



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
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In Reply Refer To:

AESO/ES
2-21-92-F-360
2-21-92-F-473
2-21-93-F-189
2-21-94-F-205
2-21-94-F-412

Mr. Charles W. Cartwright, Jr.
Regional Forester
Southwestern Region
517 Gold Avenue SW
Albuquerque, NM 87103

Dear Mr. Cartwright, Jr.:

This is in response to your letter of February 8, 1994, requesting formal consultation with the Fish and Wildlife Service (Service) under section 7 of the Endangered Species Act (Act) for four projects in the Southwestern Region of the Forest Service. The formal consultation period began on February 11, 1994, the day we received your request. The species of concern for this consultation are the threatened Mexican spotted owl (*Strix occidentalis lucida*), the endangered Gila topminnow (*Poeciliopsis occidentalis occidentalis*), and the southwestern willow flycatcher (*Empidonax traillii extimus*) which is proposed for listing as endangered. The four projects are the Beehive Timber Sale (Apache-Sitgreaves National Forest), Pumphouse 10K Timber Sale (Coconino National Forest), Government Timber Sale (Kaibab National Forest), and the Tonto Basin Allotment Management Plan (AMP) and Grazing Strategy (Tonto National Forest). The Beehive Timber Sale and Pumphouse 10K Timber Sale were submitted with a determination that they "may affect" the Mexican spotted owl (MSO) but were "not likely to adversely affect" the species. The Government Timber Sale was submitted with a determination of "no effect" on the Mexican spotted owl but the Kaibab National Forest (NF) still requested formal consultation on the project. The Service does not concur with this determination. The Tonto Basin AMP and Grazing Strategy was submitted with a "may affect" determination for the Gila topminnow, a "may affect, not likely to adversely affect" determination for the Mexican spotted owl, and a "may affect" determination for the southwestern willow flycatcher.

The Tonto Basin AMP and Grazing Strategy involves one proposed and two listed species. The conference report is still in progress for the proposed southwestern willow flycatcher and will be forwarded under separate cover. A 1993 southwestern willow flycatcher nest site is located on the Tonto Creek Riparian Unit (TCRU) immediately adjacent to the Tonto Basin AMP. The conferencing report will address livestock concentration areas (e.g. corrals, holding pens, trough placement etc.) because of their association with brown-headed cowbird (*Molothrus ater*) populations. Livestock concentration areas will increase the likelihood of encounters between brown-headed cowbirds and any willow flycatchers in the area. Brood parasitism by the brown-headed cowbird is a known threat to the willow flycatcher. Additionally, the report will address livestock grazing in riparian habitats (i.e. stocking rates and the grazing system). Questions regarding the southwestern willow flycatcher or the progress of the conferencing report should be directed to Tim Tibbitts of this office. The second species of concern for this project is the Gila topminnow. As a result of receiving documents and photographs verifying the extirpation of the Gila topminnow at the Corner Artesian site, the Service concurs with the "not likely to adversely affect" determination for this species on the Tonto Basin AMP. Because Kayler Springs was not within the TCRU at the time the riparian unit was consulted on, additional section 7 consultation may be necessary on the Kayler Springs portion of the riparian unit. Concerns regarding the Mexican spotted owl are addressed in this biological opinion.

The best scientific data available, including data in our files, consultation with experts, site visits, interagency meetings, and literature review were used in this biological opinion. The Service concurs with your finding of "no effect" to other listed species that were included in the biological information provided with your request for consultation.

DESCRIPTION OF THE PROPOSED ACTION

The U.S. Forest Service proposes an action consisting of four projects on the National Forests of Arizona in Region 3 of the Forest Service (Table 1). The proposal consists of planned and on-going activities which the respective Forests determined may affect or will not affect the Mexican spotted owl. These activities include projects on the Apache-Sitgreaves NF, Coconino NF, Kaibab NF, and the Tonto NF. The projects in this consultation include three timber sales and one AMP (Table 1).

Table 1. Summary of the four projects and types that comprise the action submitted for formal consultation.				
National Forest and Project Name	Timber Sales	Recreation	AMP	Total
Apache Sitgreaves NF Beehive Timber Sale	1	0	0	1
Coconino NF Pumphouse 10K Timber Sale	1	0	0	1
Kaibab NF Government Timber Sale	1	0	0	1
Tonto NF Tonto Basin AMP and Grazing Strategy	0	0	1	1
TOTAL	3	0	1	4

According to the Forest Service, the four projects in this consultation will not affect any suitable owl habitat and will modify 1107 acres of capable habitat (Table 2). Suitable habitat is habitat that meets all of the needs of the owls including nesting, roosting, and foraging. Capable habitat is habitat that has been suitable in the past, but because of natural or human-caused changes, no longer meets all of the needs of the owl. Capable habitat may still be used for foraging but generally lacks the characteristics needed for reproduction. Unsuitable habitat does not currently provide the characteristics of suitable habitat, is not occupied by spotted owls, and does not have the capability of attaining the characteristics of suitable habitat at any time in the future through standard, prescribed management treatments or natural processes.

