. Off-road vehicles were not recognized as a potential threat to the poppy until recently (U.S. Fish and Wildlife Service 1994). The Recovery Plan reports that in a 1983 Trip Report, Reggie Fletcher wrote "Spring grazing was intensive enough that no prickly poppy plants could be found. This is the first time grazing has been heavy enough to affect the prickly poppy there (Dog Canyon)." Monitoring to document whether these same plants died or recovered the following year was not conducted. Therefore, it is difficult to evaluate the past or current impacts of herbivory on the poppy (U.S. Fish and Wildlife Service 1994). A City of Alamogordo water pipeline withdraws water from Fresnal Creek above the South La Luz Allotment. Plants are lost during Otero County maintenance along unpaved National Forest System roads in Fresnal Canyon. Plants have continued to be lost to State Highway Department maintenance work and other roadside disturbances in the right-of-way along US Highway 82, in spite of field coordination with Highway Department supervisors.

An additional threat that affects the poppy currently is drought conditions that are significant in light of the historic and continuing withdrawal of water by the City of Alamogordo at mid-Fresnal Canyon and at the head of Alamo and Caballero Canyons. A fungal stem canker was reported by Bob Sivinski, State Botanist, as the cause of seven of eighteen plants failing to set fruit and dying in Dog Canyon (Sivinski, 1999). A presumed fungal infection was observed on adult plants in lower Alamo Canyon in June 2004 and June 2005. There is also a serious possibility of threat to the subspecies' viability as the numbers of plants in populations decline. Studies of pollination biology and subsequent fruit set and seed production conducted by Dr. Vincent Tepedino of the USDA Agricultural Research Service, in 1992 "conclusively show that *A. p. pinnatisecta* will set little or no fruit unless visited by pollinators." Self-pollination, either within one flower or among flowers of the same plant, results in significantly fewer fruits and fewer seeds per fruit (Tepedino1992). With fewer, more widely spaced plants, out-crossing may become more difficult, while lower fruit set and seed production could inhibit population recovery.

Genetic studies have not been performed on the poppy but the threat of inbreeding depression is a growing concern. This concern was alleviated to a certain extent by the successful germination of over 800 seedlings in Alamo Canyon the fall/winter of 2004 during an exceptionally wet period. The successful germination indicated that sufficient cross-pollination was occurring to allow production of fertile seeds at a time when the adult population was surveyed to be 345 plants in Alamo Canyon.

Recovery Efforts

Resource management programs have generally implemented the guidelines identified in the Recovery Plan (U.S. Fish and Wildlife Service 1994). Monitoring and surveying poppy populations and habitat have been conducted in relation to project proposals. Numerous monitoring efforts have been conducted in attempts to understand the effects of grazing on mature plants and seedlings. Monitoring of adult plants has shown that though they may be incidentally grazed in the spring while still rosettes, they continue growing and soon show no evidence of grazing (U.S. Forest Service 2005). Poppies may be eaten to the ground however observations reported by the Forest Service indicates confusion exists about plant identification on some small (i.e., seedling) plants that were grazed (U.S. Forest Service 2005). Research includes studies designed to increase knowledge of seed germination of the poppy, effects of herbivory and trampling, and habitat use. A variety of section 7 consultations on Federal actions that may affect poppies have been conducted. Those consultations resulted in minimization of adverse effects to the poppy and also implemented the Recovery Plan recommendations. The Forest Service has completed consultation on their Noxious Weed Control Plan for treatments of noxious weeds in the vicinity of the poppy.

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 that 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.

Status of the Species within the Action Area

Fresnal Canyon contains all poppies within the action area considered in this biological opinion. Total plant numbers are not known because of mixed land ownership, broken terrain and the intensity of survey effort required to conduct a complete count. On August 1, 2003, survey efforts on Forest Service land within Fresnal Canyon, reported 62 adult (U.S. Forest Service 2005). None of the plants were considered seedlings (U.S. Forest Service 2005). Understanding the effects of various factors and disturbances on germination and seedling establishment may be key to conserving the species.

