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In Reply Refer To:

AESO/SE
22410-2002-F-0277-R1
22410-2007-F-0463

November 7, 2007

Memorandum

To: Field Manager, Arizona Strip Field Office, Bureau of Land Management, St. George, Utah

From: Field Supervisor

Subject: Biological Opinion for the Arizona Strip Resource Management Plan

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request for formal consultation regarding effects of the Bureau of Land Management (BLM) Arizona Strip Resource Management Plan (RMP) was dated May 7, 2007, and received by us on May 9, 2007. The request was clarified and expanded in a June 6, 2007, email message from your staff. At issue are impacts that may result from the RMP on the California condor (*Gymnogyps californianus*), Mexican spotted owl (MSO) (*Strix occidentalis lucida*), southwestern willow flycatcher (SWWF) (*Empidonax traillii extimus*) and its critical habitat, Yuma clapper rail (*Rallus longirostris yumanensis*), desert tortoise (*Gopherus agassizii*) and its critical habitat, Virgin River chub (*Gila robusta seminuda*) and its critical habitat, woundfin (*Plagopterus argentissimus*) and its critical habitat, Brady pincushion cactus (*Pediocactus bradyi*), Holmgren milk vetch (*Astragalus holmgreniorum*) and its critical habitat, Jones' Cycladenia (*Cycladenia humilis*), Siler pincushion cactus (*Pediocactus sileri*), and Welsh's milkweed (*Asclepias welshii*) in the Arizona Strip District in Coconino and Mohave counties, Arizona.

The June 6 email message clarified that formal consultation was requested for California condors occurring on National Park Service (NPS)-administered land within the Arizona Strip District within the nonessential experimental population (where the species is considered threatened for the purposes of section 7 consultation) and Arizona Strip District Office (ASDO) land outside of the nonessential experimental population area (where the species is considered endangered). An informal conference was requested for condors on BLM land within the nonessential experimental population area (where the species is considered as a proposed species for the purposes of section 7 consultation). The information in the Status of the Species, Environmental Baseline, Effects of the Action, and Cumulative Effects sections applies to condors in all three areas. The remainder of this biological opinion applies only to the first two areas requiring

formal consultation. The remainder of the informal conference is in Appendix A to this biological opinion.

The May 7 memorandum also included a request for formal consultation on the effects of the proposed action on the bald eagle (*Haliaeetus leucocephalus*). The final rule to remove the bald eagle from the Federal List of Threatened and Endangered Species was published in the Federal Register on July 9, 2007, and took effect on August 8, 2007. Thus, formal consultation is not necessary. However, the bald and golden eagle (*Aquila chrysaetos*) continue to be protected by the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). The Eagle Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking eagles, including their parts, nests, or eggs. "Take" is defined under the Eagle Act as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" eagles. "Disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, 1) injury to an eagle, 2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition, in anticipation of delisting the bald eagle, we published a proposed rule (72 FR 31141, June 5, 2007) in the Federal Register that proposes new permit regulations to authorize the take of bald and golden eagles under the Eagle Act when the take is associated with otherwise lawful activities. The outcome of that proposal may be relevant to the proposed action in the future. Although the bald eagle has been delisted, we recommend implementation of conservation measures that have been developed within the proposed action for this species (Appendix B).

The May 7 memorandum also requested technical assistance regarding your determinations that implementation of the proposed action may affect, but is not likely to contribute to the need to list the candidate species yellow-billed cuckoo (*Coccyzus americanus*), relict leopard frog (*Rana onca*), Fickeisen plains cactus (*Pediocactus peeblesianus* var. *fickeiseniae*), and the conservation agreement species Virgin spinedace (*Lepidomeda mollispinis mollispinis*) and Kaibab (Paradine) plains cactus (*Pediocactus paradinei*). Other than the applicable conservation measures included in the proposed action (Appendix B), these species are not addressed in this biological opinion. However, we recommend full implementation of the existing conservation strategies and agreements for the relict leopard frog (Relict Leopard Frog Conservation Team 2005), Virgin spinedace (Lentsch *et al.* 1995, Lentsch *et al.* 2002), and Kaibab plains cactus (U.S. Forest Service 1996) in relation to the proposed action. We also recommend that BLM continue to work with us in developing a conservation strategy and agreement for the Fickeisen plains cactus. We are also prepared to provide technical assistance to you for these species when site-specific actions under the proposed action are considered and developed.

This biological opinion is based on information provided in the biological assessment (BA), final environmental impact statement (FEIS), meetings, telephone conversations, email messages, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, the type of actions and their effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

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CONSULTATION HISTORY

Table 1 is a summary of the consultation history for the proposed action. All tables are included at the end of this document.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Most of the information in this biological opinion is from the May 1, 2007 BA (ASDO 2007a). A detailed summary of the proposed action is contained in pages 14-42 of that document and the entire summary is incorporated herein by reference. All decisions presented in Alternative E of Chapter 2 of the FEIS (ASDO 2007b) constitute the proposed action and are incorporated here by reference.

This biological opinion addresses the anticipated effects of the proposed RMP at the broad-scale planning level. Subsequent site-specific section 7 consultation will be necessary for each discretionary action that may affect listed species.

The project area includes all BLM-administered lands on the Arizona Strip in Coconino and Mohave counties, Arizona. It also includes Lake Mead National Recreation Area (LMNRA) lands within the Grand Canyon-Parashant National Monument. The action area includes the project area, including some State of Arizona and private lands on the Arizona Strip. There are no tribal lands included in the project or action area.

The ASDO of the BLM developed a Proposed RMP and FEIS that provide management decisions for three planning areas on the Arizona Strip: Grand Canyon-Parashant National Monument (Parashant NM), Vermilion Cliffs National Monument (Vermilion NM), and the Arizona Strip Field Office (ASFO). Three separate RMPs, one for each planning area, are combined in the documents and covered under the FEIS. The FEIS identified one preferred alternative, Alternative E, from the draft and analyzed that alternative as the proposed action.

The original management plan for the areas was developed for the Shivwits and Vermilion Resource Areas of the ASDO in 1992. In 1995, those two resource areas were combined and managed as a single District. The 1992 RMP was amended in 1998 through incorporation of provisions of the Mojave Desert Tortoise Recovery Plan. In 2000, a Presidential Proclamation established the Parashant NM in Mohave County. The Parashant NM is cooperatively managed by the ASDO and the NPS, including 808,724 acres administered by the BLM and 208,444 acres administered by the LMNRA. The Vermilion NM was also established in 2000 by Presidential Proclamation and includes 293,679 acres in Coconino County, administered solely by the BLM. The remaining BLM lands in the Arizona Strip are now managed as the ASFO, including more than 1.7 million acres in Mohave and Coconino counties. Designation of the two monuments required new management direction to ensure protection of sensitive resources (objects) identified by the Proclamations.

The three RMPs (hereafter referred to as the RMP) will provide guidance to BLM in management of public land within the ASDO. The RMP allocates resources and makes decisions regarding: travel management; paleontological resources; cave and karst resources; vegetation management; fire suppression and management; soil, air and water resources; fisheries and wildlife management; special status species; cultural resources; visual resources; wild burros; recreation; off-highway vehicles (OHV); transportation network; invasive species; livestock grazing; mineral resources; special area designations including wilderness, historic trails, Areas of Critical Environmental Concern (ACEC), and wild and scenic rivers; health and safety; hazardous materials; lands and realty and land tenure adjustment; and utility and transportation corridors and communication sites.

The proposed action is to implement Alternative E, which is the preferred alternative and the proposed plan from the FEIS. Alternative E emphasizes minimal human use and influence in the more remote areas of the Arizona Strip and more human use and influence in the areas adjacent to local communities or in areas presently receiving such use and influence. Through the proposed plan, BLM and NPS are striving to implement recovery action items from approved recovery plans and conservation agreements.

The RMP will guide BLM management of public lands within the action area for a period of approximately 15 to 20 years from the date of the record of decision or until it is amended or revised.

Land use plan decisions represent the desired outcomes and the actions needed to achieve them. Decision types are described below.

Desired Future Conditions (DFC): DFCs represent the goals and objectives for resources and/or uses. They direct BLM and NPS actions to effectively meet legal mandates, regulatory responsibilities, national policy, BLM State Director and NPS Director guidance, and other resource or social needs. DFCs provide managers with long-term landscape-level direction for the management of resources.

Special Area Designations (SD): Special area designations include those that are designated by Congress for special protection, such as wilderness areas or national historic or scenic trails. Such designations are not land-use plan decisions, but recommendations for designation can be made to Congress at the land-use plan level. Administrative designations made by BLM are also special area designations that can be made in the land use plan and include designating ACECs or Watchable Wildlife Viewing Sites.

Land Use Allocations (LA): Land use allocations are land use plan decisions that set apart geographic areas for specific resources or uses, such as areas where wildland fire is not desired, grazing is authorized, or where OHV areas are necessary. Allocations have geographic boundaries and are designated on maps. The management of allocated resources is described through the decisions proposed under the alternatives. DFC and management actions assist managers in resolving issues of overlap with other resource or use allocations.

Management Actions (MA): Management actions set the framework that allows achievement of the DFCs. Management actions are categorized as either actions to achieve desired outcomes,

allowable uses, or restrictions on uses. At the land-use plan level, these decisions describe what may or may not be authorized in the planning areas and provide broad-scale direction for managers. These decisions are not site-specific. Site-specific actions are considered implementation decisions and are typically deferred to activity-level planning.

Administrative Actions (AA): Administrative actions are day-to-day activities conducted by BLM that are often required by FLPMA but do not require National Environmental Policy Act (NEPA) analysis or a written decision by a responsible official to be accomplished. Examples of administrative actions include mapping, surveying, inventorying, monitoring, research, and completed project-specific or implementation-level plans.

Many land-use plan decisions are implemented or become effective upon approval of the management plan. Those include DFCs, LAs, and all SD designations such as ACECs. Management actions that require additional site-specific project planning as funding becomes available will require further environmental analysis and consultation under the Act. Decisions to implement site-specific projects are subject to administrative review at the time such decisions are made. BLM will continue to involve and collaborate with the FWS during implementation of the plan.

Implementation Decisions (IMP): Implementation decisions implement land use plan decisions through management actions at specific locations. Implementation, or activity-level, decisions generally constitute BLM's final approval allowing on-the-ground actions to proceed. These decisions require appropriate site-specific planning and NEPA analysis. They may be incorporated into implementation plans (activity or project plans) or may exist as stand-alone decisions. The implementation phase of a project is typically the point where project-specific section 7 consultation under the Act occurs.

The following is a summary of the proposed action as described in pages 14-42 of the BA (ASDO 2007a).

Management Units: Management units are geographic areas with similar resource management goals. The proposed action includes four management units (Community, Corridors, Back Roads, and Outback) with consistent land use plan decisions in specific geographic areas with similar landscapes, resources, and resource uses in the project area. Facilities or projects associated with valid, existing rights and permitted uses could occur in any management unit. Facilities include, but are not limited to, transmission lines, communications facilities, and kiosks. Projects could include, but are not limited to, corrals, catchments, pipelines, fences, wells, troughs, recreation trails, and staging areas.

BLM lands within the Community Management Unit will provide room for community growth and development. Moderate to substantial modifications to the landscape character could be allowed, but not to the exclusion of protecting resources. Lands within the Corridors Management Unit occur along major travel routes, providing access to the Back Roads and Outback management units. Some modifications to the landscape could occur, but not to the exclusion of protecting visual, natural, and cultural resources and uses. Lands within the Back Roads Management Unit provide a variety of dispersed recreation opportunities. Some

modifications to the landscape could be expected but will be tempered by the need to protect important resources. Lands within the Outback Management Unit will provide opportunities for undeveloped, primitive, and self-directed recreation opportunities. The lowest level of landscape modifications are expected here compared to the other management units.

Special Area Designations: The proposed action adds four new ACECs to the nine already existing in the Arizona Strip Field Office. ACECs are areas where special management attention is required to protect a particular resource or process, such as sensitive plant or wildlife habitat and cultural sites. Three Pakoon ACECs (for protection of desert tortoise and Mojave Desert values) and the Nampawep and Witch Pool ACECs (for protection of cultural resources) will be revoked due to more protection afforded by the Parashant NM designation. There are no existing ACECs in the Vermilion NM.

The size of each ACEC was designed to protect as much of the sensitive resource as possible without placing unnecessary restrictions on adjacent public lands. Increases in the size of an ACEC were proposed where individuals, populations, or habitat areas of the sensitive resource were not previously included within the ACEC boundary. Buffer areas were added to special status plant ACECs to minimize disturbance from adjacent road areas. Decreases in ACEC acreage were due to removal of areas where repeated surveys indicated the sensitive resource was not present.

Desired Future Conditions

Air, Water, and Soils: DFCs include meeting applicable air and water quality standards and having functional riparian areas that meet Arizona Standards for Rangeland Health. Management actions include minimizing impacts to air and water quality, filing for water rights on available sources (including instream flows), ensuring availability of water resources, applying stipulations to surface-disturbing and reclamation activities, restoring floodplains and wetlands, and increasing management of watersheds in condition class 4. Watersheds considered high priority for assessment, treatments, and/or restrictions on use to reduce erosion include: Upper Lang's Run, Black Rock Mountain, and Parashant on the Parashant NM; all watersheds on the Vermilion NM; and Upper Lang's Run, Black Rock Mountain, Upper Parashant, Lower Hurricane Valley, Fort Pearce Salinity Area, Clayhole Flood Control Structures Area, and Wild Band Valley on the ASFO.

Geology and Paleontology: DFCs include protection of paleontological, geological, and cave and karst resources. Allocations include classification of areas for their potential to contain vertebrate fossils. Management actions include identifying, classifying, and protecting these resources while mitigating impacts to them. Inventories for paleontological and cave and karst resources will continue.

Vegetation Management: DFCs include that all watersheds will meet Standards for Rangeland Health, contain a mosaic of native perennial and non-invasive annual vegetative communities, protect or enhance ecological processes and functions, control or eliminate invasive plants, and maintain vegetative communities within the natural range of variation. Restoration and vegetation treatment projects could be authorized to meet DFCs where sensitive resources are

protected. Treatment methods and tools could include mechanical, chemical, biological, or fire. Specific treatment areas are not identified in the proposed action. Use of native species will be emphasized, although non-invasive, non-native plants could be used to restore degraded areas where criteria for their use are met. No areas will be allocated for sustained yield timber harvest. Gathering of dead and downed wood for campfires will be authorized in areas where campfires are allowed. The sale, collection, or use of vegetative materials will require a permit on the Parashant NM and ASFO. No vegetative material sales will be authorized on the Vermilion NM. Collection of listed, proposed, or candidate plant species will not be authorized. Limited harvest of posts/poles could be authorized for on-site administrative purposes on BLM portions of the monuments. Pinyon pine nuts could be harvested for non-commercial use. Salvage of vegetation that will otherwise be lost to surface-disturbing activities could be authorized. Treatment of noxious weed infestations will continue. Certified weed-free feed, mulch, and seed will be required for permitted uses. Ecological site inventories will be completed to determine site potentials and ecological conditions. Site-specific desired plant community (DPC) objectives will continue, consistent with ecological site potential.

Fire and Fuels Management: Fire management DFCs include maintaining appropriate fire return intervals, maintaining fuels at non-hazardous levels in wildland-urban interfaces, and maintaining vegetative communities within the natural range of variation. Allocations include classification of areas suitable and those not suitable for wildland fire use. Appropriate management response (AMR) will be used for managing wildland fires. Management actions include authorizing use of minimum impact suppression tactics (MIST), prescribed fire, and fire use in designated and proposed wilderness. Fire suppression tactics will favor minimum impact tools. However, use of heavy equipment could be authorized with BLM District Manager or NPS Park Superintendent approval.

Fish and Wildlife: Fish and wildlife DFCs include functional ecological systems within the range of natural variability; diverse, healthy, and self-sustaining populations of native species; sufficient forage, water, and cover to support these diverse populations; safe access to water for wildlife; wildlife-passable fencing; habitat connectivity with minimal fragmentation; balanced predator and prey relationships; and priority wildlife species (special status species, migratory birds, game animals and birds, small carnivores) at or near maximum sustainable population levels. For BLM lands, wildlife decisions and actions will be developed and implemented through three interdisciplinary wildlife Habitat Management Plans (HMP). On NPS lands, wildlife decisions and actions will be guided by a cooperative planning process focusing on ecosystem management that perpetuates a natural distribution of native wildlife in a mosaic of their associated habitats within a normal range of variability.

Special Status Species: DFCs include recovery of all special status species at stable, self-sustaining levels with no net loss of habitat; discretionary activities will not contribute to the need to list species; the project area will continue to serve as a contiguous block of habitat for special status species; habitat connectivity will be maintained with minimal fragmentation; instream flows will be sufficient to maintain healthy native fish populations; species extirpated from the project area will be reintroduced and recovered; potential roosting and nesting sites and prey populations will be abundant for raptors; and riparian habitats will be in proper functioning condition and will provide suitable habitat for riparian-dependent species.

Special Area Designations

Standard ACEC and Desert Wildlife Management Area (DWMA) Management

FLPMA and BLM Manual 1613 require the BLM to give priority to the designation and protection of ACECs during the land use planning process. Designation of an ACEC does not automatically prohibit or restrict other uses in the area. The one exception is that a mining plan of operation is required for any proposed mining activity within a designated ACEC.

Public ownership in ACECs and DWMA's will be retained. Acquisition of non-Federal lands within ACECs and DWMA's will be a priority. New land-use authorizations will only be allowed in listed species habitat when no reasonable alternative exists and impacts to the species can be mitigated. New rights-of-way (ROW) will be routed away from high-density population areas of listed species. New roads and upgrading of existing roads will be authorized only on a temporary basis or when beneficial for resources. BLM will not authorize any military maneuvers within ACECs.

Vegetative diversity will be maintained or improved in accordance with ecosite guides. ACECs and DWMA's will be closed to all vegetative product sales. ACECs designated for the protection of plants will be closed to the collection of vegetative materials. Collection of dead and down wood will be allowed for personal campfire use only. OHV restrictions will apply. Special status plant ACECs will be closed to OHVs. Motorized and mechanized vehicle use in ACECs with cultural or listed species values will be limited to designated or existing roads or trails.

ACECs will remain open to locatable mineral exploration and development, but a mining plan of operations with special mitigation measures will be required. ACECs will remain open to leasable mineral exploration and development with special mitigation. No new mineral material disposal sites will be authorized in ACECs. Material site ROW in ACECs will not be authorized or renewed. The provisions will not apply to the Pakoon DWMA because it is within the Parashant NM, which affords greater protection.

Special Status Plant ACECs

Four existing ACECs for Siler pincushion cactus will be modified to achieve the following sizes: Johnson Spring (3,444 acres), Lost Spring Mountain (19,248 acres), Moonshine Ridge (9,310 acres), and Fort Pearce (5,724 acres). In addition to the standard ACEC management measures, no new corrals or water developments will be authorized or constructed within the four ACECs. The feasibility of relocating existing corrals or water developments outside the ACEC boundary will be considered. The ACECs will be closed to OHVs. Motorized and mechanized travel will be limited to existing roads and trails until route designation is complete, except in the Fort Pearce ACEC, where some washes and trails are open for the Rhino Rally motorcycle race.

The Marble Canyon ACEC will be maintained at 12,105 acres for the protection of Brady pincushion cactus. In addition to the standard ACEC management measures, motorized and mechanized travel will be limited to existing roads and trails until route designation is complete.

Existing material sites will be evaluated for retention. The ACEC plan will be updated to ensure that management of Brady pincushion cactus is consistent with the recovery plan. Rock or similar barriers to off-road vehicle travel will be installed in areas where individuals are adjacent to canyon rim overlooks.

The Lone Butte ACEC for protection of Jones' Cycladenia will be designated at 1,762 acres. In addition to the standard ACEC management measures, the ACEC will be closed to OHV travel.

The Black Knolls ACEC for protection of Holmgren milk vetch will be designated at 428 acres. In addition to the standard ACEC management measures, the ACEC will be closed to OHV travel.

Virgin River Corridor ACEC

The Virgin River Corridor ACEC will be modified to include only the 100-year floodplain (approximately 2,065 acres), which will eliminate desert tortoise habitat from the ACEC. (Desert tortoise habitat will be managed as part of the Beaver Dam Slope and Virgin Slope ACECs.) Management of the ACEC will emphasize Virgin River fishes and riparian-dependent bird species such as SWWF, Yuma clapper rail, and yellow-billed cuckoo. In addition to the standard ACEC management measures, the following also apply. Fire and vegetation management within the ACEC will include conservation measures for native fishes and riparian-dependent birds. Land exchanges or disposals will be managed so that future developments will not adversely affect flows in the Virgin River. Riparian areas will be maintained in proper functioning condition. Actions that degrade riparian habitat or reduce the potential of the area to support riparian vegetation will be modified, restricted, or prohibited. Stream bank alteration due to recreational activities and livestock grazing within the Virgin River Corridor ACEC will be limited to 25 percent annually.

Mechanical, chemical, and biological treatment methods will be used to remove invasive plants such as tamarisk and Russian olive for the purpose of restoring ecological conditions and functions and reducing fuel hazards. Motorized and mechanized vehicle use will be limited to designated or existing roads or trails. The ACEC will be signed and fenced as funding allows.

The Virgin River Corridor ACEC will remain open to leasable and locatable mineral exploration and development with special mitigation required for Virgin River fish species. The Virgin River has moderate potential for oil and gas, based on limited direct evidence in the form of oil and gas found in wells. The Virgin River Corridor ACEC will be available for fluid mineral leasing, subject to a waivable no surface occupancy stipulation. Surface occupancy and resulting disturbance will be allowed during extraction of leasable minerals after consultation with the FWS. The Virgin River 100-year floodplain has moderate potential for placer gold. The Virgin River Corridor ACEC is subject to four different classifications for locatable mineral operations: Areas Open, Areas Open with Restrictions, Areas Open with a Plan of Operation, and Areas Closed (FEIS Map 2.10, ASDO 2007b). The BLM may develop stipulations needed to protect water quality and other resource values in the ACEC. No new mineral material sites will be authorized within the Virgin River Corridor ACEC. The Virgin River Gorge Scenic Withdrawal Area will continue to be closed to mineral entry.

Kanab Creek ACEC

The Kanab Creek ACEC will be designated at 13,148 acres for protection of potential habitat for the SWWF, riparian vegetation, wilderness characteristics, and scenic values. An ACEC plan will be developed for management of the species and associated riparian values consistent with the Southwestern Willow Flycatcher Recovery Plan. In addition to the standard ACEC management measures, the following apply. No new corrals or water developments will be authorized or constructed within the ACEC. The feasibility of relocating existing corrals or water developments outside the ACEC will be considered. Livestock grazing will be closed during the growing season (bud break to leaf drop) on the Clearwater portions of the Kanab Creek and Wildband Allotments. Conservative grazing guidelines will be used consistent with the Recovery Plan. BLM will continue to survey for SWWF and maintain updated maps of their habitat in the ACEC.

Beaver Dam Slope and Virgin Slope ACECs

The Beaver Dam Slope and Virgin Slope ACECs for protection of threatened desert tortoise and Mojave Desert Ecological Zone values will be enlarged to 51,984 acres and 39,514 acres, respectively. In addition to the standard ACEC management measures, the following apply. Proposed actions will be evaluated to ensure they do not contribute to the proliferation of natural predators within desert tortoise habitat. Habitat restoration will not include planting or seeding of non-native plants. The ACECs will be closed to live vegetation harvest except salvage in areas where surface disturbance has been authorized. Only seasonal grazing will be authorized in these ACECs, from October 15 to March 15 each grazing year. Grazing utilization levels will be set at 45 percent current year's growth on allotments in the ACECs and in other desert tortoise habitat. The ACECs will remain open to fluid mineral leasing subject to seasonal restrictions and a waivable no surface occupancy stipulation. Special mitigation will be required in mining plans of operation to avoid impacts to desert tortoise within these ACECs. Non-commercial hand collection of rocks within 100 feet of designated open roads will be permitted in the desert tortoise ACECs.

Other Designations

Pakoon Wildlife Habitat Area (WHA): The Pakoon ACEC will be revoked. The same 76,014-acre area and all designated critical habitat for desert tortoise within the Parashant NM will be managed for protection of the species as the Pakoon WHA. In addition to the standard ACEC management measures that will be applied to the WHA, the following will apply. Activities on LMNRA and on public lands in Nevada managed by the ASDO will be managed in accordance with DWMA prescriptions. Habitat restoration will not include planting or seeding of non-native plants. The area will be closed to live vegetation harvest except salvage in areas where surface disturbance has been authorized. All of the Tassi Allotment and portions of the Pakoon, Pakoon Springs, and Mosby-Nay allotments within the Pakoon WHA will be unavailable for livestock grazing. Motorized and mechanized travel will be limited to designated roads and trails. New paved roads will not be authorized in the Pakoon WHA. Temporary upgrading of existing roads and construction of new unpaved roads could be authorized only where beneficial to desert

tortoise. Maintenance of existing roads will be authorized with non-emergency maintenance deferred to the tortoise inactive period. Speed limits for vehicles associated with agency-authorized projects will be at or below 40 miles per hour in tortoise habitat during the active season.

New paved roads will not be authorized in the Pakoon DWMA/WHA or Beaver Dam Slope and Virgin Slope ACECs. Temporary upgrading of existing roads and construction of new unpaved roads in these areas could be authorized only on BLM lands where beneficial to desert tortoise.

Wilderness: The Virgin River flows through the Paiute-Beaver Dam Mountains Wilderness, from the Utah State line to the west end of the Virgin River Gorge. BLM has a prepared wilderness plan for this area (BLM 1990), which was designated in the Arizona Wilderness Act of 1984. This wilderness plan will be evaluated and amended when necessary to conform to new management direction, such as new desired future conditions or listed species recovery plans.

Wild and Scenic Rivers: The Virgin River within the planning area was determined suitable for inclusion in the National Wild and Scenic Rivers System, with portions eligible for wild, scenic and recreational classification (BLM 1994). Pursuant to the Wild and Scenic Rivers Act of 1968, no uses will be authorized which will reduce or threaten the Virgin River's potential eligibility classification or suitability for inclusion until Congress makes a final decision on inclusion.

Management Actions

Vegetation Management

Vegetative habitat areas (VHA) were allocated on the ASFO [Twist Hills and Clayhole for Fickeisen plains cactus and Buckskin for Gierisch mallow (*Sphaeralcea gierischi*)]. Management actions that apply to VHAs include increased emphasis on protection of the species, increased consideration during NEPA analysis, and the ability to modify, mitigate, postpone, or restrict proposed actions to minimize effects to the species. Species-specific conservation measures will apply to management of these and all other areas of occupied and unoccupied habitat for special status species.

Fire and Fuels Management

The proposed action identifies areas suitable for wildland fire use and those not suitable for wildland fire use (Mojave Desert; Mojave transition, except NPS Andrus Plain area; Mojave-Great Basin Transition; and WUI areas). Appropriate Management Response will be used to suppress or manage wildland fires. Prescribed fire could be used in areas classified for wildland fire use. Conservation measures (Appendix B) will be used to avoid or minimize effects to special status species and their habitats.

Fish and Wildlife

Reintroductions and augmentations of a variety of species could be authorized. The following areas will be managed as watchable wildlife areas: Tassi, Cane, and Pakoon Springs, and Oak Grove in the Parashant NM; the California condor viewing site in the Vermilion NM; Black Rock, Beaver Dam Confluence, Lime Kiln Pass, the Buckskin Mountains, and House Rock Valley on the ASFO.

Special Status Species

In addition to the management prescriptions described above for the ACECs, management actions are included in the proposed action to benefit special status species. The complete description of these actions is included in the FEIS (Table 2, ASDO 2007b).

Introductions of non-endemic special status species native to the region could be authorized on BLM lands. BLM and NPS will continue active management programs to inventory, monitor, restore, and maintain listed species and their habitats; control detrimental non-natives; minimize habitat alteration and fragmentation; and re-establish extirpated populations.

Actions authorized, as well as those not specifically authorized or permitted, that lead to adverse effects to listed, proposed, or candidate species will be reviewed and addressed in a timely manner to minimize adverse effects. Authorized actions will be subject to application of species-specific conservation measures. Special status species habitat surveys will continue to be required prior to implementation of actions. BLM and NPS may modify, limit, or restrict public land uses that lead to adverse effects to listed, proposed, or candidate species. Pre-project surveys and clearances (biological evaluations/assessments) for federally-protected species will be required for each project site before implementation. All applicable conservation measures will be applied to areas with unsurveyed suitable habitat for federally-protected species until a survey has been conducted by qualified personnel to clear the area for the treatment activity.

BLM will not transfer out of Federal ownership any designated or proposed critical habitat, except where the new owner could protect the species equally well. BLM will not transfer out of Federal ownership lands supporting listed or proposed species if doing so will be inconsistent with recovery. BLM will not transfer out of Federal ownership lands supporting candidate species if doing so will contribute to the need to list the species.

Special Status Plants: Use restrictions could be developed to minimize or eliminate trampling and/or crushing of special status plants. Recreational activities that degrade special status plant habitats will be modified or relocated. Use of herbicides could be limited or eliminated in areas where special status plants could be affected. Mechanical vegetation treatment will not be authorized in special status plant habitat unless doing so will provide benefits to the species.

Desert tortoise: Authorized actions that may result in adverse effects to desert tortoises will require implementation of project stipulations. Mechanical vegetation treatment will not be authorized in desert tortoise habitat unless doing so will benefit the species. Wild horses and burros will not be authorized on NPS and BLM lands in the project area. Competitive speed

events will be prohibited, and organized non-speed events will be restricted to designated routes in desert tortoise habitat. Activities that could adversely affect desert tortoise will be limited to the tortoise inactive period (October 15-March 15). Reclamation will be required for activities that result in alteration or degradation of tortoise habitat. Compensation may be required to mitigate residual impacts from authorized actions in desert tortoise habitat. Utility lines on BLM lands will be designed, located, and constructed to avoid attracting desert tortoise predators. No translocations of desert tortoises from private to public lands will occur without discussions with the FWS.

Full fire suppression activities will be initiated in desert habitat with minimal surface disturbance. Burning-out unburned fingers and islands of desert tortoise habitat will not be permitted. Use of foam or fugitive retardant will be authorized in desert tortoise habitat. Camps, staging areas, and helispots will be surveyed for desert tortoises prior to use whenever feasible and located in previously disturbed areas whenever practicable.

Motorized and mechanized travel will be limited to designated roads and trails. Maintenance of existing roads will be authorized with non-emergency maintenance deferred to the tortoise inactive period. Speed limits for vehicles associated with agency-authorized projects will be at or below 40 miles per hour in tortoise habitat during the active season. A signing and fencing plan will be developed and occur as funding allows. BLM will cooperate on a case-by-case basis to relocate tortoises from previously conveyed Federal lands within the project area to public lands. No translocations of desert tortoises from private to public lands will occur without completion of a section 7 consultation or section 10(a) habitat conservation plan.

Virgin River chub and woundfin: Fire suppression actions in fish habitat will implement conservation measures described in Appendix B. Minimum impact suppression tactics will be used. Actions could include hand line construction, use and removal of available water with portable pumps, use of gasoline-powered equipment (vehicles, pumps, chain saws, etc.), and setting backfires. Use of fire retardant or chemical foams will not be authorized within 300 feet of aquatic habitats.

The proposed action identifies up to 3,282 acres of public lands as available for exchange or sale (i.e. disposal) near Beaver Dam, Littlefield, and Scenic, Arizona (FEIS Map 2.7, Appendix D, ASDO 2007b). Highest priority will be leases under the Recreation and Public Purposes (R&PP) Act. These leases (and eventually conveyance) provide lands to communities for parks and public facilities. Most are isolated parcels adjacent to private lands and have been impacted by off-highway vehicles (OHVs), trash dumping, and other un-authorized activities.

Livestock grazing is not authorized at the Beaver Dam confluence with the Virgin River. There are no seasonal restrictions on the Mountain Sheep, Blake Pond, and Sullivan Canyon allotments. The Virgin River also flows through the Apex Allotment, which is not administered by the ASDO. Grazing occurs along the Virgin River in 13 of 14 river segments evaluated for rangeland health by the BLM (BLM 1995). All allotments are subject to periodic evaluation to determine if rangeland health standards are being met.

The Virgin River will remain open to recreational activities such as wading and swimming. Special recreation permits will be issued, using management discretion, to commercial enterprises, recreational events, and large (greater than 50 person) groups. Special stipulations for protection of Virgin River chub and woundfin will be included with special recreation permits in their habitats to reduce the likelihood of adverse effects to these species. Seasonal stipulations could be imposed to restrict activities that may result in adverse effects to these fishes and their critical habitats.

Interstate 15 and the Scenic Bridge allow for travel over the Virgin River but do not provide access to the river or associated riparian areas. New roads will be authorized on a temporary basis only or when beneficial for relevant resources.

BLM will assist in locating and constructing non-native fish barriers and other efforts to reduce or eradicate non-native fish populations. BLM will apply for instream flow water rights and will assist the Recovery Team in monitoring efforts for native Virgin River fish populations.

Raptors (Bald eagle, California condor, and Mexican spotted owl): BLM and NPS will continue to identify bald eagle roost locations. Authorized or permitted activities within 0.5 mile of an active bald eagle wintering roost could be deferred or otherwise restricted. Canyons and forests with the potential to support Mexican spotted owl will be managed for maintenance or enhancement of the habitat.

Restoration of the California condor into historical habitats will continue. Sources of condor lead contamination will be identified, reduced, or eliminated where possible. Within the 10(j) area, the BLM will not restrict authorized and/or permitted activities solely for the benefit of California condors. Administrative or other actions implemented by the BLM could be subject to additional stipulations and conservation measures.