Table 2. Summary of suitable and capable habitat acres affected by proposed projects.			
FOREST	SUITABLE ACRES	CAPABLE ACRES	TOTAL ACRES
Apache-Sitgreaves NF	0	1,023	1,023
Coconino NF	0	84	84
Kaibab NF	0	0	0
Tonto NF	0	0	0
TOTAL	0	1,107	1,107

PROJECT DESCRIPTIONS

BEEHIVE MULTI-PRODUCT TIMBER SALE

The Beehive Timber Sale is located in the Springerville Ranger District of the Apache-Sitgreaves NF. The Beehive Analysis Area encompasses a total of 19,451 acres. The analysis area is covered by 12,792 acres of forested land composed of the following forest types: mixed conifer (6,554 acres), ponderosa pine (3,055 acres), spruce-fir (2,938 acres), and aspen (245 acres). The analysis area includes 1,692 acres of existing old growth. The Beehive Multi-Product Sale Treatment Area located in the southern half of the analysis area totals 7,498 acres. Forested lands cover 3,684 acres within the sale treatment area and are composed of the following forest types: mixed conifer (1,623 acres), ponderosa pine (1,162 acres), spruce-fir (690 acres), and aspen (212 acres). The Beehive Multi-Product Timber Sale proposes to treat approximately 1,967 acres (Environmental Assessment, Proposed Action, Pg. 4) of the North Diversity Unit #0605 and Norton Diversity Unit #0606.

According to the updated January, 1994 Biological Assessment and Evaluation, Alternative 2 was selected for the Beehive Multi-Product Timber Sale. Approximately 1,875 acres would be treated by tractor harvest. The following silvicultural treatments would be used: uneven-age individual tree selection (273 acres), uneven-age group selection (128 acres), commercial thinning (312 acres), regular shelterwood seed cut (128 acres), irregular shelterwood seed cut (71 acres), final removal with reserve trees (137 acres), and sanitation/salvage (825 acres). In one stand in a heavily used camping area it is proposed to remove scattered hazard trees and snags that pose a potential danger to the public.

Additional activities include: spring developments, wetland improvements, earthen tank reconstruction, reduction of meadow encroachment, forage seeding, road crossing improvements, bank stabilization projects and 4 spring protection projects.

Some grazing is occurring within the Carnero Management Territory (MT) outside of the core area. The core area was considered unsuitable for grazing because the slope was greater than 40%.

MSO surveys were conducted in 1991 and 1992 using the approved Region 3 Protocol Inventory Guidelines. The Carnero MT is the only territory designated within the Beehive Analysis Area. No portion of the Carnero MT will be treated and no suitable MSO habitat within the proposed sale area will be treated. The proposed treatments will affect 1,023 acres of capable MSO habitat and 852 acres of unsuitable MSO habitat. After proposed treatment completion, 81% of the analysis area and 93% of the sale area will still be maintained as dispersal habitat.

TONTO BASIN ALLOTMENT MANAGEMENT PLAN AND GRAZING STRATEGY

The Tonto Basin Allotment is located on the Tonto Basin and Pleasant Valley Ranger Districts on the Tonto NF. Currently no grazing strategy or allotment management plan exists for the Tonto Basin Allotment. The allotment encompasses over 107,000 acres northwest of Theodore Roosevelt Lake. The Tonto Basin AMP surrounds Walnut Allotment and is bisected by the TCRU. Two separate grazing permits have been issued for the allotment. The George T. Cline Equity Trust holds the permit for the eastern portion of the allotment and the Dorothy Cline Wells Trust holds the permit for the western portion of the allotment.

The proposed management plan will employ two deferred rest-rotation grazing systems. Implementing the grazing management system will require construction of 27 structural projects (47 miles of fence, 2 miles of new pipeline, 5 water troughs, 2 cattleguards, 2 spring developments, 2 ten acre holding traps, and 2 corrals). Maintenance projects include 7 miles of fence and 2 stock tanks. Five non-structural projects, all of which are prescribed burns, have also been proposed. The Mt. Ord Prescribed Burn overlaps the Mt. Ord MT (#120604) and will be consulted on prior to implementation. The Bear Head Prescribed Burn partially overlaps the Bear Head Canyon MT (#120517) and will also be consulted on prior to implementation.

Grazing may affect owl habitat on the following MTs. In the Buck Basin MT (#120604), 490 acres of unsuitable habitat are located within the allotment. In the Mt. Ord MT (#120604), 112 acres of the core area, 835 acres of the MT and 112 acres of suitable habitat are within the allotment. All of the Bear Head Canyon MT (#120517) falls within the allotment. Past utilization and expected future utilization on the Buck Basin and Mt. Ord MTs has been and will continue to be almost non-existent and there is a chance for a few cattle to move into the canyons within the Bear Head Canyon Territory. All suitable habitat in the AMP is encompassed by the three established MTs.

GOVERNMENT TIMBER SALE

The Government Timber Sale is located in the Government Assessment Area on the Chalender Ranger District of the Kaibab NF. According to the June 25, 1992, decision notice for this project, alternative 4 was selected. This alternative proposes 2,220 acres of treatments which include 67 acres of shelterwood seedcut, 1,186 acres of intermediate treatment, 592 acres of individual selection uneven-age treatment, 9 acres of aspen release, and 314 acres of old growth treatment. Treatment for dwarf mistletoe infection will occur on 1,020 acres.

Additional activities include: killing dwarf mistletoe trees to create snags on 120 acres; underburning and seeding of 290 acres with grass and forbs plus 220 acres of seeding with mechanical site preparation; construction of two guzzlers; closing and/or obliterating 23.8

miles of roads; off-road vehicle closure of most of Government Prairie; and 246 acres of treatment on land classified as unsuitable to maintain savannah condition.

The amendment to the biological evaluation dated January 4, 1994, states that one stand of suitable habitat totalling 23 acres occurs within the assessment area and has not been surveyed for MSOs. No treatment is proposed within this stand. The nearest proposed treatment is 0.10 mile from this suitable habitat. All proposed treatments occur in the ponderosa pine type. No suitable or capable habitat will be treated. The nearest MT (Kendrick) is located approximately one mile north of the analysis area.