Factors Affecting the Species within the Action Area

Within the action area, drought, water development, a fungal infestation, livestock grazing and trampling, flash floods, off-highway vehicles, and ongoing surface-disturbing activities such as road and pipeline maintenance threaten the poppy.

Drought and flash flooding have recently affected the area occupied by the poppy. Drought conditions have led to low soil moisture conditions (U.S. Fish and Wildlife Service 2004). Severe drought conditions were recorded prior to the summer monsoons in 2004. When poppy leaves were nicked they failed to exude a milky latex sap, like they normally do (U.S. Forest Service 2005).

The City of Alamogordo maintains water pipelines that tap large springs on the upper western slope of the Sacramento Mountains. These pipelines occur in La Luz and Fresnal Canyons. The pipeline in Fresnal Canyon has been replaced over time as the pipes become cemented in with calcium carbonate. The new pipeline no longer leaks water along its route through the canyon bottom and no longer provides water to limited areas that may have supported poppies in the past (U.S. Forest Service 2004). Municipal use of canyon water has changed the natural hydrology, making upland areas and canyons much drier, perhaps reducing poppy habitat. Pipeline repair, replacement, and maintenance are ongoing. This pipeline and associated activities continue to affect the suitability of poppy habitat. Heavy equipment used to transport, excavate, position, and remove large sections of steel pipe may damage or destroy plants if not carefully controlled and monitored.

Livestock grazing has been identified as a potential threat to the poppy (U.S. Fish and Wildlife Service 2005). Sixty-four livestock are currently permitted within occupied poppy habitat in Fresnal Pasture from November 8 through January 31. Seedlings have been described as delicate and not tolerating disturbance well until they have had a chance to establish their taproot (Wood, 1992). Fall germination has not been documented in the Fresnal Pasture therefore herbivory on seedlings is not likely. The Salado Pasture will be grazed from January 31 through May 10 but does not contain historic sites for the poppy. Monitoring in recent years has indicated a 2-inch and 4-inch minimum leaf length on blue grama and sideoats grama, respectively. Poppy plants, in the Fresnal/La Luz Canyon drainage, are most often found on benches and slopes above the creek bottom, and along roadsides of the unpaved road in and adjacent to the canyon bottom. The majority of the occupied and potential habitats in the unfenced canyon bottom are not under the jurisdiction of the Forest Service. The riparian zones in Fresnal Canyon are rocky and rough, produce limited forage for livestock, and are not used extensively. These sites appear to support habitat more favorable to poppy seedling establishment.

Off-highway use of motorized vehicles on established trails is not permitted in Fresnal Canyon on the Lincoln National Forest. Motorized vehicles may be taken only up to 300 feet off of open roads for the purpose of camping or parking. This prohibition excludes use in the channels of Fresnal and La Luz Canyons on National Forest lands. Off-highway vehicles can crush or disturb poppy individuals and may modify the soils, local hydrology, and microclimates

associated with seed germination and plant growth (U.S. Forest Service 2004). Furthermore, the creation of trails through poppy habitat can promote the spread of noxious weeds already present in the area (U.S. Forest Service 2004) and may compete with the poppy for suitable habitat. The Forest Service is not aware of any off-highway vehicle use or problems in the Fresnal Canyon bottom on National Forest lands (L. Barker 2006).

The poppy is an early succession species, often occupying sites that have been disturbed and have enhanced soil moisture conditions. In unoccupied habitat, surface-disturbing activities from water pipeline projects (repair, replacement and maintenance), road construction and maintenance (including mowing and herbicide use), flash floods, trampling and grazing from livestock, and off-road vehicles could benefit the poppy. Sivinski (1999) reported, "Almost all of [the] plants observed during this study were in habitats that receive intermittent soil disturbance. This can be man-cause such as road cuts and cattle trails, or natural disturbances like drainages, slope erosion, and rodent mounds. Yet there is an abundance of moderately to severely disturbed habitats all around these prolifically seeding plants that remain unoccupied." These findings agree with previous reports which describe the subspecies habitat as being disturbed and either semi-riparian or with a reliable seasonal provision of water" (Malaby 1987). The Recovery Plan acknowledges a lack of agreement among botanists as to the level of disturbance that is beneficial to poppy recruitment.

