



DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951



Telephone: (602) 640-2720 FAX: (602) 640-2730

2-21-92-F-500

February 3, 1995

Mr. Fred Trevey
Forest Supervisor
U.S. Forest Service
2323 E. Greenlaw Ln.
Flagstaff, AZ 86004

Dear Mr. Trevey:

This biological opinion and conference report is in response to your request dated August 11, 1994, to initiate formal consultation pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended, for the Apache Maid Range Allotment area on the Beaver Creek and Long Valley Ranger Districts, Coconino National Forest (Forest), Yavapai and Coconino Counties, Arizona. The formal consultation period began on August 12, 1994, the day your request was received in this office.

The species of concern in this biological opinion is the endangered Arizona cliffrose (Purshia subintegra) and the threatened Mexican spotted owl (Strix occidentalis lucida). The conference report on the proposed endangered Southwestern willow flycatcher (Empidonax traillii extimus) and proposed critical habitat is formatted as a formal biological opinion and is included as part of this opinion. This format will facilitate the conversion of this conference report into a formal biological opinion should the proposed listing of the southwestern willow flycatcher be finalized. The following biological opinion and conference report is based on the biological assessments and evaluations (BA&Es) on four plant species including Arizona cliffrose (U.S. Forest Service, Coconino National Forest, June 1994), Mexican spotted owl (U.S. Forest Service, Coconino National Forest, August 1994), and Southwestern willow flycatcher (U.S. Forest Service, Coconino National Forest, August 1994), the draft environmental assessment (EA) (U.S. Forest Service, Coconino National Forest, April 1994) provided by the Forest, additional information provided by the Forest including an Amendment to the Preferred Alternative (Amendment) (U.S. Forest Service, Coconino National Forest, January 1995), information from previous consultations on these species, various meetings with the Forest, and data in our files.

BIOLOGICAL OPINION

It is the Fish and Wildlife Service's (Service) opinion that the proposed livestock management actions within the Apache Maid Range Allotment Area as described in the BA&Es, EA, and Amendment, are not likely to jeopardize the continued existence of Arizona cliffrose or Mexican spotted owl. It is the Service's conference opinion that the proposed actions are not likely to jeopardize the continued existence of Southwestern willow flycatcher or adversely modify proposed critical habitat.

Description of the Proposed Action

The following is a summary of the proposed action which has been described in detail in the project BA&Es, EA, and Amendment. The proposed action is to graze 1,045 head of cattle, yearlong under a typical rest-rotation grazing system, with an additional 600 yearling cattle grazing only during the summer season, on the Apache Maid Allotment. The allotment is composed of an estimated 163,500 acres and straddles the Mogollon Rim stretching from the upper Sonoran desert scrub vegetation type on the Verde River on the western boundary to the ponderosa pine vegetation type at Pine and Hutch Mountains at its eastern boundary. The allotment has three general use grazing management areas: the Winter Use Zone in the Verde Valley, 3,300-foot elevation; the Transition Use Zone, 5,500-foot elevation, generally located in the pinyon/juniper woodlands; and the Summer Use Zone, 7,000-foot elevation, above the rim in the ponderosa pine type.

The selected alternative incorporates a 10% non-use in permitted livestock numbers during 1994 with an additional 10% non-use in 1995. This 20% non-use in permitted grazing livestock may be restored if the proposed range improvements are functional, the resources respond positively to management, and the permittee demonstrates competence and willingness within this more intensive management regime. The consideration of adding permitted numbers back into the grazing management scheme will only occur when based on intensive and conclusive monitoring by the Forest.

Proposed grazing management conditions include the following:

- 1) the length of time livestock graze individual pastures during active plant growth periods is reduced to a controlled maximum length of 20 days;
- 2) during the winter months of January to April, grazing periods will be reduced to a maximum of 30 days;
- 3) the riparian pasture grazing use period is reduced to a maximum 20-day graze with total rest incorporated on half the riparian zone every other year;
- 4) rested pastures within the allotment's transition and summer use zones will not be grazed by livestock during alternate years; and
- 5) pasture size within the allotment will be reduced to a size range of 1,000 to 5,000 acres.

The following range improvements are scheduled for development over the next 10 years:

- 1) Maintenance of existing structural improvements
 - 145 miles of barbed wire fences
 - 8 miles of electric fences
 - 38 cattleguards
 - 156 earthen dam multiple-use water tanks
 - 19 miles of water pipelines
 - 5 water storage tanks
 - 14 livestock/wildlife water drinkers;
- 2) Construction of new structural improvements
 - 1.5 miles of barbed wire fence
 - 32.5 miles of electric fences
 - 17 cattleguards
 - 11 earthen dam multiple-use water tanks
 - 24 miles of water pipelines
 - 11 water storage tanks
 - 18 livestock/wildlife water drinkers; and
- 3) Prescribe burn 14,200 acres as follows
 - 6,850 acres dense and less dense woodland
 - 3,550 acres desert scrub

- 2,800 acres desert grassland
- 1,000 acres desert shrub.

The burning program will start with small areas within each vegetative type and increasing the size of the areas later within the 10-year period following analysis of results of earlier fires. The locations of the non-structural prescribed burn range improvements are not specifically known at this time. The required site specific cultural clearances and biological evaluations will be done on a project by project basis each year and addendums to the Apache Maid Range Allotment Area will be added as needed, to insure proper compliance to laws, regulations and policies.