The analysis used to determine if the Dispersal Habitat Rule (DHR) is met indicates that there are 4,865 acres capable of providing dispersal habitat within the 12,523 acres of Forest Service land in the assessment area. Of this total, 3,936 acres will provide dispersal habitat post-sale (2,137 acres of untreated and 1,799 acres of treated stands), providing dispersal habitat on 81% of the stands which are capable of providing such habitat.

PUMPHOUSE 10K TIMBER SALE

The Pumphouse 10K is located in the Mormon Lake Ranger District of the Coconino NF. According to the November 1993 decision notice and finding of no significant impact (FONSI) and a March 1994 decision notice and FONSI errata sheet, the selected alternative will result in selective thinning on 1,359 acres, approximately 21% of the Pumphouse 10K. Thinning will occur as follows: 304 acres of 1 to 6 inch thinning; 765 acres of 5 inch and greater thinning; and 290 acres of 1 inch and greater thinning. The purpose of selective thinning, as stated in the decision notice, is to reduce the potential for the spread of wildfire, increase the growth of the remaining trees, reduce the spread of dwarf mistletoe, and improve the mix of tree sizes and ages in the area. Burning is proposed on 173 acres near James Canyon to reduce dead fuels on the ground. Approximately 10 miles of road will be reconstructed to facilitate tree removal and 11 miles of road will be closed or obliterated. Fencing and stream channel shaping is proposed to improve one riparian habitat.

Five MTs fall within or partially within the boundaries of Pumphouse 10K (#040509, #040512, #040214, #040539, and #040215). Two of these MTs have no activity planned within them (#040512 and #040214). Treatment is proposed in potential foraging habitat totalling 414 acres within the remaining three MTs. Two stands totalling 269 acres are proposed for treatment within MT #040509. These stands are considered potential foraging habitat for the MSO and are located between Kelly and James Canyons. Ninety-six acres will be treated with a variable thin from below and 173 acres will be prescribed burned. The biological assessment and evaluation (BA&E) states that foraging suitability will be retained through maintaining canopy closure of 40-59%. These two stands proposed for treatment link Kelly and Pumphouse Canyons, and the BA&E states that there is some evidence that a male MSO may be moving between the two cores.

A total of 395 acres of potential foraging habitat is proposed for treatment within MT #040539. According to the and BA&E, foraging suitability will be reduced in the short-term on 85 acres and maintained in 310 acres. The 269 acres being treated in MT #040509 are shared with MT #040539 with the same effect of not decreasing foraging suitability. Canopy closure of 40-59% and the multilayered structure of stands will be maintained in all but 85 treated acres.

Within MT #040215, 19 acres of potential foraging habitat will be treated. The BA&E states that foraging suitability will be maintained by retaining 40-59% canopy closure and by the multi-layered structure of the stand.

One stand of capable habitat totalling 84 acres is proposed for treatment outside of MTs. Treatment as proposed will not increase the time to become suitable habitat and may decrease the time.

The environmental assessment states that harvest related activities are prohibited within the MT core and activities are prohibited within 1/4 mile of known nest and 1/4 mile of cores if nests are unknown. Discussion with the Mormon Lake District indicated that it is standard operating procedure to conduct fall and winter burning so there is no overlap with the owl breeding season.

Evaluation of the analysis area regarding the DHR indicates that currently, approximately 73% of Pumphouse 10K outside of MTs (2,746 acres) meets the DHR. Implementation of the selected alternative will result in approximately 68% of these acres meeting the DHR.

The Pumphouse 10K was surveyed for MSO following Forest Service Regional protocol in 1990 and 1991, and some additional calling was done in 1989 and 1993 in the vicinity of Kelly Canyon and Pumphouse Wash. There has been one and possibly two MSO responses outside the established MTs in the Pumphouse 10K. Attempts to confirm an additional MSO single or pair based on these responses have been unsuccessful. The area involved is a narrow stringer of suitable nesting and roosting habitat, surrounded by potential foraging habitat. Because much better habitat is in the immediate vicinity, and the proximity to developed subdivisions, this small area was not included in protocol surveys. The response area is directly adjacent to an established territory and very close to another. The BA&E states that a complete survey of this area will occur in 1994.

BACKGROUND AND STATUS

Background and status information on the MSO has been described in the Final Rule listing the Mexican spotted owl as a threatened species (58 FR 14248-14271; March 16, 1993), and previous biological opinions delivered to Region 3 of the U.S. Forest Service on August 23, 1993 and October 8, 1993. The information provided in those documents is included herein by reference.

ENVIRONMENTAL BASELINE-MEXICAN SPOTTED OWL

The number of known locations of owls in Forests in Region 3, together with the mean suitable, capable and total MT acreage is presented by Forest in Table 3 (based on unpublished Forest Service records). Current estimates of total acreage in suitable and capable habitat and estimated take of MSOs as a result of Forest Service actions are listed by Forest in Table 4. In addition to take listed for the National Forests, an estimated take of 4 owls was permitted on the Navajo Nation.

Table 3. Distribution of established management territories (MTs) by forests, and mean acreage of suitable and capable habitat per MT.					
Forest	MTs		Suitable ¹	Capable ¹	Total ¹
	1993 ¹	1994 ²			
Apache-Sitgreaves	89	110	1,007	303	1,884
Carson	3	3	1,172	218	2,010
Cibola	29	29	1,250	71	1,722
Coconino	122	138	943	645	2,129
Coronado	86	93	861	408	1,882
Gila	146	153	893	731	2,066
Kaibab	4	4	1,490	275	2,559
Lincoln	113	116	1,331	595	2,075
Prescott	9	10	1,378	393	1,821
Santa Fe	26	35	1,633	451	2,344
Tonto	48	48	897	56	2,187
Total MTs	675	739			
Overall Mean Acres-1993			1,043	497	2,034

¹ Data provided by L. Henson. (Letter requesting formal consultation, April 14, 1993).