Southwestern willow flycatcher and other riparian-dependent species: General management of SWWF habitat will maintain those characteristics that make it suitable for nesting. Potential flycatcher habitat will be managed to allow natural regeneration into suitable habitat as rapidly as possible. BLM will evaluate ways to reduce concentrations of brown-headed cowbirds. The effects of future development on water quality and flows in the Virgin River will be addressed in section 7 consultation prior to exchanges or disposals. Riparian areas will be maintained in proper functioning condition. Actions that degrade riparian habitat or reduce the potential of the area to support riparian vegetation will be modified, restricted, or prohibited.

BLM will continue to survey and map habitat for SWWF, Yuma clapper rail, and other special status riparian species. Livestock grazing will continue to be limited on pastures with suitable SWWF habitat. The Beaver Dam confluence is already closed year-round. Suitable habitat within the Lambing and Kanab Creek allotments will be closed during the growing season (bud break to leaf drop).

Wild Burros

The herd management level for wild burros on the Parashant NM will remain at zero. Wild horses and burros will not be authorized on NPS lands.

Lands and Realty

The Lands and Realty program will continue to respond to the needs of external and internal customers. All lands and interests in lands will be retained in Federal ownership within National Landscape Conservation System (NLCS) units (e.g., monuments, designated wilderness, national historic trails), administratively-designated areas (e.g., ACECs), areas with wilderness characteristics, eligible and suitable wild and scenic river segments, DWMA), designated or proposed critical habitat, and important riparian areas. BLM will seek to acquire non-Federal lands and interests in lands within the above-identified areas and legal access to land-locked public land from willing sellers by purchase, exchange, or donation. Exchanges with the State of Arizona to acquire lands within the identified areas will be pursued when the State is provided the authority. Land exchanges may be considered within the monuments where site-specific NEPA analysis determines the protective purposes of the monuments will be furthered. BLM will also retain in Federal ownership lands supporting listed or proposed species, except specific parcels of Category 3 desert tortoise habitat outside of ACECs that do not possess the primary constituent elements required for survival and recovery of the species. Parcels will be surveyed for special-status species and other sensitive resources prior to disposal.

Approximately 200 acres in addition to those lands specifically identified for disposal will be retained in public ownership unless needed for recreation or public purposes. Disposal proposals under the R&PP Act on lands not identified for disposal will be considered on a case-by-case basis. Those R&PP Act classifications that are no longer necessary will be terminated. Up to 25,319 acres of public land will be available for exchange, sale, or R&PP lease/sale which means that BLM could consider disposal of the lands. None of the lands identified for disposal are within critical habitat of special status species.

Individual land use authorizations (ROWs, permits, leases, easements) will be evaluated on a case-by-case basis on the ASDO. New land use authorizations will not be allowed in exclusion areas (i.e. wilderness). New land use authorizations will be discouraged in avoidance areas (i.e., ACECs, lands supporting listed species, national historic trails, riparian areas, and areas identified to maintain wilderness characteristics) and allowed in such areas only when no reasonable alternative exists and impacts to sensitive resources can be mitigated. New ROWs will be routed away from high-density listed species' populations and cultural sites and along the edges of avoidance areas.

ROWs requiring new physical facilities at Mt. Logan, Hudson (West Point), Black Rock Mountain, and Fisher Point communication sites will not be allowed. Applications for new communication sites will be considered on a case-by-case basis. Point-of-Rock, Seegmiller Mountain, and Low Mountain will be designated as multi-user communication sites. Seegmiller Mountain will be the only site allowed for commercial broadcasting above 1,000 watts radiated power.

No new ROWs or ancillary facilities will be authorized on the monuments except ROWs pursuant to existing policies and practices and necessary for access to and/or maintenance of private or State inholdings. On BLM land in the monuments, ROWs may be authorized for access, communication site, utility, and maintenance purposes within the boundaries of existing compatible ROWs and where impacts will be negligible. On BLM lands within the monuments and areas identified to maintain wilderness characteristics, minimum impact permits will be evaluated and authorized on a case-by-case basis. Existing ROWs in BLM wilderness will be evaluated prior to expiration, and if still needed, will be authorized under 43 CFR 2920.

The unoccupied Lime Kiln Utility Corridor (Navajo McCullough power line to Nevada State line) will be terminated. The existing utility corridor beginning at the Glen Canyon Dam and ending at the Arizona/Nevada border as shown on the Western Utility Group priority corridor map will be designated one mile wide. The existing utility corridor shown on the Western Utility Group priority corridor map through Rosy Canyon will be designated beginning at the Utah/Arizona State line and extending to the Navajo McCullough power line approximately 0.5 mile wide confined to the valley bottom.

Commercial development of renewable energy sources land including concentrating solar power, photovoltaics, wind, and biomass resources and technologies will be encouraged. Upon termination or expiration of the two Federal Energy Regulatory Commission withdrawals in Ferry Swale, ROWs to authorize the existing power transmission lines will be issued if still needed.

Existing land withdrawals will continue for as long as needed or as mandated, including wilderness, monument, game preserve, power site reservation, reclamation, public water reserve, administrative site, and other miscellaneous withdrawals. Land ownership adjustments will not be considered on withdrawn lands unless or until the withdrawal has been modified or lifted. The Vermilion Cliffs Natural Area, Nixon Spring Administrative Site, hybrid oak withdrawals, and part of the Virgin River Gorge Recreation Lands withdrawals will be recommended for revocation/termination.

Public land will be made available for expansion of the existing Colorado City Airport. Authorized airstrips on BLM lands (Colorado City, Cliff Dwellers, a portion of Mesquite, Pakoon, Imlay, and Whitmore-Bar Ten) will continue to be managed. The BLM will work with the Arizona Department of Transportation to continue maintenance of existing drainage structures/areas inside the Vermilion and wilderness areas on the north side of Highway 89A. The BLM will work with the Washington County Water Conservancy District to determine the best route for the proposed water pipeline from Lake Powell to Sand Hollow Reservoir, Utah, and to authorize use of BLM land for that route and a portion of the proposed flood control reservoir at Fort Pearce in Utah. In Ferry Swale, the paved access road previously used for access to the now closed Page Landfill will remain in place. Existing agricultural leases to Hafen and Hughes will continue. BLM will continue to attempt to locate responsible parties to remove/clean up any unauthorized use, restore/rehabilitate public lands back to their original condition, and pay applicable fees.

Livestock Grazing

Livestock grazing will continue throughout the majority of the Arizona Strip, including both monuments, on both BLM and NPS lands. All lands available for grazing will be managed so that they meet or are making significant progress towards meeting Arizona Standards for Rangeland Health. On NPS lands (Parashant NM, LMNRA) areas open to livestock grazing will meet NPS Vital Sign standards. On NPS lands, livestock grazing will be administered within a range of variability which maintains Vital Sign resources in good condition or improving status. On BLM lands, all allotments will continue to be classified as available for grazing by livestock under the principle of multiple use and sustained yield, with the following exceptions:

- The BLM portion of the Parashant Allotment will continue to be managed as a forage reserve. Livestock grazing use will be at BLM discretion and designed to complement management of other resources and to provide rest and deferment on other allotments. By administrative action in 1990, grazing on the NPS portion of the Parashant Allotment was made unavailable in perpetuity. The allotment boundaries are modified to include only BLM lands.
- Livestock grazing on the Home Ranch Allotment was terminated based on a 1967 written agreement between NPS and the grazing permittee and is therefore unavailable. The allotment no longer exists.
- The Tuweep Allotment will be authorized for yearlong grazing as a forage reserve allotment. Livestock grazing will be on a temporary basis at BLM discretion.
- The Tassi Allotment described in the 1998 LUP Amendment will continue to be unavailable for grazing (See Table 2.5: Special Status Species). By administrative action at the same time, that portion of the Tassi Allotment on NPS lands was made unavailable in perpetuity for grazing. The allotment boundaries are modified to include only BLM lands.
- The portion of the Mosby-Nay Allotment within the former Pakoon ACEC will continue to be unavailable for livestock grazing. Season of use and other management prescriptions will be developed for those portions of the allotment within the Pakoon WHA but outside the former ACEC consistent with achieving DFCs.
- The portion of the Pakoon Springs Allotment within the former Pakoon ACEC will continue to be unavailable for grazing. That portion of the allotment which remains available for grazing will be managed as a forage reserve for livestock grazing use or it could be reconfigured to protect priority resource values and/or promote effective management.
- That portion of the Pakoon Allotment within the former Pakoon ACEC (Grand Gulch Wash area) will be available for grazing use from October 15 through March 15. Grazing management in this portion of the allotment will be facilitated by construction of a fence

and seasonal manipulation of waters at Ed's Pond and other sources to ensure success of the seasonal restriction.

- The Beaver Dam confluence area of the Littlefield Community Allotment will continue to be unavailable for grazing.
- The Beaver Dam Slope Allotment will not be grazed between March 15 and October 15. No ephemeral extensions will be authorized.
- The Highway Allotment will not be grazed between March 15 and October 15. No ephemeral extensions will be authorized.
- The Mormon Well Allotment will not be grazed between March 15 and October 15. No ephemeral extensions will be authorized.
- The Littlefield Slope Pasture of the Littlefield Community Allotment will not be grazed between March 15 and October 15. No ephemeral extensions will be authorized.
- The Littlefield Slope Pasture of the Mesquite Allotment will not be grazed between March 15 and October 15. No ephemeral extensions will be authorized.
- The Cedar Wash Allotment will have a season of livestock grazing use from October 15 to March 15. Ephemeral extensions to May 15 will be authorized when conditions outlined in Guideline 3-5 of the Arizona Standards for Rangeland Health are met.
- The River Pasture of the Lees Ferry Allotment will be unavailable for livestock grazing.
- The Clearwater portion of the Kanab Creek Allotment will not be grazed during the growing season (bud break to leaf drop). Monitoring will ensure compliance with utilization levels and to determine actual growing season. Conservative grazing guidelines will be used consistent with the SWWF recovery plan.
- The Clearwater portion of the Wildband Allotment will not be grazed during the growing season (bud break to leaf drop). Monitoring will be used to ensure compliance with utilization levels and to determine actual growing season. Conservative grazing guidelines will be adopted consistent with the Southwestern Willow Flycatcher Recovery Plan.

Minerals

Oil and gas development will not occur within the monuments. In the ASFO, 1,690,502 acres of fluid mineral leasing are open to lease subject to standard lease terms and conditions and appropriate special stipulations (Category 1). A total of 145,566 acres are open with special terms and conditions or seasonal restrictions (Category 2). A total of 64,325 acres will have no surface occupancy or other surface disturbance (Category 3). A total of 80,671 acres will be withdrawn from minerals leasing (Category 4). Desert tortoise ACECs will remain open to

leasing subject to seasonal restrictions and a waivable no surface occupancy stipulation. Surface disturbing activity will be limited to the period from March 15 to October 15. Surface occupancy could be allowed by BLM after consultation with the FWS.

On the ASFO, 1,534,396 acres will be open to the operation of mining laws (locatable minerals), 150,691 acres will be open with restrictions, 145,226 acres will be open with a plan of operation, and 182,699 acres will be withdrawn to mining location subject to valid existing rights.

Removal of saleable mineral materials will continue to be authorized on the ASFO, consistent with protection of sensitive resources and other DFCs. On the ASFO, 1,264,889 acres will be open subject to standard stipulations, 433,457 acres will be open with restrictions, and 282,715 acres will be closed to mineral material disposals. On the monuments, existing material sites on BLM lands will continue to be used for BLM, NPS, and county road maintenance. New mineral material sites will not be allowed in ACECs. Existing material sites will be evaluated for retention. Non-commercial hand collection of rock within 100 feet of designated open roads in the Beaver Dam and Virgin Slope ACECs could continue.

On the ASFO, new reclamation stipulations for exploration and development plans directed toward maintaining naturalness and unique features and/or remoteness will be developed and will be applied to site-specific proposals. Special mitigation will be required in mining plans of operation to avoid impacts to cultural resources, special status species, and/or other sensitive resources in ACECs. Wilderness and monuments are closed to mineral entry. Mineral leasing will include notification to potential lessees of presence or potential for occurrence of special status species within a parcel proposed for leasing. Lessees will also be advised of additional stipulations or other restrictions.

Recreation

Recreation and visitor services will be managed to provide both structured and unstructured recreation opportunities. Information on the availability of recreational opportunities will be available to the public. In general, the proposed action emphasizes primitive opportunities in the more isolated and rugged areas of the Arizona Strip, while providing more accessible recreational opportunities closer to communities.

Special Recreation Management Areas (SRMA), target distinct primary recreation-tourism markets and will be managed accordingly. Management varies from providing close-to-town sustainable motorized access to remote and self-directed recreation. Recreation Management Zones (RMZ) are sub-units within SRMAs managed for distinctly different types of recreation niches within the larger targeted SRMA recreation-tourism markets. Areas not identified as SRMAs (1,784,921 acres on the ASFO) are allocated as Extensive Recreation Management Areas (ERMA) and receive only basic custodial recreation management aimed at visitor health and safety, user conflicts, or resource protection issues.

Travel Management

Within all planning areas, motorized, mechanized, or non-motorized/non-mechanized use of routes that are potentially designated as “limited” will be restricted to the specific users and use identified on a route-by-route evaluation and designation. Use of administrative routes will be subject to the terms of an appropriate authorization or transportation plan that specifies the authorized user and type of use. Motorized or mechanized use of administrative routes in “closed” areas will be limited to the minimum necessary. Installations/structures (e.g., unobtrusive barriers, gates, signs) on or along routes will be allowed when they will be the minimum necessary to control unauthorized use. Roads causing resource damage or with safety concerns could be rerouted and/or reclaimed. Newly constructed temporary access will be reclaimed after the specific need is terminated. No new roads will be allowed in BLM designated wilderness areas or on NPS lands. Roads authorized for administrative motorized use only may be designated as trails for non-motorized public use. A travel management plan will be developed and maintained that supports resource protection and uses identified in the proposed action. A route inventory database will be maintained using standard collection and information storage methods. The areas will be monitored to detect unauthorized route creation. Routes created by unauthorized use will be immediately obscured and rehabilitated.

Parashant NM: On BLM and NPS lands, 285,629 acres will be closed to motorized and mechanized vehicle use. Motorized and mechanized vehicle use will be limited to designated roads on 762,688 acres. No open areas will be designated. Existing roads will be closed and rehabilitated where public or administrative needs cease to exist or where there will be unacceptable impacts to monument objects. New permanent roads will not be constructed adjacent to or within designated wilderness or NPS proposed wilderness. On NPS lands, travel corridors will be restricted to existing roads established according to the LMNRA General Management Plan completed in 1986, with minor adjustments to remedy resource concerns or resolve conflicts between LMNRA GMP and LMNRA Wilderness Proposal completed in 1979. New permanent motorized road construction on BLM lands will be the minimum necessary. However, new permanent roads will not be constructed on 215,345 acres of areas managed to maintain wilderness characteristics. On NPS lands, roads will be maintained only within the existing disturbed travel surface.

Vermilion NM: On the Vermilion, 89,828 acres will be closed to motorized and mechanized vehicle use. Motorized and mechanized vehicle use will be limited to designated roads on 203,859 acres. No open areas will be designated. New permanent motorized road construction will be the minimum necessary.

ASFO: On the ASFO, 80,829 acres will be closed to motorized and mechanized vehicle use and 1,899,260 acres will be limited to designated roads and trails. Motorized and mechanized vehicle use will be open on 976 acres of BLM land following appropriate clearances. In those areas, vehicles will be allowed to travel off-route, including one larger area south of St. George, Utah, and one small area east of Fredonia, Arizona. Route inventories for the ASFO will be completed. A preliminary route network will be based on existing routes in the Littlefield, St. George Basin, Colorado City, Main Street, Uinkaret, Yellowstone Mesa, Kanab Plateau, Grama Canyon, Buckskin, White Sage, and House Rock sub-regions. Following completion of the

route inventory, the preliminary route network will be based on the completed inventory until route designations for the sub-regions are complete.

Following completion of route inventory and evaluation, roads/routes causing or contributing to mortality of individuals of listed species or degradation of their habitat will be identified. Where practical, such roads/routes will be closed and signed. Where closing such roads will not be practical, seasonal restrictions or other mitigation will be developed to minimize adverse effects to special status species. Where necessary, fences, culverts or other physical barriers will be installed to protect special status species.

All cross-country motorized or mechanized travel will be prohibited except for: any designated open OHV areas, the minimum necessary for administration of the area, emergency purposes, and/or the minimum necessary for the exercise of a valid existing right or authorized use. New routes and any associated ROWs, once authorized, will become part of the designated transportation system. Closed routes will be removed from the transportation plan.

Use of non-motorized, mechanized vehicles (including bicycles) will be prohibited off the transportation system in ACECs designated for cultural or listed species values and in designated wilderness. In ACECs, some rerouting of existing roads may occur, establishment of new permanent roads and/or upgrades may be restricted, and speed limits may apply.

In areas allocated as "limited," motorized-vehicles may be allowed to pull off a designated route 100 feet either side of centerline. New permanent motorized route construction on BLM lands will be the minimum necessary. Route maintenance will occur within standard widths based on route type. Widening, passing lanes, realignments, or travel surface upgrades could occur if needed to achieve route standards. Trail construction (non-motorized) could occur.

The FEIS identifies travel management areas (TMA) as a tool that addresses comprehensive travel management planning for all resource use and acceptable modes and conditions of travel. The Rural TMA will provide for the widest variety of motorized, non-motorized, and mechanical travel modes to serve existing and future needs adjacent to communities, but not to the detriment or exclusion of the protection of resources. The Backways TMA will provide for a variety of motorized, non-motorized, and mechanical travel modes to serve existing and future needs, but not to the detriment or exclusion of the protection of resources. Settings will be maintained within the Backways TMA that typically provide entry to more remote areas, interpretive developments, and administrative facilities in mostly natural-appearing areas with motorized and mechanized use. The Specialized TMA will provide for a variety of motorized, non-motorized, and mechanical travel modes to serve existing and future access needs in remote, rustic settings, but not to the detriment or exclusion of the protection of resources. The Primitive TMA will provide adequate, but limited motorized travel to serve existing and future access needs and non-motorized, non-mechanized public access to serve existing and future recreational access needs in the most remote, rustic settings, for the enhancement and protection of important resource values.

Public Health and Safety

Hazardous sites or locations that affect or could affect public health or safety will be inventoried and monitored. Areas known to have hazardous materials, hazardous wastes, or solid wastes, including abandoned mine lands, will be cleaned up, restored, or corrected. Public access to abandoned mine and well sites will be controlled by providing warning signs and barriers. On BLM lands, recreational shooting will be allowed within the context of the law. Recreational shooting will not be authorized on NPS lands.

Scientific Research

Permits will be required for approved scientific research to ensure compatibility and reporting of results. The collection of any objects in the monuments will not be authorized except by permit for scientific research or use.

Conservation Measures

Conservation measures are steps taken to minimize potential negative impacts due to implementation of the proposed action. Appendix B of this biological opinion contains conservation measures that are referred to in the BA (ASDO 2007a) and are from Appendix 2.E of the FEIS (ASDO 2007b). The conservation measures are part of the proposed action. The BA also lists recovery plan action items that were either implemented or are ongoing for California condor, Mexican spotted owl, Brady pincushion cactus, Siler pincushion cactus, and Welsh's milkweed.

STATUS OF THE SPECIES

Virgin River Chub

The Virgin River chub was listed as endangered in the Federal Register on August 24, 1989 (USFWS 1989). Critical habitat was designated for this species on January 26, 2000 (USFWS 2000), and a Recovery Plan was completed in April 1995. The Virgin River chub was first collected in the 1870's from the Virgin River near Washington, Utah. Historically, it was collected in the mainstream Virgin River from Pah Tempe Springs, Utah, downstream to the confluence with the Colorado River in Nevada (Cross 1975). Presently, the Virgin River chub occurs within the mainstem Virgin River from Pah Tempe Springs, Utah, downstream to at least the Arizona-Nevada border. Anecdotal information suggests that Virgin River chub were very abundant before the 1900's and that the abundance and range of Virgin River chub has declined substantially throughout its range in Utah, Arizona, and Nevada since European settlement and water development. Reasons for this decline are thought to be mainly habitat loss through dewatering of the river system such that some areas are inundated by reservoirs and other areas are completely dewatered. Also, competition from non-native species, which prey on young life-stages of Virgin River chub, also contributes to population declines.

When the Virgin River chub was listed it was considered a subspecies of roundtail chub (*G. robusta*) and its taxonomic classification was *G. robusta seminuda*. At the time of listing, chubs

in the Muddy River were considered a separate unnamed subspecies, *G. robusta* spp., commonly referred to as Moapa roundtail chub. This population was not included in the listing of the Virgin River chub.

DeMarais *et al.* (1992) asserted that full species status was warranted for the Virgin River chub and reclassified it as *Gila seminuda*. The Moapa roundtail chub was also included as *G. seminuda* by DeMarais, although he recognized it as a distinctive population. On July 24, 1995, the FWS proposed a change in classification from subspecies to species for the Virgin River chub, a change in the status of the Virgin River population of Virgin River chub from a subspecies to a vertebrate population segment, and provided notice of a status review of the Virgin River chub in the Muddy River to determine if this vertebrate population segment warranted listing (60 FR 37866). This action was not finalized.

Virgin River chub is most often associated with deep runs or pools habitats of slow to moderate velocities with large boulders or instream cover, such as root snags. Both adults and juveniles are associated with these habitats; however, the larger adults are collected most often in the deeper pools within the river. Hardy *et al.* (1989) determined that Virgin River chubs were most often collected in depths ranging from 0.6 to 3.0 feet, in velocities ranging from 0.0 to 2.5 feet per second, over sand substrates with boulders or instream cover. Schumann (1978) and Deacon *et al.* (1987) determined that the adult temperature preference was approximately 75 degrees Fahrenheit.

Very little is known about the population dynamics of this species, including reproductive biology, population size, and variability. However, spawning is known to occur in the spring, and ripe females have been reported during the months of April, May and June (Hickman 1987). Hickman (1987) also noted that good spawning years for the chub coincided with good spawning years for woundfin. It is likely that Virgin River chub live for many years, perhaps for decades, but they mature rapidly and probably spawn in their second or third year of life (Williams and Deacon 1998). More specific information on the population dynamics of this species will be required before recovery can be achieved.

Woundfin

The woundfin was listed as endangered in 1970 (USFWS 1970) under a precursor to the Act. Critical habitat was designated for this species on January 26, 2000 (USFWS 2000), and a Recovery Plan was completed in April 1995.

The woundfin is a small, silver minnow with a conspicuous, sharp spine on the dorsal fin. It is the most silvery of all American minnows, and reflects blue in bright sunlight. A wash of light-yellow at the bases of the pectoral and pelvic fins is the only breeding color noted. Woundfin rarely achieve a length of more than three inches. The woundfin has a flattened head and belly and overall streamlined body shape, which is indicative of fish that inhabit swift, shallow streams. Woundfin are scaleless, with the exception of small plates of bone situated in the leathery skin, especially near the nape.

Woundfin live in swift parts of silty, warm streams, seemingly avoiding clear waters, and are very seldom found in quieter pools (USFWS 2000). Woundfin appear to be restricted to approximately 50 miles of perennial reaches of the Virgin River in Utah, Arizona, and Nevada.

Woundfin adults and juveniles are most often collected from runs and quiet waters adjacent to riffles, with juveniles using habitats that are generally slower and deeper than adults. Woundfin larvae are collected most frequently from backwaters or slow-velocity habitat along stream margins, often associated with dense growths of filamentous algae (USFWS 1995a). Fry may be found in shallow areas next to the channel. Pools, which often contain predatory non-native fish species, are generally avoided by woundfin of all sizes and ages.

Historical distribution of the woundfin included the Colorado, Salt, Verde, and Gila rivers in central and western Arizona in addition to the Virgin River. The woundfin is presently known only from the Virgin River drainage; all other populations have been extirpated. Woundfin from Virgin River stock have been translocated by the Arizona Game and Fish Department into four different locations along the Hassayampa River, Salt River, Sycamore Creek, and Paria River, Arizona.

In July/August 2007, flood spills over the Quail Creek diversion in Utah resulted in fish kills in the Virgin River. Surveys conducted in early September included a zero woundfin capture for the first time ever as well as the lowest catch rates for all native fish since inception of the current sampling methodology. Though this incident occurred in Utah, it is likely to affect fish in the Arizona portion of the Virgin River as well. Woundfin from Dexter National Fish Hatchery and Wahweap State Hatchery are to be stocked into the Virgin River as soon as possible.

Virgin River Fishes Critical Habitat

The area designated as critical habitat for both the Virgin River chub and woundfin is the mainstem Virgin River and its 100-year floodplain, extending from the confluence of La Verkin Creek, Utah to Halfway Wash, Nevada. The critical habitat designation along the Virgin River includes 31.6 miles in Arizona, 37.3 miles in Utah, and 18.6 miles in Nevada.

The FWS designated critical habitat areas for Virgin River chub and woundfin minnow (hereafter referred to as Virgin River fishes) based on the presence or potential for specific physical and biological features and primary constituent elements (USFWS 2000). Only those portions of the 100-year floodplain that contain at least one of the primary constituent elements is considered critical habitat. The primary constituent elements essential to Virgin River fishes are:

Water - A sufficient quantity and quality of water (i.e., temperature, dissolved oxygen, contaminants, nutrients, turbidity, etc.) that is delivered to a specific location in accordance with a hydrologic regime that is identified for the particular life stage for each species. This includes the following:

- 1) Water quality characterized by natural seasonally variable temperature, turbidity, and conductivity;
- 2) Hydrologic regime characterized by the duration, magnitude, and frequency of flow events capable of forming and maintaining channel and instream habitat necessary for particular life stages at certain times of the year; and
- 3) Flood events inundating the floodplain necessary to provide the organic matter that provides or supports the nutrient and food sources for the listed fishes.

Physical Habitat - Areas of the Virgin River that are inhabited or potentially habitable by a particular life stage for each species, for use in spawning, nursing, feeding, and rearing, or corridors between such areas:

Virgin River Chub

- 1) River channels, side channels, secondary channels, backwaters, and springs, and other areas which provide access to these habitats; and
- 2) Areas with slow to moderate velocities, within deep runs or pools, with predominately sand substrates, particularly habitats which contain boulders or other instream cover.

Woundfin

- 1) River channels, side channels, secondary channels, backwaters, and springs, and other areas that provide access to these habitats;
- 2) Areas inhabited by adult and juvenile woundfin include runs and pools adjacent to riffles that have sand and sand/gravel substrates;
- 3) Areas inhabited by juvenile woundfin are generally deeper and slower. When turbidity is low, adults also tend to occupy deeper and slower habitats; and
- 4) Areas inhabited by woundfin larvae include shoreline margins and backwater habitats associated with growths of filamentous algae.

Biological Environment - Food supply, predation, and competition are important elements of the biological environment and are considered components of this constituent element. Food supply is a function of nutrient supply, productivity, and availability to each life stage of the species. Predation and competition, although considered normal components of this environment, are out of balance due to non-native fish species in many areas. Components of this constituent element include the following:

- 1) Seasonally flooded areas that contribute to the biological productivity of the river system by producing allochthonous (humus, silt, organic detritus, colloidal matter, and plants and animals produced outside the river and brought into the river) organic matter, which provides and supports much of the food base of the listed fishes; and

- 2) Few or no predatory or competitive non-native species in occupied Virgin River fishes' habitats or potential reestablishment sites.

Desert Tortoise and Critical Habitat

The desert tortoise populations north and west of the Colorado River in Arizona and Utah (excluding the Beaver Dam slope population) were listed as endangered under an emergency rule on August 4, 1989 (54 FR 42270). Subsequently, the entire Mojave population of the desert tortoise west of the Colorado River in California and Nevada, and north of the river in Arizona and Utah, including the Beaver Dam slope, was listed as a threatened species on April 2, 1990 (55 FR 12178). Critical habitat was designated in 1994 (59 FR 5820-5846, also see corrections at 59 FR 9032-9036). The Desert Tortoise (Mojave Population) Recovery Plan (Recovery Plan) (USFWS 1994) was signed on June 28, 1994.

The desert tortoise is an arid land reptile associated with desert scrub vegetation types, primarily creosote bush (*Larrea tridentata*) flats, washes, and hillside slopes or bajadas. A robust herbaceous component to the shrubs and cacti of the creosote bush vegetation type is an important component of suitable habitat. Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met: a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and over-wintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Further information on the range, biology, and ecology of the desert tortoise can be found in the Recovery Plan (USFWS 1994).

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. In Arizona, tortoises are considered to be active from approximately March 15 through October 15. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert.

Desert tortoise home range sizes vary with respect to location and year. Over its lifetime, each desert tortoise may require more than 1.5 square miles of habitat and make forays of more than seven miles at a time (Berry 1986). During droughts, tortoises forage over larger areas, increasing the likelihood of injury or mortality through encounters with humans and predators. Direct loss of tortoises has occurred from illegal collection by humans for pets or consumption, upper respiratory tract disease (URTD), predation on juvenile desert tortoises by common ravens (*Corvus corax*) and kit foxes (*Vulpes macrotis*), and collisions with vehicles on paved and unpaved roads. Other threats affecting the desert tortoise include loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture.

Grazing and off-highway vehicle (OHV) activities have degraded additional habitat. Fire is an increasingly important threat because it degrades or eliminates habitat (Appendix D of USFWS 1994). Following wildfire, native plant species are often replaced by invasive, non-native species such as red brome (*Bromus rubens*), resulting in long-term habitat degradation or loss. Over

500,000 acres of desert lands burned in the Mojave Desert in the 1980s and about 500,000 acres burned in the northeastern Mojave Desert in 2005.

The Recovery Plan divides the range of the desert tortoise into six recovery units (RUs) and recommends establishment of 14 Desert Wildlife Management Areas (DWMAs) throughout the RUs. Twelve DWMAs have been designated as ACECs by the BLM through development or modification of their land use plans in Arizona, Nevada, Utah, and parts of California; designation is still underway in the West Mohave planning area in California. Recovery of the desert tortoise may occur at the RU level, which allows populations within each of the six RUs to be recovered and delisted individually. Similarly, the jeopardy and adverse modification standards may be applied within or across RUs. Thus, proposals to implement the Desert Tortoise Recovery Plan in portions of a RU cannot be evaluated with regard to jeopardy or adverse modification in a section 7 consultation without an understanding of proposed or existing management prescriptions occurring elsewhere in the RU.

Permanent plots were established in the 1970s to monitor tortoise populations, and some of these plots were surveyed through 2002. However, surveys in the Northeastern Mojave RU (Nevada, Utah, and Arizona) and some other RUs detected too few live tortoises to determine a population trend. Line distance sampling was used to monitor populations across the range of the desert tortoise from 2001 through 2005. Tortoise populations have declined significantly in the Western Mojave and appear to be declining in the Eastern Mojave RUs in California (Tracy *et al.* 2004).

In 2003, the U.S. Fish and Wildlife Service convened the Desert Tortoise Recovery Plan Assessment Committee (DTRPAC) to scientifically assess the Desert Tortoise Recovery Plan. The DTRPAC Report (Tracy *et al.* 2004) produced a number of findings and recommendations that will serve as the basis for revision of the 1994 Recovery Plan. In particular, this report recognizes that threats to the desert tortoise have cumulative, synergistic, and interactive effects, and that tortoise recovery depends on managing multiple threats. Threats facing desert tortoises have been increasing since the 1994 Recovery Plan, including in the Northeastern Mojave RU, and recovery actions have not been fully implemented. The DTRPAC Report also recognizes that tortoise populations may be distributed in metapopulations rather than single, large populations in RUs. In addition to reducing multiple threats within management areas, it is important to protect the corridors among habitat patches. For recovery, tortoise metapopulations require areas of suitable habitat, but these areas may be periodically vacant of tortoises.

Critical Habitat

Twelve areas in Arizona, California, Nevada, and Utah were designated as critical habitat in 1994. Critical habitat units (CHUs) were based on recommendations for DWMAs outlined in the draft Recovery Plan (USFWS 1993a). These DWMAs are also identified as “desert tortoise areas of critical environmental concern (ACECs)” by the BLM. Some critical habitat units extend across State lines and are listed below for each state in which they occur. The units are:

- Arizona: Beaver Dam Slope, Gold Butte-Pakoon
- California: Fremont-Kramer, Superior-Cronese, Ord-Rodman, Chuckwalla, Pinto Mountain, Chemehuevi, Ivanpah, Piute-Eldorado

- Nevada: Piute-Eldorado, Mormon Mesa, Gold Butte-Pakoon, Beaver Dam Slope
- Utah: Beaver Dam Slope, Upper Virgin River

Because the CHU boundaries were drawn to optimize reserve design, the CHU may contain both "suitable" and "unsuitable" habitat. Suitable habitat can be generally defined as areas that provide the primary constituent elements of desert tortoise critical habitat:

- Sufficient space to support viable populations within each of the six recovery units and provide for movements, dispersal, and gene flow;
- Sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species;
- Suitable substrates for burrowing, nesting, and overwintering;
- Burrows, caliche caves, and other shelter sites;
- Sufficient vegetation for shelter from temperature extremes and predators; and
- Habitat protected from disturbance and human-caused mortality.

At the time of CHU designation, all lands in the CHUs had been impacted by past land management activities to some degree. Appendix D of the Recovery Plan (USFWS 1994) discusses the types of human actions that occurred in desert tortoise habitat before and after the designation of critical habitat that have had effects to the physical habitat components of critical habitat. Designation of most CHUs as DWMAs/ACECs has aided in protection of these areas, particularly by limiting off-highway vehicle use and other ground-disturbing activities, and reducing or eliminating wild burros and livestock grazing in many units.