Species Account and Environmental Baseline

ARIZONA CLIFFROSE

Arizona cliffrose was listed as endangered under the Endangered Species Act on May 29, 1984 (USDI 1984). Critical habitat has not been designated. The Arizona cliffrose recovery plan has been completed (USFWS 1994). This species has narrow habitat requirements and occurs in four widely separated areas in central Arizona: near Bylas (Graham County), the Horseshoe Lake vicinity (Maricopa County), near Burro Creek (Mohave County), and near Cottonwood in the Verde Valley (Yavapai County) (Rutman 1992a). These sites differ slightly in elevation and associated vegetation, but all sites share limestone soils (generally white but also reddish in color) derived from Tertiary lakebed deposits and at each site Arizona cliffrose is part of a locally unique vegetative community (Anderson 1993).

Each of the four populations of Arizona cliffrose are genetically variable (Mount and Logan 1992). The prevalence of certain morphological characteristics, especially the frequency and degree of leaf lobing and the density of leaf and flower stipitate glands, differ among the populations (Reichenbacher 1992). As leaf lobing and glandularity increases, distinguishing Arizona cliffrose from the commonly occurring Purshia stansburiana may present some difficulty (Schaack and Morefield 1985; Phillips and Phillips 1987; Reichenbacher 1987 and 1989). Problems concerning the definition and morphological separation of Arizona cliffrose from P. stansburiana have been attributed to putative hybridization between these two species (Schaack and Morefield 1985). Studies have been conducted on Arizona cliffrose morphometrics by Reichenbacher (Southwestern Field Biologists, Tucson) and an analysis of Arizona cliffrose DNA using the RAPD marker method was undertaken by Mount (University of Arizona, Tucson). These studies (Reichenbacher 1992; Mount and Logan 1992) are consistent with the

observations of others (Denham 1992; Reichenbacher 1987 and 1989; J. Hendrickson, California State University in Rutman 1992c) and demonstrate that species of the genus Purshia tend to be phenotypically plastic, and can respond to long-term and seasonal changes in climate by producing leaves and shoots that have adapted to local or seasonal climatic conditions. This type of phenotypic plasticity does not mean that the plants are hybrids or of hybrid origin (Reichenbacher 1987; Rutman 1992c; USFWS 1994).

The largest population of Arizona cliffrose occurs in the Verde Valley (Anderson 1986; Denham 1992, qualifying Schaack and Morefield 1985, and Phillips *et al.* 1987). Arizona cliffrose habitat in the Verde Valley is restricted to an area of approximately three miles long by one mile wide (Denham 1992; Phillips *et al.* 1987). This population includes the largest and most robust individuals of Arizona cliffrose currently known (Denham 1992). Reproductive output has successfully produced seedlings and young plants of various age cohorts. This is the only Arizona cliffrose population where successful seedling establishment leading to population recruitment is currently known. Land ownership includes the U.S. Forest Service, Arizona State Parks, Arizona State Trust, and numerous private parcels.

Current land management practices in the Verde Valley often conflict with long-term conservation goals for Arizona cliffrose. The Coconino National Forest established the Verde Valley Botanical Area (VVBA) in 1987 (U.S. Forest Service 1987) to emphasize management practices needed to protect and preserve the unique desert community which includes Arizona cliffrose. The VVBA includes an estimated 50 to 60% of the Arizona cliffrose plants in the Verde Valley (Denham 1992, modifying Phillips *et al.* 1987). An additional 10 to 20% of Arizona cliffrose plants in the Verde Valley are found on Forest Service lands not included in the VVBA.

Arizona cliffrose has experienced declines due to human-caused actions. Grazing by livestock, feral animals, and wildlife threatens the long-term survival of Arizona cliffrose (Phillips 1986; Phillips *et al.* 1980; Rutman 1992a; USDI 1984; USFWS 1994). This relatively palatable shrub often receives moderate to heavy grazing pressure when exposed to ungulate herbivores, particularly in the vicinity of water sources and frequently used trails (Bingham 1976; Phillips *et al.* 1980; Reichenbacher 1986). Tender seedlings, new growth, and branches with flowers and developing fruit are preferentially selected (Bingham 1976; Denham 1992). Observations and preliminary data from Bureau of Land Management (BLM) enclosure studies on the Burro Creek population indicate that consistent yearly browsing pressure may have reduced the vigor and/or form-size class of the remaining plants. Reduced vigor may result in less than optimal reproductive success. The extent to which browsing has altered successful reproduction in any Arizona cliffrose population has never been quantified.

Mining and mining-related activities are a serious threat to the long-term survival of this species, particularly in the Burro Creek area. These activities have reduced the number of cliffrose plants and the amount of occupied, available, and undisturbed habitat. The BLM estimates that 14% of Arizona cliffrose habitat in the Burro Creek area has been lost due to mining. Evidence from past small-scale mining activities can be found within the Verde Valley population of Arizona cliffrose. Other than at Burro Creek, no mining activities are presently occurring or have been proposed within the other three cliffrose populations.

Construction of roads and utility corridors has caused losses across the range of Arizona cliffrose (Phillips *et al.* 1980). Additional destruction of habitat in the Verde Valley may result from road construction, roadway expansions, and land exchanges which are currently under evaluation. Expanding urbanization within the Verde Valley has led to direct loss of habitat and plants. No estimates of the amount or proportion of total habitat lost to these threats is available.

Recreational activities and off-road vehicle (ORV) use has contributed to significant habitat loss and degradation in all but the Bylas population (Bingham 1976; Phillips *et al.* 1980; USFWS 1994). The importance of these threats to the continuing survival of Arizona cliffrose, especially in the Verde Valley, is likely to increase as human populations increase and the nearby urban areas expand. Currently, within the Verde Valley population, there are informal parking-lots, illegal dump sites, target shooting range, ORV activity areas, and numerous "party" sites. The amount or proportion of habitat lost to these activities has not been estimated.