² 1994 information provided by Forest Service Regional Office (pers. comm. with H. Hollis) June 1994.

Forest	Suitable ¹	Surveyed ¹	Capable ¹	Converted ²	% ³	Estimated Take
Apache-Sitgreaves	258,000	194,000	100,000	730	28	5
Carson	250,000	148,000	42,000	1,751	15	
Cibola	172,000	63,000	83,000	183	33	
Coconino	356,000	167,000	170,000	2,059	33	13
Coronado	107,000	78,000	22,000	27	17	4
Gila	619,000	225,000	342,000	584	36	5
Kaibab	63,000	60,000	19,000	38	23	2
Lincoln	371,000	267,000	24,000	634	6	
Prescott	133,000	10,000	53,000	73	29	
Santa Fe	476,000	110,000	157,000	142	25	1
Tonto	317,000	182,000	25,000	177	7	6
TOTAL	3,122,000	1,504,000	1,037,000	6,398	25⁴	36

¹ Data provided by L. Henson (Letter requesting formal consultation, April 14, 1993).

² Proposed treatment in previous requests for formal consultation. These figures reflect the assumption that all suitable acres subjected to timber harvest will be converted to capable. These figures are based on information submitted with the individual requests for formal consultation from the Forest Service. Not all of the suitable acreage identified as being affected in the requests is included in these figures because some treatments (e.g., prescribed burns) are not expected to degrade suitable habitat to capable condition.

³ Percent of formerly suitable habitat that is now capable with the addition of the implementation of the actions in the previous requests for formal consultation.

⁴ Percent of the total suitable habitat converted to capable.

Information provided to us by the Forest Service Regional office (pers. comm. with H. Hollis) in June 1994 indicates that 1,549,000 acres have been surveyed on Region 3 NFs. The amount of suitable acreage has also been updated on the following NFs: Coconino NF (216,000 suitable acres), Coronado NF (115,000 suitable acres), and Lincoln NF (250,000 suitable acres).

EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

Effects of Forest Activities-Mexican Spotted Owl

Effects of forest activities on the Mexican spotted owl such as timber harvest and livestock grazing have been described in the Final Rule listing the Mexican spotted owl as a threatened species (58 FR 14248-14271; March 16, 1993), and previous biological opinions provided to Region 3 of the U.S. Forest Service on August 23, October 8, and December 14, 1993, and is included in this biological opinion by reference.

Long-Term Conservation Planning

The long-term conservation planning information on the Mexican spotted owl had been described in the Final Rule listing the Mexican spotted owl as a threatened species and previous biological opinions delivered to Region 3 of the U.S. Forest Service on August 23, 1993, and October 8, 1993, and is included in this biological opinion by reference.

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. Examples of activities in Region 3 that are interrelated to the projects considered in this consultation package are road maintenance and construction, development of skid trails and loading areas, stream crossings, road closures and precommercial thinning.

Interdependent actions are actions that have no independent utility apart from the action under consideration. Examples of interdependent actions include slash treatments and certain fuel management practices such as lop and scatter, machine piling, and controlled burning. In some cases, fuel management projects are implemented independent of other projects.

INDIRECT EFFECTS

Indirect effects are those that are caused by, or result from, the proposed action, and are later in time, but reasonably certain to occur. The most significant indirect effect that is expected to result from these projects will be increased access from the creation of new roads. Recreation activities that can be reasonably expected to increase will be sight-seeing, off-road-vehicle travel, and hunting. These are all forms of diffused recreation. Wood gathering and cutting may also occur in newly accessible areas. Uncontrolled gathering of snags and downed wood for fuel may have negative impacts on owl prey species. Increased predation may also result because of habitat modifications. The increased predation may be either a direct or indirect effect of the proposed action.

CUMULATIVE EFFECTS

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur in the foreseeable future. Future Federal actions are subject to the consultation requirements established in section 7, and, therefore, are not considered cumulative in the proposed action. Because of the predominant occurrence of the owls on Federal lands, and because of the role of the respective Federal agencies in administering the habitat of the owl, actions to be implemented in the future by non-Federal entities on non-Federal lands are considered of minor impact.

SUMMARY OF EFFECTS-MEXICAN SPOTTED OWL

BEEHIVE MULTI-PRODUCT TIMBER SALE

No portion of the Carnero MT will be treated. The potential impacts associated with this proposal are to MSO dispersal and foraging habitat. Treatments in 206 acres of capable MSO habitat will receive a temporary setback in reaching suitability and 817 acres of capable habitat will reach suitability faster than if no treatment occurred. Formal consultation was requested on the timber sale and not on the allotment management plan occurring in this area. As noted in the proposed KV Project List and the Riparian/Watershed Post Sale Treatments section of the Environmental Assessment, this timber sale will provide funding for livestock improvements. Grazing is occurring within and in the vicinity of the sale. The effects of livestock grazing on MSO habitat and prey species are difficult to determine with the available information.

TONTO BASIN ALLOTMENT MANAGEMENT PLAN AND GRAZING STRATEGY

All or portions of the Buck Basin MT, Mt. Ord MT and Bear Head Canyon MT fall within the allotment. The direct and indirect effects of cattle grazing on owl habitat and owl prey species are difficult to quantify. The fence construction between Bear Head and Mud Spring Pastures runs through the core area of the Bear Head Canyon MT but is more than 0.5 miles away from the 1993 nest site. Grazing within the core area should be limited due to the steep terrain and lack of potential cattle foraging habitat. The Bear Head trap and spring development are within suitable habitat of the Bear Head MT. The round up at this location is expected to involve an average of 10 cattle.