The year 2005 was a particularly bad fire year for desert tortoises. That year, much of the Southwest received nearly twice the average annual winter-spring precipitation. This resulted in lush vegetative growth during spring and summer. Large wildfires occurred across southwestern Utah, southern Nevada, and northwestern Arizona during summer 2005. In the Northeastern Mojave RU, wildfires burned 124,782 acres of critical habitat, approximately 11 percent of the critical habitat in this unit. Most vegetation was burned off during these fires, with a loss of forage available for MDT and loss of shrubs to provide shelter from temperature extremes and predators.

Section 7 consultations since 1994 on various human actions have addressed the effects of those actions on the conservation value of the critical habitat units. The most recent major consultation on the MDT in California was on the California Desert Conservation Area Plan (USFWS 2002a), which contained a summary of the status of the species and its critical habitat in California. In

Nevada, consultations with three BLM offices (Las Vegas, Ely, and Battle Mountain) addressed most impacts to tortoises and designated critical habitat from land management practices.

MDT management in Arizona is covered primarily by the Mohave Amendment to the Arizona Strip Resource Management Plan for BLM lands in northern Arizona (file number 02-21-88-F-127), which also considered the effects of BLM actions on the conservation value of critical habitat. The MDT is the primary species covered by the Clark County Multiple Species Habitat Conservation Plan (HCP) in Clark County, Nevada (Regional Environmental Consultants 2000) and critical habitat units in Clark County were evaluated in the analysis for that permit. The Washington County HCP in Utah was completed prior to critical habitat designation; however, consultations for Federal actions in that area consider the effects to critical habitat. Effects to critical habitat areas for MDT are fully included either by existing section 7 consultations or by the existing HCPs. Conservation actions for the species include protection for individuals and habitat.

Yuma Clapper Rail

Listing History

The Yuma clapper rail was listed as an endangered species on March 11, 1967 under endangered species legislation enacted in 1966 (Public Law 89-669). Only populations found in the United States were listed as endangered; those in Mexico were not listed under the 1966 law or the subsequent Endangered Species Act of 1973 (as amended). Critical habitat has not been designated for the Yuma clapper rail. The Yuma Clapper Rail Recovery Plan was issued in 1983 (USFWS 1983).

Species Description

The Yuma clapper rail is a 14-16 inch long marsh bird with a long, down-curved beak. Both sexes are slate brown above with light cinnamon underparts and barred flanks. The Yuma clapper rail is distinguished from other clapper rail subspecies using distributional data, plumage color, and wing configurations (Banks and Tomlinson 1974). The Yuma clapper rail is a secretive species and is not often seen in the wild. It does have a series of distinctive calls that are used to identify birds in the field. Frequency of calls or responsiveness to taped calls varies seasonally.

Habitat for the Yuma clapper rail is freshwater and brackish marshes with dense vegetation, dominated by cattails (*Typha* spp.) that includes both mats of old material and more open stands. The most productive areas consist of uneven-aged stands of cattails interspersed with open water of variable depths (Conway *et al.* 1993). Other important factors in the suitability of habitat include the presence of vegetated edges between marshes and shrubby riparian vegetation (saltcedar or willow thickets) (Eddleman 1989), and the amount and rate of water level fluctuations within the habitat. Water flow in the open channels within the marsh is desirable (Todd 1971; Tomlinson and Todd 1973). Yuma clapper rails will use quiet backwater ponds, flowing stream or riverside areas, irrigation canals and drainage ditches, reservoirs and small

lakes or other small marshlands where cattail habitat is available. Natural and artificially constructed marshes can provide suitable habitat.

The breeding season for the Yuma clapper rail runs from February through early July (Eddleman 1989). Nests are constructed in marsh vegetation or low growing riparian plants at the edge of the water. Non-native (introduced) crayfish (*Procamberus clarki*) form the primary prey base for Yuma clapper rails today (Todd 1986). Prior to the introduction of crayfish, isopods, aquatic and terrestrial insects, clams, plant seeds, and small fish dominated the diet. Once believed to be highly migratory (with most birds thought to spend the winter in Mexico), telemetry data showed most rails do not migrate (Eddleman 1989). Very little is known about the dispersal of adult or juvenile birds, but evidence of populations expanding northward along the lower Colorado River, the Salton Sea, and central Arizona over the last 80 years indicates that Yuma clapper rails can effectively disperse to new habitats provided that habitat corridors exist between the old and new sites (Rosenberg *et al.* 1991).

Additional life history information is found in the Recovery Plan (U.S. Fish and Wildlife Service 1983), Todd (1986), Eddleman (1989), and Rosenberg *et al.* (1991).

Distribution, Abundance, and Status (Rangewide)

The Yuma clapper rail has two major population centers in the United States: the Salton Sea and surrounding wetlands in California, and the lower Colorado River marshes from the border with Mexico to Havasu National Wildlife Refuge. Smaller numbers of rails are found along the lower Gila River in Yuma County, the Phoenix metropolitan area (including portions of the Gila, Salt and Verde rivers) in Maricopa County, Roosevelt Lake in Gila County, Picacho Reservoir in Pinal County, and the Bill Williams River in La Paz County, Arizona (FWS annual survey data). Yuma clapper rails have also recently been documented from southern Nevada in Clark County (McKernan and Braden 2000; Tomlinson and Micone 2000) and the Virgin River in Washington County, Utah and Mohave County, Arizona (McKernan and Braden 2000).

Annual survey data compiled by the FWS for the period 1990 through 2002 documented between 464 and 1076 rails observed (via calls or visual observation) at the survey sites. Surveys in 2002 documented 610 birds. These figures are of actual birds and are not extrapolated to provide a population estimate. The unlisted Yuma clapper rail population in Mexico was estimated to contain 6300 birds (Hinojosa-Huerta *et al.* 2000), and the amount of movement between the two populations is unknown.

Declines in actual numbers heard or seen on survey transects since the early 1990's have not been positively connected to any event on the lower Colorado River or Salton Sea; however, changes in habitat quality caused by overgrown marsh vegetation is suspected of influencing rail numbers in those areas. Habitat restoration through mowing or burning over-age cattail stands is under evaluation in several locations to determine future management needs.

Recently developed information that may affect the life history of the Yuma clapper rail involves selenium levels in the crayfish, the primary prey species. Levels of selenium in crayfish from Yuma clapper rail habitats were high enough to cause concern for potential reproductive effects

(Roberts 1996, King *et al.* 2000). No adverse effects from selenium have been observed; however, due to the clapper rail's secretive nature, nests are very difficult to find and young birds hard to observe. Additional monitoring is under consideration at this time.

Effects of Federal Actions on the Species

Federal actions that may have adverse effects to the Yuma clapper rail undergo section 7 consultation. These actions include issuance of Clean Water Act section 404 permits for dredging or filling in wetlands, and placement of seawalls or other shoreline modifications on all rivers and streams within the U.S. range of the species. The number of such actions varies between river systems.

Actions by the Bureau of Reclamation in managing the lower Colorado River have the greatest potential to impact large marsh habitats or disturb individual birds during dredging, bank stabilization, and other channel maintenance activities. Past Federal actions to construct dams, diversion structures, and other management actions have increased the amount and longevity of marsh habitats in several locations on the lower Colorado River. These same actions eliminate the variable physical conditions that provide for marsh regeneration, and habitat quality is reduced over time. Measures are in place under biological opinions issued for Reclamation's maintenance activities to reduce or eliminate adverse effects of current management on remaining marshes. Changes to water releases in the lower Colorado River are in part subject to Reclamation oversight and are also addressed for reduction of effects and replacement of lost habitat. Effects to the Salton Sea Yuma clapper rail habitats from changes in water flow to the Sea that have a Federal nexus are being addressed under section 7. Conservation for Yuma clapper rails at Roosevelt Lake, Salton Sea, and on the lower Colorado River are part of ongoing HCP efforts in those areas.

California Condor

The California condor was listed as endangered on March 11, 1967 (32 FR 4001). Critical habitat was designated in California on September 24, 1976 (41 FR 187). Critical habitat has not been designated outside of California. The California condor remains one of the world's rarest and most imperiled vertebrate species. Despite intensive conservation efforts, the wild California condor population declined steadily until 1987, when the last free-flying individual was captured. During the 1980s, captive condor flocks were established at the San Diego Wild Animal Park and the Los Angeles Zoo, and the first successful captive breeding was accomplished at the former facility in 1988. Following several years of increasingly successful captive breeding, captive-produced condors were released back to the wild in California in early 1992 and in Arizona starting in 1996.

The first release of condors into the wild in northern Arizona occurred on December 12, 1996. They were released within a designated nonessential experimental population area in northern Arizona and southern Utah. The area is bounded by Interstate 40 on the south, U.S. Highway 191 on the east, Interstate 70 on the north, and Interstate 15 and U.S. Highway 93 on the west. The nonessential experimental population status applies to condors only when they are within the experimental population area. For the purposes of section 7 consultation, when condors are on

lands not within the National Wildlife Refuge System or the National Park System, but within the experimental population area, they are treated as if proposed for listing. When condors are on National Wildlife Refuge or National Park System lands within the designated experimental population area, they are treated as a threatened species. Any condors outside of the experimental population area are fully protected as endangered.

As of the date of the most recent (July 31, 2007) summary statistics of the recovery program, 306 California condors exist. A total of 96 condors have been released in Arizona, and seven chicks have been produced in the wild beginning in 2003. Reintroduction efforts have been complicated by lead poisoning, predation, bird-human interactions, and shootings. A total of 59 individuals remain in the wild in the Arizona population.

Mexican Spotted Owl

The MSO was listed as a threatened species in 1993 (USFWS 1993b). The primary threats to the species were cited as even-aged timber harvest and stand-replacing wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The FWS appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USFWS 1995b).

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USFWS 1993b) and in the Recovery Plan (USFWS 1995b). The information provided in those documents is included herein by reference. Although the MSO's entire range covers a broad area of the southwestern United States and Mexico, the MSO does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed that the species has an affinity for older, uneven-aged forest, and the species is known to inhabit a physically diverse landscape in the southwestern United States and Mexico.

The U.S. range of the MSO has been divided into six recovery units (RU), as discussed in the Recovery Plan. The primary administrator of lands supporting the MSO in the United States is the Forest Service (FS). Most owls have been found within FS Region 3 (including 11 National Forests in Arizona and New Mexico). FS Regions 2 and 4 (including two National Forests in Colorado and three in Utah) support fewer owls. According to the Recovery Plan, 91 percent of MSO known to exist in the United States between 1990 and 1993 occurred on lands administered by the FS.

Historical and current anthropogenic uses of MSO habitat include both domestic and wild ungulate grazing, recreation, fuels reduction treatments, resource extraction (e.g., timber, oil, gas), and development. These activities have the potential to reduce the quality of MSO nesting, roosting, and foraging habitat, and may cause disturbance during the breeding season. Livestock and wild ungulate grazing are prevalent throughout Region 3 National Forest lands and is thought to have a negative effect on the availability of grass cover for prey species. Recreation impacts are increasing on all forests, especially in meadow and riparian areas. There is anecdotal

information and research that indicates that owls in heavily used recreation areas are much more erratic in their movement patterns and behavior. Fuels reduction treatments, though critical to reducing the risk of severe wildfire, can have short-term adverse effects to MSO through habitat modification and disturbance. As the population grows, especially in Arizona, small communities within and adjacent to National Forest System lands are being developed. This trend may have detrimental effects to MSO by further fragmenting habitat and increasing disturbance during the breeding season. West Nile Virus also has the potential to adversely impact the MSO. The virus has been documented in Arizona, New Mexico, and Colorado, and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney *et al.* 2004). Unfortunately, due to the secretive nature of owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to MSO range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona and New Mexico. Uncharacteristic, severe, stand-replacing wildfire is probably the greatest threat to MSO within the action area. As throughout the West, fire severity and size have been increasing within this geographic area.

A reliable estimate of the numbers of owls throughout its entire range is not currently available (USFWS 1995b) and the quality and quantity of information regarding numbers of MSO vary by source. USFWS (1991) reported a total of 2,160 owls throughout the United States. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico. However, Ganey *et al.* (2000) estimates approximately $2,950 \pm 1,067$ (SE) MSOs in the Upper Gila Mountains RU alone. The FS Region 3 most recently reported a total of approximately 1,025 PACs established on National Forest lands in Arizona and New Mexico (B. Barrera, pers. comm. June 18, 2007). The FS Region 3 data are the most current compiled information available to us; however, survey efforts in areas other than National Forest lands have resulted in additional sites being located in all Recovery Units.

Researchers studied MSO population dynamics on one study site in Arizona (n = 63 territories) and one study site in New Mexico (n = 47 territories) from 1991 through 2002. The Final Report, titled "Temporal and Spatial Variation in the Demographic Rates of Two Mexican Spotted Owl Populations," (*in press*) found that reproduction varied greatly over time, while survival varied little. The study concludes that spotted owl populations could experience great (>20 percent) fluctuations in numbers from year to year due to the high annual variation in recruitment. However, due to the high annual variation in recruitment, the MSO is then likely very vulnerable to actions that impact adult survival (e.g., habitat alteration, drought, etc.) during years of low recruitment.

Since the owl was listed, we have completed or have in draft form a total of 187 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 380 PACs. The form of this incidental take is almost entirely harm or harassment, rather than direct mortality. These consultations have primarily dealt with actions proposed by FS Region 3. However, in addition to actions proposed by FS Region 3, we have also reviewed the impacts of actions proposed by the Bureau of Indian Affairs, Department of Defense (including Air Force, Army, and Navy), Department of Energy, NPS, and Federal

Highway Administration. These proposals have included timber sales, road construction, fire/ecosystem management projects (including prescribed natural and management ignited fires), livestock grazing, recreational activities, utility corridors, military and sightseeing overflights, and other activities. Only two of these projects (release of site-specific owl location information and existing forest plans) have resulted in biological opinions that the proposed action will likely jeopardize the continued existence of the MSO. The jeopardy opinion issued for existing Forest Plans on November 25, 1997 was rendered moot as a non-jeopardy/no adverse modification BO was issued the same day.

The final MSO critical habitat rule (USFWS 2004a) designated approximately 8.6 million acres of critical habitat in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands (USFWS 2004a). The project area does not contain designated MSO critical habitat.

Southwestern Willow Flycatcher and Critical Habitat

Description

The SWWF is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. The song is a sneezy “fitz-bew” or a “fit-a-bew”, the call is a repeated “whitt”. It is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migrant that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Ridgely and Tudor 1994, Howell and Webb 1995). The historical breeding range of the SWWF included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

Listing and critical habitat

The SWWF was listed as endangered, without critical habitat, on February 27, 1995 (USFWS 1995c). Critical habitat was later designated on July 22, 1997 (USFWS 1997). A correction notice was published in the Federal Register on August 20, 1997 to clarify the lateral extent of the designation (62 FR 44228).

On May 11, 2001, the 10th circuit court of appeals set aside designated critical habitat in those states under the 10th circuit’s jurisdiction (New Mexico). The FWS decided to set aside critical habitat designated for the SWWF in all other states (California and Arizona) until it could re-assess the economic analysis.

On October 19, 2005, the FWS re-designated critical habitat for the SWWF (USFWS 2005). A total of 737 river miles across southern California, Arizona, New Mexico, southern Nevada, and southern Utah were included in the final designation. The lateral extent of critical habitat includes areas within the 100-year floodplain.

A final recovery plan for the SWWF was signed by the FWS Region 2 Director and released to the public in March, 2003 (USFWS 2002b). This plan describes the reasons for endangerment,

current status of the SWWF, addresses important recovery actions, includes detailed issue papers on management issues, and provides recovery goals. Recovery is based on reaching numerical and habitat related goals for each specific Management Unit established throughout the subspecies range and establishing long-term conservation plans (USFWS 2002b).

Habitat

The SWWF breeds in dense riparian habitats from sea level in California to approximately 8,500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range describe the SWWF's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips *et al.* 1964, Hubbard 1987, Unitt 1987, San Diego Natural History Museum 1995). Currently, SWWF primarily use Geyer willow (*Salix geyeriana*), coyote willow (*Salix exigua*), Goodding's willow (*Salix gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* sp.), Russian olive (*Elaeagnus angustifolius*), and live oak (*Quercus agrifolia*) for nesting. Other plant species less commonly used for nesting include: buttonbush (*Cephalanthus* sp.), black twinberry (*Lonicera involucrata*), cottonwood (*Populus* spp.), white alder (*Alnus rhombifolia*), blackberry (*Rubus ursinus*), and stinging nettle (*Urtica* spp.). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge *et al.* 1997).

Tamarisk is an important component of the SWWF's nesting and foraging habitat in Arizona and other parts of the bird's range. In 2001 in Arizona, 323 of the 404 (80 percent) known SWWF nests (in 346 territories) were built in a tamarisk tree (Smith *et al.* 2002). Tamarisk had been believed by some to be a habitat type of lesser quality for the SWWF, however comparisons of reproductive performance (USFWS 2002), prey populations (Durst 2004) and physiological conditions (Owen and Sogge 2002) of SWWF breeding in native and exotic vegetation has revealed no difference (Sogge *et al.* 2005).

The SWWF's habitat is dynamic and can change rapidly: nesting habitat can grow out of suitability; saltcedar habitat can develop from seeds to suitability in five years; heavy runoff can remove/reduce habitat suitability in a day; or river channels, floodplain width, location, and vegetation density may change over time. The SWWF's use of habitat in different successional stages may also be dynamic. For example, over-mature or young habitat not suitable for nest placement can be occupied and used for foraging and shelter by migrating, breeding, dispersing, or non-territorial SWWF (McLeod *et al.* 2005, Cardinal and Paxton 2005). That same habitat may subsequently grow or cycle into habitat used for nest placement. SWWF habitat can quickly change and vary in suitability, location, use, and occupancy over time (Finch and Stoleson 2000).

Rangewide distribution and abundance

There are currently 275 known southwestern willow flycatcher breeding sites in California, Nevada, Arizona, Utah, New Mexico, and Colorado (all sites from 1993 to 2005 where a resident flycatcher has been detected) holding an estimated 1,214 territories (Durst *et al.* 2006). It is difficult to arrive at a grand total of flycatcher territories since not all sites are surveyed annually.

Numbers have increased since the bird was listed and some habitat remains unsurveyed; however, after nearly a decade of intense surveys, the existing numbers are just past the upper end of Unitt's (1987) estimate of 20 years ago (500-1000 pairs). About 50 percent of the 1,214 territories (Table 2) currently estimated throughout the subspecies range are located at four general locations (Cliff/Gila Valley - New Mexico; Roosevelt Lake – Arizona; San Pedro River/Gila River confluence – Arizona; Middle Rio Grande - New Mexico).

Arizona distribution and abundance

While numbers have significantly increased in Arizona (145 to 495 territories from 1996 to 2005) (English *et al.* 2006), overall distribution of SWWF throughout the state has not changed very much. Currently, population stability in Arizona is believed to be largely dependent on the presence of two large populations (Roosevelt Lake and San Pedro/Gila River confluence). Therefore, the result of catastrophic events or losses of significant populations either in size or location could greatly change the status and survival of the species. Conversely, expansion into new habitats or discovery of other populations will improve the known stability and status of the SWWF.

Critical habitat

The primary constituent elements of critical habitat are based on riparian plant species, structure and quality of habitat, and insects for prey. A variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, fine sediments, etc. help develop and maintain these constituent elements (USFWS 2005). The primary constituent elements are:

1. Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:
 - a. Trees and shrubs that include, but are not limited to, willow species, box elder, tamarisk, Russian olive, cottonwood, stinging nettle, alder, ash, poison hemlock, blackberry, oak, rose, false indigo, Pacific poison ivy, grape, Virginia creeper, Siberian elm, and walnut.
 - b. Dense riparian vegetation with thickets of trees and shrubs ranging in height from 2 to 30 meters (m) (6 to 98 feet). Lower-stature thickets (2 to 4 meters or 6 to 13 feet tall) are found at higher elevation riparian forests, and tall-stature thickets are found at middle- and lower-elevation riparian forests;
 - c. Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 feet) above ground or dense foliage only at the shrub level, or as a low, dense tree canopy;
 - d. Sites for nesting that contain a dense tree and/or shrub canopy (the amount of cover provided by tree and shrub branches measured from the ground) (i.e., a tree or shrub canopy with densities ranging from 50 percent to 100 percent); or

- e. Dense patches of riparian forests that are interspersed with small openings of open water or marsh, or shorter/sparser vegetation that creates a mosaic that is not uniformly dense. Patch size may be as small as 0.1 ha (0.25 acre) or as large as 70 ha (175 acres).
2. A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, including: flying ants, wasps, and bees; dragonflies; flies; true bugs; beetles; butterflies/moths and caterpillars; and spittlebugs.

A variety of river features such as broad floodplains, water, saturated soil, hydrologic regimes, elevated groundwater, fine sediments, etc. help develop and maintain these constituent elements (USFWS 2005).

Past Consultations

Since listing in 1995, at least 154 Federal agency actions have undergone (or are currently under) formal section 7 consultation throughout the SWWF's range. Many activities continue to adversely affect the distribution and extent of all stages of flycatcher habitat throughout its range (development, urbanization, grazing, recreation, native and non-native habitat removal, dam operations, river crossings, ground and surface water extraction, etc.). Stochastic events also continue to change the distribution, quality, and extent of flycatcher habitat.

Brady Pincushion Cactus

Brady pincushion cactus was listed as an endangered species on October 26, 1979 (44 FR 61784) without critical habitat. A recovery plan was completed in March 1985. The Arizona State Land Department protects the species under the Arizona Native Plant Law and classifies it as Highly Safeguarded.

Brady pincushion cactus is a small, succulent, perennial cactus species (Cactaceae) of one or sometimes two subglobose to obovoid stems, 3.2-6.2 cm high, and 2.6-4 cm in diameter. The areoles are elliptic and densely white or yellow-villous. There is usually no central spine, but rarely one or two. Radial spines 9-18, each 2.0-6.0 mm in length, white or yellowish, smooth, cartilaginous, semi-flexible (not sharp) and somewhat pectinate (comb-like with closely set teeth or divisions). Flowers are straw-yellow in color, to 2.5 cm in diameter. The fruit are green and top-shaped, the base constricted into a short stalk; turning brown at maturity.

The species flowers from late March to April. Fruits mature from late May to early June. Flowers and fruit are produced by plants over 15 mm in diameter. Larger-stemmed plants are more likely to produce multiple flowers. The total number of seeds produced by a single plant over its life is relatively small. Up to 76 percent of monitored adult plants produced fruit in some years. Preliminary data suggests that Brady pincushion cactus is self-incompatible and that flowers are pollinated by native bees.

The species is endemic to the rims of the plateaus along the Colorado River, including tributary canyons such as Badger Creek, Soap Creek, and North Canyon. It also occurs in suitable habitat up to approximately one mile from canyon rims. The species occurs in the Great Basin desert scrub biotic community. The dominant vegetation types along the canyon rims are saltbush and desert grasslands. The desert grasslands are dominated by galleta (*Hilaria jamesii*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), sand dropseed (*Sporobolus cryptandrus*), and Indian ricegrass (*Oryzopsis hymenoides*). The saltbush type is dominated by shadscale (*Atriplex confertifolia*), four-wing saltbush (*Atriplex canescens*), and *Ephedra* spp.

Brady pincushion cactus grows in gravelly alluvium on gently-sloping benches and terraces in an elevation range of 1,037-1,586 m. Exposure is normally open and sunny on gentle and generally north-facing slopes. The substrate is Kaibab limestone chips overlaying soil derived from shale, mudstone, and siltstone of the Moenkopi Formation. Chert and quartz pebbles eroded from the Shinarump Conglomerate Member of the Chinle Formation are also present at some sites.

The species occurs only along Marble Canyon on lands administered by BLM, NPS, and the Navajo Nation. Scattered populations occur along both sides of the rim of Marble Canyon and tributary canyons for a distance of about 40 km from below Lees Ferry to the vicinity of Bedrock Canyon on the west side, and to Tanner Wash on the east side, of Marble Canyon. The amount of potential habitat has been estimated to be 17,000 acres, although only 10-20 percent of that appears to be occupied. The densest populations occur along Soap Creek, Badger Creek, the north side of North Canyon and Rider Canyon rims, and the rims of Marble Canyon leading into Soap and Rider Canyons.

The Navajo Nation maintains a monitoring plot for the species at Jackass Canyon (ASDO 2007a). In counts of individuals from 1991 through 1993 and 1997 through 2004, the population fluctuated from a high of 114 in 1993 to a low of 78 in 2004. Population declines were attributed to site disturbance from a filming permit and several beetle infestations. An estimated 85 percent of the plants were in excellent condition.

There were no changes in the size of the population in Glen Canyon National Recreation Area (GLCA) in 1992 and 1993 (ASDO 2007a). Mortality (8 individuals) was balanced with new seedlings (8 individuals). However, size class frequencies changed from 1992 to 1993; the 1993 population was older and significantly larger. Monitoring in 1997 indicated no change in size structure. The major threat to the GLCA population may be off-road vehicle activity.

At the time of listing, the total population of the species was estimated to be 10,000 individuals distributed in discrete local areas. Monitoring indicates that there are close to 1,000 individuals within monitoring plots (ASDO 2007a).

The limited distribution and small number of populations make this species vulnerable to extinction. Current threats include off-road vehicle traffic, pesticide application, illegal collecting, trampling by livestock, herbivory by rodents and/or rabbits, disturbance from maintenance and construction activities, mineral development, and impacts from dispersed recreation. Highway maintenance and road alignment (U.S. Highway 89A) have affected at least one population. Depredation by rodent herbivory may result in the most damage of the species,

especially under drought conditions (ASDO 2007a). Drought and frost heaving have also contributed to loss of individual plants.

Holmgren Milk Vetch and Critical Habitat

Holmgren milk vetch was listed as endangered on September 28, 2001 (66 FR 49560) without critical habitat. Critical habitat was designated on December 17, 2006 (71 FR 77972). A recovery plan for the species was completed in September 2006.

A member of the pea family (Fabaceae), the species is an herbaceous perennial that produces small purple flowers in the spring, and dies back to its root crown after the flowering season. The leaves are pinnately compound and arise directly from the root crown. Leaves are pressed close to the ground; leaflets are 0.8-1.6 cm and oval-shaped with the narrow end towards the base of the leaf. Fruits are pods 3-5 cm long and 0.6-0.9 cm in diameter and are curved, elliptic, and have a beak at the tip.

Leaves appear as early as January. Flowering stems produce several white and purple flowers in April. Fruits appear as early as April. Native bees are the primary pollinators of the species. Flowers on some individuals can produce fruit without insect visitation (i.e., autogamously). However, self-fertilized flowers produced fewer fruits which can negatively influence the number of offspring. Seeds are thought to be dispersed by water as plants are generally found on the skirt edges of washes or in run-off channels around mounds. Rodents and smaller ground-dwelling birds may also be dispersal agents.

Holmgren milk-vetch is a Mojave Desert endemic in southwestern Utah and northwestern Arizona. It is a short-lived perennial that occurs primarily on gravelly slopes and washes on the Virgin limestone member of the Moenkopi Formation. Populations are found between 756 and 914 m elevation in areas that drain to the Santa Clara and Virgin rivers.

Only three populations are known. The primary population exists on the Arizona (Mohave County) and Utah (Washington County) border, and the other two occur in Washington County, Utah. All populations are within 15 km of St. George, Utah.

Annual fluctuations in the number of individuals within a population are great. Years with adequate precipitation produced a population estimated at 10,000 individuals, while populations in dry years may be as few as 500 individuals. More seedlings are found when precipitation in the first quarter of the year is higher. In recent years (2000-2004), high flushes of seedlings have been coupled with a low survivorship rate (58.9-96.8 percent mortality) most likely due to the timing of precipitation. The mortality has resulted in relatively few reproductive adults. Although the landscape holds an unknown quantity of seeds, high mortality may be depleting the seed bank. Low survivorship and reproductive results make this species more vulnerable to extinction. There is no current total population estimate. The overall population trend for this species is significant decline. Disappearance and/or a large reduction of individuals have been observed in the Utah populations (ASDO 2007a).

The primary threats to the species are loss of habitat due to urban expansion and development, road/highway construction, off-road vehicle use, displacement by exotic weeds, mining, and mineral exploration. The small number of populations and restricted habitat of this species make it vulnerable to human-caused and natural environmental disturbances. The primary population is threatened by a proposed interchange that will connect Interstate 15 to the proposed Southern Corridor highway, other habitat loss associated with the highway, and residential and commercial development.

Holmgren milk vetch critical habitat occurs in three units (USFWS 2006). Unit 1 contains three subunits known as Central Valley, Gardner Well and State Line. Central Valley occurs in Washington County, Utah, between the Atkinville and Fort Pearce washes. Gardner Well is in Mohave County, Arizona, just south of the Arizona-Utah border and west of Atkinville Wash. State Line is almost centered on the intersection of the Arizona-Utah border and Interstate 15. Unit 2 contains two subunits known as Stucki Spring and South Hills. Unit 2 is in Washington County, Utah southwest of Santa Clara. Unit 3 is known as Purgatory Flat and is in Washington County, Utah, west of the Virgin River.

Within the critical habitat units, the primary constituent elements of Holmgren milk-vetch critical habitat are:

- Appropriate geological layers or soils that support individual *Astragalus holmgreniorum* plants. These include the Virgin Limestone member, middle red member, and upper red member of the Moenkopi Formation, and the Petrified Forest member of the Chinle Formation. Associated soils are Badland; Badland, very steep; Eroded land-Shalet complex, warm; Hobog-rock land association; Isom cobbly sandy loam; Ruesh very gravelly fine sandy loam; Gypill Hobog complex, 6 to 35 percent slopes; Gypill very cobbly sandy loam, 15 to 40 percent slopes; and Hobog- Grapevine complex, 2 to 35 percent slopes
- Topographic features/relief (mesas, ridge remnants, alluvial fans and fan terraces, their summits and backslopes, and gently rolling to steep swales) and the drainage areas along formation edges with little to moderate slope (0 to 20 percent)
- The presence of insect visitors or pollinators, such as *Anthophora captognatha*, *A. damnersi*, *A. porterae*, other *Anthophora* species, *Eucera quadricincta*, *Omia titus*, and two types of *Dialictus* species.

Jones' Cycladenia

Jones' Cycladenia was listed as threatened on May 5, 1986 (51 FR 16530) without critical habitat. A recovery plan is being developed for the species.

The species is a member of the dogbane family (Apocynaceae). It has succulent-broadly orbicular leaves (3.5-9.5 cm long) with rose-purple dimorphic flowers. The plant is clonal and rhizomatous, 11-36 cm tall. The stems have pedicels 5-25 mm long.

Jones' *Cycladenia* is a perennial of unknown longevity that appears to persist mainly by the spreading of rhizomes. Although it flowers from April through June, sexual reproduction appears to be infrequent. The observed low sexual reproduction may be due in part to a paucity or loss of pollinators (ASDO 2007a). Insect visits are uncommon, and of the insects that have been observed visiting the flowers from 1988 to 1993, none can be distinguished as the primary pollinator. Flowers often appear to commence fruit development but later abort. This species demonstrates strong vegetative reproduction and observers have not found any seedlings in and around the populations.

The species occurs in a cool desert shrub, pinyon (*Pinus edulis*)-juniper (*Juniperus* spp.) plant community. Associated species include roundleaf buffaloberry (*Shepherdia rotundifolia*), cliffrose (*Purshia* spp.), prince's plume (*Stanleya pinnata*), flattop buckwheat (*Eriogonum fasciculatum*), *Penstemon* spp., stinking milk vetch (*Astragalus praelongus*), and galleta grass. Jones' *Cycladenia* occurs on saline soils, rich in selenium, on the Chinle Formation. The plant typically grows on the steep (20-50 percent) side slopes of canyons.

Most populations occur in Utah. Inventories there continue to find more populations in the Grand Staircase-Escalante Canyon National Monument. In Arizona populations occur southeast of Colorado City.

The species is threatened by mineral development, and recreational and vehicle use within its habitat. In addition, the species has a limited population size and distribution, as well as a low reproductive rate.

Siler Pincushion Cactus

Siler pincushion cactus was listed as endangered on November 26, 1979 (44 FR 61786) without critical habitat. The species was downlisted to threatened on December 27, 1993 (58 FR 68476). A recovery plan was completed in April 1986. No critical habitat has been designated for the species.

Siler pincushion cactus is a globose, usually single-stemmed, cactus (occasionally clustered) averaging 4-5 inches tall and about 4 inches in diameter (plants in old age have been noted over 20 inches tall). The areoles are circular and each contains three to seven brownish-black straight or slightly curved central spines, becoming pale gray or nearly white with age. The flowers are one inch in diameter, with yellowish marginally scarious petals with maroon veins. The flowers occur from late April into May. The fruits, which dry at maturity, are greenish-yellow and somewhat enlarged upward. The fruits dehisce in May and June by both a dorsal slit and a ring around the circumsessile apex.

Several indigenous bees from four families pollinate the flowers. Fruit set and seed production is not thought to be pollinator-limited. The species produces seed regardless of pollination activity (ASDO 2007a).

The species occurs within three broad vegetation communities. The largest distribution is in the Great Basin desert shrub biotic community. A few of the higher-elevation occurrences are

located in the Great Basin conifer woodland and plains and Great Basin grassland. One low-elevation site is in Mohave Desert Scrub. Associated species include shadscale, fourwing saltbush, big sagebrush (*Artemisia tridentata*), snake weed (*Gutierrezia sarothrae*), desert sage (*Salvia dorrii*), shrubby buckwheat (*Eriogonum wrightii*), slender buckwheat brush (*Eriogonum microthecum*), rabbit brush (*Chrysothamnus* spp.), and *Ephedra* spp. At higher elevation sites, associated species include pinyon , Utah juniper (*Juniperus osteosperma*), cliffrose, and banana yucca (*Yucca baccata*). At some low elevations sites, associated species include creosote (*Larrea tridentata*) and cheesebush (*Hymenoclea salsola*).