MEXICAN SPOTTED OWL

Background and status information on the Mexican spotted owl (MSO) has been described in the Final Rule listing the MSO as a threatened species (58 FR 14248-14271; March 16, 1993), in the Proposed Rule to designate Critical Habitat (50 CFR 63162-63201; December 7, 1994), 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.

The number of known locations of owls in Forests in Region 3, together with the mean suitable, capable and total Management Territory (MT) acreage is presented by Forest in Table 2. 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 3. In addition to take listed for the National Forests, an estimated take of 4 owls was permitted on the Navajo Nation.

Forest	MTs		Suitable ¹	Capable ¹	Total ¹
	1993 ¹	1994 ²			
Apache-Sitgreaves	89	117	1,007	303	1,884
Carson	3	3	1,172	218	2,010
Cibola	29	41	1,250	71	1,722
Coconino	122	149	943	645	2,129
Coronado	86	105	861	408	1,882
Gila	146	192	893	731	2,066
Kaibab	4	6	1,490	275	2,559
Lincoln	113	123	1,331	595	2,075
Prescott	9	10	1,373	393	1,821
Santa Fe	26	35	1,633	451	2,344
Tonto	48	63	897	56	2,187
Total MTs	675	844			
Overall Mean ² Acres-1993			1,093	506	2,129

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

This has not been updated to reflect any individual Forest changes due to the increase in the number of MTs on many of the Forests.

² USDA Forest Service, Southwest Region. November 1994.

Table 3. Acreage of suitable and capable habitat on Region 3 National Forests.						
Forest	Suitable ¹	Surveyed ¹	Capable ¹	Converted ²	% ³	Estimated Take
Apache-Sitgreaves	258,000	262,700	100,100	730	28	5
Carson	250,000	155,900	48,700	1,751	15	
Cibola	172,000	69,200	84,600	183	33	
Coconino	216,000	177,800	180,100	2,059	33	13
Coronado	115,000	54,000	22,100	27	17	4
Gila	619,000	308,200	342,300	584	36	5
Kaibab	63,000	60,400	19,400	38	23	2
Lincoln	250,000	225,200	27,700	634	6	
Prescott	133,000	55,700	53,000	73	29	
Santa Fe	476,000	196,100	165,900	142	25	1
Tonto	317,000	172,700	25,400	177	7	6
TOTAL	2,869,000	1,920,000	1,068,500	6,398	27⁴	36

¹ USDA Forest Service, Southwestern Region. November 1994

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.

SOUTHWESTERN WILLOW FLYCATCHER

The southwestern willow flycatcher (SWWF) was proposed for listing as endangered, with critical habitat, on July 23, 1993 (58 FR 39495). The State of Arizona lists the willow flycatcher as endangered (Arizona Game and Fish Department 1988). The flycatcher is a riparian obligate, nesting in riparian thickets associated with rivers, streams and other wetlands where dense growth of willow (*Salix* spp.), baccharis (*Baccharis* sp.), buttonbush (*Cephalanthus* sp.), boxelder (*Acer* sp.), tamarisk (*Tamarix* sp.) or other plants are present, often with a scattered overstory of cottonwood (*Populus* sp.). Nests are in thickets of trees and shrubs approximately 4 to 7 or more meters tall, with dense vegetation from the ground or surface water to 4 or more meters high. Surface water or saturated soil is usually present beneath or adjacent to nesting thickets; at the very least, the water table is high enough to support riparian vegetation. Breeding begins in the late spring with the young fledging from early to mid-July to mid-August. Primary foods are insects, captured on the wing and gleaned from foliage.

Loss and modification of nesting habitat is one of the primary threats to this species (Phillips *et al.* 1964; Unitt 1987; USDI 1993). The extent of this loss is reflected by the extirpation of the species from large portions of its former range, and the predominantly small sizes of remaining populations. Large-scale losses of southwestern wetlands have occurred, particularly the cottonwood-willow riparian habitats of the southwestern willow flycatcher (Phillips *et al.* 1964; Carothers 1977; Rea 1983; Johnson and Haight 1984; Karibah 1984; Johnson *et al.* 1987; Unitt 1987; General Accounting Office 1988; Bowler 1989; Szaro 1989; Dahl 1990; State of Arizona 1990; Howe and Knopf 1991). Changes in riparian plant communities have resulted in the reduction, degradation and elimination of nesting habitat for the willow flycatcher, curtailing the ranges, distributions, and numbers of all three willow flycatcher subspecies in western North America, including *E. t. extimus* (Gaines 1974; Serena 1982; Cannon and Knopf 1984; Klebenow and Oakleaf 1984; Taylor 1986; Unitt 1987; Schlortz 1990; Ehrlich *et al.* 1992).

The former range of the SWWF in Arizona included portions of all major watersheds (Colorado, Salt, Verde, Gila, Santa Cruz, and San Pedro Rivers) (Willard 1912; Phillips 1948; Unitt 1987). However, SWWF habitat has declined throughout Arizona. Extensive loss and modification of riparian habitats have occurred throughout much of the state, and the habitat of the flycatcher is now largely absent or altered (Phillips 1948; Phillips *et al.* 1964). Unitt (1987) concluded that "Probably the steepest decline in the population levels of *extimus* has occurred in Arizona . . . *extimus* has been extirpated from much of the area from which it was originally described, the riparian woodlands of southern Arizona."