GOVERNMENT TIMBER SALE

The presence of 23 acres of unsurveyed suitable MSO habitat in the assessment area is of concern. Although this is a small piece of suitable habitat surrounded by unsuitable nesting

habitat, it may still be used by MSOs in the area. Small patches of suitable habitat located in areas such as this, but in proximity to successfully breeding pairs of MSO (i.e. Kendrick MT pair approximately one mile away), may be used by dispersing young or single adult birds. It is a possibility that a pair of MSOs could nest in such a small patch of habitat, thus disturbance by logging activity within 0.25 miles of this habitat is of concern. Dispersal habitat in excess of 50% of the analysis area will be maintained after harvest.

PUMPHOUSE 10K TIMBER SALE

The proposed treatment that will result in the degradation of 85 acres of potential foraging habitat within MT #040539 is of concern. This MT contains 2,140 acres of which 1,024 acres are suitable habitat, 231 acres are capable, and 859 acres are potential foraging habitat. The effect of the loss of 85 acres of potential foraging habitat where a large quantity of habitat is present that will meet the foraging needs of the owl is likely small.

Harvest and prescribed fire activities taking place during the breeding season in the five stands between and adjacent to the Kelly and James Canyon MT core areas have the potential to cause disturbance to MSO foraging adjacent and between these two canyons. Disturbance caused by harvest and prescribed fire activity has the potential to affect foraging ability during the critical nesting period and potentially affect MSO ability to capture prey for themselves and their young. This is of particular concern in this sale because of the proximity of Kelly and James Canyon core areas to each other, because the activity stands are located adjacent to the cores and in the narrow area between the two cores, and because the Forest Service indicates there is some evidence that a male owl may be moving between the two canyon cores.

Research on MSO foraging habitat is very limited. Ganey and Balda (1994) found that eight owls on the Coconino National Forest and in the White Mountains forage in habitat with $67.1\% \pm 10.9\%$ canopy closure. This was based on plot data from telemetry locations in canyons, mixed conifer, and pine habitats. The authors state that plot data was pooled and may not be representative of all areas where owls forage. Despite this, the research is some of the best data available on foraging owls, and should be considered when planning activities in foraging habitat within MTs, particularly when they are located immediately adjacent to core areas where the potential for foraging may be high.

Maintenance of characteristics such as dead and downed woody material which provide habitat for MSO prey species is of concern where prescribed burning takes place.

BIOLOGICAL OPINION

Based on the best scientific and commercial data available, it is the biological opinion of the Service that the action consisting of 4 projects addressed in this consultation package is not likely to jeopardize the continued existence of the Mexican spotted owl.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits taking (harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harass is further defined as an intentional or negligent act or omission which created the likelihood of injury to wildlife by annoying it to such an extent to significantly disrupt normal behavior patterns. Normal behavior patterns include, but are not limited to, breeding, feeding, and sheltering. Harm 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. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental, and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the incidental take statement. **The measures described below are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.**

For the purposes of consideration of incidental take of owls by the proposed project now under consultation, incidental take can be broadly defined as either the direct mortality of individual birds, or the alteration of habitat that affects the behavior of the birds in a manner that essential activities such as breeding or foraging are impeded to such a degree that the birds are considered lost as viable members of the population and are thus "taken." They may fail to breed, fail to successfully rear young due to inadequate food supplies available in altered habitat, raise fewer young, raise less fit young, or desert the area because of disturbance when habitat no longer meets the owls' needs.

For the minimization of incidental take through habitat modification, the management unit established by the Forest Service for the Mexican spotted owl, the MT has been used. Based on a standardized survey protocol, the Forest Service has delineated MTs which serve to identify known areas of occupancy by the owls. Using those territories and the available information concerning habitat classification identified by the Forest Service, the Fish and Wildlife Service has identified conditions of probable or likely take for those occupied sites.

Take is considered likely for the Mexican spotted owl as a result of the following:

Actions in or adjacent to suitable habitat that has not been surveyed to the established protocol as determined by Region 3 of the Forest Service. The

Service assumes unsurveyed suitable habitat to be occupied until proven otherwise by appropriate surveys.

Actions in suitable habitat in established MTs if suitable habitat exists at, or is reduced to, levels less than the mean acreage of suitable habitat within MTs for each specific National Forest included in this biological opinion, or 1,000 acres, whichever is greater.

More than 10% of suitable habitat within a MT is converted from suitable to capable. This condition reflects our uncertainty about the needs of individual owls. If owl home range sizes vary because of differences in habitat quality, and owls do not have excess suitable habitat within territories, eliminating any acreage of suitable habitat might result in take. We believe the 10% criterion is reasonable.

Suitable habitat exists within a MT exists below the mean for the specific National Forest, or 1,000 acres, whichever is greater, and a sizable area within the territory is subjected to treatment that will degrade owl habitat characteristics in that area.

The existing condition of an analysis area is less than those characteristic of the DHR, and/or habitat modifications outside MTs result in conditions less than those characteristic of the "Dispersal Habitat Rule".

Proposed actions are located within 1/4 mile of unsurveyed suitable habitat, or within 1/4 mile of a nest tree during breeding season, or, if the nest site is unknown, within 1/4 mile of the MT core area.

Proposed actions resulting in a significant increase in the disturbance of MTs that may affect reproduction, roosting, and/or foraging of MSOs.

Over and above all the reasonable and prudent measures and attendant terms and conditions listed below, it is assumed by the Service that activities on National Forest lands will continue to be planned and conducted in accordance with the Forest Service's Interim Directive #2. Although the Service does not believe that reliance on the Interim Directive alone will conserve the MSO, we believe its implementation will serve, in conjunction with the reasonable and prudent measures, to minimize incidental take of the MSO by the actions currently under consideration in this biological opinion. The conditions required by Interim Directive #2 are detailed in biological opinions that were issued for Forest Service projects on the Mexican spotted owl delivered to Region 3 of the Forest Service on August 23, October 8, and December 14, 1993, and are included here by reference.