Siler pincushion cactus is found primarily in the Schnabkaib and middle red member of the Moenkopi Formation. Geologic maps for the west half of the species habitat and inventories from 1978 to 2004 suggest a close association of Siler pincushion cactus with the Schnabkaib and middle red formations. Intensive surveys on the other members have been negative for the species. The species is found exclusively on gypsiferous clay to sandy soils apparently high in soluble salts.

The Moenkopi formation occurs from the Fort Pearce area near St. George, Utah, south onto the Arizona Strip and east to Fredonia, Arizona. There are four populations of Siler pincushion cactus outside of the action area: White Dome, administered by the State of Utah; the Kaibab Paiute Indian Reservation; Warner Ridge; and Muggins Flat, Utah, administered by Utah BLM.

The population at White Dome is monitored periodically, but results do not indicate a trend for the population. A survey in 2004 found numerous individuals in the area. There is a commitment for a fenced plant preserve at White Dome containing approximately 800 acres (signed by the State of Utah in coordination with The Nature Conservancy) to be established by 2015 due to the presence of both dwarf bear claw poppy and Siler pincushion.

Individuals of the species on the Kaibab Paiute Indian Reservation have not been counted and trend evaluations have not been done. Casual observation suggests that the population is doing as well as the rest of the monitored populations.

The Warner Ridge population has been counted and demographic studies have been done. The ASDO administers grazing on the south end of the Warner Ridge area. BLM constructed a fence on the west side of Warner Ridge to provide protection to the species from OHVs.

The Muggins Flat population has been counted and demographic studies have been done. Monitoring of this population occurred over five years from 1992 through 1997. At the end of this five-year period, average annual recruitment rate was four times greater than the average mortality rate. This site had not been formally monitored since 1997 until informal searches in 2007 revealed less than 10 individuals.

More than 10,000 individuals of the species were counted at selected locations throughout the Moenkopi formation by 1988. One survey was estimated to be one percent of 56,100 acres at eight locations and with a count of 1,153 individuals (ASDO 2007a).

In 1987, a habitat management plan (HMP) was developed for the species (ASDO 2007a). The goal of the HMP was to stabilize or increase the population of Siler pincushion cactus. At that time, the proportion of small and young cactus in the population was a major concern. The HMP was developed to address that concern and included goals of a minimum of 20 percent of the population as young small cactus (0-4 cm in height) at trend plots and 20 percent in the other size classes. Mining, trampling by livestock, off-road-vehicle activity, and collection are the primary threats to the species.

Welsh's Milkweed

Welsh's milkweed was listed as a threatened species on October 28, 1987 (52 FR 41435) with critical habitat in Utah. No critical habitat is designated in Arizona. A recovery plan for the species was completed in 1992.

Welsh's milkweed is a tall herbaceous plant of the milkweed family (Asclepiadaceae). Stems are about 1 m tall at maturity arising singularly or in clusters of about 10 stems from vertical taproots with horizontal runners connecting stem clusters. The leaves are displayed in opposite pairs along the stems. The upper leaves are broadly ovate with a short petiole and 8 cm long and 5 cm broad. The lower leaves are smaller and have acuminate tips and are borne directly on the stem without a petiole. The foliage and stems are covered with a very dense white-wooly tomentum early in the growing season. During the growing season, the tomentum of the current year's herbaceous stems and leaves is abraded by blowing sand which leaves them nearly glabrous late in the growing season.

About thirty flowers are borne in a spherical inflorescence 7 cm in diameter at the end of a pedicel about 10 mm long arising from the plant's upper leaf nodes. Individual flowers have the characteristic milkweed form. The reflexed calyx has individual lobes about 6 mm long. The corolla, with the characteristic milkweed hoods and horns, is about 6 mm long and cream-colored with a rose-tinged center. Adaptive morphological characteristics of the species include a deep-seated clustered root and stem system, a dense tomentum, and very large seeds with large endosperm reserves. Flowering occurs in May and June with fruit and seed development and dispersal occurring from July to September. Asexual reproduction is by rhizomes. Milkweeds evolved with specific pollinators and they cannot self-pollinate. Bees, wasps, butterflies and moths have been observed visiting the flowers.

Populations of Welsh's milkweed occur in a plant community dominated by sand mulesears (*Wyethia scabrida* var. *attenuata*) with prominent groves of ponderosa pine (*Pinus ponderosa*) and clumps of Gambel oak (*Quercus gambelii*). Other plant species commonly associated with Welsh's milkweed include blowout grass (*Redfieldia flexuosa*), sand dropseed, giant dropseed (*Sporobolus gigantean*), Indian ricegrass (*Oryzopsis hymenoides*), giant dunegrass (*Calamovilfa gigantea*), sand hill muhly (*Muhlenbergia pungens*), sand-spurge (*Reverchonia arenaria*), silvery sophora (*Sophora stenophylla*), dune scurfpea (*Psoralea lanceolata*), Kanab yucca (*Yucca kanabensis*), rubber rabbitbrush (*Chrysothamnus nauseosus*), and winged wild-buckwheat (*Eriogonum alatum*). The vegetation surrounding the sand dune habitat of Welsh's milkweed is dominated by pinyon-juniper (*Pinus edulis* and *Juniperus osteosperma*) woodlands with sagebrush parks.

The substrate supporting the species is unconsolidated aeolian sand on active dunes. The dunes are surrounded by vegetated and stabilized sands, sandstone slickrock, various exposed shales, or other fine-grained geologic rock types or their finer grained developed soils. The sand dunes on which Welsh's milkweed occurs are effectively islands of suitable habitat within a sea of unsuitable geologic substrates (ASDO 2007a).

Most individuals are on the Coral Pink Sand Dunes about 12 km west of Kanab in Kane County, Utah. A second population occurs in the Sand Hills about 13 km north of Kanab, also in Kane County. A third population is located in Sand Cove about 45 km east of Kanab, Utah, and Fredonia, Arizona, on the Arizona-Utah border in Coconino County, Arizona, and Kane County, Utah. The species was also reported on the Navajo Nation Sand Dunes (ASDO 2007a).

The total known population of Welsh's milkweed is estimated at 11,000 individuals (ASDO 2007a). The recovery plan estimated the Coral Pink Sand Dune population at 10,000 individuals on approximately 4,000 acres of occupied and potential habitat. The Sand Hills population of Welsh's milkweed was estimated at about 500 individuals on approximately 100 acres. The Sand Cove population within the action area was estimated at about 600 individuals on approximately 50 acres. Coral Pink Sand Dunes is managed by the State of Utah within Coral Pink Sand Dunes State Park and BLM (Cedar City district). The Sand Hills and Sand Cove populations are managed by BLM (Cedar City and Arizona Strip districts).

The species is threatened by recreational off-road vehicle use. Mineral and energy development, road-building, and livestock grazing are other potential threats. The demographic stability of the various populations of Welsh's milkweed is not known. The smaller populations may not be large enough to ensure long-term survival of the species. The effect of natural factors, such as disease, parasitism, grazing by native species, natural erosion, and vegetative competition on the viability of the species population is not known. Due to its very limited specific habitat requirements and its small population size, Welsh's milkweed is vulnerable to any event which could cause the local extirpation of one or more of its isolated populations.

ENVIRONMENTAL BASELINE

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

A. STATUS OF THE SPECIES WITHIN THE ACTION AREA

Virgin River Chub

Virgin River chub occupy the Virgin River near Littlefield and are regularly captured during the spring and fall AGFD surveys (Table 3). Individuals have been captured within Beaver Dam

Wash usually within 15 to 100 yards of the confluence with the river) (Herder 2006). It has been suggested that chub use of the wash occurs mostly in the summer as chub (with a critical maximum temperature of 94°F) move to cooler spring-fed tributaries to escape very warm, low-flow temperature water in the Virgin River (Deacon *et al.* 1987). However, surveys in 2003 in November and December caught six Virgin River chub below the Highway 91 bridge, indicating that chub use the area at other times of the year as well (Morvilius and Fridell 2004). AGFD surveys Virgin River chub in the Virgin River every spring and fall (Table 3).

Woundfin

Woundfin are present in the Virgin River within the action area; however, populations in the Virgin River and its tributaries have declined since 1984 due to the spread of red shiner (*Cyprinella lutrensis*) and physical habitat degradation that has continued through the 1980s and into the 1990s (USFWS 1995a). The spread of the red shiner through the Virgin River drainage significantly reduces the value of the remaining habitats due to the resource competition and woundfin egg and fry predations. Woundfin are short-lived; therefore yearly reproductive success is crucial to population maintenance. AGFD surveys woundfin in the Virgin River every spring and fall (Table 3). Though Table 3 only contains data for surveys through 2006, surveys conducted in spring/early summer of 2007 located many native fishes, including chub and woundfin, in the Virgin River.

Virgin River Fishes Critical Habitat

Critical habitat for Virgin River chub and woundfin in Arizona comprises the entire reach of the Virgin River and its historical floodplain. The Virgin River is characterized by narrow, steep-walled canyons, especially in the headwaters, with smaller canyons separating wider bottomland areas further downriver. Gradients in the canyon reaches are higher than in the more open bottomlands (Addley and Hardy 1993) and the PCEs for critical habitat are largely intact.

In accordance with recovery action tasks identified in the Virgin River Fishes Recovery Plan, the ASDO initiated an instream flow study on the Virgin River in 1991. The study was designed to determine the minimum and optimum flow rate necessary to sustain native fish populations based on the way each species uses its available habitat.

Instream flow data suggest that optimum flows for young of the year Virgin River chub range from 50 to 115 cfs in the Virgin River Gorge (BLM 2001). Optimum flows for adult chub below the Gorge range from 40 to 70 cfs. Similarly, optimum flows for adult chubs in the Gorge range from 140 to 225 cfs, and 40 to 110 cfs in the lower portions of the River (BLM 2001). This indicates that higher flows are necessary to sustain the adult fish, particularly in the Gorge. Typically summer flows in the Gorge drop below 30 cfs, with the river occasionally going dry.

Instream flow data for young of the year woundfin suggest that optimum flows range from and 40 to 90 cfs below the Gorge (BLM 2001). Optimum flows within the Gorge may be moot as woundfin are seldom found in the rocky riffle and pool habitat more commonly used by Virgin River chubs. Optimum flows for adult woundfin below the Gorge range from 40 to 130 cfs

(BLM 2001). This indicates that woundfin can tolerate lower flow conditions due to their preference for sandy run habitat.

Water quality in the Virgin River and its tributaries remains essentially suitable for most purposes. Increases in nutrient loading from irrigation returns and municipal releases have occurred. The Virgin River also carries a considerable sediment load, although not all tributaries contribute substantial amounts of either suspended sediments or bedload. Low flows transport relatively low amounts of total sediments, with maximum sediment transport occurring during the higher spring flows. Changes to channel morphology are controlled by the higher flows that provide maximum sediment transport.

Activities that have contributed to loss or degradation of critical habitat include channelization, impoundments, water diversions, and groundwater pumping. These actions affect the amount of water available in the streams, the timing of that availability (based on changes to the natural hydrograph), connectivity to the historical floodplain, and physical changes to the habitat through changes in sediment processes and water temperature. Effects to the physical components of the aquatic habitats may be subtle or obvious, and the response of the Virgin River fishes to those changes is reflected in the decline of these species.

Invertebrate populations in the Virgin River are sparse, dominated by chironomids, simuliids and seasonally by mayflies (Greger and Deacon 1988). Seasonal high water events affect local abundance of invertebrates as does the type of substrate. The shifting sands of the Virgin River's main channel do not support large numbers of invertebrates; however, backwaters, rock and gravel areas, and more stable shallow water areas support higher concentrations and a more diverse fauna.

There have been significant changes to the flora and fauna in the Virgin River and its tributaries both through land use changes and the intentional or unintentional introduction of non-native species. Replacement of native riparian plant species by tamarisk has occurred along the Virgin River. Leaf litter decomposition is an important food source for aquatic macroinvertebrates. Tamarisk leaves breakdown faster than cottonwood and willow, resulting in lower macroinvertebrate abundance (Bailey *et al.* 2001). Fewer aquatic macroinvertebrates, an important food source for the Virgin River fishes, may be supported in the Virgin River reaches where tamarisk is now so dominant.

The most significant changes are to the aquatic fauna. The introduction and proliferation of red shiner into the aquatic ecosystem has contributed significantly to the Virgin River fishes' decline because it competes for food resources and space, and may be a predator of the larval and young-of-the-year life stages thereby reducing survival and recruitment of native fishes.

Desert Tortoise and Critical Habitat

Desert tortoise occurs within two primary habitat areas in the planning area. The northern area consists of the western slopes and flats of the Virgin and Beaver Dam mountains. The southern area, the Pakoon Basin, is located south of the Virgin Mountains and lies adjacent to the Nevada State line. The two areas are separated by higher elevations of the Virgin Mountains. The most common native perennial plants in this desert tortoise habitat are creosote bush, white bursage

(*Ambrosia dumosa*), range ratany (*Krameria parviflora*), Nevada ephedra (*Ephedra nevadensis*), and big galleta grass (*Hilaria rigida*) (NCCS 2007). Desert tortoise habitat is also found within the blackbrush series of Mohave Desert scrub (Turner 1982). Annual grass and forb production is highly dependent on precipitation and varies from close to zero to as high as 4,000 pounds per acre. Desert tortoise habitat in the planning area occurs at elevations ranging from 1,500 to 4,000 ft and averages 5 to 10 inches of precipitation annually (Turner 1982).

The planning area is located within the Northeastern Mojave RU, with only a small portion occurring in the action area. The northern portion of this RU represents the northernmost distribution of the species. Tortoises in this RU are typically found in low densities (approximately 10 to 20 adults per square mile).

Information on desert tortoise distribution and abundance in the planning area is derived primarily from triangular, 1.5 mi by 10-yard, line transects, as well as from three study plots, one in the Pakoon Basin and two on the Beaver Dam Slope. The Pakoon Basin Plot (two square miles) was surveyed only once in 1991 and 10 live tortoises were found (six to eight tortoises on section 3 and 9 to 12 on section 4). According to the Recovery Plan, most of the Gold Butte-Pakoon DWMA had densities of 20 adult desert tortoises per square mile (USFWS 1994). The Pakoon Basin plot is the closest survey location to the action area and the most recent data available for this area. University of Nevada – Reno completed line distance sampling within the Northeast Mojave RU during 2001 to 2004. Draft results show density estimates for the RU ranging from 0.94 to 3.20 adult tortoises per square kilometer (2.44 to 8.32 tortoises per square mile) (Roy Averill-Murray, pers. comm., 2006). Based on these data and the lack of additional human-induced impacts over the last 15 years in the area, we estimate that tortoise densities in suitable habitat ranged from 2 to 10 tortoises per square mile through the action area, prior to the wildfires.

Desert tortoise densities have been determined several times since 1977 on the two Beaver Dam Slope study plots, each of which is one square mile. The data from these plots indicate a nearly stable population structure over 12 years with an increase in the relative numbers of female tortoises on one plot. Numbers of tortoises found on the plots have varied from 46 to 53 (Littlefield Plot) and 20 to 35 (Exclosure Plot) (Hohman and Ohmart 1980, Duck and Snider 1988, Rourke 1993, Duck and Schipper 1989). In 2001, the Utah Division of Wildlife Resources (UDWR) surveyed 53 random transects across the Beaver Dam Slope DWMA/ACEC. Each transect was 1.6 km square with 400 m sides. Tortoise sign was found on 40 percent of transects ($n = 21$) while 60 percent of transects had no sign or a possible burrow that could not be confirmed. The density of reproductive tortoises was estimated at 3.04 tortoises per square km with a 95 percent confidence interval of 1.3 to 7.12. This estimate is one of the lowest observed during the spring 2001 monitoring effort. No live tortoises or shells were observed on any of the eleven of transects were in Arizona. Three transects had definite signs, three had possible signs, and five had no signs of tortoises (UDWR 2001).

We designated 338,700 acres of critical habitat for the desert tortoise in Arizona. Of this, 288,800 acres were designated on BLM lands. Also designated as critical habitat are 43,600 acres of LMNRA immediately south of BLM lands in the Pakoon Basin, and scattered State and private parcels.

Yuma Clapper Rail

Along the Virgin River, only a limited number of surveys have been conducted and most detections have been during SWWF surveys conducted in the same area. Yuma clapper rails have been detected in the Virgin River since at least 1998, and in the areas near Littlefield and Mesquite sporadically between 2000 and 2003. Much of the habitat in the Littlefield area was lost to flooding in January 2005.

California Condor

Individual condors could occur anywhere within the project area; however, most condor movements remain within the nonessential experimental population area. Condors regularly occur along the Vermilion Cliffs in the vicinity of the release site and in the vicinity of Navajo Bridge at Marble Canyon. Many of the birds spend at least a portion of the summer months along the South Rim of Grand Canyon. In the fall, many individuals occur on the Kaibab Plateau.

Particularly in the early portion of the reintroduction program, a few individuals flew to other parts of Arizona, Utah, Wyoming, Colorado, and California outside of the nonessential experimental population area. In each case, the individuals returned after a short period of time. By 2002, it was estimated that condors had occurred beyond the nonessential experimental area a total of 48 condor-days. Beginning in 2004, increasing numbers of condors have spent large portions of the summer months in the Kolob area of Zion National Park in Utah.

Mexican Spotted Owl

The project area is bracketed by areas where MSO have been detected, including Grand Canyon, Zion, and Canyonlands national parks, and Grand Staircase-Escalante National Monument. A juvenile MSO radio-tagged at Zion National Park was detected during the winter months at Lost Spring Mountain on the Arizona Strip (ASDO 2007a). No MSO Protected Activity Centers (PAC) are designated within the project area.

MSO forest habitat (mixed-conifer cover type) does not occur in the project area. However, surveys were conducted in all ponderosa pine and pine-oak areas in the project area including Black Rock Mountain (1992), Oak Grove (1992), and Mt. Trumbull/Mt. Logan (1978, 1991, 1992, 1998, 1999, 2000, and 2003). No MSO were detected.

Willey and Spotskey (ASDO 2007a) used MSO life history data and physical landscape features (e.g., geology, slope, aspect) to create predictive models of potential MSO habitat in Utah and Arizona. The Willey and Spotskey model identified over 13,765 acres of predicted MSO canyon habitat within the project area in over 850 polygons. The proximity of predicted potential habitat allowed the ASDO to group polygons into thirteen geographic areas. The ASDO is currently in the process of developing criteria for assessing whether habitat predicted by the model is MSO habitat. The ASDO worked with us in 2006 and determined that three of the thirteen geographic areas identified by the Willey and Spotskey model were not likely to be MSO habitat because

they were open cliff faces in arid locations with no shade, no riparian characteristics, and no caves or ledges. Many of the areas were composed of small, isolated polygons. The remaining geographic areas are considered to be MSO canyon habitat as predicted by the model.

Paria Canyon, Upper Kanab Creek, and the Hack Canyon area (including Grama, Water, and Chamberlain Canyons) are ranked by ASDO as high priority MSO habitat. The ADSO considers these sites to have the greatest potential as MSO breeding habitat and the BLM considers these areas to be occupied by MSO. Some surveys for MSO have previously been conducted at Paria, Hack, Grama, Water, and Chamberlain Canyons. No MSO were detected. However, most of the surveys were not conducted according to established protocols due to logistical constraints. Only the Chamberlain Canyon portions of the Paria included four visits during the same season as described in the protocol. The ASDO intends to complete surveys for MSO in accordance with protocol at all high priority locations, and develop a monitoring plan with us.

MSO canyon habitat that ranked as medium or low priority include Virgin Mountains, Last Chance Canyon, Andrus Canyon, Parashant Canyon, Hurricane Cliffs (Rock and Cottonwood Canyons), Vermilion Cliffs, Cottonwood Point, and Toroweap Valley. The ADSO considers these sites to have low to moderate potential as breeding habitat for MSO; however, the ADSO still believes that these areas may likely be occupied by MSO. Habitats in these locations generally consist of dry canyons with broken terrain, and cool-microsites are typically absent. However, these areas still contain enough key habitat components that they have potential to support nesting and/or roosting owls. Some surveys were conducted at Last Chance Canyon, Parashant Canyon, Hurricane Cliffs (Rock and Cottonwood Canyons), at Sullivan Canyon in the Virgin Mountains, and at Soap Creek in the Vermilion Cliffs. NO MSO were detected. In most cases, surveys were not conducted according to established protocols. Only Rock, Cottonwood, and Soap Canyons included four visits during the same season as described in the protocol.

Since few of the potential habitat areas predicted by the Willey and Spotskey model have been surveyed to protocol, the ASDO assumes the areas to be occupied habitat until surveys are completed. There is no designated critical habitat for the MSO within the action area.

Southwestern Willow Flycatcher and Critical Habitat

SWWF have been documented breeding only at the Beaver Dam Wash and Virgin River confluence in the planning area. One nest was found in 2001 and two in 2004 (Table 4). The habitat patch consisted of native vegetation: willow, cottonwood, and velvet ash. Floods in January 2005 removed the habitat. Status of the habitat recovery is not reported, but SWWF surveys have been conducted since the floods (Table 4). Migrating SWWF have only been documented on the Virgin River during the 2003 surveys (Smith *et al.* 2004).

SWWF have not been documented on Kanab Creek despite the presence of suitable habitat (ASFO 2007). The Paria River was surveyed once, then surveys were discontinued after the area was determined to be unsuitable SWWF habitat.

Portions of the Lower Colorado River SWWF Recovery Unit occur within the planning area. The Virgin Management Unit, within this Recovery Unit, includes the Beaver Dam Wash and the Virgin River in Arizona and Nevada.

In addition to the habitat at the Beaver Dam Wash confluence, the BLM determined that there are six additional suitable SWWF breeding habitat patches on the Virgin River. Two of these patches have been unoccupied (ASDO 2007a). Five of the six unoccupied habitat patches are located downstream of the Virgin River Gorge; one is upstream near the Utah State line. Most sites are dominated by monotypic tamarisk stands. The Virgin River riparian habitats were considered to be in proper functioning condition during a functionality assessment in 1995 (BLM 1995). At least two habitat assessments since 1995 have reached the conclusion that sufficient vegetation and landform still exists to dissipate flood flow energy.

Critical habitat

SWWF critical habitat has been designated within the 100-year floodplain on the entire Virgin River in the planning area (USFWS 2005), where the PCEs are largely intact. No critical habitat has been designated in either Kanab Creek or Paria Canyon. The description of Virgin River Fishes Critical Habitat, above, also applies to SWWF critical habitat.

Brady Pincushion Cactus

Within the project area, Brady pincushion cactus is found on the Emmett Wash, Rider Point, North Canyon Point, South Soap, and River Pastures of the Soap Creek (Kane Ranch) Allotment on the ASFO. An area less than five acres in size on the west side of Highway 89A between Soap Creek and Badger Creek is the only known location of the species within the Vermilion NM. Because virtually all individuals found to date occur on Kaibab limestone, that formation is considered potential habitat for the species. Approximately 47,705 acres of Kaibab limestone occurs in the project area within the known range of the species. Of that amount, the species is known to occur on at least 313 acres. BLM estimates the species occurs on approximately 17,063 acres of suitable habitat in the project area. More than eighty percent of the known populations in the project area are north of Soap Creek. To date, seventeen of the sixty-three miles of the Marble Canyon rim within the project area have been inventoried by transect. At least 600 individuals have been counted.

In the early 1980s, monitoring was initiated to assess the source and extent of man-caused mortality of the species. Potential sources of injury or mortality include crushing by OHV, trampling by livestock, and collection. Monitoring was also designed to provide basic information about population dynamics and other demographics of the cactus. Demography plots were established in 1984.

Four permanent demography plots were established at North Canyon West, North Canyon East, Badger North, and Soap Creek. The Badger North and Soap Creek plots are adjacent to roads. The North Canyon plots are located at least 0.25 mile from the nearest road. Livestock grazing was authorized in the Soap Creek plot and both North Canyon plots from fall to spring from 1984 to 2003. Since 2003, grazing has been temporarily discontinued. The area where the

Badger Creek plot is located has not been grazed since the plot was first established in 1984. With a few exceptions, all four plots have been monitored at least annually since 1984. Linear transects were also used to assess damage to individuals from livestock grazing along the canyon rims in Brady pincushion cactus habitat in 2001, 2002, and 2003. Linear transects were discontinued after 2003 due to removal of livestock from the Soap Creek Allotment.

From 1985 through 2005, an average of 305 individuals were counted each year. During the 12-year period from 1994 through 2005, when the most consistent monitoring effort occurred, an average of 350 individuals were counted each year on the demography plots. The Badger Creek and Soap Creek plots consistently contained more individuals than did the North Canyon plots. All plots exhibited considerable fluctuation over the 1994-2005 period. Overall, the North Canyon plots exhibited a static-to-increasing trend, while the Badger Creek and Soap Creek plots exhibited a decline in total numbers. Poor recruitment was noted in 1991, 1995, 2002, and 2004. The species exhibited variable annual seed production from 1991 through 2005.

During fifteen years of monitoring, a total of 375 direct mortalities of individuals were recorded in the demography plots. Man-caused mortality accounted for 22 individuals, including two trampled by livestock, six by vehicles including three in a roadway, three by collecting, and eleven by vandalism. Herbivory by rodents or lagomorphs was the single greatest cause of mortality (81 individuals on the North Canyon plots).

The damage transects provided additional mortality data from outside of the demography plots. In 2001, approximately 7,300 feet of transects were conducted. Of the 71 individuals detected, no injuries or mortalities were observed. In 2002, approximately 13,080 feet of transects were conducted. Of the 126 individuals detected, one had been trampled by livestock and killed along the north rim of North Canyon. In 2003, approximately 19,800 feet of transects were conducted. Of the 589 individuals detected, eight were trampled by livestock.

Monitoring results for the North Canyon plots indicate that the plots have somewhat recovered from high mortality due to rodent herbivory in the early 1990s. In general, the populations in the plots appear to be stable, although periods of drought may increase mortality.

Impacts that may be attributable to drought are more apparent in the Badger Creek plot than in the other plots. Following high mortality due to rot in 2000, the population in the plot appears to be in a slight downward trend. The population in Soap Creek plot appears to have been stable from 1991 through 2002 but has declined over the past few years.

Holmgren Milk Vetch and Critical Habitat

Holmgren milk vetch is known to occur on BLM and State of Arizona land at a few very small and scattered locations in the project area. Initially, the Curly Hollow plot on State of Arizona land was the only trend plot for the species in Arizona. The plot is 96x96 feet in size and was established to obtain the same information as described for Brady pincushion cactus. The species was observed and reproduction was monitored in March and April on the trend plot from 1988 through 2003. From 1988 through 1995, the numbers of individuals were variable (range

0-283) but essentially declining. From 1996 through 1999, there were almost no individuals in the plot. From 2000 through 2003, no individuals were observed in the plot.

The known occurrence of Holmgren milk vetch on BLM land within the project area is in an area approximately five acres in size. That population was found in 2004 and a transect was established. There are no permanent plots or tagged individuals, but the transect contained 35 adult individuals and five seedlings in 2005. All of the known habitat of the species on BLM land within the project area is within the designated critical habitat. There are 1,881 acres of Holmgren milk vetch critical habitat in the project area. Of that total, 1,498 acres are on State of Arizona land. Only 362 acres of critical habitat are on BLM land in the project area.

Jones' Cycladenia

Up to 500 acres has been inventoried and 7,300 ramets were counted. Two 10x10 m long-term trend plots were established in 1993 in the densest part of the population within habitat of Jones' Cycladenia. The trend plots are similar to the demography monitoring plots described for Brady pincushion cactus. The two plots have been monitored every year since 1993.

Numbers of ramets in the plots are variable (ranges: 0-226 and 0-316). The numbers in one plot seem to be declining since 2002, but a similar decline is not evident in the other plot. Monitoring has revealed that flowering and subsequent fruit set is very low in both plots. In general, the population appears to be stable but does not appear to be increasing in area. No human-induced impacts have been observed in the plots.

Within the action area, Jones' Cycladenia is known to occur on 485 acres of BLM land east of Cane Beds, Arizona, in Potter Canyon and the breaks to the south of Woodbury Canyon. The site is part of the Cane Beds Allotment and approximately 50 head of cattle graze in the allotment. There are no livestock waters in the breaks but there is a small spring development in Potter Canyon next to the Kaibab Paiute Indian Reservation.

Siler Pincushion Cactus

More than 333,000 acres of the Schnabkaib and middle red members are within the project area. However, not all of that area is considered to be Siler pincushion cactus habitat. Extensive surveys over the past 25 years have identified specific locations where the species occurs. Siler pincushion cactus is known to occur on 5,588 acres, including 5,412 acres in the Schnabkaib and middle red members of the Moenkopi Formation. Of that area, dense populations are considered to occur on 3,434 acres and scattered populations occur on 2,154 acres.

The ASDO observed a high correlation of known populations of Siler pincushion cactus with the Schnabkaib and middle red members of the Moenkopi Formation. In addition, distribution seemed to be limited to the more northerly portions of potential habitat in the action area. Several extensive survey efforts found no individuals south of the Clayhole Allotment or west of Hurricane Cliffs, with the exception of the Fort Pearce area along the Arizona-Utah border. After discussions with us, the ASDO mapped a buffer area of approximately two miles around all areas of potential habitat with known Siler pincushion cactus populations. The formations

beyond the mapped known locations and buffers are no longer considered habitat for the species. The ASDO estimates there are 5,412 acres of occupied Siler habitat in the Schnabkaib and middle red members and 176 acres in the lower red member. A remaining 126,494 acres of Schnabkaib and middle red members are considered potential habitat for Siler pincushion cactus.

In the early 1980s, monitoring was initiated to assess the source and extent of man-caused injury and mortality of the species. Potential sources of mortality included crushing by OHVs, trampling by livestock, and collection. Monitoring was designed to provide basic information about population dynamics and other demographics of the cactus. Demographic plots were established in 1984.

Plot counts and line transects were conducted in Siler pincushion cactus habitat from 1985 to 1988 to determine the relative number of cactus in the habitat. Transects were established on 2,476 acres across the range of the species including two transects in Utah. More than 10,000 individuals were counted at selected locations throughout the Moenkopi formation by 1988. Annual monitoring indicates the numbers remain constant with fluctuation in some areas.

Six permanent demography plots were established on BLM land in Siler pincushion cactus habitat at Warner Ridge, Atkin Well Enclosure (ungrazed), Atkin Well (grazed), Yellowstone Mesa, Johnson Spring, and Muggins Flat. The demography plots are used to count individuals, monitor recruitment, follow changes in population structure (growth in different size classes), assess reproduction (flowering and fruiting), and count mortality. Population demographic data indicates that all plots except the Warner Ridge, Utah, plot have reached and are maintaining the objective of 20 percent or more of individuals in the plots in the 0-4.9 cm height class. Plot numbers indicate a stable population in the Yellowstone Mesa plot, Johnson Spring subplots and at Warner Ridge.

Density of the species was determined by dividing the number of individuals in the plot or subplot by the plot size. The species occurs on the Warner Ridge plot (3 acres) and the Atkin Well plot (0.15 acre) at an approximate density of 45 individuals per acre. The two Johnson Spring plots (0.32 acre) exhibit an approximate density of 222 individuals per acre. The Yellowstone plot (0.34 acres) has 385 individuals per acre.

Recruitment was noted at most of the study plots. Some correlation between average annual rainfall and recruitment is evident, particularly in 1995-1997 and 2000-2003. However, some years exhibited poor recruitment while receiving above average precipitation (1991, 1994, and 2004), while other years had high levels of recruitment during drought periods (1992 and 1998).

During fifteen years of monitoring, a total of 574 mortalities were observed in the study plots. Of that number, human-caused mortality accounted for loss of five individuals, including four trampled by livestock and one run over by an OHV. No mortalities were recorded from collection, vandalism, or mineral development. Up to 258 mortalities were attributed to herbivory by rodents or lagomorphs. The Atkin Well plots (within and outside of the enclosure) exhibited the highest mortality and lowest recruitment. The study plot was established at a location containing a corral, well, and spring for the purpose of determining the effects of livestock grazing on the species.

Welsh's Milkweed

Populations of the species occur in the sand dunes and sand around the Paria Plateau within the Paria Canyon-Vermilion Cliffs Wilderness Area and the Vermilion Cliffs National Monument. The species occurs in the sand dunes of the Coyote Buttes area on the north and east sides of the plateau. Individuals have also been found in small deposits of sand in Paria River side canyons.

A study plot was established on a sand dune in the Coyote Buttes Wilderness Area. The trend plot is 40 acres in size and has been monitored since 1989. Numbers of individuals peaked at 566 in the plot in 1990. The number of stems in the plot has declined significantly from an average of 181 in the 1990s to an average of 42 in the 2000s. Fruit production in the plot has been essentially zero since 2000.

B. FACTORS AFFECTING SPECIES' ENVIRONMENT WITHIN THE ACTION AREA

At least 31 actions undertaken by the ASDO in the project area since 1987 have resulted in formal consultation regarding adverse effects to listed species (ASDO 2007a). These actions included management plans, rights-of-ways, utility lines, livestock grazing, fire management, and land tenure adjustments. Table 5 lists the file numbers and titles of biological opinions that were produced as a result of formal consultations for these actions.

Virgin River Fishes and Critical Habitat

The Virgin River fishes (Virgin River chub and woundfin) have declined in numbers largely due to the introduction and proliferation of non-native fishes such as red shiner and loss or degradation of habitat (USFWS 1995a). The introduction and proliferation of red shiner into the aquatic ecosystem has contributed significantly to the species' decline because it competes with Virgin River fishes for food resources and space, and may be a predator of the larval and young-of-the-year life stages.