Livestock grazing in riparian habitats typically results in reduction of plant species diversity and density, especially palatable broadleaf plants like willows and cottonwood saplings, and is one of the most common causes of riparian degradation (Carothers 1977; U.S. Forest Service 1979; Rickard and Cushing 1982; Cannon and Knopf 1984; Klebenow and Oakleaf 1984; General Accounting Office 1988; Clary and Webster 1989; Schultz and Leininger 1990). Plant species composition may change as plants more vulnerable to overuse by livestock or that are unable to survive in the area are replaced by other plant species. The new species composition may not provide the same level of bank protection or stabilization as the natural one. Plants that are overused by livestock will exhibit a reduction in growth and vigor and recruitment of young plants may be reduced or eliminated as seedlings are either eaten or trampled. Additionally, compaction of soil in heavily used areas may reduce the ability of the seeds to grow there, creating areas of bare ground that are more easily eroded. The quality of wildlife habitats associated with the riparian vegetation may also be adversely affected.

Brood parasitism by brown-headed cowbirds (Molothrus ater) is another factor in the decline of the species (Brown 1991; Whitfield 1990; Sogge et al. 1993). Parasitism rates up to 100% (proportion of nests parasitized) of known nests have been documented for willow flycatchers in Arizona (Sogge et al. 1993), further contributing to the decline of this species. Although native to North America, the cowbird has greatly expanded its range as a result of livestock grazing, the expansion of agriculture and other human activities, and fragmentation of host species' habitats. Bock et al. (1993) found that 40% of the riparian bird species they examined, including the willow flycatcher (various subspecies), were negatively affected by livestock grazing. Klebenow and Oakleaf (1984) listed the willow flycatcher (adustus subspecies) among bird species that declined from abundant to absent in riparian habitats degraded in part by overgrazing.

Current estimates for total numbers of remaining SWWF throughout its range are 500 or fewer nesting pairs (Unitt 1987; Service 1993). Approximately 77 nesting pairs were located in extensive surveys in Arizona in 1994 (AFGD in prep.), and approximately 100 nesting pairs are estimated to exist in Arizona. Surveys in 1994 located additional nesting sites in numbers and distributions that continue to support this estimate (S. Sferra, AGFD, Pers. comm. July 1994).

Effects of the Action on Listed Species**ARIZONA CLIFFROSE**

Potential habitat for Arizona cliffrose occurs within the Winter Use Zone of the Apache Maid Range Allotment. To date, no Arizona cliffrose plants have been located within the proposed project area, though only partial surveys have been completed. Surveys have located other plant species often associated with the unique desert scrub community of which Arizona cliffrose is a part. These other species include rare plants such as Ripley wild buckwheat (Eriogonum ripleyi), and local endemics such as Verde Valley sage (Salvia dorrii spp. mearnsii) and Eriogonum ericifolium var. ericifolium. These species are currently under consideration for listing under the Act pending more information.

With the expanding development within the Verde Valley, all Arizona cliffrose habitat managed by the Forest is increasingly crucial for the recovery of the species and the protection of the unique plant community found on these special limestone soils. In the absence of conclusive survey data, potential impacts to Arizona cliffrose are evaluated as if the plant is present. Recommended actions follow the guidelines of the recovery plan (U.S. Fish and Wildlife Service 1994).

As part of the project action, livestock use is proposed for portions of the Winter Use Zone where livestock grazing has not occurred for approximately 30 years. This area includes some of the best potential habitat for Arizona cliffrose and other unique plant species. The potential impacts of livestock use include both direct and indirect effects. Under previous consultations, the Forest has reported that a 20% utilization of grasses in Arizona cliffrose habitat does not result in cliffrose being grazed. However, there are other potential impacts associated with livestock. Trampling, soil erosion, soil compaction, and grazing of seedlings and flowering branches may reduce reproductive output and recruitment. Other indirect impacts include possible changes to the species composition of the plant community due to foraging livestock (potentially reducing the occurrence of palatable forage species and expanding the range of nondesirable or exotic species) or through other range improvement practices (e.g. a prescribed fire program). These potential impacts may be substantial and warrant the use of structural improvements such as fencing and water placement to control livestock movement and use periods, and the restriction of prescribed fires from potential Arizona cliffrose habitat and this unique plant community.

To minimize the potential impacts of the proposed action to Arizona cliffrose, the Forest has defined a survey schedule and various habitat protection mechanisms, including excluding certain portions of the Winter Use Zone from livestock use, within the

Amendment to the Preferred Alternative (pages 2-4). These measures appear appropriate and contribute to the recovery goals for the species. As part of the surveys for Arizona cliffrose, sites with other unique plant species will also be identified.

MEXICAN SPOTTED OWL

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, in the Proposed Rule to designate Critical Habitat (50 CFR 63162-63201; December 7, 1994), 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.

As stated in the MSO BA&E for this project, little is currently known regarding the direct and indirect effects of livestock grazing on MSO and their prey populations. The preferred alternative appears to reduce the possible impacts on MSO prey by limiting grazing time on each pasture, allowing pasture resting, and controlling grazing impact. Because the locations and extent of prescribed burning are not known at this time, the effects to the MSO and its habitat and proposed Critical Habitat cannot be determined. Some general guidelines are presented in the conservation recommendations in this opinion.