Occurrence of Take

The Service anticipates that Mexican spotted owls will be taken as a result of this proposed action. The Pumphouse 10K and the Government Timber Sale are both expected to result in the take of owls. The incidental take is expected to be in the form of harassment and harm due to habitat modification and disruption of normal reproductive behavior. With implementation of the reasonable and prudent measures the Service believes that no Mexican spotted owls will be incidentally taken through harm or harassment by the proposed action consisting of 4 projects addressed by this consultation.

Reasonable and Prudent Measures-Terms and Conditions

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the incidental take of owls anticipated for the Pumphouse 10K Timber Sale and the Government Timber Sale. In order to be exempt from the take prohibitions of section 9 of the Act, the Forest Service must comply with the mandatory terms and conditions listed under the measures to which they apply.

As set forth in 50 CFR Part 402.14 (i) (3), in order to monitor the impacts of incidental take, the Forest Service or any applicant must report the progress of the action and its impact on the owl to the Service as specified in the incidental take statement.

The Forest Service shall provide on-site review and direction to ensure that no direct mortalities of owls will occur. The Forest Service will also assess post-harvest vegetative characteristics to determine if predicted conditions were achieved for maintenance of the DHR. The Service shall be contacted immediately if any previously unknown spotted owls are located within or in close proximity to the project area where use of the project area by the owl is possible.

Reasonable and prudent measures and terms and conditions:

1. Conduct all proposed actions in a manner that will minimize direct and indirect mortalities, and disturbance of owls.

- 1.1 No silvicultural treatments involving habitat removal (such as commercial and precommercial harvest) or prescribed burning will be conducted during the MSO breeding season (February 1 to August 31) within the following units in the Pumphouse 10K Timber Sale: 345 -11; 354 - 2, 8, 24; and 352 - 9. Other timber related activities that do not directly remove trees may continue (road improvements and closures, hauling, slash treatment, erosion control).

1.2 Treatment within 0.25 miles of the 23 acres of suitable MSO habitat in the Government Timber Sale will not be conducted during the MSO breeding season (February 1 to August 31).

2. We realize that the Forest Service may develop additional project modifications which are intended to further minimize take of the owl. The Forest Service will coordinate the possible implementation of these modifications with the Arizona Ecological Services State Office.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize or remove the impacts of the incidental take that might otherwise result from the proposed action. With implementation of these measures the Service believes that no Mexican spotted owls will be incidentally taken through harm or harassment by the proposed project of 4 actions addressed by this consultation. There is no expected incidental take that will result in direct mortality. Anticipated incidental take in the form of dead owls is set at 0.

Reporting Requirements

If, during the course of the action, this level of incidental take is exceeded on any sale or in aggregate, such incidental take would represent new information requiring review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Upon locating a dead, injured, or sick individual of an endangered or threatened species, initial notification must be made to the nearest Fish and Wildlife Service Law Enforcement Office. Care should be taken in handling sick or injured individuals and in the preservation of specimens in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. In Arizona, contact (602/379-6443) or the Arizona State Office (602/379-4720).

CONSERVATION RECOMMENDATIONS

Section 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. The term "conservation recommendations" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section

7(a)(1) responsibility for these species. For each individual project in the Region-wide action where a particular conservation recommendation can physically be applied, it is recommended that it should be applied. Many of the recommendations will not apply to all projects, but we recommend implementing those where conditions apply. The terms and conditions provided with the reasonable and prudent measures apply specifically to sales involving take. The conservation recommendations apply to all activities.

CONSERVATION RECOMMENDATIONS:

A. The Service recommends that a true programmatic section 7 consultation be conducted on all future proposed activities in Region 3 of the Forest Service when possible. We believe that such a programmatic overview will provide the scope of action assessment necessary to address all direct, indirect and cumulative impacts to the owl. In addition, it will identify opportunities to conserve the species on forest lands in the most effective manner. If this recommendation is too ambitious, consultation in individual forest timber programs or forest plans would also be beneficial. Consultations conducted in this manner would ensure the best long-term protection for the owl and aid the Forest Service in its planning efforts.

B. Suitable Habitat. The Service recommends surveying all suitable habitat regardless of acreage involved (i.e. Government Timber Sale).

C. Capable Habitat. Capable habitat should only receive treatments if those treatments can be shown to lead to faster return to suitability than if no treatment occurred. The California spotted owl Technical Application Team (TAT; Verner et al., 1992) developed a strategy for treatment of habitat for California spotted owls which they believed would have minimal adverse effects on owl habitat. They "focused on setting strong rules to retain stand components that are most at risk and hardest to replace" (pp. 25). The following treatment program is modified from their recommendations in an effort to retain aspects of the habitat that are most difficult to recover after they have been lost. The elements that are at greatest risk are the largest, oldest trees, and the complex stand structure. Snags and large dead wood are also important and may be at risk as well. The TAT developed a tree size profile for the relevant forests and identified the components of the forests that were most important to owls. They determined that in nesting habitat 40% of the basal area in the largest trees should be retained, and that no trees greater than 30 inches dbh should be harvested. If there were inadequate trees in the large size class to provide 40% canopy closure, they called for adding trees in smaller size classes until 40% canopy closure was obtained. Their rationale for allowing harvest in the smaller size classes was that a 30-inch tree could easily grow in 100 years or less, and so was replaceable. In addition, the 40% canopy closure in large trees was expected to provide suitable foraging habitat. In New Mexico and Arizona, tree growth rates are slower than in the Sierra Nevada and other ranges in southern and west California. Furthermore, we do not have tree size profiles for mountain ranges in New Mexico

and Arizona. The following recommendations are an attempt to blend the TAT recommendations with the individual tree selection techniques that are used on some Native American timberlands in the two states.