Activities that have contributed to loss or degradation of habitat include channelization, impoundments, water diversions, and groundwater pumping. These actions affect the amount of water available in Virgin River, the timing of that availability (based on changes to the natural hydrograph), connectivity to the historical floodplain, and physical changes to the habitat through changes in sediment processes and water temperature. Effects to the physical components of the aquatic habitats may be subtle or obvious, and the response of the Virgin River chub and woundfin to those changes is reflected in the decline of both species.

The Virgin River Habitat Conservation Plan (VRHCP) was initiated in June 2004 and involves the City of Mesquite, Nevada (City); Clark County, Nevada (County); FWS; and other cooperating agencies and entities. The VRHCP is being developed jointly by the City, County, and FWS and will cover activities conducted by the City and County that will affect the mainstem of the Virgin River and surrounding watershed. This HCP will serve as a basis for an incidental take permit under section 10 of the Act.

Desert Tortoise and Critical Habitat

The Pakoon Basin, because of its remote nature and limited access, has been subjected to relatively few human intrusions that adversely affect desert tortoises and their habitat. The greatest human intrusion has been historic year-round livestock grazing and the development of livestock waters to support the grazing. In 1994, The Desert Tortoise Recovery Team rated the threats to tortoises in this area as level 2 (on a scale of 1 = low to 5 = high). However, this level of threats had increased to level 4 by 2003 (Tracy *et al.* 2004). The Desert Tortoise Recovery Plan Assessment Committee (DTRPAC) reported that through 2002, 80 percent of recovery actions had been at least partially implemented in the Gold Butte-Pakoon DWMA (Tracy *et al.* 2004).

Wildfire threat is increasing in this portion of the planning area. From 1980 to 1990, 88,152 acres of desert tortoise habitat in the Pakoon Basin burned (USFWS 1994). Wildfires during summer 2005 burned a total of 89,444 acres within the Pakoon Basin of the Parashant NM and 36,057 acres in the critical habitat unit. During summer 2006, an additional 14,500 acres burned in the same basin, with about 7,500 acres in the critical habitat unit (USFWS unpublished data, 2005). Desert perennials are poorly adapted to burning and can be replaced by non-native grasses and weeds following fire. Areas that have been burned by intense fires or that burn repeatedly no longer support desert tortoises because essential habitat features (shrubs for sheltering and perennial plants for forage) have been removed. As a result these wildfires, the condition of tortoise habitat has been severely degraded, with much of the perennial forb and shrub cover removed by the fires. Some re-sprouting of these plants occurred following monsoon rains. Although biological habitat conditions in the burned habitat have been severely degraded by these fires, we believe that through successful rehabilitation and appropriate management of other uses, such as livestock grazing and dispersed recreation, these areas can recover and reestablish the vegetative characteristics of suitable habitat and critical habitat.

Livestock grazing is currently permitted on most of the wildfire areas that burned in 2005 and 2006. A few portions of the burned areas are not authorized for grazing use; however, until BLM completed fencing around the perimeter of these fires in 2007, trespass cattle remained in the area. BLM reported that while delineating post-fire treatment areas in February 2006, some native plants were sprouting and cattle were grazing in these areas (file number 02-21-05-F-0772). Grazing post-fire may reduce the success of fire-related habitat rehabilitation in these areas.

On January 28, 1998, the Arizona Ecological Services Office issued a biological opinion for the proposed amendment to the 1992 Arizona Strip RMP (Mojave Amendment). The Mojave Amendment expanded the Beaver Dam Slope ACEC and designated the Virgin Slope and the Pakoon DWMA/ACECs, all of which would be managed primarily for recovery of the desert tortoise. The BLM established prescriptions to promote tortoise recovery within DWMA/ACECs and to continue current management outside DWMA/ACECs. These prescriptions included closure of portions of the Pakoon DWMA/ACEC to livestock grazing. The Tassi Allotment and the Burro Springs Pasture of the Pakoon Springs Allotment were closed to grazing on March 1, 2000. Because of an appeal of the decision, the portion of the Mosby-Nay allotment within the DWMA/ACEC was not closed by the construction of a fence; however

use was restricted to the non-active season (October 15-March 15) by limiting water availability to the non-active season only. In the rest of the DWMA/ACEC, livestock use was controlled by limiting waters in that area. Further actions were the removal of wild burros from the Pakoon DWMA/ACEC, additional requirements to reduce disturbance related to leaseable and locatable minerals extraction, closure and rehabilitation of certain routes, full fire suppression within desert tortoise habitat, and other measures.

The BLM revised the RMP and issued a final EIS in January 2007. Through this proposed action, the BLM is proposing to remove the ACEC designation for the Pakoon Basin and to continue to manage the area as a DWMA in accordance with the Recovery Plan, although portions of the area would remain open to fall and winter livestock grazing.

Wild burros also occur in the planning area. The Tassi Herd Management Area (HMA) includes the lower end of the Pakoon Basin. Although the allowable management level has been set to zero, some burros still occupy the HMA, and animals can also access the Pakoon Basin from the adjoining HMA in Nevada.

Other threats that have increased in this area include URTD, OHV use, and other recreational activities that attract predators.

Yuma Clapper Rail

Clapper rails along the Virgin River were likely adversely affected by winter floods during 2005 that scoured marsh areas along the river and temporarily removed most clapper rail marsh habitat. Habitats are expected to recover over time.

The recently approved Lower Colorado River Multi-Species Conservation Plan (LCR MSCP) will provide substantial conservation benefit for lower Colorado River clapper rail habitats, including lands along the Virgin River. The LCR MSCP is a 50-year, comprehensive Habitat Conservation Plan (HCP) that addresses the effects of water use and hydropower generation on 26 species including the clapper rail. The plan provides for creation of 512 acres of clapper rail habitat, maintenance of habitat quality, species monitoring and research efforts, and funding to maintain existing habitats that are threatened with elimination over time by natural aging processes (LCR MSCP 2004). Clapper rail habitat will be created in a landscape mosaic on lands along the lower Colorado River corridor and in adjacent areas (including the Virgin River) in proximity to currently inhabited areas.

The VRHCP described under Virgin River fishes, above, will also include minimization measures to reduce effects on Yuma clapper rail from water and land development activities in Mesquite.

Habitat modification and loss remains an ongoing concern along the Virgin River. Increasing development that depends on groundwater withdrawal may have direct and indirect effects to clapper rail and habitat conditions, and water management regimes have the potential to impact clapper rail habitat.

California Condor

The overall decline in California condor numbers has been attributed to illegal collection of eggs and birds, poisoning from predator control, lead poisoning, effects of DDT and other organochlorines, and development in open country needed by condors for foraging. Their slow rate of reproduction and high numbers of years spent reaching breeding maturity make condor populations more vulnerable to these threats.

Since their reintroduction in the experimental population area, a few condors were killed when they were illegally shot. There have also been some incidents of other unfavorable interactions between condors and humans, primarily associated with human recreation. However, most mortalities since 2002 have been due to lead poisoning, with exposure from lead ammunition. Arizona Game and Fish Department has actively promoted use of non-lead ammunition in the primary hunting units with condors to try to reduce this level of exposure. However, although the population can apparently tolerate the impact of the aggregate of other mortality factors, the added impact of lead-related deaths resulting from lack of treatment will likely prevent the establishment of a self-sustaining population (Southwest Condor Review Team 2007).

Mexican Spotted Owl

Current activities within the action area include mining, livestock grazing, recreation, and vehicle use. These activities generally occur on established roads and trails, though some off-trail hiking may occur. Uranium exploration is currently occurring in MSO canyon habitat and has the potential to impact MSO. Current authorized livestock grazing is likely affecting MSO prey species habitat. Recreational use is relatively low across much of the Arizona Strip due to the remote and steep topography of the area. Paria Canyon has relatively high concentrated recreational use; however, BLM issues permits to control the number and timing of hikers in the canyon. Although this system reduces recreational impacts to the area and results in better protection of the area if owls are using the canyon, disturbance to nesting birds may be occurring.

Southwestern Willow Flycatcher and Critical Habitat

Livestock grazing, road and trail construction, off-road-vehicle use, heavy recreational use in concentrated areas, large-scale fires (prescribed burns or wildfires), resource extraction, and other ground disturbing activities have contributed to current watershed conditions. Removal of upland vegetation cover, vehicle use, livestock trampling, and other surface-disturbing activities lead to soil compaction, decreased water infiltration, and increased runoff that increases the frequency and magnitude of flood events in the Virgin River (USFWS 2002b). All of these impacts can have indirect adverse effects to SWWF habitat.

Replacing native riparian vegetation with tamarisk can change the natural fire regime in riparian areas. Mature cottonwoods are often killed by fire, but mature willows and tamarisk can re-sprout from the root crowns. Trees re-sprouting from root crowns are often more shrub-like and lack a typical tree growth form. It may take a longer period of time for these trees to develop the growth form or stature preferred by breeding SWWF. Tamarisk can become established in

riparian communities where native species are stressed from water table declines caused by pumping and diversions, from excessive livestock grazing, or where flow regimes have been changed or eliminated and no longer allow native vegetation to regenerate. Tamarisk flammability increases with the build-up of dead and senescent woody material within the plant community. Dense tamarisk stands can be highly flammable in areas where limited or non-existent flooding allows litter to accumulate on the floodplain (USFWS 2002b). Tamarisk established in this location is also extremely susceptible to flood scour and removal (Stromberg 1997, Stromberg *et al.* 1991).

Despite being implicated as a cause for the decline of riparian bird species in the Southwest, tamarisk often supports nesting SWWF (Owen and Sogge 2002). Recent studies (Owen and Sogge 2002, Drost *et al.* 2001) indicate that tamarisk not only provides adequate nesting habitat, but insect numbers are also sufficient to provide food for adults and young SWWF. Cottonwood and willow flower early in the spring, while tamarisk flowers later in the spring and summer when breeding SWWF have migrated back to Arizona (Drost *et al.* 2001).

Brady Pincushion Cactus

The BLM established the 10,700-acre Marble Canyon ACEC for Brady pincushion in 1995 to protect the majority of known occupied Brady pincushion habitat on BLM lands. Efforts to reduce OHV activity in this area appear to be successful. The species has been affected by drought since the mid-1990s and herbivory by rodents.

Holmgren Milk Vetch and Critical Habitat

Current activities affecting the species in the action area include urban expansion and development, road/highway construction, off-road vehicle use, displacement by exotic weeds, livestock grazing, mining, and mineral exploration. The small number of populations and restricted habitat of this species make it vulnerable to human-caused and natural environmental disturbances. At the current rate of habitat loss for this species in Utah, the population in Arizona has significant conservation status and is very important for the recovery of the species. A recovery plan was finalized in 2006.

Jones' Cycladenia

Jones' Cycladenia populations on BLM lands occur in remote locations and are not currently experiencing negative effects from mining or recreational activities. Drought seems to be the primary factor affecting the populations. Populations of Jones' Cycladenia are within the Cane Bed allotment, but there seems to be no observed effect from livestock grazing on these plants.

Siler Pincushion Cactus

Current activities that affect the species include livestock grazing and unauthorized OHV travel associated with growing urban areas, especially near St. George and Fredonia. Livestock grazing is authorized on 16 allotments on the Arizona Strip within Siler pincushion cactus habitat. However, monitoring data have shown only limited mortality due to grazing and other human-

caused activities. Most mortality has been from herbivory by rodents and lagomorphs, and possibly by drought.

Welsh's Milkweed

Livestock grazing is authorized within habitat of the species. The habitat area within the Vermilion is withdrawn from new mineral entry. The area is closed to OHVs and the wilderness designation precludes use of motorized vehicles in the area, although exceptions may be granted for permitted operations.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

General

Effects to listed species in the project area may include loss or alteration of native habitats, increased invasion of noxious weeds and other exotic weed species, decreased water availability, increased habitat fragmentation, changes in habitat and species composition, disruption of species behavior leading to reduced reproductive fitness and/or increased susceptibility to predation, and direct mortality of individuals. Surface disturbing actions that alter vegetation characteristics (e.g. structure, composition, and/or production) have the potential to affect habitat suitability for listed species, particularly where the disturbance removes or reduces cover and/or food resources. Many habitat protection measures are also expected to occur during the 15 to 20-year life of the project. Even minor changes to vegetation communities have the potential to affect the species.

Management activities may result in mortality or displacement of individuals, disturbance due to reduced air or water quality, and alteration of immediate environments through loss of or changes to habitat components including food or water availability or quality, cover from predators, thermal refugia, nesting/roosting/denning habitat, and travel corridors.

Effects to listed species may result from components of the proposed action including: travel management; vegetation management; fire management; air, water, and soil management; fish and wildlife management; special status species management; mineral development; livestock grazing; recreation; and lands and realty.

Vegetation Management

Effects of vegetation restoration treatments on listed species may include: disturbance of breeding, feeding, and sheltering activities; temporary or permanent loss of habitat or habitat components; increased habitat fragmentation; increased susceptibility to predation; forced emigration; and direct injury or mortality. Reclamation actions such as re-contouring, ripping compacted areas, replacing topsoil, seeding, and planting can injure or kill individuals. The magnitude of anticipated impacts will vary with the treatment method. Following vegetation treatment, increased invasion of noxious weeds and other exotic weed species, decreased water availability, and long-term changes in habitat and species composition could affect listed species. Mechanical and chemical treatment methods could result in localized impacts to air quality.

Use and/or sale of vegetation products will not be authorized in the Vermilion area. On BLM lands in the Parashant NM, sale, collection or use of vegetative materials will require a permit and may be authorized only if tied to a research or restoration project, as well as consistent with achieving DFCs and protecting Monument objects. On NPS lands, these authorizations will not include sale of vegetative materials and must be in accordance with NPS regulations and policy. Sale, collection, or use of vegetative materials on the ASFO would also require a permit and would only be authorized for those areas where resource management objectives have been developed. Salvage of vegetation that will be destroyed through surface disturbing activities may be authorized in the project area where doing so would assist in achieving DFCs. Possible effects to listed species include disturbance of individuals at breeding, feeding, or sheltering sites; loss of cover or similar habitat features; injury or death; increased risk of fire; increased risk of predation; and nest abandonment, increased soil surface temperatures, and changes in species composition and/or community structure. Depending on the method used, management of noxious weeds may result in effects to non-target plant species including listed plant species and vegetative components of listed species.

Fire and Fuels Management

Effects of fire suppression and fire and fuels management activities on BLM-administered lands on the Arizona Strip were analyzed as part of the September 3, 2004 Biological and Conference Opinion for the BLM Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management (file number 02-21-03-F-0210) (2004 BO). The 2004 BO is incorporated here by reference. The BA for this action includes the same conservation measures for managing these activities within special status species habitats that were included in the 2004 BO. However, for this proposed action, BLM did not provide any site-specific information on the prescriptions or appropriate management responses that will be applied in listed species habitats. If BLM plans to include these treatments in habitat for these species, site-specific consultation should occur on these activities prior to implementation to fully analyze potential effects.

Wildfire, prescribed fire, and fire suppression activities may result in injury or death of individuals of listed species; disturbance/displacement from breeding, feeding, and/or sheltering activities; and increased risk of predation. Prescribed fires are designed to provide overall habitat protection. Wildfires may leave the surrounding soil and accumulated ash vulnerable to erosion and remove shading streamside vegetation, which will increase sedimentation and water

temperature. Effects may include reduction in plant vigor or animal health, alteration or loss of plant communities, loss of seed-dispersal mechanisms, increased light penetration and temperatures, and loss of cover. Chemical retardants may have adverse effects on vegetation and/or wildlife that forage upon them.

Lands and Realty

Disposal, exchange, or sale of lands and issuance of ROWs may result in loss of habitat and individuals of listed species. The proposed action includes land exchanges or sales of up to 1,162 acres of BLM lands in the Virgin River corridor. Some parcels of land available for disposal contain listed plant species habitat. In the monuments, listed species could be affected by issuance of ROWs necessary for access and/or maintenance needs in private or State in-holdings, and existing ROWs or designated corridors.

Livestock Grazing

Livestock grazing may result in injury or death of individuals due to trampling. Grazing may also result in degradation and localized loss of habitat due to changes in plant community composition and dynamics and erosion.

Minerals

Mineral development in the ASFO could include locatable mineral development, oil and gas development, and mineral material sales/disposal almost anywhere in the unit. Effects to listed species may include disturbance, injury, or mortality of individuals and degradation or loss of habitat resulting from the extraction and construction associated with those activities. Vehicles associated with mineral development activities could strike listed species. Chemicals used in mineral extraction, and trash and debris at mining sites may result in degradation of habitat or injury or mortality of individuals.

Recreation

A wide variety of recreational activities occur throughout the project area. Commercial activities and organized non-commercial events of more than 50 participants will generally be authorized with a special recreation permit. Such permits typically allow for vehicular events such as motorcycle races or OHV or horseback tours, guided hiking or hunting trips, research oriented field schools, or orienteering events such as geo-caching. Vehicle use, foot traffic, camping and other components of recreation may result in injury or death of individuals and degradation or loss of habitat.

Travel Management

Roads may affect listed species by fragmenting habitat; reducing available habitat for breeding and foraging activities; providing access corridors for weed invasion, hunting, pollution, wildfires, and habitat-altering projects; increasing erosion; increasing opportunities for collisions; and disturbing species' movement and habitat use. Not all roads are the same in their

effects on listed species due to variables such as road widths, location, traffic type, speed, and volume. In general, the lower the speed and volume of traffic, the lower the likelihood of collision. Only a few roads in the ASFO are paved, none of the roads within the monuments are paved, and there are no plans to pave or authorize paving of roads in the monuments. The average speed for most roads in the project area is generally less than 35 miles per hour. Increased road access may result in increased foot traffic or unauthorized OHV use in listed species habitat. In the Parashant NM, 1,404 miles will remain open for motorized use by the public. In the Vermilion NM, 377 miles will remain open for motorized use by the public. In the ASFO, two miles of routes will be closed initially. Route designation decisions will be made in the future.

Virgin River Fishes and Critical Habitat

Vegetation Management

The BLM anticipates treating tamarisk along the Virgin River and its tributaries, using prescribed fire and mechanical and chemical treatment methods (BLM 2004). Conservation measure FT-3 will require an inventory for these species prior to any treatments (FEIS Appendix 2E, ASDO 2007a). No more than 300 acres will be treated in a year. Limiting the treatment area to this size would significantly reduce the likelihood of elevated flows and consequent changes to the flow regime and water quality. Potential for successfully restoring native vegetation will be determined at sites proposed for treatment.

Chemical treatments are proposed for tamarisk along the Virgin River. Garlon 4 (triclopyr) and Arsenal (imazapyr) are the two herbicides that are labeled for tamarisk control and removal approved for use on BLM lands (BLM 1991). Triclopyr is rated as a class 2 pesticide for warm water fish; imazapyr is rated as class 0. FWS guidance (USFWS 2004b) recommends larger buffer zones for triclopyr application near large water bodies than the BLM currently proposes (recommended 20 to 350 feet, depending on the application method). Buffer zones proposed for imazapyr application should be sufficient to avoid adverse effects. Depending on the actual location of application, pesticide formulation, and dilution rate, effects could include reduction in invertebrate food sources, fish behavioral changes, and sublethal effects (endocrine disruption). FWS recommended buffers the development of buffers for the site-specific project plans and additional section 7 consultation, where needed.

Effects to Virgin River chub and woundfin from implementation of vegetation treatments or restoration projects would vary by the method of treatment used. Direct effects could include minor disturbance from chemical treatments or physical removal of non-native habitat. Disturbance could temporarily displace fish from key spawning areas, depending upon the timing of the proposed action. Indirect effects could include reduced fitness resulting from loss of vegetative cover, increased potential for predation, and change or loss of food resources associated with changes in vegetation community dynamics. The FEIS also authorizes use of non-native seeds in re-establishing vegetation following treatment. The use of non-native vegetation could lead to additional adverse affects to native fishes, depending upon the species used.

The proposed vegetation treatments may beneficially affect the primary constituent elements of physical habitat (presence or riffles, pools, and preferred substrates in designated critical habitat). Downstream of the Beaver Dam Wash confluence, the river channel is stabilized by tamarisk, creating narrow, deeper channels with decreased turbidity and increased substrate size. BLM has proposed tamarisk removal along narrowed portions of the active channel; this may allow the river to develop wider, shallower channels with increased turbidity and the sand substrate habitats that woundfin prefer.

Tamarisk removal may encourage pool formation in the Virgin River which is preferred habitat for Virgin River chub. River widening can result in mid-channel bar development as sediment accumulates in the channel. During higher flows, water is diverted into river banks when it comes into contact with a bar. Often pools are scoured into the stream bed when the bar is located upstream of a river bend. Increased widening causes lateral erosion on the river banks. When trees or rock are exposed or topple into the river, pools are often scoured on the downstream end. Pool habitat formation and availability to Virgin River chub is not known.

Fire and Fuels Management

The BA did not discuss proposed prescribed fire or wildland fire use outside of riparian and upland desert scrub habitats. However, large portions of the Virgin River watershed within the action area, including Fort Pierce Wash, are located at higher elevations containing other vegetation communities (sagebrush, pinyon-juniper, blackbrush, and ponderosa pine) that may be treated in the future (BLM 2004) and will be addressed separately in a future consultation. Prescribed fire or wildland fire would be a management option in riparian and upland desert scrub habitats.

Large prescribed fires have the potential to result in higher peak runoff events into aquatic systems. However, given the large watershed size outside of the planning area, it is unlikely that BLM-administered prescribed burns in the watershed would significantly increase peak flows into the Virgin River. The 5,500 acres of projected prescribed burning in the Virgin River HUC are broken into four parcels: 400 acres, 600 acres, 700 acres and 3,500 acres (BLM 2004). Seventy-five percent of the proposed projects in the Fort Pierce HUC are located in the upper reaches of this watershed. A network of stock tanks and reservoirs in Fort Pierce Wash will help store sediment and dissipate flow energy in the event of a large flood flow. Site-specific individual fire plans will include treatment area sizes, locations within the Virgin River watershed, and an analysis of the project impacts on Virgin River peak flows and effects on Virgin River chub and woundfin.

Wildfires have occurred within tamarisk along the Virgin River in the past. Because of the intensity and safety concerns associated with these fires, aggressive suppression actions are not generally taken in tamarisk unless valuable resources (e.g. federally-listed species habitat), homes, or public safety is in danger. In past suppression efforts, water has not often been drafted from the Virgin River. Large fire engines are usually used when more aggressive suppression actions are attempted. Smaller pumps may result in mortality of Virgin River chub if the fish are caught in pumps and sprayed onto a fire. Woundfin mortality would be unlikely because they occur in shallower water where pumping would not occur. BLM will take measures to minimize

taking fish while drafting water (conservation measure RA-8). Fire trucks have also been able to obtain water from fire stations in the area. Helicopters would not dip water from the Virgin River because the river is not deep enough or wide enough to do so safely.

Fire suppression actions could affect Virgin River chub and woundfin and their critical habitat by contaminating water quality with retardants or petroleum products. Conservation measure RA-6, which avoids the use of fire retardant and foam within 300 feet of open water or within riparian areas, would limit drift and direct application to critical habitat. Conservation measure RA-9, which requires the use of containment systems to prevent fuel spills, would be implemented to minimize negative effects to water quality in critical habitats. Other fire suppression effects to water quality would be similar to those described in the section on general effects for federally-protected fish species: increases in sediments, ash, or debris; alteration of water chemistry; and decreases in water quality. However, surface-disturbing fire suppression actions (such as constructing fire breaks) within salt cedar are likely to be limited because of the difficulty of suppressing fires in these areas, so these effects are not to be significant in the river and these fishes' critical habitat.

Conservation measure RA-8 prevents unused water from fire suppression activities from being dumped back in the river and into critical habitat, which would reduce the spread of disease and the likelihood introducing additional non-native competitors or predators.

Native Fish Management Actions

Virgin River chub and woundfin will benefit in the long-term from fish barrier construction by preventing the movement of non-native fish upstream of the barrier in the Virgin River. The proposed barrier location, within the Virgin River Gorge, is upstream of key Virgin River chub habitat at the Beaver Dam Wash confluence. Virgin River chub and woundfin located below the barrier would be still be affected by competition and predation by non-native species. These downstream fish would also be more isolated from upstream portions of the Virgin River. The river is largely dry at the site of the barrier except during flood events when fish from up-and down-stream may move through the system. Although the barrier would prevent downstream fish from moving up, it will not impair upstream fish from moving down. Prior to construction of the barrier, the BLM or lead agency on the project would initiate consultation with us.

In the short-term, Virgin River chub and woundfin within the vicinity of the barrier during construction may be disturbed, injured, or killed by heavy equipment work if there is surface flow present. Specific conservation measures such as keeping heavy equipment out of water and culvert installation to divert low base flows away from construction may limit these effects. The barrier would change river channel conditions up and downstream of its location. Fish barriers form sediment collection traps upstream and scour holes below the structure. Pool habitat immediately upstream from the barrier dam would likely be filled by sediment and form shallow sandy runs. Additional, site specific consultation will be needed for these activities. These effects would also likely benefit woundfin, which prefer shallower water, and adversely effect Virgin River chub, which use pool habitats. The scour hole below the barrier would create pool habitat preferred by Virgin River chub. Virgin River chub are not commonly found in the

Virgin River Gorge so this might not be a significant effect. However, the benefits from non-native fish removal would over-shadow the loss of pool habitat immediately above the barrier.

The Virgin River Fishes Recovery Team, in which the BLM would cooperate, would implement treatments to kill non-native fish using rotenone or another piscicide. Rotenone coats gills and prevents fish from breathing. The chemical is non-specific and affects all gill-breathing organisms. All fish, including Virgin River chub and woundfin, would be killed. While attempts would be made to salvage native fish prior to the treatments, any remaining fish would be killed during the chemical treatment process. These renovations will be consulted upon prior to implementation.

The FEIS states that the ASDO will continue to support applications for instream flow rights with the Arizona Department of Water Resources. The ASDO submitted an Application for Permit to Appropriate Water for five different Virgin River reaches in 1989 and one reach in 1991. These applications have water use priority dates ranging between June 1, 1989 and December 23, 1991. These instream flow rights will be very beneficial to the Virgin River fishes as they would help protect surface flows needed by these species. These applications were protested by water user groups in Nevada and were not issued to the ASDO at that time. Information regarding the current status of these applications was not made available to the AESO.

Lands and Realty

Disposal of Federal lands, in terms of time and subsequent development or use, is unclear and will remain so until specific disposal actions are initiated. The attributes of any land to be transferred to the Federal government in exchange for the disposed lands is also unclear. However, effects of the land exchange and disposal program cannot be fully evaluated on a parcel by parcel basis and require the type of programmatic overview included in this consultation. Site-specific section 7 consultation on the effects of individual land exchanges may be needed as those actions are initiated.

Lands within the Virgin River Corridor ACEC (which includes critical habitat for Virgin River chub and woundfin) are not available for disposal. BLM may dispose of or exchange up to 3,282 acres of public lands near Beaver Dam, Littlefield, and Scenic, Arizona. The transfer of lands out of Federal ownership and subsequent development of those lands may indirectly affect Virgin River surface flows by reducing flows at springs and seeps. Increased groundwater pumping has the potential to reduce the surface flows in the Virgin River, which would have a significant effect on Virgin River chub and woundfin, as well as on critical habitat (water quality and quantity). Hydrologic studies indicate that local groundwater aquifers are well below river level, so pumping from these aquifers may have little effect on flows in the river (ADEQ 1999; Langenheim *et al.* 2000). However, these studies also acknowledge that there are many unknowns in predicting how ground and surface water systems would respond to development of lands along the river. Surface and shallow sub-surface flow reductions could lead to temporary or permanent reduction or alteration of breeding, feeding, or sheltering habitat. Reduced flows would decrease available water along channel margins that these fish need for cover. Riffles and streambanks are the first habitats affected by lower flows (Armstrong *et al.* 2001, Nehring 1979).

If the water surface level drops sufficiently, riffles would become impassable and fish may become concentrated in the remaining pool habitats. Fish can become stressed when they are concentrated in small pools, especially in warm summer months if water quality declines. Smaller fish may also suffer increased predation under these circumstances (Armstrong *et al.* 2001). Lower water levels may decrease fish habitat quality when streambank cover, woody debris, and overhanging banks are no longer accessible to fish. Fish not only lose cover for protection from predation and foraging habitat, but water temperatures may rise if shoreline vegetation is no longer shading portions of the channel.

Livestock Grazing

The grazing allotments that contain portions of the Virgin River (Beaver Dam Slope, Highway, Littlefield Community, Cedar Wash, and Mormon Well) are only grazed from October 15 to March 15. Livestock are not authorized to graze along the Virgin River at the Beaver Dam Wash confluence. Livestock do not concentrate in riparian and aquatic areas at this time of year as they do in the warmer spring-summer months. Fall-winter grazing seasons generally allow for riparian vegetation establishment and maintenance, which help stabilize the river channel and trap sediment. Riparian vegetation is dormant through most of this period and is not fed upon heavily by livestock during late fall and winter. Data from study plots along the Virgin River have shown that willow and tamarisk survive grazing use when livestock use is limited to the fall and winter (Hughes 2000).

Virgin River chub and woundfin begin spawning in April, after the authorized grazing period (Cross 1975, Hickman 1978). Therefore, fish eggs or fry should not be exposed to direct injury or mortality from livestock in the river corridor.

Minerals

Virgin River fish habitat in the Virgin River Gorge Scenic Withdrawal area would not be affected by mineral extraction due to the existing mineral entry closure. The remainder of the Virgin River fish habitat in the Virgin River Corridor ACEC would remain open to mineral entry with a plan of operation. FLPMA and BLM policy (BLM Manual 1613) require the BLM to give priority to the designation and protection of ACECs during the land use planning process. ACEC designation does not automatically prohibit or restrict other uses in the area. The one exception is that a mining plan of operation is required for any proposed mining activity within a designated ACEC. The BLM makes a determination, through the NEPA process, as to whether or not a mining permit, license, or lease should be issued. The BLM may develop stipulations needed to protect water quality and other resource values in an ACEC. The BLM will initiate section 7 consultations for any mining plans of operation as they are proposed.

The fisheries and wildlife habitat rehabilitation that is required as part of a mining plan of operation, and the requirement that operators shall comply with applicable Federal and state water quality standards, including the Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 et seq.) should adequately protect Virgin River fishes and their critical habitat from significant adverse effects.

Virgin River fish and their critical habitat will be protected from future effects of mineral material sites because no new mineral material sites would be authorized within the Virgin River Corridor ACEC. The three existing mineral material sites within the Virgin River Corridor ACEC will be closed and rehabilitated.

The large ponds that are often formed as a result of gravel operations create warmer water conditions that may improve habitats for non-native fish species such as red shiner, catfish, and bass that prey on native fish species (Kondolf *et al.* 2001).

Continued use of the Littlefield gravel pit use would have no effect on these species because it is located outside of the 100-year floodplain and critical habitat. .

Recreation

Virgin River recreational use has the potential to impact Virgin River chub and woundfin and their critical habitat through increased erosion from trail creation and streambank alteration, trash, pollution, impaired water quality, and human-caused fire that can adversely affect aquatic habitat. River access in the Virgin River Gorge is limited by the lack of parking areas and controlled access along Interstate-15. River access for recreationists downstream of the Virgin River Gorge may be limited by the large tamarisk stands present along the river, as well as large parcels of private land.

Woundfin spawn in shallow water, which makes their eggs and fry susceptible to trampling by recreationists. Recreation use is lowest during summer (USFWS 2000). Flows during October to April are typically higher than in the summer, thus providing more habitat area for fish, reducing their concentration, and reducing the risks to fish and their eggs from recreation. Although specific Virgin River chub spawning habitat needs are unknown, adults and juveniles typically use pool habitats (USFWS 2000). This would be expected to reduce the risk of harm, injury or death of individuals from recreationists.

Travel Management

Virgin River fish and their critical habitat are protected from OHV and other travel management effects because the Virgin River Corridor ACEC is closed to all motorized vehicles. There are no direct access routes to the Virgin River within the Virgin River Gorge. Except for Interstate 15, the Gorge is located within the Paiute and Beaver Dam Mountains Wilderness and is closed to motorized vehicles.

Special Designations

Designation of the Virgin River Corridor ACEC continues enhanced management for the Virgin River chub and woundfin by minimizing adverse effects from other resource management programs. Impacts from restrictions on authorized uses within these fishes' habitats are described under the resource program where the restrictions apply. ACEC designation is considered to be wholly beneficial for management of these species.

The Virgin River chub and woundfin benefit by interim protection for the Virgin River Wild and Scenic River Study Area until Congress makes a final decision regarding Wild and Scenic River designation. Land management activities would not be allowed to damage the existing eligibility, classification, or suitability of these segments of the Virgin River for inclusion in the Wild and Scenic River system. This includes protecting the Virgin River's free-flowing characteristics from modification, which further protects the Virgin River fish species and their critical habitat. Virgin River fish were among the issues used to support this recommendation (BLM 1994).

The Pauite and Beaver Dam Mountains Wilderness Plan (BLM 1990) would be modified to benefit the Virgin River fishes through incorporation of Virgin River Fishes Recovery Plan actions (USFWS 1995a). These include fish barrier construction, non-native fish removal, and Virgin River instream flow application.

Desert Tortoise

Vegetation Management

Vegetation treatments could be used in desert tortoise habitat to enhance vegetation diversity, restore native plant communities, maintain or increase wildlife habitat, and reduce or eliminate hazardous fuels. Treatment priority areas would be where desert tortoise habitat has burned and/or converted to invasive annual grass communities.