SOUTHWESTERN WILLOW FLYCATCHER

Within the proposed project area there is suitable and potential SWWF nesting habitat. In May of 1993, an unpaired or migrant male (unconfirmed) was observed singing in a dense patch of willows at Dry Beaver Creek. The bird was detected on a 75-100 meter (m) long, 5-25 m wide linear island that splits Dry Beaver Creek. The island was a patch of willow, sycamore, and ash and approximately half of a hectare in size. Willows were mostly under 5 m in height, with sycamore and ash up to 9 m in height. The bird was observed singing and foraging for approximately 12 minutes; however, a second bird was not detected. A campsite and swimming hole lie just downstream of the site, and evidence of recent cattle grazing was abundant just upstream of the site. Southwestern willow flycatchers were not detected during a second site visit in June, 1993.

Continued livestock grazing in the area and adjacent habitat will result in the establishment of additional trails or paths through the potential nesting habitat, further contributing to habitat fragmentation and modification. Livestock grazing within the

project area, particularly concentrations of livestock at tanks, corrals, nutrient supplements, areas with extensive shade, etc., will also facilitate brown-headed cowbird parasitism. Although willow flycatchers have not been documented nesting within the project area, cowbirds were observed in the area. Continual monitoring efforts and cowbird management will be needed at this site to control brood parasitism by the brown-headed cowbird.

The Service anticipates that direct and indirect effects of the proposed activities may result in a decrease in potential for productivity at this potential breeding location. The Service has proposed to list the flycatcher as endangered because at current population levels, and with continuing threats, extinction is foreseeable. Thus, incidental take of individuals, or loss or modification of habitat for population expansion further endangers the continued existence of the SWWF.

Implementation of the proposed action is intended to improve existing watershed, riparian and aquatic conditions, and minimize the impacts of cowbirds in the project area while continuing to provide for viable livestock operations. The time to full implementation, not addressed in the documentation but assumed to be ten years (the length of the permits), is considerable when the project as a whole is considered. Since improvements to habitat condition take time to occur, the time needed to restore the riparian and aquatic habitats becomes greater than 10 years. If the proposed action works as planned by the Forest, there would be improvements to proposed and endangered species habitats, but when those benefits would be realized is not known.

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.

ARIZONA CLIFFROSE

Outdoor recreational activities, especially ORV driving, "party sites," and shooting range, have produced severe direct and indirect impacts to Arizona cliffrose in the Verde Valley. Expanding urbanization in the Bridgeport area has eliminated Arizona cliffrose habitat on private property for home sites, roads, and other associated activities (e.g. illegal

dumping; ad hoc parking areas). These human related impacts are very serious threats to Arizona cliffrose in the Verde Valley and will continue to escalate as the human population expands.

Livestock grazing on Arizona State Trust Lands within Arizona cliffrose habitat in the Verde Valley (T. 16 N., R. 3 E. section 36) is managed as part of the Windmill Allotment (Coconino National Forest, Sedona Ranger District, Formal Consultation completed December 30, 1992) but is not specifically addressed in the Windmill Allotment Management Plan environmental documentation. Stocking rates have been higher on this section than permitted on neighboring Forest Service lands (Ward 1992). Though the Arizona cliffrose on State Land currently appear vigorous and are successfully reproducing (Rutman 1992b), there are no assurances of the future management direction on State Land.

MEXICAN SPOTTED OWL

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.

SOUTHWESTERN WILLOW FLYCATCHER

Some parcels of private land with livestock potentially occur within cowbird travel distance of the known southwestern willow flycatcher nesting area. The increase in the cowbird population attributable to livestock grazing on private lands is not determinable at this point and time.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm 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. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which

include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

MEXICAN SPOTTED OWL

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.

AMOUNT OR EXTENT OF TAKE

The Service anticipates that no MSO will be taken as a result of this proposed action.

SOUTHWESTERN WILLOW FLYCATCHER

AMOUNT OR EXTENT OF TAKE

The Service believes the loss of nesting sites and loss or modification of adjacent habitat for population expansion will be prevented with the implementation of the proposed actions described in detail in the Amendment to the Preferred Alternative (U.S. Forest Service, Coconino National Forest, January 1995).

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7 (a) (1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. 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 sections 2(c) or 7(a)(1) responsibility for these species.

MEXICAN SPOTTED OWL

1. 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 inches or greater) should be monitored closely to assure that loss of this larger material does not occur. Individual consultation on the burn program may be required as details are determined.
2. The Service recommends the Forest Service conduct or fund a study to determine how grazing affects prey abundance. This type of study is mentioned as a research need in the Agency Review Draft of the MSO Recovery Plan.

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.

REVISIONS TO THE PREFERRED ALTERNATIVE WITH WHICH THE SERVICE CONCURS

The Forest has incorporated all Service recommendations during the consultation process. The Service would like to acknowledge the cooperation of Forest personnel, especially Liz Blake, Ken Vensel, and Jerry Bradley, in creatively address and resolving all issues. Most of the following commitments are included within the definition of the proposed actions, but are re-stated to emphasize their importance. The Service supports implementation of the following actions:

ARIZONA CLIFFROSE

1. Survey potential habitat areas for Arizona cliffrose and other rare plant species found in this unique vegetative community within 2 years in the following areas:

*remainder of the Middle Verde pasture, with emphasis on the northwest corner of the pasture.

*all of Horse pasture.

*eastern half of the White Hills pasture.

If possible, surveys should be conducted during the flowering period for best plant identification.

2. After the surveys are complete and the information is evaluated in coordination with the Service, determine the best fenceline locations within the Middle Verde, Horse, and White Hills pastures to protect known rare plant populations.

3. Evaluate areas within this unique plant community (including Arizona cliffrose potential habitat for inclusion to the Verde Valley Botanical Area).

4. Fencing in the Middle Verde pasture should exclude the known occurrence of the unique plant community and the best potential Arizona cliffrose habitat within the southwest 1/4 from livestock grazing use. The excluded area should be expanded as needed when new survey results become available.