To repeat, the goals are to retain the largest trees in the stand, to provide replacements for those trees when they die or fall, and to retain existing canopy structure. This treatment is recommended to speed the return of capable habitat to a condition suitable for owls.

Retain, but do not include in basal area (BA) calculations, all hardwoods greater than 4 inches (10 cm) dbh up to a basal area of 30 square feet. Retain the largest trees in the stand to 20 square feet of BA. In smaller size classes, retain 55 square feet of BA. In smaller size classes, retain 55 square feet of BA area as follows: 18-23.9 inch dbh=20-25 BA; 12-17.9 inch dbh=20-25 BA; 5-11.9 inch dbh=10-15 BA. Retain sufficient trees less than 5 inches dbh to provide recruits into the 5-11.9 inch size class at the next entry. If trees are not available in a given size class this entry, try to mark the stand so that this size distribution will be available at the next entry.

D. Unsuitable habitat. In order to avoid the likelihood of take of dispersing and non-territorial owls through increased vulnerability to predation and lack of foraging habitat, dispersal habitat should be maintained. Apply the 50-11-40 rule developed in 1990 by the Interagency Scientific Committee (ISC) (Thomas et al., 1990), as modified below, on habitats lying exterior to established MTs that are also recognized as providing the edaphic and/or biological conditions to support the 50-11-40 characteristics. Because the 50-11-40 rule is being modified for New Mexico and Arizona forests, we will refer to it below as the "Dispersal Habitat Rule" (DHR). The conditions of DHR will be applied within the analysis area encompassing the proposed timber sale. The Service is not advocating that all stands be reduced to the minimum standard of the DHR rule. However, all habitat within an analysis area capable of supporting the DHR characteristics will be subject to these minimum leave conditions. Suitable habitat within the matrix will provide adequate cover and should be retained as suitable habitat. Capable habitat may or may not provide sufficient cover depending on leave conditions.

The ISC (Thomas et al. 1990) recommended that at least 50% of the forest matrix outside the habitat conservation areas (HCAs) be maintained in stands with a mean dbh of 11 inches or greater, and with at least 40% canopy closure. The standards and guidelines section of the ISC report (Appendix Q: 327) call for application of this rule (the 50-11-40 rule) to forest land in every quarter township.

The ISC considered how best to maintain connectivity among the HCAs developed for the northern spotted owl. They cite Weins (1989:217) who notes that :

"A focus exclusively on fragmentation of habitats missed the point that it is often the structure of an entire landscape mosaic rather than the size or shape of individual patches that is important to birds. The likelihood that dispersal can occur between fragments and forestall the extinction of sensitive species on a regional scale is influenced by the configuration of fragments and the landscape mosaic in which they are embedded."

The ISC developed guidelines that would provide a landscape matrix that would be suitable for dispersal. They state (p. 309): "These zones are not designed for preservation. Many existing management practices, including those associated with certain timber harvest methods, provide habitat attributes conducive to spotted owl dispersal. Examples include visual corridors, riparian corridors, and streamside management zones, which contain possible stopover sites as do other areas deferred from harvest for a variety of reasons." In the northwestern United States, 50% of the forest acreage under management would be greater than 40 years old, given an 80-year rotation cycle, and much of that would also provide dispersal habitat.

Because Mexican spotted owls evolved in southwestern forests which are naturally fragmented, and which grow more slowly than the conifer forests of the Pacific Northwest, we recommend that the 50-11-40 rule be modified. Because many of the stands that provide dispersal habitat in the Southwest are uneven aged, unlike the even-aged second growth stands in the Northwest, the requirement that average tree diameter be 11 inches may not be appropriate. This is because uneven-aged stands tend to be comprised of many more small than large trees. This has the effect of reducing the mean tree diameter in the stand. Instead, the Forest Service will apply one of the following methods to meet the tree size standard in coniferous tree species to meet the DHR requirement. Method 1: Beginning with the largest trees in the stand, save successively smaller diameter class trees until 40% canopy closure is retained. If the average stem diameter is greater than or equal to 9 inches then the stand meets the criterion for dispersal. For instance, this method can be used for thin-from-below treatments, precommercial thinnings or commercial timber sales where none of the largest trees in the stand (starting with the largest diameter trees) are to be harvested until 40% canopy closure is retained. Method 2: Apply the Taylor Woods formula to trees greater than 9 inches dbh to retain a minimum of 30% canopy closure, and retain sufficient additional trees greater than 5 inches dbh to retain an additional 10% canopy closure. This will also yield a total of 40% canopy closure and provide dispersal habitat. We do not require that this standard be applied to stands of pinyon-juniper, scrub oak or other stands that are edaphically unable to meet these conditions. As stated above, we do not advocate applying this formula to suitable or capable habitat.

The Service believes that the DHR will conserve dispersal habitat in forested zones outside management territories in New Mexico and Arizona, thereby minimizing the likelihood of take. The rule will be applied to guarantee that no treatments will

degrade the forest matrix to a condition below the DHR standard in the analysis area, and the standard will remain effective following any harvest treatment.

E. Slash and fuels treatments, including controlled burns, should maintain sufficient dead and down material to support Mexican spotted owl prey species. To help insure the above, the guidelines in the March 22, 1993 Forest Service direction (Reference 2670/2430) to the forests should be followed to maintain at least the minimum leave conditions contained therein. The burning prescription should specify that fuel moisture for the larger, down woody material (10" or greater) should be monitored closely to assure that loss of this larger material does not occur.