While the long-term effects of these restoration projects would be beneficial to desert tortoise, short-term adverse effects to desert tortoise could occur. Adverse effects may result from crushing of individuals above ground or in burrows, loss of burrows and sheltersites, and loss of forage by use of vehicles or equipment during treatment activities. BLM will conduct pre-treatment surveys to identify desert tortoise burrows and protect any sites and/or eggs through avoidance. This should eliminate loss of any desert tortoise or eggs in burrows by crushing within the treatment areas. Conducting most project activities during the tortoise dormant period (October 15 to December 15) should also reduce the likelihood of harm. Biological monitors will be present during project activities to check burrows and move any desert tortoises encountered out of harm's way.

Desert tortoise may occasionally emerge from burrows, depending on weather conditions, for short periods during the dormant season. Although the conservation measures should effectively minimize any risk of injury to desert tortoise, there is a possibility that a desert tortoise, particularly a hatchling, could be missed by the biological monitor and could be inadvertently injured or killed by people or equipment.

Desert tortoises that are physically moved out of treatment areas to prevent mortality or injury could be harmed if not handled properly. Urine and large amounts of urates are frequently voided during handling and may represent a severe water loss, particularly to juveniles (Luckenbach 1982). Desert tortoise drink and store large amounts of water after winter rains to allow them to digest dry grasses and forbs in the summer (Oftedal *et al.* 1993, Peterson 1996). If desert

tortoises lose stored water, they are unable to eat dry summer forage and starvation may occur (Peterson 1996).

Overheating can occur if desert tortoises are not placed in the shade when ambient temperatures equal or exceed temperature maximums for the species (Desert Tortoise Council 1994, revised 1999). BLM will implement a desert tortoise education program and protocol for handling desert tortoise, ensuring that only qualified individuals handle tortoises and that tortoises would only be handled if necessary, which should reduce these potential effects.

Measures to control and properly dispose of waste should minimize the attraction of predatory species to the project areas.

Since the purpose of these treatments would be to restore native shrub habitat, successful rehabilitation of these areas should restore these habitat features. If rehabilitation efforts are not effective, there may be a longer-term degradation of desert tortoise habitat in these treatment areas where the existing vegetation is disturbed by project activities.

Critical Habitat

Primary constituent elements that would be affected by vegetation treatments are: sufficient quality and quantity of forage species and proper soil conditions to provide for desert tortoise; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

Forage species quality and quantity may be slightly reduced where existing vegetation is disturbed during the treatment, until reseeding is successful. Depending on the treatment methods used, surface soils may be disturbed by vehicles and equipment.

In summary, there may be effects that directly impact tortoises and their habitat, including possible injury and/or mortality. Short-term disturbance to desert tortoise critical habitat may also occur from treatments. Over the long-term, we expect the condition of critical habitat to remain stable or improve due to the treatments that restore native vegetation communities and suppress the invasive annual species-fire cycle.

Sale or Use of Vegetation Products: The Pakoon DWMA/ACEC is closed to the collection of vegetation products (i.e. native seed, medicinal plants, landscape mulch, posts, and fuel wood). The Beaver Dam Slope DWMA/ACEC (ASFO) was not closed to the collection of these products; the collection of vegetation products is restricted unless it meets specific resource management objectives. However, few if any, vegetation products are available in desert tortoise habitat. Effects from sale or use of vegetation products in Mojave desert tortoise habitat are considered discountable.

Fire and Fuels Management

The FEIS proposes to continue full suppression of fire within desert tortoise DWMA/ACECs with minimum surface disturbance, in accordance with guidelines in Duck *et al.* (1994) and the

programmatic Statewide Land Use Plan Amendment for Fire and Fuels biological opinion (FWS file number 02-21-03-F-0210). Minimum impact suppression tactics would be used.

Suppression actions could include construction of fire lines, use and removal of available water for portable pumps, use of gasoline powered equipment (vehicles, pumps, chain saws, etc.), and setting backfires. Use of heavy equipment for construction of fire lines would be authorized to limit the extent of habitat alteration from wildfires. A resource advisor or qualified biologist is required to walk ahead of heavy equipment to flag sensitive resources for avoidance, including tortoise burrows. Fire suppression forces are pre-positioned to promote protection of sensitive resources. Although minimum impact fire suppression tactics will be used, desert tortoises may still be adversely affected by placement of crew camps, operation of vehicles and equipment (including staging areas), aircraft landing/fueling sites, construction of fire-lines, use of retardants, and setting of backfires. Fire suppression actions in desert tortoise habitats would follow conservation measures described in Appendix B.

Lands and Realty

Land sales or exchanges would not directly affect desert tortoise critical habitat because these lands are not proposed for disposal. All public lands within DWMA/ACECs are to be retained. However, sale and subsequent development of public lands adjacent to DWMA/ACECs and designated critical habitat could result in adverse indirect effects. Most parcels on the disposal list are isolated and are not close to critical habitat. An increase in development would likely result in an increase in the number of people using desert tortoise habitat. This would likely increase OHV use, wildfire risk, illegal collection or killing of desert tortoise, spread of URTD, predation by domestic dogs, and attraction of other predators from trash accumulation.

Desert tortoise habitat outside of DWMA/ACECs has been proposed for disposal. Most of these parcels are isolated or close to existing development and generally are estimated to contain low populations of tortoise. Land disposals outside of DWMA/ACECs that could lead to adverse effects to desert tortoise or critical habitat would be addressed in future consultations. The FEIS includes specific conditions that must be met prior to initiating land disposal actions. These include provisions that BLM would not transfer out of Federal ownership lands supporting listed or proposed threatened or endangered species if such transfer would be inconsistent with recovery needs and objectives or would likely affect the recovery of the listed or proposed. The BLM would prepare a biological assessment when an applicant expresses interest in acquiring one or more parcels identified for disposal. The biological assessment would include a description of the land use and a discussion of how that use would affect desert tortoise and associated habitat. Exchanges and/or sales would be subject to compensation if they resulted in a net loss of tortoise habitat from public ownership. Compensation would be used for management of desert tortoise DWMA/ACECs.

The existing utility corridor located across the northern portion of the Beaver Dam Slope DWMA/ACEC would be widened to one mile wide to allow future utility development. Powerlines provide raven perches and nest platforms. Ravens are significant predators on hatchling desert tortoise. Transmission line poles provide elevated perches that ravens can hunt from more effectively than from lower, natural perches. These poles also provide nesting substrates for ravens in desert tortoise habitat, which can increase predatory pressure when adult

ravens are hunting to feed their young (Boarman 2002a). Transmission lines located across the Beaver Dam Slope DWMA/ACEC may result in increased raven predation on hatchling desert tortoise.

Powerline construction and future maintenance also require development of roads through desert tortoise habitat that allows for increased human access. This increases the risk of vehicular collision, wildfire, spread of invasive plants, and illegal collection or killing of desert tortoise. Powerlines or other utilities placed within the corridor would be required to meet the stipulations described above for land disposal actions before a right-of-way would be issued. BLM will initiate section 7 consultation for new right-of-way authorizations that may affect desert tortoise or its critical habitat.

The FEIS states that the BLM will work with Mohave County to determine an appropriate location for a landfill in the Beaver Dam-Littlefield area. The potential impacts that landfills can have on desert tortoise populations include: loss of habitat, spread of garbage, introduction of toxic chemicals, increased road kills from vehicles driving to or from the landfill, proliferation of predatory raven populations, and increases in coyote and feral dog populations (Boarman 2002b). The subsidized food supply helps ravens to survive the summer and winter, when natural sources of food are in low abundance (Boarman 1997). As a result, more ravens are present at the beginning of their breeding season (February to June) to nest, raise young, and prey upon desert tortoise. Raven predation is probably relatively low immediately around landfills where tortoise populations are relatively low, but increases as ravens disperse to distant nest sites (Boarman 2002b). If a landfill site is selected, the BLM will consult with us at that time.

Livestock Grazing

The Cottonwood, Mosby-Nay, and Pakoon Springs allotments will be managed under a deferred rotation grazing system. Managing these allotments under this system will move livestock to various pastures on succeeding years to allow periods of rest to the desert tortoise habitat during the tortoise active season. The Pakoon Allotment is managed under winter and spring grazing use. Allotment management plans for these allotments, which establish seasons of use and other management prescriptions consistent with achieving DFCs, would be prepared and consulted on with us.

The Cottonwood Allotment includes one pasture with desert tortoise habitat. This fenced pasture is used for only one month during the tortoise non-active season annually (November-January), and is rested during the growing season annually (March 1 through September 30). The remaining portions of the allotment are not in desert tortoise habitat.

The Pakoon Springs Allotment outside the former DWMA/ACEC is identified as available for grazing use as a forage reserve, or to be reconfigured into other allotments, where that use is determined to be advantageous to management and/or protection of high priority resources. An allotment management plan and seasons of use will be developed to ensure that forage reserves are in conformance with the Standards of Rangeland Health.

The Mosby-Nay allotment is located in what was formerly classified as category 3 Mojave desert tortoise habitat, and contains designated desert tortoise critical habitat.

Direct Effects

Cattle have been known to trample desert tortoises and their burrows, but the frequency of trampling, or how this affects tortoise populations is unclear. Direct mortality or injury may occur if cattle step on tortoises, their eggs, tortoise burrows, or sheltersites (Burge 1977; Berry 1989; Avery and Neibergs 1993; USFWS 1994). These direct effects can occur when grazing is authorized during the desert tortoise inactive period. Several cases of trampling have been reported on the Arizona Strip; however, the frequency with which trampling occurs is unknown. Trampling has been documented twice on the Beaver Dam Slope, in 1988 (Coffeen 1990) and in 1991 (BLM 1991).

Livestock are not likely to trample desert tortoise eggs within the DWMA/ACECs since eggs are laid from mid-May through July and most or all would hatch before cattle would be turned out onto the allotments in October (Ernst *et al.* 1994). Egg trampling could still occur in habitat outside of the DWMA/ACECs where spring-summer grazing occurs as part of deferred grazing systems.

Grazing and associated activities may also result in direct mortality or injury of desert tortoises that are struck by vehicles associated with grazing activities, and possibly during range improvement project construction and maintenance. Range development construction and maintenance could result in minor disturbance of habitat. During range improvement construction, maintenance, and inspection, some desert tortoise mortality or injury could result through collisions with vehicles or other equipment. Access to new or existing range developments could lead to desert tortoise mortality through illegal collection, vandalism, crushing by vehicles, and shooting. No desert tortoise mortality has been recorded at existing livestock water developments in the planning areas, and none are expected to occur under the proposed action. No new range improvement projects are currently proposed in desert tortoise habitat. New projects that are proposed in the future would be consulted upon at that time. Desert tortoise mortalities have not been documented at existing livestock water developments in the planning areas.

Indirect Effects

Non-native annual plants; such as split grass (*Schismus arabicus*), filaree (*Erodium cicutarium*), and red brome have increased because of livestock grazing, while native perennial bunchgrasses, which are highly palatable desert tortoise forage species, have become less abundant in many areas (Berry and Nicholson 1984, McClaran and Anable 1992). Native perennial grasses have been reduced or eliminated as a result of historical land use practices and wildfire on the Beaver Dam Slope DWMA/ACEC (ASDO 2007a). These trends are expected to continue under the proposed action.

Both cattle and desert tortoises consume annual forbs and grasses in the spring if winter precipitation has been sufficient for annual production (Burkhardt and Chamberlain 1982, Burge

and Bradley 1976, Coombs 1979, Minden 1980, Esque 1994). During dry winters and other seasons, cattle consume primarily perennial shrub and grass species, such as white bursage, range ratany, and big galleta grass. Outside of the spring months or in dry years when winter annual plants are not available, desert tortoise diets comprise a greater percentage of shrubs, perennial grasses, and dried annuals (Henen 1992; Turner *et al.* 1984; Nagy and Medica 1986; Hohman and Ohmart 1980).

Several authors have suggested that cattle and desert tortoise compete for forage (Berry 1978, Karl 1981, Coombs 1979). Dietary overlap between the two was as high as 60 percent on the Beaver Dam Slope in Arizona and Utah (Hohman and Ohmart 1980, Coombs 1979). However, studies in the eastern Mojave Desert of California suggest desert tortoise and cattle may not compete for forage at even lower levels of annual plant production than those prescribed by Tracy *et al.* (1994). At stocking rates of 1.7 animal unit months (AUM)/mi²/month, Avery (1996) found that cattle did not cause adverse changes in desert tortoise foraging. Although dietary overlap between cattle and desert tortoise was great, food abundance was sufficient to prevent competition for food. During Avery's study, biomass of spring annuals exceeded 200 pounds per acre in one year and was approximately 70 pounds per acre in the second year of the study.

The Cedar Wash, Beaver Dam Slope, Highway, and Mormon Well allotments; Littlefield Slope Pasture of the Littlefield Community Allotment; Littlefield Slope Pasture of the Mesquite Allotment; and that portion of the Pakoon Allotment within the former Pakoon ACEC (Grand Gulch Wash area) will be available for grazing from October 15 through March 15. This seasonal restriction would reduce some forage competition for winter annual plants, which exhibit most growth in April and May (Beatley 1974). Livestock would be feeding upon what early winter annual growth may be available, plus perennial shrubs and grasses, at this time. If perennial plants are overgrazed and reduced in availability, desert tortoise would have less perennial forage in the summer when it is needed most (Jarchow and May 1989, Nagy and Medica 1986). If winter precipitation does not produce winter annual growth, desert tortoise exiting hibernation must feed upon perennial shrubs and grasses and what dried annual vegetation is still available after livestock have been grazing in the area. Ensuring that cattle do not exceed the established forage use threshold of 45 percent current annual growth will help reduce direct competition for forage between cattle and desert tortoises and simultaneously reduce the chances of desert tortoise habitat degradation.

The FEIS did not discuss livestock grazing effects on post-fire restoration projects (ASDO 2007a). Livestock grazing is currently permitted on most of the wildfire areas proposed for vegetative restoration treatment. Most, if not all, fire treatment projects have included fencing to protect these areas after they have been reseeded, or for areas to be used as a control (no treatment).

White bursage seedlings can rapidly colonize disturbed areas (Hunter 1987; McAuliffe 1988; Vasek 1979, 1980 in McAuliffe 1988). Because of its colonizing ability, white bursage is an important pioneer plant on disturbed areas in the Mojave Desert (Prose *et al.* 1987). Unlike creosotebush, white bursage readily establishes itself in disturbed, open sites (McAuliffe 1988). In a comparison between vegetation in disturbed and undisturbed sites, white bursage was

subdominant to creosotebush on undisturbed sites and dominant on disturbed sites 40 years after disturbance (Prose *et al.* 1987).

Once established, white bursage acts as a nurse plant to creosotebush and other desert species, providing improved microhabitat and protection from herbivory and temperature extremes (McAuliffe 1988, Franco and Nobel 1989). McAuliffe (1988) found that most creosotebush recruitment occurs beneath white bursage canopies. Creosotebush seedlings rarely establish in open areas and are completely absent from areas beneath mature creosotebush (McAuliffe 1988). The recovery of perennial vegetation on recently burned areas depends upon the presence of pioneer species such as white bursage. Long-lived perennials such as creosotebush do not re-establish in disturbed areas unless the appropriate nursery plant is present. White bursage can quickly re-establish in disturbed sites due to its large seed production (McAuliffe 1988) and the large numbers of germinating seedlings after heavy fall precipitation (Beatley 1974, Hunter 1987).

Fire can adversely affect desert tortoise critical habitat through the removal of perennial shrubs and grasses (USFWS 1994). Critical habitat recovery is dependant upon the re-establishment of nursery plants, such as white bursage, before important perennial shrubs, such as creosotebush, will recover in burn areas. Continuing to allow livestock grazing in burned areas may be prolonging the recovery of these sites to useable desert tortoise habitat. If livestock are feeding on white bursage and other important pioneering shrubs and grasses, creosotebush and other important desert tortoise habitat components may not re-establish after fires.

In summary, livestock grazing may adversely affect desert tortoises directly or indirectly through trampling, range management activities, and changes to the vegetation community that reduce or remove forage or change species composition and diversity.

Minerals

In the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994), surface disturbance that diminishes the capacity of the land to support desert tortoises, other wildlife, and native vegetation were found to be "generally incompatible" with recovery. However, the recovery plan makes exceptions for mining on a case-by-case basis so long as desert tortoises and their habitat are not significantly impacted and mitigation and restoration are implemented.

Most types of mineral development would result in alteration or destruction of desert tortoise habitat. Habitat alteration would be similar to that described for vegetation treatment projects. Rehabilitation would be required in most cases, meaning that most effects would be temporary.

Based on the almost complete lack of locatable mining activity, very low potential for mineral extraction in desert tortoise habitat, and BLM requirements for mitigation and restoration, adverse effects from locatable mineral extraction in the DWMAs/ACECs are anticipated to be insignificant. Degradation or alteration of up to 20 acres of tortoise habitat is expected as a result of locatable mineral development through the life of the plan.

Most types of mineral development could result in injury or mortality of desert tortoise. Vehicle traffic on the access road would increase the potential for adverse effects related to roads (see

also Travel Management, below). Direct effects include desert tortoise being struck by vehicles on roads or injured in their burrows. Trash and debris left at the site could attract ravens and increase the risk of predation. Restricting surface-disturbing activities to the desert tortoise inactive season (October 15 to March 15) would reduce the probability of some forms of take, but injuries to desert tortoise in their burrows could still occur.

The Littlefield pit is an existing pit for landscape boulders and the BLM proposes designate it as a community pit. The BLM would conduct site clearance surveys and implement desert tortoise exclusion methods prior to authorizing removal of resources and would only issue permits during the desert tortoise inactive season. Operations could disturb surface materials and could injure or kill desert tortoise remaining on site.

Recreation

The proposed action allows camping, backpacking, horseback riding, and mountain biking, provided these activities do not significantly impact desert tortoise or its critical habitat. Authorized actions such as commercial recreation or competitive events increase the probability of death or injury to desert tortoise from vehicle collisions. All competitive vehicular speed events are prohibited in DWMAs/ACECs. The probability of collisions would be reduced dramatically where vehicle use is limited to the desert tortoise inactive season. Organized non-speed events in DWMAs/ACECs will be limited to designated routes and only from October 15 to March 15. Desert tortoise would not likely be affected by these activities since they are not likely to be above ground at this time. The slow traffic speeds would reduce the likelihood of crushing tortoises by racing vehicles, if any tortoises are above ground at that time.

Vehicles will be allowed to pull off of designated roads up to 100 feet in the ASFO, but must park on the shoulder of the road within the Parashant NM. Special recreation permits will be issued to commercial enterprises, recreational events, and large groups. Special stipulations for desert tortoise protection will be included with these permits to reduce the likelihood of adverse affects. Additional seasonal stipulations that could be imposed to restrict activities that may result in adverse effects to desert tortoise and its critical habitats would also benefit the species.

Some desert tortoise mortality and crushing of burrows could occur as a result of vehicles pulling off the road for camping, horseback riding, mountain biking, or other recreational pursuits. However, given the relatively low level of public use in these areas, the incidence of injury or mortality should be very low.

Travel Management

Desert tortoises may be injured or killed by vehicles traveling on the existing transportation system. However, road miles are not all equal in their effects to desert tortoise due to variables such as road widths, location, and traffic type, speed, and volume. In general, the lower the traffic speed and volume, the lower the likelihood of collision with a desert tortoise. Most scientific literature concerning the effects of transportation systems on wildlife species is based on paved roads with high traffic volumes, traveling at high rates of speed. Many of the roads in desert tortoise habitat on the Arizona Strip are in remote areas that receive a low volume of

traffic, including the Pakoon Basin and the Beaver Dam Slope. These are dirt roads where reported collisions with desert tortoise have been infrequent (ASDO 2007a).

The BLM proposes to seek funding and cooperate with Mohave County, Arizona Department of Transportation, and others to erect tortoise fencing along Highway 91 on the Beaver Dam Slope and along other routes where desert tortoise mortality is or becomes significant. Fencing would benefit desert tortoise by reducing the mortality in this area. Roadkills are a substantial source of desert tortoise mortality in California as evidenced by data from two highways (Boarman *et al.* 1997). Desert tortoise populations are depauperate along highways and this depression may extend for at least 0.8 km or more from the road (Nicholson 1978, Boarman *et al.* 1997). Increased diversity and productivity of vegetation, resulting from enhanced hydrological conditions beside roads, attracts desert tortoises and places them at greater risk from motorized vehicles (Boarman *et al.* 1997).

Fencing however, would also separate the Beaver Dam Slope population into two sub-populations. This may further restrict gene flow in this population which is already separated from the Virgin Mountain Slope population by Interstate 15. Gene flow estimates between desert tortoise populations in the Sonoran Desert indicate that populations exchanged individuals historically at a rate greater than one migrant per generation (Edwards *et al.* 2004). The Beaver Dam Slope population status will continue to be negatively impacted by the limits on additional individuals migrating into the area, highway mortality; loss of perennial forage; mortality due to URTD; and reduced habitat quality due to a long history of cattle grazing, mining, and increasing development near Beaver Dam, Arizona (Brussard *et al.* 1994, USFWS 1994).

The FEIS route designation process will result in closure of specific routes through desert tortoise habitat. Rehabilitation of closed roads or temporary roads that are no longer needed would have moderate short- and long-term direct and indirect effects depending upon the habitat and the closure method. Physical closures, such as ripping portions of the road, could result in short-term impacts to desert tortoise through harm, injury or death if done during the active period. Long-term benefits to MDT and its critical habitat would result from closing and rehabilitating roads by eliminating or reversing many of the adverse effects described above.

Road maintenance, especially on remote dirt roads, improves vehicle travel conditions that allow increased traffic volume and higher speeds. Such conditions may lead to increased desert tortoise injury or mortality. Desert tortoise could also be crushed by maintenance equipment such as road graders. Road maintenance often involves grading into washes to improve drainage off the road. Desert tortoise could be injured in drainages, and burrows constructed in the banks of washes could be damaged or destroyed. Desert tortoise could be trapped in collapsed burrows following road maintenance. Maintenance activity effects to active desert tortoise would be reduced by limiting non-emergency road maintenance to the desert tortoise inactive season (October 15 to March 15).

Special Area Designation

Beaver Dam Slope and Virgin Slope ACECs will continue to provide enhanced management capabilities for desert tortoise, while minimizing adverse effects from other resource

management programs. Management prescriptions provided in the FEIS and in future ACEC plans would benefit desert tortoise by elevating this species to the highest priority and focusing management direction toward conservation and recovery efforts. Proposed boundary adjustments to the ACECs, including moving desert tortoise habitat from the Virgin River Corridor ACEC to the Beaver Dam Slope and Virgin Slope ACECs, will also enhance management capabilities. Withdrawing designation of the Pakoon ACEC will have no effect on desert tortoise as management within the National Monument will continue unchanged. The name will be changed to the Pakoon DWMA and the boundaries will remain the same as the former Pakoon ACEC.

Yuma Clapper Rail

Fire and Fuels Management

No direct effects to Yuma clapper rail would occur since BLM does not propose to implement prescribed burning in cattail-dominated wetlands, which constitute Yuma clapper rail habitat in the planning area. Although not documented in the BA, it is possible for these wildfires and controlled burns to spread into adjacent cattail habitats. Wildland fire is not likely to kill cattail, unless conditions are such that roots are destroyed (Nelson and Dietz 1966, Beule 1979). Most fires in cattail only burn the above ground biomass and do little to reduce the size of these marshes (Nelson and Dietz 1966). Cattail re-growth within these sites would resume immediately if wildfires occur in winter to early spring (Sojda and Solberg 1993). Cattail densities may actually increase immediately after burning and return to pre-fire densities three to four years post-fire (Ponzio *et al.* 2004). Fires that occur in the summer would remove habitat temporarily until the growing season resumes the following spring.

The BA did not discuss proposed prescribed fire or wildland fire use outside of riparian and upland desert scrub habitats (ASDO 2007a). However, large portions of the Virgin River watershed within the action area, including Fort Pierce Wash, are located at higher elevations containing other vegetation communities (sagebrush, pinyon-juniper, blackbrush, and ponderosa pine) that may be treated in the future (BLM 2004). Yuma clapper rail could be affected by fire suppression actions. The effects would be similar to those described for SWWF, and were previously consulted on in the programmatic consultation with BLM on their statewide fire management activities (file number 02-21-03-F-0210). Yuma clapper rail habitat suitability could be modified by handline construction and use of backfires. Fire suppression actions could occur in occupied habitats during the nesting season. The proposed action includes conservation measures to avoid or minimize these effects (Appendix B). The probability that fire suppression actions would modify wetland or cattail marsh habitat to the extent that it would no longer be considered suitable for Yuma clapper rails is very low (Nelson and Dietz 1966, Beule 1979).

Lands and Realty

The timing and eventual development and use of Federal lands that are disposed of is unclear and will remain so until specific disposal actions are initiated. The attributes of the land to be transferred to the Federal government in exchange for the disposed lands is also unclear. However, effects of the land disposal program cannot be fully evaluated on a parcel by parcel

basis and require the type of programmatic overview included in this amendment. Site-specific consultation on the effects of specific land exchanges would be needed as those actions are initiated.

Lands within the Virgin River Corridor ACEC are not available for disposal. The transfer of lands outside of the ACEC out of Federal ownership and subsequent development of those lands may indirectly affect Virgin River surface flows by reducing flows at springs and seeps. Increased groundwater pumping has the potential to reduce the surface flows in the Virgin River and have a significant impact on Yuma clapper rail if wetland habitats are reduced or lost. Hydrologic studies indicate that local groundwater aquifers are well below river level and may have little effect on flows in the river (ADEQ 1999, Langenheim *et al.* 2000). However, these studies acknowledge that there are many unknowns in predicting how ground and surface water systems would respond to development of lands along the river.

Livestock Grazing

The grazing allotments that contain portions of the Virgin River (Beaver Dam Slope, Highway, Littlefield Community, and Cedar Wash, and Mormon Well) will only be grazed from October 15 to March 15. Livestock are not authorized to graze in the Virgin River at the Beaver Dam Wash confluence where Yuma clapper rails have been documented.

Livestock do not concentrate in riparian and aquatic areas during fall and winter as they would do in the warmer spring-summer months. Fall-winter grazing seasons will allow for riparian vegetation establishment and maintenance, which help stabilize the river channel and trap sediment. Herbivory in early spring is not likely to adversely affect later growth (Sojda and Solberg 1993).

Minerals

Yuma clapper rail habitat in the Virgin River Corridor ACEC would remain open to mineral entry with a plan of operations. FLPMA and BLM policy (Manual 1613) require the BLM to give priority to the designation and protection of ACECs during the land use planning process. ACEC designation does not automatically prohibit or restrict other uses in the area. The one exception is that a mining plan of operations is required for any proposed mining activity within a designated ACEC. The BLM may develop stipulations needed to protect water quality and other resource values in an ACEC. The BLM will initiate section 7 consultations for mining plans of operation as they are proposed.

The fisheries and wildlife habitat rehabilitation that is required as part of a mining plan of operations and the requirement that operators shall comply with applicable Federal and state water quality standards, including the Federal Water Pollution Control Act, as amended (30 U.S.C. 1151 *et seq.*) will also protect Yuma clapper rails and their habitat. Yuma clapper rails are also protected by the recommendation to include the Virgin River in the Wild and Scenic River System. The Legislative EIS (BLM 1994) requires interim management to prohibit mining from damaging the Virgin River's existing eligibility, classification, or suitability (ASDO 2007b). The Beaver Dam Wash confluence area is within the Virgin River reach that was

recommended for recreational designation. Continued use of the Littlefield gravel pit would have no effect on the Yuma clapper rail because it is located outside of the Virgin River's 100-year floodplain.

Recreation

Recreational activities may directly affect Yuma clapper rails if recreationists can gain access to cattail habitats where Yuma clapper rails are nesting. The cattail habitat patches are not accessible by boats. Typically, cattails grow in thick dense stands that are inaccessible to hikers. Unless the cattail stand is linear in shape, the effects of recreationists near occupied Yuma clapper rail habitat are likely to be insignificant. Virgin River recreational use has the potential to impact Yuma clapper rail through increased risk of human-caused fire that can temporarily affect cattail habitat. The FEIS proposes to reduce or eliminate campfire use in riparian/wetland areas. Recreation activities that reduce habitat suitability for Yuma clapper rail are prohibited.

Travel Management

Yuma clapper rails are protected from OHV and other travel management effects because the Virgin River Corridor ACEC is closed to motorized vehicles. There are no established vehicle routes within this ACEC.

Special Designations

Virgin River Corridor ACEC designation provides enhanced management for the Yuma clapper rail by minimizing adverse affects from other resource management programs. Impacts from restrictions on authorized uses within Yuma clapper rail habitats are described under the resource program where the restrictions apply. ACEC designation is considered to be wholly beneficial for management of these species.

The Yuma clapper rail is benefited by the Virgin River Wild and Scenic River Study Area receiving interim protection until Congress makes a decision regarding Wild and Scenic River designations. Land management activities are not allowed to damage the existing eligibility, classification, or suitability of the Virgin River for inclusion in the Wild and Scenic River system. This includes protecting the Virgin River's free-flowing characteristics from modification, further protecting Yuma clapper rail habitat.

California Condor

California condors may be disturbed, and nesting and foraging areas degraded, by components of the proposed action including vegetation management, fire and fuels management, and mineral development. Injury or mortality of condors is most likely from ingesting contaminants.

Vegetation Management

Depending on location and extent, authorization of watershed, restoration, noxious weed, and vegetation treatments; prescribed fire and fuels reduction projects; sale and use of vegetation

products; and range improvement projects may result in modification of foraging and nesting areas used by condors. This modification may degrade the function of the areas to support species that become food for condors. It is possible that such actions may also degrade the characteristics of condor roost and nest locations. Noise and human activity associated with these actions may disturb the normal foraging and breeding behavior of individuals. Disturbance of normal behavior may result in less efficient foraging and reduced reproductive success. Under some circumstances, condors are known to be attracted to human activity, which could lead to adverse human-condor interactions and result in injury or death of individuals. Condors often ingest foreign materials; trash or other debris at work sites could be ingested by the birds, which could directly result in injury or death.

Fire and Fuels Management

Condor habitat could be degraded as a result of fire management. Fire (wildfire, wildland fire use, and prescribed fire) may result in large-scale and long-term degradation of areas that support species that are food for condors. Fire may result in loss of characteristics of roost and nest locations that are selected by condors. Fire may result in disturbance of the normal foraging and breeding behavior of individuals. Fire suppression or other on-the-ground management activities may also result in degradation of condor habitat and disturbance of individuals. Smoke from fires may affect the ability of foraging birds to locate carcasses, their ability to detect obstacles such as aircraft or transmission lines, and their ability to complete breeding activities. In some cases, human activity associated with fire management may attract condors, which may result in injury or death due to adverse human-condor interactions. Trash and contaminants associated with fire management may result in injury or death of individuals. Fire retardant may be ingested by condors feeding on contaminated carcasses, possibly poisoning and sickening these birds.

Minerals

The exploration for and development of mineral resources within the planning areas may degrade condor foraging, roosting, and nesting areas. Uranium development will likely involve use of heavy equipment and explosives to access breccia pipe deposits. That activity and construction of drill pads or other project-related facilities could degrade condor foraging, roosting, or nesting areas. Such activities may also result in the disturbance of condor behavior, leading to reduced foraging efficiency and reproductive success. Condors may be attracted to human activity associated with mineral extraction sites, which could lead to injury or death from condor interactions with humans or machinery. Condors may ingest trash, debris, machine fluids, or other contaminants associated with mineral development activity which may lead to direct injury or death of individuals.

Contaminants

As stated above, injury or death of condors may result from ingestion of project materials or waste products. Other contaminants in the project area may also result in injury or death. Ingestion of lead in carcasses and the resulting toxicity is a primary cause of injury and mortality to condors in the nonessential experimental population (Southwest Condor Review Team 2007).

At least one source of lead contamination is spent ammunition or fragments in the carcasses of animals killed by hunters. Animals shot but not retrieved, or gut piles that are not buried, are a potential food source and probably attract California condors. Condors feed on these carcasses or other remains and have become sick or have died from lead poisoning (Southwest Condor Review Team 2007).

Animal damage control on the Arizona Strip is conducted by the Division of Wildlife Services (Wildlife Services) of the U.S. Department of Agriculture. BLM may request the assistance of Wildlife Services for specific predator control issues. Methods employed by Wildlife Services typically involve use of fixed-wing aircraft to locate and shoot coyotes (in areas outside of the two monuments) where predation on livestock calves or pronghorn fawns is anticipated to be high. Only aerial or ground shooting is allowed. Wildlife Services prefers aerial gunning with a shotgun and steel shot. They rarely use ground shooting, but they gather the carcasses when ground shooting is employed. Toxicants and traps are not used by Wildlife Services on the Arizona Strip. Methods used for predator control actions, including using non-lead ammunition, are entirely at the discretion of Wildlife Services. BLM has requested that Wildlife Services use non-lead ammunition and direct their operations away from sensitive species habitat.

The BLM may use herbicides such as tebuthiuron (spike) to kill sagebrush, juniper, or other invasive species as a means of reducing hazardous fuels or increasing vegetative vigor. Spike is applied in pellet form at predetermined application rates from a fixed-wing aircraft. With the exception of a 30-acre agricultural lease on the Arizona-Nevada border, there are no agricultural areas within the project area. While condor exposure to pesticides is possible, effects are likely to be minimal.

Power Lines

Although condors could collide with cell towers, power lines, and other types of aerial communication towers, there have been no condor mortalities since The Peregrine Fund began using mock power poles for aversive conditioning prior to release into the wild (Southwest Condor Review Team 2007). As development continues, such collisions may be more likely where new facilities are constructed along a condor flight path. The BLM authorizes construction of power lines within identified utility corridors on the Arizona Strip.