5. If additional rare plant populations are found, all or part of the White Hills and part of the Horse pasture should be excluded from livestock use. If no or isolated plants are found, these pastures will be available for livestock grazing with controls such as pasture division fences and water placement to keep livestock away from potential habitat areas.

6. In the Middle Verde pasture, pipelines installed should end at least 1 mile from currently known rare plant locations to keep livestock away from the plants. After fencing is installed, water pipelines can be extended within the grazing area if needed.

7. No water pipelines should be installed in Horse pasture until plant surveys are completed and the best location for pipeline and fencing is determined in coordination with the Service. Pipelines should end at least 1 mile from any identified rare plant populations not protected by fencing.

8. Water pipelines should not be installed in the west half of the White Hills pasture that is part of the potential expansion area of the Verde Valley Botanical Area. Water pipeline should not be installed within the east half of the pasture unless livestock use is allowed following completion of the plant surveys. Any pipelines installed should end at least 1 mile from any identified rare plant populations not protected by fencing.

9. Monitoring of known *S. d.* ssp. *mearnsii* sites in the Middle and Horse pastures should occur to determine impacts from specific actions. An assessment of the impacts and changes to the plant community size, composition, and structure in both use and non-use areas should be made. If monitoring shows undesirable changes or impacts, informal consultation should be reinitiated with the Service to alter management or mitigation measures as needed.

10. Monitoring of prescribed burn areas for change in plant community size, structure, composition, plant competition, and site conditions should occur. Non-use areas should act as a control. If monitoring shows undesirable changes or impacts, informal consultation should be reinitiated with the Service to alter management or mitigation measures as needed.

11. If rare plants are found in areas where grazing occurs, the livestock grazing scheme should be modified to avoid grazing in those areas during the flowering period (late March to mid-April), if possible.

SOUTHWESTERN WILLOW FLYCATCHER

1. Conduct annual surveys on Dry Beaver Creek, Wet Beaver Creek, and the Verde River following methods specified in the Southwestern willow flycatcher survey protocol (Tibbitts *et al.* 1994) with the following adjustments:

*Survey potential Southwestern willow flycatcher locations at least once in each of the last two 10-day periods of May (i.e., survey each location at least once between May 11 and May 20, and at least once between May 21 and May 31) in addition to surveying during the period specified in the protocol.

2. Determine the breeding status of any Southwestern willow flycatcher observed using the following criteria:

* repeated presence of a non-singing Southwestern willow flycatcher, or a Southwestern willow flycatcher using vocalizations other than the primary song in proximity to an individual exhibiting territorial behavior;

- * observation of a Southwestern willow flycatcher carrying nesting material;
- * observation of Southwestern willow flycatcher exhibiting activities associated with reproduction;
- * location and verification of a willow flycatcher nest;
- * observation of a Southwestern willow flycatcher carrying food items; and
- * observation of a juvenile.

3. If breeding status is confirmed or suspected, continue monitoring efforts by visiting breeding locations at least once during each of the three 10-day periods of June and July or until observation indicate that Southwestern willow flycatcher have stopped breeding efforts. Collect breeding and habitat data as outlined in the survey protocol (Tibbitts *et al.* 1994) and submit the completed data forms to Arizona Game and Fish Department/Arizona Partners in Flight Program.
4. If breeding status is confirmed or suspected, begin a brown-headed cowbird trapping program in the following year by April 1, using established protocols. Once a breeding pair is located, assume nesting will also occur in subsequent years and begin the trapping program through the end of July, or until the Southwestern willow flycatcher breeding season ends (if earlier than July 31).
5. Determine the number and location of traps based on the distribution of Southwestern willow flycatcher along the drainage, but include a minimum of two traps.
6. Check all traps at least once each day; individual traps should be checked at approximately the same time each day.
7. Maintain data on the brown-headed cowbird trapping program, including:
 - date trapping is initiated and stopped;
 - locations of traps (marked on a topographic map);
 - variations from established protocol;
 - number and sex of brown-headed cowbirds and non-target species captured;
 - and
 - date of each capture.
8. Kill all captured brown-headed cowbirds in a humane manner; dispose of the dead birds properly.
9. Report to the Service and Forest Service each year on the survey and trapping program.

10. Monitor for signs of nest parasitism (i.e., cowbirds fledging from Southwestern willow flycatcher nest(s); if parasitism does occur, reinstate consultation with the Service to alter management or mitigation measures as needed.

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 of these actions.

CONCLUSION

This concludes formal consultation on the actions outlined in the Apache Maid Range Allotment Area draft Environmental Assessment, corresponding Biological Assessments and Evaluations, and Amendment to the Preferred Alternative. As required by 50 CFR §402.16, reinstitution of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (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 manner or extent not considered in this opinion; (2) 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 (3) a new species is listed or critical habitat is designated that may be affected by this action. Please notify the Service of your final decision on this project action.

In future communications on this project, please reference consultation number 2-21-92-F-732. If we may be of assistance, please contact Bruce Palmer, Rob Marshall, or Tom Gatz.