Although the poppy is adapted to disturbed habitats and could benefit from some ground-disturbing activities, grading along drainage ditches and the shoulders of unpaved roads has destroyed some poppy plants (U.S. Forest Service 2004). The effect of mowing on the poppy is not known. Invasive plants such as Russian thistle, tamarisk, spotted knapweed, and Russian knapweed occur in the poppy's habitat. At present, the Forest Service and New Mexico State Highway and Transportation Department coordinate efforts at weed control and implement spraying of infested sites along the highways. In Fresnal Canyon, road maintenance by the Otero County Road Maintenance Department has resulted in the loss of poppy plants along an unpaved National Forest System road.

Plant competition may be a limiting factor to the distribution of the poppy based on the poppy's preference to colonize disturbed sites, eliminating invasive plants especially those that also colonize disturbed sites may be beneficial for the poppy (U.S. Fish and Wildlife Service 1994). However, spraying performed near poppy individuals has been a threat to this species.

Although the flower is large and open and does not appear to be adapted to a particular pollinator, the plant does require cross-pollination for maximum seed set (Tepedino 1992). Self-pollination, either within one flower or among flowers of the same plant, results in significantly fewer fruits and fewer seeds per fruit in this species (Tepedino 1992). The reduction of numbers of plants and their proximity within a population (patch size) may decrease the likelihood of pollinator visits because of the reduction in visual or chemical cues emitted to passing pollinators (Jennersten 1988).

Fungal stem canker was reported as a cause of the poppy's failure to set fruit and die in dog Canyon (Sivinski 1999). The stem fungus is also present on poppies within Alamo Canyon and may be the primary reason for the loss of a majority of the population in Dog Canyon (U.S. Fish and Wildlife Service 2004, U.S. Forest Service 2004). Subsequent observations and photographic documentation by L. Barker (U.S. Forest Service 2006) have shown that plants affected by the fungus can later proliferate from lateral buds, often in the fall, and will return to normal growth the following season. In combination with drought or abnormally dry conditions this fungus may be responsible for the reduced numbers or disappearance of poppies in some canyons (U.S. Fish and Wildlife Service 2004). In 1999, a fungus was found in association with the poppy. Although the infestation may have always coexisted with the poppy, direct evidence of this infestation was first noted in Dog Canyon in 1999 (Sivinski 1999). At the time of this discovery, the infestation caused 7 of 18 plants to fail to set fruit and die in this small population (Sivinski 1999). Subsequent surveys in Dog Canyon located 32 plants in June 2004 (U.S. Fish and Wildlife Service 2004), but there are only 3 remaining poppies currently (E. Hein 2006). Plants known to be affected by the fungus in Alamo Canyon have not died, they were documented to proliferate from the nodes later in the season (L. Barker 2006). L. Barker (2006) stated that the fungal infection she observed for several years appeared as a surface mildew and not a raw, open wound or canker. It is not known at this time if the fungus is a disease, or a naturally occurring fungus that is simply more prevalent as the poppy experiences stress from reduced rainfall (L. Barker 2006). On June 16, 2004, an infection was found in association with adult poppies in Alamo Canyon (U.S. Forest Service 2004). The infestation in Alamo Canyon turns the stem and leaf tissues gray, causing the plant to appear to lose torpor and to stop growing. Subsequent observations in November 2004 show the plants to resume growth from lateral buds on the stems, and in the spring of 2005, to resume normal growth from the rosettes (U.S. Fish and Wildlife Service 2005).

EFFECTS OF THE ACTION

For the effects of the action, refer to the direct and indirect effects of an action on the species or critical habitat, as well as the effects of interrelated and interdependent activities. Interrelated actions are actions that are part of a larger action and depend on the larger action for their justification. Interdependent actions are actions having no independent utility apart from the proposed action. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Beneficial Effects

Beneficial effects are effects of an action that are wholly positive without any adverse effects to listed species or designated critical habitat. The removal of livestock from the Fresnal Pasture in late January; the use of the unsuitable habitat Mill Ridge portion of the Fresnal Pasture for part of the time in that pasture; and the care to be taken during removal of the livestock from the allotment will benefit the poppy. These actions would remove herbivory and trampling by livestock during late winter and spring.