Collisions with Aircraft

Aircraft may be used in the project area in association with a variety of authorized projects including animal damage control, fire suppression and reconnaissance, law enforcement, construction and maintenance of range and/or wildlife improvement projects, herbicide application, and wildlife inventories. A condor would be injured or killed if it collided with an aircraft, with objects slung below or behind an aircraft, or with objects dropped from aircraft such as chemical retardant. The BLM uses fixed-wing aircraft for fire reconnaissance and suppression actions such as retardant drops. Single engine air tankers (SEAT) are used for most applications of fire retardant. Helicopters are used to ferry fire suppression crews, supplies, and materials to remote locations when and where necessary and to drop water. Range and wildlife improvement projects in remote areas occasionally require use of a helicopter to ferry supplies, materials, and/or work

crews to the site. BLM applies herbicides and seed using aircraft at extremely low altitudes. However, since condors were first released in Arizona in 1996, there have been no condor injuries or mortalities associated with aircraft. FWS encourages all agencies to acquire recent condor location information from The Peregrine Fund prior to using aircraft in condor habitat.

Mexican Spotted Owl

Components of the proposed action including vegetation management (treatments, noxious weed control, sale and use of vegetation products), fire management, livestock grazing, mineral development, and permitted and non-permitted recreation may result in degradation or loss of MSO habitat and disturbance of the normal behavior of individuals.

Vegetation Management

Depending on location and extent, authorization of vegetation treatments, noxious weed control, and sale and use of vegetation products may result in modification of MSO habitat. The modification may degrade the function of the habitat to provide shelter and prey by affecting key habitat components. Noise and human activity associated with the actions may also disturb the normal foraging and breeding behavior of individuals; however, BLM would typically conduct these treatments outside the breeding season.

Vegetation management actions may not result in large-scale degradation of MSO canyon habitat. However, MSO canyon habitat does have a vegetative component that could be affected by removal and control of invasive species (e.g., tamarisk and Russian olive) in canyon habitat. Vegetated areas surrounding MSO canyon habitat provide foraging opportunities for MSO. Management of vegetation in those areas may directly affect the function of those areas to provide prey for the species. Restoration and vegetation treatment actions may include changes in plant community composition and species dynamics that could lead to changes in distribution and abundance of prey for MSO. It may also remove and/or change roosting microclimate along these riparian corridors. Authorization of the use of non-native seeds in re-establishing vegetation following treatment may lead to further adverse effects to plant community dynamics and habitat for prey species.

Water quality could be degraded by use of various herbicides such as Garlon and Roundup to prevent tamarisk re-growth. Use of herbicides in MSO habitat would be unlikely to result in direct exposure of individuals to the chemicals.

Fire and Fuels Management

MSO habitat may be degraded as a result of fire management. Fire (wildfire, wildland fire use, and prescribed fire) may result in loss of cover at roosting or nest sites. Fire may also result in large-scale and long-term degradation of areas that support prey species and foraging areas for MSO. Fire may result in disturbance of the normal foraging and breeding behavior of individuals. Low-flying aircraft, helispots, spike camps, or handline construction may result in disturbance. Fire suppression (fire line construction, backfiring and burn-outs, water and fire retardant drops, fire camps) or other on-the-ground management activities may also result in

degradation of MSO habitat and disturbance of individuals. Smoke from fires may affect the ability of foraging birds to locate prey and complete breeding activities.

Livestock Grazing

Livestock grazing may affect MSO habitat by altering prey availability, altering the susceptibility of vegetation to wildfire or its ability to carry fire, degrading riparian plant communities, and impairing the ability of plant communities to develop into MSO habitat (USFWS 1995).

Livestock grazing may result in reduction of plants that provide food and cover for MSO prey species. One study found that total abundance of small mammals differed significantly between grazed and ungrazed plots, with the mean abundance of small mammals about 50 percent higher on plots where livestock were excluded (ASDO 2007a). Upland grazing can affect surface runoff and thus the timing, duration, and level of flows. These effects can lead to reductions in vegetative cover and changes in prey species abundance or composition.

Livestock grazing is authorized within some riparian areas in the project area. Grazing is not authorized in the River Pasture of the Lees Ferry Allotment, which comprises most of the Paria River in the Vermilion NM. Livestock grazing in the Clearwater portion of Kanab Creek Allotment is restricted to the non-growing season (leaf drop to bud break) for protection of SWWF habitat. Livestock grazing is occurring in the Hack Canyon area (Grama, Water, and Chamberlain Canyons), which the BLM considers to be occupied owl habitat. Overuse of riparian areas by livestock may result in reduction of vegetation that holds banks in place and maintains the river channel. Livestock wastes can foul water sources and change the local water quality conditions. Grazing in adjacent upland areas can lead to an increase in erosion, sedimentation, and salinity in adjacent riparian habitats; however, with proper livestock management, we do not anticipate livestock grazing to have a significant effect on MSO.

Minerals

The exploration and development of mineral resources within or adjacent to MSO canyon habitat may degrade this habitat. The majority of previous mineral development activities on the ASDO have been extraction of breccia pipe uranium deposits along the rims of Hack Canyon and Kanab Creek, which are ranked by BLM as high priority MSO habitat (ASDO 2007a). Uranium development will likely involve use of heavy equipment and explosives to access breccia pipe deposits. Other activities could include construction of drill pads or other project-related facilities, earth moving, hauling, and road construction and maintenance. Those activities within or adjacent to MSO canyon habitat could degrade or result in the loss of MSO habitat. Mineral exploration and development in the uplands associated with MSO canyon habitat may result in loss of vegetation at the site, reducing foraging opportunities for MSO.

Exploration and development of mineral resources within or adjacent to MSO habitat may also disturb normal MSO breeding, feeding, and sheltering behaviors. The same activities listed above could decrease foraging efficiency, affect the owl's ability to find microhabitat cover and cover from predators, and reduce reproductive success.

Recreation

Recreational activities may affect the normal foraging, roosting, and nesting behavior of MSO. Paria Canyon is the only area with both permitted recreation and MSO habitat in the project area. The permit system allows up to 20 overnight visitors (backpackers) per day to enter from the four main trailheads to the canyon. Visitors camp on sandy beaches in protected alcoves in the canyon. Day-use visitation is not limited in the canyon, but such users seldom go 10 miles beyond the trailheads. Group size for all users is limited to 10 persons.

Kanab Creek and Hack Canyon are also popular hiking areas, but neither has a permit system to regulate use. Special recreation permits are issued to commercial enterprises such as guide services and outdoor education providers. In recent years, special recreation permits have been requested for jeep and OHV tours of Hack Canyon.

Specialized recreation events, OHV use, and jeep tours in MSO habitat may also result in disturbance of the normal behaviors of MSO. Such activities may also result in the degradation of MSO habitat by affecting key habitat components.

Southwestern Willow Flycatcher and Critical Habitat

Vegetation Management

Vegetation treatments would not be authorized in occupied SWWF habitats or in areas adjacent to occupied habitat during the nesting/breeding season (May through August). Therefore, no direct effects are anticipated as a result of vegetation treatments.

Indirect effects of vegetation restoration and treatments may include changes to plant community composition and species dynamics. Tamarisk reduction or removal could temporarily reduce suitable nest tree availability and habitat density. It may also facilitate cowbird access to flycatcher nesting habitat. The duration of these indirect effects depend upon the degree of tamarisk removal. Total tamarisk removal will permit cottonwood and willow establishment where suitable hydrologic conditions (protection from scouring floods and shallow water table) exist.

If suitable conditions, such as a shallow water table, do not exist at the tamarisk removal site, the removal of suitable/potential SWWF breeding habitat could result in upland vegetation replacing riparian/breeding habitat. SWWF do not nest in upland vegetation (USFWS 2005). Tamarisk can tolerate water table depth increases caused by river downcutting, water diversions, dams, or groundwater pumping that would normally kill or prevent cottonwood and willow establishment and maintenance (Busch and Smith 1993, Shafroth *et al.* 2000). Tamarisk can also become established at higher elevations on the floodplain or terrace as a result of large flood events. Tamarisk in these sites can provide suitable SWWF habitat, whereas cottonwood and willow would not survive. Under these circumstances, the indirect effects of tamarisk removal may be permanent. These areas of critical habitat could be lost if riparian vegetation cannot reestablish after a tamarisk removal project. The SWWF Recovery Plan recommends not removing

tamarisk that is growing in sites unsuitable for cottonwood and willow and that provides suitable or potential SWWF habitat, since it would result in a net loss of breeding habitat (USFWS 2002b).

The short term effect to SWWF and its critical habitat from vegetation management activities may be the temporary reduction of habitat suitability of the particular habitat patch that was treated. The long-term effects of these activities would be beneficial if native vegetation is restored and the risk of catastrophic wildfires in tamarisk-dominated systems is reduced.

Fire and Fuels Management

Effects from fire use and suppression include direct effects such as physical disturbance, injury, or mortality from construction of fire line through habitat, presence of crews or vehicles used during suppression, and noise from use of gasoline-powered equipment. Adverse effects could include disturbance of nesting adults, eggs, or nest structures resulting in nest abandonment, and injury or mortality of individuals from backfires. These adverse effects to breeding SWWF could be reduced if the conservation measures in Appendix B are implemented.

SWWF critical habitat could be adversely affected as a result of fire suppression, post-fire rehabilitation, and related actions in riparian zones despite implementation of conservation measures. Construction of hand lines and use of backfires could temporarily affect critical habitat and reduce its suitability for SWWF nesting, foraging, or rest during migration. Effects to critical habitat would be similar to those described above for vegetation treatments, except that fire suppression actions could occur in occupied habitats during the nesting season. Fire suppression effects to critical habitat would be temporary, requiring from two to five years for gaps in woody habitats to regenerate. Effects could be longer if the entire habitat patch had to be restored. The probability that fire suppression actions would permanently alter critical habitat to the extent that it would no longer be considered suitable for SWWF depends heavily upon post-fire conditions. If the burned area does not have the potential for native or non-native vegetation to re-establish after the fire, then the loss of critical habitat may be permanent.

Lands and Realty

The transfer of lands out of Federal ownership, outside of the Virgin River Corridor ACEC, may indirectly affect Virgin River surface flows and/or reduce flows at springs and seeps through subsequent development. Springs and sub-surface alluvial water provides much of the existing flow that supports SWWF habitat. Increased groundwater pumping has the potential to reduce surface flows in the Virgin River and adversely affect SWWF and its critical habitat. Hydrologic studies indicate that local groundwater aquifers are well below river level and may have little effect on flows in the river (ADEQ 1999, Langenheim *et al.* 2000). However, these studies acknowledge that there are many unknowns in predicting how ground and surface water systems would respond to development of lands along the river. Surface and shallow sub-surface flow reduction could lead to indirect effects to SWWF, including temporary or permanent reduction or alteration of breeding, feeding, or sheltering habitat. Reduced flows would decrease available water along channel margins that is needed for riparian regeneration and maintenance. Groundwater depletion and resultant de-watering could reduce or eliminate riparian vegetation

along the Virgin River (Busch and Smith 1995, Stromberg 1993, Stromberg *et al.* 1996). When water table depths become too deep for riparian vegetation, upland vegetation, which is not used by SWWF for nesting, becomes established. In addition to use of groundwater and the effects described above, residential development would likely result in more people recreating along the Virgin River. Fire risk and unauthorized OHV use will also likely increase. Future land disposals will be addressed in NEPA analysis and section 7 consultation to determine the site-specific effects on SWWF and its critical habitat.

Livestock Grazing

Livestock are not authorized to graze in the Virgin River at the Beaver Dam Wash confluence. This area is not part of any BLM grazing allotment. SWWF breeding has only been documented at this site in the planning area (Table 4). This habitat patch area is currently recovering from winter 2005 flood damage. The grazing allotments that contain portions of the Virgin River (Beaver Dam Slope, Highway, Littlefield Community, Cedar Wash, and Mormon Well) are only grazed during the period October 15 to March 15. To date, SWWF have not been found in other habitat patches (Table 4). Fall-winter grazing seasons generally allow for the establishment and maintenance of riparian vegetation. This vegetation is dormant and is not fed upon heavily by livestock in the fall and winter. Additionally, tamarisk dominates these habitat patches that are accessible to fall-winter livestock grazing. The literature is void of research investigating the importance of tamarisk in cattle diets, but these animals have been observed to occasionally browse tamarisk foliage and remove seedling plants. When given a preference, livestock will select other native herbage and shrubs before grazing tamarisk (Zouhar 2003). Virgin River study plots, established by the BLM, have shown willow and tamarisk survive when livestock use is limited to the fall and winter (Hughes 2000) and these trends are expected to continue under the proposed action.

Livestock concentration areas may attract cowbirds. Although cowbirds have been observed at virtually all suitable and potential SWWF habitats in the planning area, livestock will not be authorized in allotments within or adjacent to SWWF habitat during the SWWF breeding season. These allotments are large enough to provide adequate buffer zones between SWWF habitat and those allotments with authorized grazing during the breeding season. BLM-authorized livestock grazing is not likely to cause cowbird parasitism of SWWF nests.

Minerals

SWWF habitat in the Virgin River Corridor ACEC would remain open to locatable (gold, uranium, and silver) and fluid (oil and gas) mineral entry with a plan of operations. However, preconstruction surveys will be conducted to identify suitable and potential SWWF habitat in order to minimize impacts. Habitat restoration and site rehabilitation are also required. All mining plans of operations will undergo NEPA assessment (environmental impact statement or environmental assessment) and separate section 7 consultation.

Mineral resource exploration and development adjacent to occupied habitat could disturb SWWF from breeding, feeding, and/or sheltering activities. Most mineral extraction methods could disturb SWWF within close proximity of the mining operation. Disturbances could lead to

reduced reproductive success, nest abandonment, failure to hatch or fledge young, and/or reduced fitness from loss of foraging efficiency. Negligible adverse effects could occur to these species in the form of noise, dust, and disturbance resulting from the equipment used for construction and maintenance of projects.

No new mineral material sites (gravel pits) will be authorized within SWWF critical habitat. Existing mineral material sites within the Virgin River Corridor ACEC will be closed and rehabilitated. SWWF will not be affected by these operations in the future. The Littlefield gravel pit, located approximately 1.7 miles downstream from the Beaver Dam Wash confluence breeding area will remain open. It is unlikely that SWWF foraging or nesting at the Beaver Dam Wash confluence would be disturbed by operations at this gravel pit.

Recreation

Noise and disturbance could result in reduced SWWF reproductive success and nest abandonment. Recreational use in riparian areas has the potential to impact SWWF and its critical habitat when new social trails are created through habitat. These activities compact soils, remove and impair regeneration of vegetation, and increase erosion. Increased trash, pollution, and human-caused fires may also degrade SWWF habitat. Additionally, noise associated with recreational activities, including OHVs creating or using undesignated routes, in or near SWWF territories may disrupt breeding activities. The potential for recreational activity to produce negative impacts depends on the frequency, intensity, location, and type of use, and is often determined by ease of access to riparian areas. As the frequency and intensity of use increases, the creation and use of new trails would also increase.

Existing recreational use levels have not prevented suitable SWWF breeding habitat from developing and nesting from occurring at the Beaver Dam Wash confluence area (ASDO 2007a). Visitor use at the confluence is typically confined to existing trails leading from the parking area. Until the floods of 2005, few visitors ventured into the dense interior vegetation where SWWF have previously nested. Most other suitable and potential habitat areas on the Virgin River receive less recreational use than the Beaver Dam Wash confluence. Recreational use along the Virgin River is also limited by the high summer temperatures that coincide with the SWWF breeding season. The BLM has not documented evidence of trampling, vegetation loss, or soil compaction due to recreation within the Virgin River Corridor ACEC. As a result, SWWF critical habitat has not been and is unlikely to be altered by dispersed recreation.

Travel Management

There are no existing or designated routes within SWWF critical habitat along the Virgin River. All vehicle use within riparian areas is prohibited, including SWWF critical habitat and the Virgin River Corridor ACEC. Travel management is not likely to adversely affect SWWF or its critical habitat.

Special Designations

The Paiute and Beaver Dam Mountains Wilderness and Virgin River Corridor and Kanab Creek ACEC designations provide enhanced management capabilities for this species by minimizing adverse effects from other resource management programs.

The Virgin River Wild and Scenic River Study Areas receive interim protection until Congress makes a decision regarding Wild and Scenic River system designations. Management activities are not allowed to damage the existing eligibility, classification, or suitability of the Virgin River for inclusion in the Wild and Scenic River system. This includes protecting the Virgin River's free-flowing characteristics from modification. SWWF and its critical habitat will benefit from all of these special area designations.

General Effects to Plants

The following analysis describes the general effects from various activities in the proposed action on listed plant species.

Vegetation Management

Vegetation treatment projects may result in injury or death of individual plants due to trampling, crushing, removal, and herbicides. Treatments may also result in degradation of habitat. Degradation may include changes in vegetation community dynamics that could affect the plant composition and plant and pollinator community dynamics of the habitat. Use of mechanical methods of treatments will require construction of some new temporary roads for access and could result in injury or mortality of individuals from crushing or physical removal. Vegetation manipulation could change surface water flow patterns that could lead to increased erosion or reduce the availability of water. Use of non-native seeds in re-establishing vegetation following treatment could result in changes in community composition and dynamics, as well as competition for resources. These impacts may result in reduced survival and fitness of the species affected.

Fire and Fuels Management

Fire may result in direct injury or death of individuals. Fire may also affect habitat of the species by degrading soils and plant community composition and dynamics. Fire suppression activities may result in burning, trampling, crushing, or removal of individuals by foot traffic, vehicles, other machinery, and application of fire retardant. Fire retardant may also affect the physiology of the species. Fire suppression activities may similarly also degrade habitat of the species through effects to soils and the plant community. Suppression actions could include construction of hand lines, use and removal of available water for portable pumps, use of gasoline-powered equipment (vehicles, pumps, chainsaws), use of retardant, and backfires. Construction of fire line and use of backfires may also lead to an increase of invasive species that could result in degradation of habitat and possibly direct competition with these listed plant species. The ability of the plant community to support pollinators may be reduced as a result of fire and fire suppression actions.

Lands and Realty

In most cases, the transfer of land out of Federal ownership, through either disposal or exchange, would result in the loss or degradation of listed species habitat and individuals through subsequent uses and development. Authorization of rights-of-way or lease of lands may also result in degradation or loss of habitat of the species and individuals. Specific effects would vary depending on the timing, duration, and type of activity that is authorized and could vary from minimal effects to a species through avoidance to complete loss of habitat in an area from construction of major ROWs. BLM includes stipulations to protect sensitive resources when ROWs and permits are issued; these would minimize loss of habitat and individuals of listed plants.

Livestock Grazing

Injury and mortality of individuals due to trampling by livestock has been documented for some species and is always a possibility when grazing occurs in listed species habitats. Reproductive success may also be affected if trampled individuals are not killed. Livestock trampling may also compact soils, reducing successful reproduction. Livestock grazing may lead to long-term changes in soil and vegetation community dynamics resulting in degradation of listed plant species habitat and introducing non-native species that can compete with native plants for resources. Herbivory may occur from livestock directly (depending on the palatability of the individual species) or may be an indirect effect of livestock grazing. Consumption of desirable forage species by livestock may reduce available vegetation for rodents and rabbits resulting in increased small mammal herbivory on these species. These effects are also amplified during drought when other palatable vegetation is less available.

Minerals

The exploration and development of mineral resources may result in the degradation or loss of listed species habitat and injury or death of individuals directly from mining activities. Uranium development will likely involve use of heavy equipment and explosives to access breccia pipe deposits. Other activities that may result in habitat loss or degradation include construction of drill pads or other project-related facilities, earth moving; hauling; and road construction and maintenance.

Construction of Range/Wildlife Developments

Livestock and wildlife water developments within habitat of the species may increase the likelihood of injury and death of individuals and degradation of habitat of the species due to attraction and concentration of cattle activity. Depending on location, habitat and individuals could also be degraded or lost due to the construction of the development itself.

Travel Management and Recreation

General use of the transportation system may result in injury or mortality of individuals from vehicles traveling on existing roads. Vehicles may injure or kill individuals when off roadways to park, turn around, or camp. Vehicles also provide access to the plant habitat for foot traffic. Foot traffic through the habitat may result in injury or mortality of individuals, particularly in areas of concentrated and continuing traffic. Camping and other forms of recreation may also result in injury and mortality of individuals.

Special Designations

Designation of ACECs will provide general protection to much of the listed species habitat on the ASDO. Other than the stipulations described in the proposed action, the RMP does not include species-specific measures or management for the individual ACECs. These actions will be developed in site-specific management plans, in consultation with FWS.

Brady Pincushion Cactus

Components of the proposed action including vegetation treatments, fire suppression, lands and realty rights-of way, livestock grazing, mineral development, construction of new projects/facilities, travel management, and recreation may result in degradation or loss of Brady pincushion cactus habitat and injury or death of individuals.

Vegetation Management

No areas within habitat for Brady pincushion cactus have been identified for restoration, enhancement, or control of invasive species. However, treatment projects could be considered during the life of this plan. Effects would be similar to those described under General Effects to Plants, above. Site-specific effects will be analyzed as needed in future section 7 consultations for any projects.

Fire and Fuels Management

The effects of fire suppression are the same as those described under General Effects to Plants, above.

Lands and Realty

BLM permits filming of commercials or other videos in habitat of the species. Damage to individuals and degradation of habitat for the species from that activity is known to have occurred outside of the project area.

Livestock Grazing

Injury and mortality of Brady pincushion cactus individuals due to trampling by livestock have been documented. Reproductive success may also be affected even if trampled individuals are

not killed. The individuals are always vulnerable to damage, but they may be particularly so during certain times of the year. Flowers (mid-March through early April) and fruits (early April) are vulnerable to damage, which could result in lowered reproduction. If the soil is wet, livestock can step on individuals and push them into the ground causing injury or mortality more easily. Livestock trampling may also prevent young individuals from emerging.

Livestock grazing may lead to long-term changes in soil and vegetation community dynamics resulting in degradation of Brady pincushion cactus habitat. There is evidence of long-term changes in species composition within 0.25 mile of water developments in the House Rock Valley outside of habitat of the species. The nature and scope of the effect that these plant community shifts have had on the species is unknown and requires further study.

Consumption of desirable forage species by livestock may also reduce available vegetation for rodents and rabbits resulting in increased small mammal herbivory on Brady pincushion cactus. Rodent/rabbit herbivory of the species has been observed and such an effect could be amplified during drought when Brady pincushion cactus could be among the only nutritious and succulent forage available.

Minerals

Mineral exploration and potential in Brady pincushion cactus habitat is considered to be low. Most of the habitat receives additional protection from ACEC designation, which will require a mining plan of operations and special stipulations to minimize effects to the species.

Construction of Range/Wildlife Developments

No new waters or corrals are planned or being considered in Brady pincushion cactus habitat, but could be proposed at a later time. Depending on location, habitat and individuals could also be degraded or lost due to the construction or use of the development by livestock or wildlife. However, BLM considers the need for additional waters or corrals near this species' habitat to be unlikely.

Travel Management and Recreation

General use of the transportation system may result in injury or mortality of individuals from vehicles traveling on existing roads. The species grows close to and, in some cases, in the middle of, existing roads. Three of the six recorded mortalities from vehicles were of individuals growing within a roadway. The most frequent users of areas within Brady pincushion cactus habitat are visitors driving to and parking at canyon overlooks or stopping to hike or turn around. Vehicles may injure or kill individuals when off roadways to park or turn around. Livestock permittees and holders of other permits also use roads in the areas. Use of OHVs in Brady pincushion cactus is not common.

Vehicles also provide access to the habitat for foot traffic. Foot traffic through the habitat may result in injury or mortality of individuals particularly in areas of concentrated and continuing

traffic. Camping and other forms of recreation may also result in injury and mortality of individuals.

Holmgren Milk Vetch and Critical Habitat

Components of the proposed action including vegetation treatments, fire management, land tenure adjustments, livestock grazing, mineral development, and route maintenance and construction may result in injury or mortality of Holmgren milk vetch individuals. The same activities may result in the degradation or loss of habitat and critical habitat of the species.

Vegetation Management

The effects of vegetation treatments on Holmgren milk vetch and its critical habitat will be the same as those described for General Effects on Plants, and Brady pincushion cactus, above. Effects on critical habitat would involve the changes to vegetation community dynamics that may result in a reduction of pollinators for the species, thus reducing reproductive success.

Fire and Fuels Management

The effects of fire suppression actions will be the same as those described for General Effects on Plants, above. Fire suppression actions would be unlikely to affect the primary constituent elements of critical habitat for this species.

Lands and Realty

The proposed action identifies specific parcels of public land which will be made available for sale or exchange. Two parcels include isolated parcels adjacent to, but not including, Holmgren milk vetch habitat. BLM will retain parcels in Federal ownership that are designated critical habitat. Prior to conducting any disposals near Holmgren milk vetch habitat, BLM will update survey information for the species and will consult with FWS as needed.

Livestock Grazing

Injury or mortality of individuals may result due to trampling by livestock. There is one livestock water and one corral within one half mile of Holmgren milk vetch habitat. However, trampling has not yet been documented in the Holmgren milk vetch monitoring plots in Arizona.

Livestock grazing may result in adverse effects to habitat of the species through degradation of soils and vegetation community dynamics. Continued utilization of desirable perennial forage species by livestock may cause plant communities to shift towards non-forage species (ASDO 2007a). The nature and scope of possible effects to Holmgren milk vetch habitat is unknown and requires further study.

Minerals

The effects of minerals development actions will be the same as those described for General Effects on Plants, above. Because of ACEC designation, no new mineral material sites will be authorized within Black Knoll ACEC, and there are no existing sites in the ACEC.

Travel Management and Recreation

Injury or death of individuals may result from route maintenance, upgrades to existing routes, or construction of new routes. Holmgren milk vetch is not known to occur in or adjacent to existing roadways. Holmgren milk vetch occurs within that portion of the ASFO where route inventory and evaluation have not yet been completed. Under the proposed action, motorized and mechanized vehicle use within Holmgren milk vetch habitat would be limited to existing routes and trails until such time as route designation occurs. Following completion of a route evaluation and designation for the ASFO, some roads in the area may be closed and/or limited to administrative traffic.

However, use of ATV is not uncommon due to the proximity of the area to St. George, Utah. Livestock permittees and other holders of valid permits also use roads in the area of Holmgren milk vetch habitat. Vehicles may injure or kill Holmgren milk vetch by pulling off the roadway to park or turn around within the habitat. Vehicles also provide access to the habitat for foot traffic. Increased human presence can lead to plants being stepped on and crushed.

Jones' Cycladenia

Components of the proposed action including fire suppression, livestock grazing, mineral development, and recreation may result in degradation or loss of individual Jones' Cycladenia plants or its habitat.

Fire and Fuels Management

The effects of fire suppression actions will be the same as those described for General Effects on Plants, above. However, because of the sparse fuels within the habitat for this species, it is unlikely that wildfires would ignite and carry enough to require any significant suppression actions.

Livestock Grazing

Livestock grazing may result in injury or death of individuals or degradation of habitat of the species. To date, injury or mortality due to trampling of Jones' Cycladenia have not been documented, and this is expected to continue under the proposed plan. Livestock typically do not eat the species and are not commonly found using the area where the habitat exists on steep barren slopes where there is little else to eat. There are no livestock waters or other developments within 0.5 mile of Jones' Cycladenia habitat.

Minerals

The exploration and development of mineral resources may result in degradation or loss of Jones' Cycladenia habitat, similar to the effects described under General Effects on Plants, above. Depending upon the type of mineral sought and the method of extraction used, mineral exploration could result in loss of vegetation at the site and increased erosion. However, the BLM does not believe the area has high potential for mineral exploration, in part because of its inaccessibility (ASDO 2007a).

Recreation

Recreation may result in injury or death of individuals or degradation of habitat of the species. There are no travel routes through Jones' Cycladenia habitat. However, ATV use in the habitat is not uncommon. Foot traffic, camping, and other recreational activities may also result in injury, death, or degradation.

Siler Pincushion Cactus

Components of the proposed action including vegetation treatments; fire management, livestock grazing, construction of new projects/facilities, mineral development; recreation, special recreation permits, and transportation may result in injury or death of individuals of the species. The actions may also result in the degradation or loss of Siler pincushion cactus habitat.

Vegetation Management

The effects of vegetation treatments on Siler pincushion cactus will be the same as those described for General Effects on Plants, and Brady pincushion cactus, above.

Fire and Fuels Management

The effects of fire suppression actions would be the same as those described for General Effects on Plants, above. However, because of the sparse fuels within the habitat for this species, it is unlikely that wildfires would ignite and carry enough to require any significant suppression actions.

Livestock Grazing

Injury and mortality of Siler pincushion cactus due to trampling by livestock have been documented and will likely continue. The species is always vulnerable but additional damage may occur at certain times of the year. Damage of flowers and fruits without killing individuals may result in reduced reproductive success. When the soil is wet, trampling by livestock may be more likely to result in injury or death. Livestock trampling may also prevent young individuals from emerging. Trampling by livestock may be most likely to occur where range improvement projects, such as water developments or corrals, occur near populations of Siler pincushion cactus. There are 34 livestock waters and three corrals within 0.5 mile of Siler pincushion cactus

populations, primarily on the Clayhole, Glazier Dam, Atkin Well, and Cottonwood East allotments.

Livestock grazing also contributes to long-term changes in soil and vegetation community dynamics. Continued utilization of desirable perennial forage species by livestock may cause plant communities to shift towards non-forage species (ASDO 2007a). Consumption of desirable forage species by livestock may also reduce available vegetation for rodents and rabbits which may increase small mammal herbivory on Siler pincushion cactus. Such an effect may be amplified during drought when Siler pincushion cactus could be among the only nutritious and succulent forage available.

Construction of Range/Wildlife Developments

Construction of new water developments may injure or kill individuals. Construction within the habitat could also degrade or eliminate habitat for this species. Although no new waters or corrals are planned within Siler pincushion cactus habitat, such facilities could be authorized under the proposed action.

Minerals

The exploration and development of mineral resources may result in degradation or loss of Siler pincushion cactus habitat, similar to the effects described under General Effects on Plants, above. Depending upon the type of mineral sought and the method of extraction used, mineral exploration could result in loss of vegetation at the site and increased erosion. However, the BLM does not believe the habitat for this species area has high potential for mineral exploration or development (ASDO, 2007a).

Lands and Realty

Disposal or lease of land containing habitat or individuals of the species may result in injury or death of the individuals and degradation or loss of the habitat. BLM land east of Fredonia, Arizona, is included on the list of lands identified for disposal. The identified land includes habitat, and possibly occurrences, of Siler pincushion cactus. This disposal is adjacent to an area that includes one of the largest populations of the species. If these lands leave Federal ownership, they will likely be used for development of an OHV use area near Fredonia (Lee Hughes, pers. comm. 2007).

Recreation

A variety of recreational activities may affect Siler pincushion cactus. Use of OHVs, hiking activities, and camping may result in injury or death of individuals and degradation of habitat. Continual and concentrated recreational use may also result in degradation of habitat by compacting soils and reducing successful reproduction.

The proposed action will allow for authorization of special use permits for motorcycle, OHV, horseback, and other types of competitive and non-competitive events through Siler pincushion

cactus habitat. In particular, the Rhino Rally and the Hurricane All-Terrain Vehicle (ATV) Jamboree typically involve use of existing washes that pass through or adjacent to Siler pincushion cactus habitat. Typically, participants in these events stay in the wash bottoms, rather than traveling on the side slopes where Siler pincushion cactus grows. However, the riders pass within a few meters of individuals that could be injured or killed. An area that has become known as Cactus Pass occurs south of the Fort Pearce ruins in the Warner Ridge area. The BLM has denied the use of Cactus Pass as a part of Rhino Rally course over the past few years. However, following the annual event, an undetermined amount of casual use occurs throughout the area as local riders attempt to run the same or similar courses to the Rhino Rally.

Travel Management

Injury or mortality of Siler pincushion cactus may result from vehicles traveling on existing roads. The species occurs close to existing roads. Seekers of recreational activity, including the use of ATVs, are among the most frequent users of the Siler pincushion cactus habitat. Livestock permittees and other holders of valid permits also use roads in the habitat of the species. Impacts to the species may be greatest during and following wet weather when moisture may result in re-emergence of retracted cacti and allows for greater compaction of softened soils.

Use of motorized and mechanized vehicles in the ACECs for the species will be limited to designated roads and trails. Vehicles could still injure or kill Siler cushion cactus by pulling off the roadway to park or turn around within the habitat. Elsewhere on the ASFO, vehicles will be allowed to pull off the road up to 100 feet to camp. Use of OHVs in this habitat is common. Some route proliferation has been documented. Siler pincushion cactus occurs within that portion of the ASFO where route inventory and evaluation have not yet been completed. Under the proposed action, motorized and mechanized vehicle use within Siler pincushion cactus habitat will be limited to existing routes and trails until such time as route designation occurs. Following completion of a route evaluation and designation for the ASFO, roads may be closed and/or limited to administrative traffic. Injury or mortality of individuals due to route maintenance, upgrades to existing routes, or construction of new routes may also occur.

Welsh's Milkweed

Components of the proposed action including vegetation treatments, livestock grazing, construction of developments, transportation and access, and recreation may result in degradation or loss of Welsh's milkweed habitat. The actions may also result in the injury or death of individuals.

Vegetation Management

The effects of vegetation treatments on Welsh's milkweed are the same as those described for General Effects on Plants, and Brady pincushion cactus, above.

Livestock Grazing

Injury or mortality of individuals may result from trampling by livestock. To date, injury or mortality of Welsh's milkweed have not been documented and are not expected under the proposed plan. Livestock typically do not eat Welsh's milkweed and are not commonly found using the barren sand dunes areas where the habitat exists. There are no livestock waters or other developments that would concentrate cattle within 0.5 mile of Welsh's milkweed habitat.