Sincerely,



Sam F. Spiller
State Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico
(AES)(AFF)
Director, Fish and Wildlife Service, Washington, D.C. (TE)
Director, Arizona Game and Fish Department, Phoenix, Arizona
Director, Arizona Department of Agriculture, Phoenix, Arizona
Director, Arizona State Land Department, Phoenix, Arizona
District Ranger, Long Valley Ranger District, Coconino National Forest,
Happy Jack Arizona
District Ranger, Sedona Ranger District, Coconino National Forest,
Sedona, Arizona

LITERATURE CITED

- Anderson, J.L. 1986. Biogeographical analysis of Cowania subintegra Kearney (Rosaceae): an Arizona Sonoran Desert endemic. Master's Thesis. Arizona State University, Tempe.
- . 1993. A synthetic analysis of a rare Arizona species, Purshia subintegra (Rosaceae). Pages 205-220. In Sivinski, R. and K. Lightfoot (eds). Proceedings of the Southwestern rare and endangered plant conference. New Mexico Forestry and Resources Conservation Division, Miscellaneous Publication Number 2, Santa Fe, New Mexico.
- Arizona Game and Fish Department (AGFD). 1988. List of threatened native wildlife in Arizona. Arizona Game and Fish Commission, Phoenix Arizona. 32 pp.
- Bingham, S. 1976. Proposed threatened and endangered plant species in the Upper Gila-San Simon EIS area. Bureau of Land Management, Safford District. Safford, Arizona.
- Bock, C.E., V.A. Saab, T.D. Rich, and D.S. Dobkin. 1993. Effects of livestock grazing on neotropical migratory landbirds in western North America. Pages 296-309 in D. Finch and P. Stangel, eds., Status and Management of Neotropical Migratory Birds. Gen. Tech Rep. RM-229. USDA Forest Service, Rocky Mountain Range and Experiment Station, Fort Collins, Colorado. 422 pp.
- Bowler, P.A. 1989. Riparian woodland: an endangered habitat in southern California. Pages 80-97 in Endangered Plant Communities of Southern California - Proceedings of the 15th annual symposium. Special Publication No. 3, Southern California Botanists and California State University, Fullerton.
- Cannon, R.W and F.L. Knopf. 1984. Species composition of a willow community relative to seasonal grazing histories in Colorado. Southwestern Naturalist 29:234-237.
- Carothers, S.W. 1977. Importance, preservation, and management of riparian habitats: an overview. Pages 2-4 In R.R. Johnson and D.A. Jones (eds.), Importance, preservation, and management of riparian habitats: a symposium. General Technical Report RM-43. USDA Forest Service, Denver, Colorado.

- Clary, W.P. and B.F. Webster. 1989. Managing grazing of the riparian areas in the intermountain region. Gen. Tech. Rep. INT-263. Ogden, Utah. USDA Forest Service, Intermountain Research Station. 11 pp.
- Dahl, T.E. 1990. Wetlands losses in the United States, 1780s to 1980s. USDI Fish and Wildlife Service, Washington, D.C. 13 pp.
- Denham, R. 1992. Subintegration. A series of unpublished essays to the U.S. Fish and Wildlife Service. Phoenix, Arizona.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. Birds in jeopardy: the imperiled and extinct birds of the United States and Canada, including Hawaii and Puerto Rico. Stanford University Press, Stanford, California. 259 pp.
- Gaines, D. 1974. A new look at the nesting riparian avifauna of the Sacramento Valley, California. *Western Birds* 5:61-79.
- General Accounting Office. 1988. Public rangelands: Some riparian areas restored but widespread improvement will be slow. General Accounting Office, U.S. Government. Washington, D.C.
- Howe, W.H. and F.L. Knopf. 1991. On the imminent decline of Rio Grande cottonwoods in central New Mexico. *Southwestern Naturalist* 36:218-224.
- Johnson, R.R., and L.T. Haight. 1984. Riparian problems and initiatives in the American Southwest: a regional perspective. Pages 404-412 in *California riparian systems: ecology, conservation, and productive management*. R.E. Warner and K.M. Hendrix, eds., University of California Press, Berkeley, California. 1035 pp.
- _____, _____, and J.M. Simpson. 1987. Endangered habitats versus endangered species: a management challenge. *Western Birds* 18:89-96.
- Katibah, E.F. 1984. A brief history of riparian forests in the Central Valley of California. Pp. 23-29 in *California Riparian Systems: Ecology, Conservation, and Productive Management* (R.E. Warner and K.M. Hendrix, eds.). University of California Press, Berkeley, California. 1034 pp.

- Klebenow, D.A. and R.J. Oakleaf. 1984. Historical avifaunal changes in the riparian zone of the Truckee River, Nevada. Pp. 203-209 in California Riparian Systems (R.E. Warner and K.M. Hendrix, eds.). University of California Press, Berkeley, California. 1034 pp.
- Mount, D. and B. Logan. 1992. Progress report: RAPD marker analysis of Purshia populations. Unpublished report to U.S. Fish and Wildlife Service. Phoenix, Arizona.
- Phillips, A., J. Marshall, and G. Monson. 1964. The birds of Arizona. University of Arizona Press, Tucson, Arizona. 212 pp.
- Phillips, A.M., B.G. Phillips, L.T. Green, J. Mazzoni, E. M. Peterson. 1980. Status report for Cowania subintegra. Prepared for U.S. Fish and Wildlife Service. Phoenix, Arizona.
- Phillips, A.R. 1948. Geographic variation in Empidonax traillii. Auk 65:507-514.
- Phillips, B.G. 1986. Endangered species information system workbooks I & II on Cowania subintegra for USDI Fish and Wildlife Service. Arlington, Virginia.
- _____, M. Avery, and M. Morgan. 1987. Evaluation of occurrences of Cowania subintegra Kearney in Dead Horse Ranch State Park vicinity for alternative entrance road locations. Final Report for Donohue Engineers and Architects, Inc. Phoenix, Arizona. Project # N-900-31 PE ADOT Contract No. 86-46.
- _____, and A.M. Phillips. 1987. Starch gel electrophoreses of Purshia stansburiana. Prepared for U.S. Bureau of Reclamation, Phoenix Projects Office. Phoenix, Arizona.
- Rea, A.M. 1983. Once a river: bird life and habitat changes on the middle Gila. University of Arizona Press, Tucson, Arizona. 285 pp.
- Reichenbacher, F.W. 1986. On-call surveys of federally listed, proposed and candidate category 1 plant species on the Central Arizona Project aqueduct route. Interim report for task #1: Cliff Dam Cowania subintegra and Eriogonum ripleyi surveys. U.S. Bureau of Reclamation, Phoenix Projects Office. Phoenix, Arizona.