F. Do not schedule controlled burns in MTs during the breeding season. We concur with the Forests that fuel build-up in suitable habitat is hazardous, and we encourage continued efforts to reduce those hazards. Treatments should be limited to 25% or less of a given MT in any one year. The burn units should be small (250 acres or less) in order to minimize disturbance to owls and their young and owl habitat.

G. Retain sufficient small trees (1-5") in treatment units to ensure recruits for uneven-aged structure in the future.

H. Projects should be planned so no more than one year elapses between the completion of formal owl surveys and implementation of the project.

I. Conduct no silvicultural treatments or construction activity, during the breeding season within 0.25 miles of a known nest site, within 0.25 miles of a core area when the nest site is undetermined, or within 0.25 miles of unsurveyed suitable habitat.

J. Treatments should not result in loss of the number of pre-treatment canopy layers in a given stand.

K. Unsuitable habitat adjacent to suitable or capable habitat, whether occupied or not, should be retained as foraging habitat by retaining sufficient basal area, canopy cover, structure, and dead and downy woody material.

L. Livestock grazing should be limited in the owl MTs.

a) In the Tonto Basin AMP and Grazing Strategy, the Service recommends that the Forest Service develop a research study on effects of grazing on rodent populations in owl habitat. Present and post-grazing vegetative characteristics should be compared to determine if grazing impacts within the Bear Head Canyon MT change as result of the delineation of new pastures. Implementation of the AMP affords an excellent opportunity to initiate such a study to help determine the effects of livestock grazing on the prey base of owls. The Service recommends monitoring of the Bear Head Canyon MT (#120517) to verify the owls persistence and quantify any changes in

reproduction. The current use of the MT should not be exceeded as a result of the new grazing strategy. The Service should be notified if an increase in use is observed within the MT, especially during dry years when cattle may seek forage in the moister riparian areas. The Service recommends moving the roundup pen outside of the suitable habitat of the MT and piping water to the new location.

b) For the Beehive Timber Sale, livestock grazing was a secondary issue. As a result of the KV project list it was determined that grazing was taking place within the Carnero MT. The Service recommends that the Forest Service determine if the AMP affects the MSO and requests consultation if necessary. Any KV project that is implemented should not increase the use within the MT. Troughs should be placed outside of the MT and water piped to them. Any new fence construction should minimize cattle use within the MT.

M. In future consultations, the Service strongly recommends providing completed Table 3's, including a complete breakdown of the VSS classes for existing and residual trees in areas proposed for treatment.

N. Limit new road construction to the absolute minimum necessary and use the lowest standard road types. Avoid construction of new roads in suitable habitat.

O. If the Forest Service plans to develop new guidelines to replace Interim Directive #2, we recommend that such guidelines address management beyond established MTs. The Forest Service may want to initiate a programmatic consultation on proposed or revised guidelines.

P. Mexican spotted owls have not been detected in some areas that contain apparently suitable Mexican spotted owl habitat. The Service recommends that the survey protocol be examined and improved to increase the probability of detecting owls in such areas.

Q. The Service recommends that post-harvest vegetative characteristics be assessed and documented for all timber harvesting activities to determine if the predicted conditions were achieved. If changes in post-harvest DHR are different than those predicted, the Service should be notified.

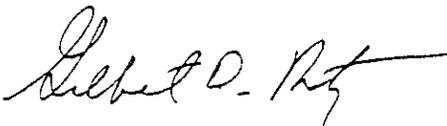
R. For the Pumphouse 10K, a canopy cover of 60% or greater should be maintained in potential foraging habitat in the MTs. Ganey and Balda (1994) found that MSOs forage in habitat with $67.1\% \pm 10.9$ canopy closure.

CONCLUSION

This concludes formal consultation on the projects submitted to the Service by Region 3 of the Forest Service. As required by 50 CFR 402.16, reinitiation of formal consultation is required if : (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

Thank you for your continuing efforts to conserve and recover threatened and endangered species on the National Forests. If we can be of further assistance, please contact Britta Muiznieks or Tom Gatz.

Sincerely,


for Sam F. Spiller
State Supervisor

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LITERATURE CITED

- Fletcher, K.W. 1990. Habitat used, abundance and distribution of the Mexican spotted owl, *Strix occidentalis lucida*, on National Forest system lands. USDA Forest Service, Southwest Region, Albuquerque, New Mexico. 55pp.
- Ganey, J.L. and R.P. Balda. 1994. Habitat Selection by Mexican Spotted Owls. *The Auk* 111(1):162-169.
- Henson, L. 1993. Request for Initiation of Formal Consultation on the First Iteration of Projects that "May Effect" the Mexican Spotted Owl. Letter dated April 14, 1993.
- Thomas, J.W., E. D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon and J.Verner. 1990. A conservation strategy for the northern spotted owl. Interagency Scientific Committee to address the conservation of the northern spotted owl, Portland, Oregon. 458 pp.
- Verner, J., K.S. McKelvey, B. Noon, R.J. Gutierrez, G.I. Gould, Jr., and T.W. Beck. 1992. Assessment of the current status of the California spotted owl, with recommendations for management. Chapter 1 in Jared Verner, Kevin S. McKelvey, Barry R. Noon (technical coordinators). *The California spotted owl: A technical assessment of its current status*; 8 May 1992. Final report to the Steering Committee for the California spotted owl assessment from the Technical Assessment Team. USDA Forest Service, Pacific Southwest Research Station.
- Weins, J.A. 1989. *The ecology of bird communities*, Vol. 2: Processes and variations. Cambridge University Press, New York.