Direct Effects

Based on topography and forage production about 3,214 acres of the approximately 5,620 acres on the South La Luz Grazing Allotment, are accessible to grazing by livestock. Sixty-two poppy plants have been found on National Forest lands in the action area and a portion of these are accessible to livestock and may be affected by the proposed action. Additional poppy plants are know to exist on other ownerships in Fresnal Canyon. Poppies may exist near livestock gathering and herding locations where herbivory and trampling could occur. Occupied and potential poppy habitat is not fenced to exclude livestock.

Detrimental effects to the poppy depend on the life stage of the plant and timing, and intensity, and duration of livestock use. If fall germination occurs, livestock use may affect the poppy directly by grazing and trampling of young seedlings. Seedlings and young plants may be more vulnerable to grazing, as they would have more succulence and softer spines than mature plants. There is a potential overlap of livestock present with young seedlings for some 2.5 months. The absence of livestock in the Fresnal Pasture during late winter, spring, and summer would reduce herbivory and trampling and allow vulnerable seedlings and young plants that may be present to put on growth and root storage without damage to photosynthetic tissue (U.S. Forest Service 2005). Fall germination has not been documented in Fresnal Canyon, but may occur. The planned rotation reduces the time and location spent by livestock in occupied poppy habitat. Livestock spend part of that time on Mill Ridge, which is not poppy habitat. The potential for trampling is present from November through January during those periods when livestock are in poppy habitat near the creek bottoms. Trampling by livestock can destroy young seedlings, reduce seed production by adult plants, and potentially degrade the quality of poppy habitat. Trampling by livestock may occur in Fresnal Pasture in limited areas. Information provided in the BA indicates that adult plants can and do recover from trampling. Trampling would have short-term effects on the poppy if plants are injured but not killed. Effects of livestock grazing and trampling of the poppy will be avoided, or minimized in the event of fall germination, because the proposed season of use is outside the main poppy growing season.

Livestock may avoid mature poppies due to their bitter tasting latex; however, early season basal rosettes with spines may be grazed. Grazing and recovery of basal rosettes has been documented (U.S. Forest Service 2005). It is possible that herbivory may be one of the limiting factors in seedling and young plant survival (U.S. Fish and Wildlife Service 1989). The disturbance frequency affecting poppies from livestock grazing is unknown. The Forest Service has not found herbivory to be a significant factor in the loss of any plants, adults, or seedlings (L. Barker 2006).

Monitoring of adult plants has shown that herbivory does occur, though more often in situations of heavy use that is not the case on this allotment (U.S. Forest Service 2005). All observed adult plants eaten were in the rosette stage (U.S. Forest Service 2005). Monitoring has shown that the plants may be grazed quite heavily but do recover and go on to bolt and flower. Seedlings and young plants may be more palatable (U.S. Fish and Wildlife Service 1994). However, the Forest

Service has not documented herbivory on seedlings or very young plants (U.S. Forest Service 2005) because they may be consumed in their entirety.

Driving livestock from Salado Pasture to private land in Fresnal Pasture may expose poppies to herbivory and trampling. Driving livestock in May will take place along unoccupied ridgelines or along the Fresnal Canyon Road. The remainder of the route is almost entirely on hillsides because the canyon bottom is too brushy and rocky. Care is taken when the animals are removed from the allotment in May by driving them out along unoccupied ridgelines, or along the road if they have drifted to that side of the pasture (U.S. Forest Service 2005). Moving livestock through Fresnal Canyon along unoccupied ridgelines of Salado and Fresnal Pastures minimizes potential impacts. In the event that livestock drift into occupied habitat, the existing road would be used to move livestock to private property adjacent to the Fresnal Pasture.

Indirect Effects

Scarcity and limited distribution make this species vulnerable to both natural and man-caused threats. Any further reduction in plant numbers could reduce the reproductive capabilities and genetic potential of the species (U.S. Fish and Wildlife Service 1989). Livestock grazing can affect vegetation species composition, and plant density and vigor. A reduction in vegetative cover, plant root masses, and soil water retention can lead to increased water velocities during rainfall and spring runoff events and subsequent loss of topsoil which may not benefit the poppy.