- _____. 1987. Specimen collection and data reduction for Purshia subintegra, an endangered species. U.S. Bureau of Reclamation Arizona Projects Office. Phoenix, Arizona. P.O. #7-PG-32-16590.
- _____. 1989. Multivariate analysis and the question of hybridization and Purshia subintegra. Unpublished data presented to January 1989 Arizona Plant Recovery Team Meeting.
- _____. 1992. Progress report: Character variation in the Purshia subintegra / Purshia stansburiana species complex. Unpublished data presented to U.S. Fish and Wildlife Service. Phoenix, Arizona.
- Rickard, W.H. and C.E. Cushing. 1982. Recovery of streamside woody vegetation after exclusion of livestock grazing. *J. Range Manage.* 35:360-361.
- Rutman, S. 1992a. Handbook of Arizona's endangered, threatened and candidate plants. U.S. Fish and Wildlife Service. Phoenix, Arizona.
- _____. 1992b. Notes to the file: Purshia subintegra. Field trip report. U.S. Fish and Wildlife. Phoenix, Arizona.
- _____. 1992c. Notes to the file: Purshia subintegra. Meeting notes. U.S. Fish and Wildlife Service. Phoenix, Arizona.
- Schaack, C.G. and J.D. Morefield. 1985. Field survey for Cowania subintegra Kearney, Coconino National Forest. Prepared for the USDA Coconino National Forest. Flagstaff, Arizona.
- Schlorff, R.W. 1990. Status review of the willow flycatcher (Empidonax traillii) in California. Report to the California Department of Fish and Game, Department Candidate Species Status Report 90-1. 23 pp.
- Schultz, T.T., and W.C. Leininger. 1990. Differences in riparian vegetation structure between grazed areas and exclosures. *J. Range Manage.* 43:295-299.
- Serena, M. 1982. The status and distribution of the willow flycatcher (Empidonax traillii) in selected portions of the Sierra Nevada, 1982. California Department of Fish and Game, Wildlife Management Branch Administrative Report 82-5.

- Sogge, M.K., T.J. Tibbitts, and S.J. Sferra. 1993. Status of the southwestern willow flycatcher along the Colorado River between Glen Canyon Dam and Lake Mead - 1993. Summary report. National Park Service Cooperative Park Studies Unit/Northern Arizona University, U.S. Fish and Wildlife Service, and Arizona Game and Fish Department report. 69 pp.
- State of Arizona. 1990. Final report and recommendations of the Governor's riparian habitat task force. Executive Order 89-16. Streams and Riparian Resources. Phoenix, Arizona. October 1990. 28 pp.
- Szaro, R.C. 1989. Riparian forest and scrubland community types of Arizona and New Mexico. *Desert Plants* 9:70-138.
- Taylor, D.M. 1986. Effects of cattle grazing on passerine birds nesting in riparian habitat. *J. Range Manage.* 39:254-258.
- Tibbitts, T.J., M.K. Sogge, and S.J. Sferra. 1994. A survey protocol for the southwestern willow flycatcher (*Empidonax traillii extimus*). Technical Report NPS/NAUCPRS/NRTR-94/04
- Unitt, P. 1987. *Empidonax traillii extimus*: An endangered subspecies. *Western Birds* 18:137-162.
- U.S. Department of the Interior. 1984. Final rule to determine *Cowania subintegra* (Arizona cliffrose) to be an endangered species. *Federal Register* 49(104):22326-22329.
- _____. Fish and Wildlife Service. 1993. Notice of 12-month petition finding/proposal to list *Empidonax traillii extimus* as an endangered species, and to propose critical habitat. July 23, 1993. *Federal Register* 58:39495-39522.
- U.S. Fish and Wildlife Service (USFWS). 1994. Arizona cliffrose (*Purshia subintegra*) recovery plan. USDI Fish and Wildlife Service, AESSO, Phoenix, AZ. 90pp + appendix.
- U.S. Forest Service. 1979. Action program for resolution of livestock-riparian conflicts on the Salt River and Verde River. Region Three: Tonto, Prescott, and Coconino National Forests. 129 pp.

_____. 1987. Coconino National Forest Land Resource Management Plan. Coconino National Forest. Flagstaff, Arizona.

_____. 1994. Habitats used, abundance, and distribution of the Mexican spotted owl (Strix occidentalis lucida) on National Forest system lands in the Southwestern region. K.W. Fletcher and H.E. Hollis.

Ward, D. 1992. Biological evaluation for Arizona cliffrose Purshia subintegra. Windmill Allotment management plan. August 4, 1992. Coconino National Forest, Sedona Ranger District. Sedona, Arizona.

Whitfield, M.J. 1990. Willow flycatcher reproductive response to brown-headed cowbird parasitism. Masters thesis, California State University, Chico, California. 25 pp.

Willard, F.C. 1912. A week afield in southern Arizona. Condor 14:53-63.