Interrelated and Interdependent Actions

Interrelated actions are actions that are part of a larger action, and are dependent on the larger action for their justification. The use of access roads and vehicles in the project areas are considered interrelated with the implementation of the current project. Although the majority of vehicles will likely stay on roads and trails, effects of the project from interrelated actions may result in poppies being harmed or killed by trampling or crushing of individual plants by vehicles that do not use roads or trails.

Summary

While trampling and grazing may not kill mature plants with an established taproot, these actions may kill seedlings and can reduce or preclude flowering and seed production of mature plants. Monitoring of adult plants has shown that herbivory does occur, though more often in situations of heavy use that is not the case on this allotment (U.S. Forest Service 2005). All observed adult plants eaten were in the rosette stage (U.S. Forest Service 2005). Monitoring has shown that the adult plants may be grazed quite heavily but do recover and go on to bolt and flower. Seedlings and young plants may be more palatable (U.S. Fish and Wildlife Service 1994). However, the Forest Service does not have any documentation of herbivory on seedlings or very young plants (U.S. Forest Service 2005) because they may be consumed in their entirety.

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 in this section because they require separate consultation pursuant to section 7 of the Act.

The poppy may be adversely affected on State, private, and local lands by: 1) Grazing, noxious weed treatment, clearing of land, and maintenance of local dirt roads, 2) road construction and maintenance activities performed by the New Mexico State Highway and Transportation Department and the Otero County Road Department, 3) maintenance of water pipelines by the City of Alamogordo, and 4) herbicide use and mowing along State Highway 82 and local dirt roads where plants occur in the rights-of-way.

CONCLUSION

After reviewing the current status of the poppy, the environmental baseline for the action area, the effects of the proposed livestock grazing, and the cumulative effects, it is the Service's biological opinion that the livestock grazing, as proposed, is not likely to jeopardize the continued existence of the poppy. No critical habitat has been designated for this species; therefore, none will be affected.

We reached this conclusion for the following reasons: 1) the relatively low level of anticipated harm to the poppy; and 2) the minor effects to poppy habitat.

The conclusions of this biological opinion are based on full implementation of the project as described in the "Description of the Proposed Action" section of this document, including any Conservation Measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed endangered plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law (19 NMAC 21.2).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use 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 recommendations provided here relate only to the proposed action and do not represent complete fulfillment of the agency's section 7(a)(1) responsibility for this species. We recommend the following conservation recommendations be implemented for the South La Luz Grazing Allotment:

1. Follow the recommendations in the 1994 Sacramento Prickly Poppy Recovery Plan.

2. Protect adult plants and microhabitats to facilitate increased likelihood of seed production and seedling establishment.

3. In cooperation with other agencies and research groups, continue research and monitoring activities on poppy populations.

4. The Lincoln National Forest should continue to survey all potential poppy habitat in the South La Luz Grazing Allotment during the poppy flowering season (typically May to September). Survey data would provide population trend information and contribute to the overall knowledge of this species.

5. We strongly recommend that the Forest Service work with the City of Alamogordo to construct and maintain Forest Service/City of Alamogordo boundary fences within the South La Luz Grazing Allotment.

6. The Lincoln National Forest and permittee should place mineral blocks away from riparian bottoms in occupied habitat.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the issuance of a 10-year term grazing permit on the South La Luz Grazing Allotment and its effects on the poppy and informal consultation for the Pumphouse Grazing Allotment.

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) 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 consultation; (2) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in this consultation; or (3) a new species is listed or critical habitat designated that may be affected by the action.

In future communication regarding this project, please refer to consultation #2-22-05-F-0501. Please contact Eric Hein at the letterhead address or at (505) 761-4735 if you have any questions.

Sincerely,

Wally Murphy
Field Supervisor

cc:
District Ranger, U.S. Department of Agriculture, Forest Service, Lincoln National Forest, Sacramento Ranger District, Cloudcroft, New Mexico
Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, Phoenix, Arizona

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