Construction of Range/Wildlife Developments

Livestock and wildlife water developments in or near Welsh's milkweed habitat may increase the likelihood of trampling of individuals. Construction of new developments may also injure or kill individuals. Construction of facilities within the habitat could also degrade or eliminate habitat for this species. Although no new water developments or corrals are proposed or anticipated within Welsh's milkweed habitat, such facilities could be authorized under the proposed action.

Recreation

Foot traffic through sensitive areas could trample, injure, or kill Welsh's milkweed. Camping within its habitat could also injure or kill the plant.

CUMULATIVE EFFECTS

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

Virgin River Fishes and Critical Habitat

Development activities by non-Federal entities are not likely to diminish in the near future. This area of Arizona-Nevada-Utah has experienced considerable growth in the last decade and projections for future growth indicate the trend will continue. There may be additional demands for water placed on the water supply and new developments in or adjacent to the floodplain may result in future efforts to manipulate the course of the river or disturb remaining areas of riparian vegetation. The exact locations and size of new developments or of additions to existing developments cannot be stated with certainty, although Mohave County has completed a general land use plan for this area.

Desert Tortoise and Critical Habitat

The primary cumulative effect in the project area is continued development in the Virgin River corridor. Communities in and around the tri-State region of Arizona-Nevada-Utah have experienced tremendous growth over the last decade. The Virgin River Communities Area Plan (Virgin River Communities Ad Hoc Plan Development Committee 1996) predicts a population

of 25,000 to 100,000 by the year 2020. Loss of desert tortoises and alteration of critical habitat will occur in developing areas. These areas are all outside of the DWMAs/ACECs and primarily in private or State ownership.

Common raven populations in the Mojave and Colorado deserts have undergone tremendous increases in recent years (over 1000 percent from 1968 to 1992, Boarman 1997). These increases are attributable to increased food and water from landfills, urban expansion, agriculture, and other human activities, as well as to additional nesting sites provided by high-tension electric line towers, telephone poles, bridges, other artificial structures, and cultivated trees. These effects are expected to continue in the future. Continued recreation, and other legal and illegal activities (e.g. trash dumping, off-highway vehicle use, collection of tortoises), and elevated predation of tortoises by dogs and ravens are expected to continue on State and private lands. The exact locations and size of new developments or of additions to existing developments cannot be stated with certainty, though the BLM anticipates considerable growth adjacent to existing communities.

Evidence from the Beaver Dam Slope suggests that significant desert tortoise mortality may be occurring as a result of recreation activities on private and state lands, including illegal shooting. The high percentage of tortoise carcasses showing evidence of being shot in the western Mojave Desert (Berry 1986) is especially disturbing and indicates the potential magnitude of this problem. Because intrinsic population growth rates are very low, the stability of desert tortoise populations is highly dependent on low adult mortality. Normal adult mortality is approximately two percent per year (USFWS 1994). Adults are the most visible segment of the population and the most susceptible to death or injury by gunshot. This problem has the potential to become more serious as towns and human populations along the Virgin River continue to grow.

Yuma Clapper Rail

This area has experienced considerable growth in the last decade and projections for future growth indicate the trend will continue. There may be additional demands for water placed on the water supply and new developments in or adjacent to the floodplain may result in future efforts to manipulate the course of the river or disturb remaining areas of riparian vegetation. The exact locations and size of new developments or of additions to existing developments cannot be stated with certainty, although Mohave County has completed a general land use plan for this area.

California Condor

California condors may be injured or killed by ingesting lead in carcasses shot by hunters. Coyote hunters typically use lead bullets and often do not retrieve the carcasses of the animals they shoot. California condors are known to feed upon dead coyotes. To help minimize potential adverse effects to wildlife and other resources from hunting activities, the BLM produces and distributes an annual letter to permitted big game hunters on the Arizona Strip encouraging use of solid copper bullets, steel shot, and other non-lead based ammunition. It is not known if these measures will be adopted on state and private lands. California condors may also be injured or killed as a result of illegal shooting. Recreational activities are expected to

continue to increase on state and private lands which may result in an increase of adverse human-condor interactions.

The AGFD conducts annual or biennial aerial surveys to count big game animals. Most surveys are conducted from fixed-wing aircraft, though helicopters are occasionally used. The BLM only has discretionary authority for those surveys conducted over designated wilderness. The AGFD may also conduct specific types of predator control actions on BLM lands in the planning areas.

Mexican Spotted Owl

Various recreational activities are expected to continue to increase throughout the project area, including state and private lands particularly in riparian areas and canyons. Recreational activity may result in disturbance of normal MSO behavior. In addition, human recreation may result in degradation of MSO habitat. For example, components of riparian or canyon vegetation could be affected by continual and concentrated recreational use.

Southwestern Willow Flycatcher and Critical Habitat

The Beaver Dam-Littlefield area communities have experienced tremendous growth over the last decade. SWWF habitat loss could occur in developing areas through loss of riparian habitat to development, greater use of groundwater resources near the river, and changes to the river's channel from these actions. If significant population growth occurs along the Virgin River, as is expected, then recreation, illegal activities (e.g. trash dumping and OHV use), and elevated cowbird nest parasitism are likely to occur. The exact locations and size of new developments or of additions to existing developments cannot be stated with certainty, although the Mohave County land use plan for the area anticipates that considerable growth adjacent to existing communities will occur.

Brady Pincushion Cactus

Recreational activity can be expected to continue and increase in the range and habitat of the species. Individuals are known to have been affected by vehicle traffic associated with recreation. Foot and vehicle traffic, particularly continual and concentrated traffic in certain areas, could affect individuals and habitat of the species. Brady pincushion cactus is highly desired for its ornamental value in the cactus and succulent trade. Although it is very difficult to cultivate, illegal collection may occur.

Holmgren Milk Vetch and Critical Habitat

The primary cumulative effect in the project area is continued development of communities within the action area. As a result, there is potential for increase in commercial development on the road south of the proposed ACEC, located off the Black Rock Interchange along Interstate 15. Such development could lead to direct degradation and loss of habitat of the species. In addition, increased development in the area may result in increased visitation of people walking and driving through the habitat, affecting the habitat and individuals. Illegal OHV use is likely to continue and increase and dumping of trash may also affect habitat and individuals.

Jones' Cycladenia

Continued development of communities and recreational activities are likely to be the sources of cumulative effects for the species. Both actions may result in loss or degradation of habitat and injury or death of individuals.

Siler Pincushion Cactus

Continued development of communities and recreational activities are likely to be the sources of cumulative effects for the species. Both actions may result in loss or degradation of habitat and injury or death of individuals.

Welsh's Milkweed

Recreational activities are likely to be the source of cumulative effects for the species. Such activities could result in loss or degradation of habitat and direct impacts to individuals of the species.

CONCLUSIONS

The conclusions of this biological opinion are based on the project as described in the "Description of the Proposed Action" section of this document. Conservation measures incorporated into this project as implemented will further reduce project effects. After reviewing the current status of the Virgin River chub, woundfin, desert tortoise, Yuma clapper rail, California condor, Mexican spotted owl, southwestern willow flycatcher, Brady pincushion cactus, Holmgren milk vetch, Jones' Cycladenia, Siler pincushion cactus, and Welsh's milkweed, and the environmental baseline for the action area, the effects of the proposed actions, and the cumulative effects, it is our biological opinion that the Arizona Strip Resource Management Plan is not likely to jeopardize the continued existence of these species, and is not likely to destroy or adversely modify designated Virgin River chub, woundfin, desert tortoise, southwestern willow flycatcher, and Holmgren milk vetch critical habitat.

We note that this biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

We present these conclusions for the following reasons:

Virgin River Fishes and Critical Habitat

We believe that the major threat affecting these fishes and their critical habitat is loss of flow in the Virgin River from land development and groundwater pumping. The effects of land disposals that provide additional private acreage for development, along with the cumulative effects of development of existing private lands could significantly reduce flows in the river and critical habitat for these species. However, BLM has committed to thoroughly assessing

intended water uses associated with disposal parcels and analyzing impacts to these species along with cumulative effects, in site-specific proposals (ASDO 2007a). BLM will not transfer out of public ownership Federal lands that support listed species, if that transfer is inconsistent with recovery needs and objectives or would likely affect the recovery of those species (ASDO 2007a).

Although these species may be affected by the other activities authorized by the proposed action, the effects are likely to be offset in part by management that works to restore native fish populations, promotes healthy watershed conditions, and by ACEC, wilderness, and wild and scenic river management that also protects critical habitat. Subsequent site-specific section 7 consultation on individual actions will allow for minimizing and tracking the actual effects of those actions. BLM's commitment to implement the conservation (Appendix B) as well as the recovery plan for these species will also help reduce the effects of the proposed action.

Desert Tortoise and Critical Habitat

The proposed action promotes recovery of the desert tortoise in the northeastern Mojave recovery unit by amending the Arizona Strip RMP to be largely in accordance with the desert tortoise recovery plan in regards to management of desert tortoises and their critical habitat on the Beaver Dam and Virgin slopes, and in the Pakoon Basin. Critical habitat will be managed largely in accordance with the desert tortoise recovery plan. Critical habitat located outside of the DWMA/ACECs are (1) degraded as a result of close proximity to development in the Beaver Dam-Littlefield area or from wildfire that has altered vegetation communities, or (2) in wilderness areas in which management, with the exception of livestock grazing, will be largely in accordance with the Desert Tortoise Recovery Plan.

The FEIS mandates that surface disturbing activities: mining operations, recreational activities requiring special recreation permits, road maintenance, and authorized livestock grazing on most allotments containing desert tortoise habitat, would occur during the desert tortoise inactive period (October 15 to March 15). It is not known if these activities will carry over in the state and private lands.

Up to 1,828 acres of desert tortoise habitat will be available for disposal. These lands, if sold or exchanged, will likely be developed and lost as desert tortoise habitat. However, these lands are all in the Beaver Dam-Littlefield area and many have already been degraded as desert tortoise habitat due to a variety of unauthorized uses and proximity to Interstate 15 and private lands. Sale or exchange of these lands would generate compensation funds for enhanced management of habitat within the DWMA/ACECs.

Yuma Clapper Rail

While there are upland effects from livestock use near Yuma clapper rail habitat, the present effect of that use on the Yuma clapper rail and their habitats should not be of such a magnitude to significantly reduce populations or degrade habitat. The effects of land disposals that provide private acreage for development, along with the cumulative effects of development of existing private lands could reduce flows in the river and habitat for this species. However, BLM has

committed to thoroughly assessing intended water uses associated with disposal parcels and analyzing impacts to these species, along with cumulative effects, in site-specific proposals (ASDO 2007a). BLM will not transfer out of public ownership federal lands that support listed species, if that transfer is inconsistent with recovery needs and objectives or would likely affect the recovery of those species (ASDO 2007a). Subsequent site-specific section 7 consultation on individual actions will allow for minimizing and tracking the actual effects of those actions. BLM's commitment to implement the conservation measures (Appendix B) will also help reduce the effects of the proposed action.

California Condor

NPS-administered land within the Arizona Strip District within the nonessential experimental population

The NPS-administered land is that portion of the Parashant NM that is on LMNRA. This land is a small subset of the project area and is located a considerable distance from any current roosting and nesting areas. Although condors may occur in the area and may be affected by the proposed action, condors spend very little time in the area. The occurrence of the project activities and the extent of the effects discussed in this biological opinion are likely to be much less in this small portion than in the rest of the project area. The conservation measures that are part of the proposed action will help reduce the effects of the proposed action. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions

Arizona Strip District land outside of the nonessential experimental population area

This portion of the project area is the BLM land in the project area west of Interstate 15. This land is also a very small subset of the project area. Although condors may occur in the area and may be affected by the proposed action, condors rarely spend time in the area. The occurrence of the project activities and the extent of the effects discussed in this biological opinion are likely to be much less in this small portion than in the rest of the project area. The conservation measures that are part of the proposed action will help reduce the effects of the proposed action. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions.

Mexican Spotted Owl

No MSO forest habitat occurs on BLM land in the project area. MSO canyon habitat occurs primarily in larger canyon systems that are scattered through the project area. Most of the MSO canyon habitat on BLM land in the project area has not been surveyed for the presence of the species, and no MSO PACs have been designated as of the date of this biological opinion. The amount and nature of the MSO canyon habitat on BLM land in the project area is likely to support fewer MSO than the canyon systems of nearby units such as GRCA and Zion National Park. Although the species may be affected by the activities authorized by the proposed action, the effects are likely to be of a limited site-specific nature both spatially and temporally rather than simultaneously over large portions of the distribution of the species in the project area.

Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions. The conservation measures that are part of the proposed action will also help reduce the effects of the proposed action.

Southwestern Willow Flycatcher and Critical Habitat

The SWWF has only been documented nesting at the Beaver Dam Wash confluence with the Virgin River, and this area is not part of any BLM livestock grazing allotment. Protections from ACEC and wilderness designations, interim management requirements for wild and scenic rivers, and fall-winter only livestock grazing protect critical habitat for this species. The effects of land disposals that provide additional private acreage for development, along with the cumulative effects of development of existing private lands could significantly reduce flows in the river and habitat for this species. However, BLM has committed to thoroughly assessing intended water uses associated with disposal parcels and analyzing impacts to these species, along with cumulative effects, in site-specific proposals (ASDO 2007a). BLM will not transfer out of public ownership Federal lands that support listed species, if that transfer is inconsistent with recovery needs and objectives or would likely affect the recovery of those species (ASDO 2007a). Subsequent site-specific section 7 consultation on individual actions will allow for minimizing and tracking the actual effects of those actions. BLM's commitment to implement the conservation measures (Appendix B) as well as the recovery plan for SWWF will also help reduce the effects of the proposed action.

Brady Pincushion Cactus

Although the species may be affected by the activities authorized by the proposed action, the effects are likely to be of a limited site-specific nature both spatially and temporally rather than simultaneously over the distribution of the species in the project area. The ACEC designated for the species may reduce but not eliminate effects to the species. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of the actions. The conservation measures that are part of the proposed action will also help reduce the effects of the proposed action.

Holmgren Milk Vetch and Critical Habitat

BLM has committed to surveying parcels in or near milk vetch habitat prior to land disposal actions and implementing conservation (e.g., not disposing of occupied areas, fencing, habitat protection) to protect any new occurrences of the species. The ACEC designated for the species will reduce but not eliminate effects to the species. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions. The conservation measures that are part of the proposed action will also help reduce the effects of the proposed action.

Jones' Cycladenia

The remoteness and the nature of its habitat will likely limit the actual effects of the proposed action on this species. The ACEC designated for the species will reduce but not eliminate effects to the species. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions. The conservation measures that are part of the proposed action will also help reduce the effects of the proposed action.

Siler Pincushion Cactus

Although the species may be affected by the activities authorized by the proposed action, the effects are likely to be of a limited site-specific basis both spatially and temporally rather than simultaneously over the distribution of the species in the project area. The ACEC designated for the species will reduce but not eliminate effects to the species. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions. The conservation measures that are part of the proposed action will also help reduce the effects of the proposed action.

Welsh's Milkweed

The remoteness and the nature of Welsh's milkweed habitat will likely limit the actual effects of the proposed action on the species. The ACEC designated for the species will reduce but not eliminate effects to the species. Subsequent site-specific section 7 consultation on particular actions will allow for minimizing and tracking the actual effects of those actions. The conservation measures that are part of the proposed action will also help reduce the effects of the proposed action.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent 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 defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 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 to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

We recognize that some flexibility is built into, and some uncertainty is inherent in, some of the conservation measures that are part of the proposed action. We included consideration of that flexibility and uncertainty into our analysis in determining the amount of incidental take that we anticipate for each species.

Virgin River Chub

The FWS anticipates incidental take of Virgin River chub will be difficult to detect because finding a dead or impaired individual is unlikely due to predation by other species. However, the following level of take of Virgin River chub can be anticipated by measuring a surrogate related to water availability in the Virgin River. We assume incidental take will be exceeded if baseflow in the Virgin River declines as a result of BLM land disposal actions and subsequent development.

FWS completed a biological opinion on September 3, 2004 (02-21-03-F-0210) for a fire and fuels management program on BLM-administered lands within Arizona. That opinion issued an incidental take statement for Virgin River chub for fire suppression activities along or near the Virgin River. That programmatic opinion included incidental take that could occur from fire suppression as a result of this proposed action. The following Incidental Take Statement is carried forward from the 2004 opinion:

Fire Suppression

We anticipate that incidental take of Virgin River chub could occur as a result of fire suppression actions. We anticipate that take will be difficult to detect and quantify because dead fish would be difficult to find. We anticipate that take could occur in the form of water drafting at up to two pools of deep water within the same reach of the Virgin River, per wildfire incident. The incidental take is expected to be in the form of harassment or injury to fish in a pool, or mortality of fish pumped from pools.

Drafting would likely remove individuals or disturb all chub the first time that it is used; therefore, drafting may continue from the same pool for the duration of the suppression activity without further take of chub.

Woundfin

The FWS anticipates that incidental take of woundfin will be difficult to detect because finding a dead or impaired individual is unlikely due to predation by other species. However, the following level of take of woundfin can be anticipated by measuring a surrogate related to water availability in the Virgin River.

If baseflow in the Virgin River declines as a result of BLM land disposal actions and subsequent development, the level of incidental take will have been exceeded.

Desert Tortoise

We anticipate that the following incidental take of desert tortoises could occur as a result of the proposed action. Activities that may result in incidental take include vegetation treatments, lands and realty actions, livestock grazing, minerals exploration and development, recreational activities, and travel management. The incidental take is expected to be in the form of harm (injury or mortality related to project activities, livestock trampling, increased human access and uses) and/or harassment (resulting from habitat degradation or loss, loss of forage, disturbance of individuals during the breeding season, or moving animals out of harm's way). A tortoise refers to one desert tortoise or one clutch of desert tortoise eggs.

1. All desert tortoises found in harm's way may be captured and moved according to permit stipulations and protocol. We estimate that an average of 10 tortoises per year may be harassed by project activities. We will not consider this level of incidental take to be exceeded as long as all conservation measures included in this opinion are followed and individual site-specific consultations are completed for these actions.
2. Thirty desert tortoises may be injured or killed by project activities and BLM authorizations over the next 20 years.

These estimates are based upon the small number of desert tortoises likely to occur in the project areas, the ability of biological monitors to detect and move adult tortoises, the timing of surface disturbing activities during the tortoise inactive period, and the lands available for disposal that are located in low quality desert tortoise habitat.

The above anticipated take and our description of the effects of the action are based, in part, on the assumption that no more than 40 acres within DWMA/ACECs will be disturbed as a result of authorized projects in the form of rights-of-ways and temporary use permits; no more than 20 acres will be disturbed in DWMA/ACECs due to locatable mineral extraction; no more than 20 acres will be disturbed in DWMA/ACECs due to mineral leasing. The BA does not quantify the acreage of land disposals or other actions that could occur outside of DWMA/ACECs but within desert tortoise habitat; this estimate is based on the assumption that tortoise densities are low in these parcels and that no designated critical habitat will be leased, exchanged, or disposed of. If these limits are exceeded, BLM should informally consult with the FWS to determine if formal consultation should be reinitiated. Also, although we anticipate loss of desert tortoises as a result of private development of land disposal and exchange parcels, this incidental take statement does not authorize agencies, individuals, or parties other than the BLM to incidentally take desert tortoises. Thus, if the actions of others may result in an incidental take of tortoise, such as take associated with development of disposal parcels, those individuals must comply with the Act before such incidental take occurs.

FWS completed a biological opinion on September 3, 2004 (02-21-03-F-0210) for a fire and fuels management program on BLM-administered lands within Arizona. That opinion issued an incidental take statement for desert tortoise for fire suppression activities on the Arizona Strip. That programmatic opinion included incidental take that could occur from fire suppression as a

result of this proposed action. The following Incidental Take Statement is carried forward from the 2004 opinion:

Fire Suppression

We anticipate that incidental take of desert tortoises could occur as a result of fire suppression. We anticipate that the following take of desert tortoises could occur, with individuals experiencing effects ranging from harassment, harm, injury, and/or mortality, as a result of the fire suppression actions (a tortoise refers to one desert tortoise or one clutch of desert tortoise eggs):

1. Four desert tortoises every two years resulting from the following activities: a) operation of vehicles and equipment; b) development of crew camps, equipment staging areas, and aircraft landing/fueling sites; c) construction of firelines; d) use of retardants; and e) setting of backfires.
2. Ten desert tortoises every five years as a result of moving animals from harm's way during fire suppression activities.

Yuma Clapper Rail

We do not anticipate that the proposed action will result in incidental take of any Yuma clapper rails.

California Condor

This Amount or Extent of Take section applies to condors occurring on NPS-administered land within the Arizona Strip District within the California condor nonessential experimental population, and Arizona Strip District land outside of the nonessential experimental population area.

Because condors that occur in the project area are known and are monitored, detecting any incidences of harm, harassment, injury, or death of individuals would be straightforward. However, because condors occur only rarely outside of the nonessential experimental population area, and because these areas are a considerable distance from nesting and roosting habitat, we do not anticipate that the proposed action will incidentally take any California condors.

Mexican Spotted Owl

As of the date of this biological opinion, most of the approximately 13,000 acres of MSO canyon habitat on BLM land in the project area have not been surveyed to protocol, and no MSO PACs have been designated. However, BLM considers the unsurveyed habitat to be occupied by MSO due to the presence of key habitat components in these areas that provide high-potential for nesting and roosting MSO to occupy the area. Based upon this information, we are reasonably certain MSO currently occur within the action area. As surveys are conducted over the life of the proposed action, MSO may be detected in the project area. The FWS anticipates that incidental

take of MSO may result from vegetation treatments (not including fuels management), noxious weed control, mineral development, and permitted recreation that may be authorized under the proposed action. We anticipate that the take of MSOs will be difficult to detect because finding a dead or impaired specimen is unlikely, especially due to the remote nature of most of the MSO habitat in the action area. However, the level of incidental take can be anticipated by the loss of key habitat components and long-term disturbance that may affect the reproductive success and survival of the MSO within the project area. We anticipate that four MSO (two pairs) associated with habitat the BLM considers to be occupied (Paria, Kanab, and Hack canyon areas) may be taken as a result of the proposed action. The incidental take is expected to be in the form of harm and harassment resulting from the disruption of breeding, feeding, and sheltering activities from mineral development, permitted recreation, vegetation treatments and management, and noxious weed control.

FWS completed a biological opinion on September 3, 2004 (02-21-03-F-0210) for a fire and fuels management program on BLM-administered lands within Arizona. That opinion issued an incidental take statement for MSO for fire suppression and fuels management activities. That programmatic opinion included incidental take that could occur from the fire management program as a result of this proposed action. The following Incidental Take Statement is carried forward from the 2004 opinion:

Fire Suppression, and Fire and Fuels Management Treatments

We anticipate that incidental take of MSO could occur as a result of fire suppression, wildland fire use, prescribed fire, and mechanical treatments. We anticipate that the take of MSOs will be difficult to detect because finding a dead or impaired specimen is unlikely, especially due to the remote nature of most of the MSO habitat in the action area. However, the level of incidental take can be anticipated by the loss of essential elements in the habitat and long-term disturbance that may affect the reproductive success and survival of the MSO within the project area. We anticipate that two MSO (one pair) could be taken as a result of the proposed action. The incidental take is expected to be in the form of harm and harassment resulting from:

1. Harm through long-term disturbance from actions in unsurveyed MSO habitat associated with the proposed action. Unknown MSO may be present during wildland fire use, mechanical treatments, prescribed fire and/or suppression actions, which may result in direct impacts to owls, disrupted reproduction and/or the ability of the habitat to provide for essential elements of survival for resident MSO.
2. Harm through the reduction of MSO nesting and roosting habitat due to temporary habitat loss that may result from mechanical thinning, prescribed or wildland fire, and/or fire suppression actions that result in the removal of MSO habitat components (multi-storied canopy, coarse woody debris, snags) to the extent that at least near-term survival of MSO within that habitat is not likely.
3. Harassment through the reduction of the habitat suitability for prey species, thus limiting the availability of prey for owls. Habitat suitability will be decreased through the

loss of coarse woody debris and herbaceous vegetation following prescribed fires. These actions could impair the ability of MSO to survive and/or successfully raise young.

Southwestern Willow Flycatcher

The FWS anticipates SWWF could be taken as a result of harm (habitat loss) and harassment (disturbance) due to recreation activities and/or vegetation treatments. The anticipated level of take is the failure of one nesting attempt every three years. The incidental take is expected to be in the form of harassment and/or harm due to nest failure or the inability to nest due to the loss of suitable habitat.

FWS completed a biological opinion on September 3, 2004 (file number 02-21-03-F-0210) for a fire and fuels management program on BLM-administered lands within Arizona. That opinion issued an incidental take statement for SWWF for fire suppression activities. That programmatic opinion included incidental take that could occur from fire suppression as a result of this proposed action. The following Incidental Take Statement is carried forward from the 2004 opinion:

Fire Suppression

BLM has proposed fire suppression actions that, when wildfires occur, are expected to reduce the overall adverse effects to SWWF and their habitat. Although we are unable to determine where or when incidental take of SWWF could occur as a result of fire suppression actions, take as a result of these actions has occurred in the past. We anticipate that the take of SWWF will be difficult to detect because finding a dead or impaired specimen is unlikely. Survey data may not be available prior to a wildfire ignition; however, locations of existing territories on or adjacent to BLM land are known. The level of incidental take can be anticipated by the loss of essential elements in the habitat and long-term disturbance that may affect the reproductive success and survival of the SWWF within the project area. The average number of pairs per site within the Middle Gila/San Pedro MU, where territories on BLM-administered land were found in 2004, is 5.2. Fire suppression actions within one habitat site would likely remove all habitat within the site and/or disturb all birds within the site. We anticipate that five pairs (ten SWWF) and their eggs and young could be taken as a result of the proposed action¹. The incidental take is expected to be in the form of harassment, harm, and mortality resulting from:

1. Harassment through long-term disturbance from fire suppression actions in occupied SWWF habitat associated with the proposed action. SWWF present during fire suppression actions would be directly impacted, resulting in disrupted reproduction, and/or loss of habitat that provides for the essential elements of survival.
2. Harm through the loss of SWWF nesting habitat due to temporary habitat loss that may result from backburning, bulldozing, aircraft use, and/or water drops during fire suppression that remove southwestern willow flycatcher habitat components (multi-storied canopy, dense vegetation) to the extent that the habitat patch is no longer suitable for nesting by SWWF.

¹ This level of incidental take applies to BLM actions throughout Arizona as a result of fire suppression activities.

3. Mortality of SWWF eggs or young in nests from fire suppression actions in occupied SWWF habitat.

Brady Pincushion Cactus, Holmgren Milk Vetch, Jones' Cycladenia, Siler Pincushion Cactus, Welsh's Milkweed

Sections 7(b)(4) and 7 (o)(2) of the Act do not apply to the incidental take of listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal permit for removal or reduction to possession of threatened or endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy endangered plants on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law. Neither incidental take authorization nor recovery permits are needed for implementation of the proposed action.

The Fish and Wildlife Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

EFFECT OF THE TAKE

In this biological opinion, we have determined that this level of anticipated take is not likely to result in jeopardy to these species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES WITH TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, BLM must comply with the following terms and conditions (lettered and Roman numeral items), which implement the reasonable and prudent measures (numbered items) and outline reporting/monitoring requirements. The terms and conditions are non-discretionary.

Virgin River chub and Woundfin

The following reasonable and prudent measures are necessary and appropriate to minimize take of Virgin River chub and woundfin:

1. BLM shall monitor changes in the Virgin River flow data and report the findings to the AESO.
 - A. The BLM shall monitor changes in flow data at the USGS "Virgin River at Littlefield" gage, including:
 - i. tracking trends in median monthly flow.
 - ii. seeking opportunities for more in-depth study to determine connectivity of groundwater to Virgin River surface flow.

B. BLM shall submit annual reports as described in Reporting Requirements, below.

Additionally, the following reasonable and prudent measure with terms and conditions are carried forward from the September 3, 2004 opinion (02-21-03-F-0210) for the Virgin River chub only:

2. Minimize the effects of harassment and mortality of Virgin River chub.
 - A. BLM shall coordinate all fire suppression actions along, and adjacent to, the Virgin River and its tributaries with the FWS.
 - B. BLM shall use screens with a maximum mesh size of 1 inch if pumping water from the Virgin River during fire suppression activities.

Desert Tortoise

The following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoise:

1. BLM shall implement programs and procedures to minimize injury or mortality of tortoises during project activities.
 - A. BLM will include the following stipulations in BLM-authorized or BLM-conducted activities within desert tortoise habitat, except livestock grazing and fire suppression (if precluded by protection of valuable property, resources, or human safety).
 - i. All individuals handling tortoises must meet the FWS desert tortoise monitor or biologist qualifications requirements (see Appendix D). Permitting of these individuals may be done through application for a section 10(a)(1)(a) research and recovery permit, or through project-specific section 7 consultation.
 - ii. Designate a field contact representative (FCR) who will have the authority to halt all non-emergency project activity should any danger to a listed species arise. Work will only resume after hazards to the listed species are removed.
 - iii. Authorized biologists will act as biological monitors and be present during all construction activities for the protection of desert tortoises and other listed species. These biological monitors will be responsible for determining compliance with measures as defined in the biological opinion or other agreements between the project proponent and agencies.
 - iv. A biological monitor will be assigned each activity within the project site requiring large equipment. A biological monitor would also be assigned to all backfilling, recontouring, and reclamation activities.

- v. Authorized activities will require monitoring of the desert tortoise population throughout the duration of the project. The appropriate level of monitoring will be developed in coordination with BLM and FWS. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, section 7 consultation reinitiated.
 - vi. For drilling activities, where technically and economically feasible, use directional drilling, or horizontal, or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in occupied desert tortoise habitat.
 - vii. Within DWMAs/ACECs during the tortoise active season (March 15-October 15), set a 20 mph speed limit on BLM roads.
 - viii. Limit new access routes created by the project.
 - ix. Powerlines will be minimized and if built, include anti-perching mechanisms to discourage raptors and corvids. Monitoring of such use may be necessary. Powerline alignment should be kept within existing utility corridors.
 - x. Uncontrolled domestic dogs will be prohibited from the project site and site access routes. Use of firearms, except by law enforcement officers or licensed hunters during lawful hunting activities will also be prohibited.
 - xi. No standing water as a result of project operations will be permitted.
2. BLM shall take measures to eliminate or minimize take of desert tortoises resulting from livestock grazing.
 - A. The BLM shall monitor compliance with livestock removal from those allotments with seasonal restrictions (October 15 to March 15) and/or compliance on required pasture moves in the allotments managed with deferred grazing and take prompt action to resolve unauthorized grazing uses.
 - B. The BLM shall monitor compliance with the established key forage use threshold of 45 percent current annual growth on allotments with desert tortoise habitat to ensure that over-utilization of forage does not occur.
 - C. The BLM shall complete proposed fencing to implement proposed management changes and to exclude livestock from areas identified for closure in a timely manner.
 3. BLM shall take measures to minimize incidental take from recreational activities and travel.
 - A. Upon implementation of the route designation/closure plan, make available to the public a route designation map that displays all open routes and clearly explains

- vehicle, camping, recreational, and other public use regulations and opportunities in the DWMAs/ACECs, and explains the purpose of the DWMAs/ACECs.
- B. Use various mechanisms of public outreach to inform the public about the DWMAs/ACECs and recovery of the desert tortoise. These mechanisms may include interpretive displays, news releases, and open houses to answer questions about DWMAs/ACEC designation and management, and/or other actions.
4. BLM shall submit annual reports as described in Reporting Requirements, below. Specifically for desert tortoises, the report shall briefly document for the previous calendar year actions taken to implement these terms and conditions, surface-disturbing activities authorized, the effectiveness of these terms and conditions at reducing take of desert tortoise, actual acreage of desert tortoise habitat disturbed, numbers of tortoises taken, including animals injured or killed, the number of desert tortoises excavated from burrows, the number of desert tortoises moved from construction sites, and information on individual desert tortoise encounters. The report shall make recommendations for modifying or refining these terms and conditions to enhance desert tortoise protection and reduce needless hardship on the BLM and users of public lands.

Mexican Spotted Owl

The following reasonable and prudent measure and terms and conditions are necessary and appropriate to minimize take of MSO.

1. The ASDO shall take measures to minimize effects to individuals from project activities.
 - A. BLM will work with us to proactively develop appropriate measures to protect individual MSO from the site-specific effects of the activities authorized by the proposed action.
2. BLM shall submit annual reports as described in Reporting Requirements, below.

Southwestern Willow Flycatcher

The following reasonable and prudent measures and terms and conditions are necessary and appropriate to minimize take of SWWF.

1. BLM shall minimize the site-specific effects on SWWF of activities authorized by the proposed action.
 - A. BLM will rehabilitate all undesignated routes used by OHVs within riparian areas, or areas with the potential to support SWWF breeding habitat. This can include obliterating the beginnings and ends of undesignated routes so that the routes are not accessible or visible to the public.

- B. BLM will monitor other recreational activities that contribute to degradation of habitat on BLM-administered lands along the Virgin River and Kanab Creek and take appropriate measures to minimize those activities or modify them to reduce habitat degradation.
2. BLM shall monitor the effects of incidental take and submit annual reports as described in Reporting Requirements, below.
 - A. ASDO shall provide information on survey status for each area of suitable habitat, including location, size, shape, and spacing of habitat areas; either the date(s) surveyed (according to current protocol) or indication that the area has not been surveyed, and any other available information.

Additionally, the following reasonable and prudent measure with terms and conditions are carried forward from the September 3, 2004 opinion (02-21-03-F-0210):

3. Minimize the effects of harassment, harm, and mortality to southwestern willow flycatchers.
 - A. In cooperation with us, and using guidance from the southwestern willow flycatcher recovery plan, BLM shall incorporate the elements recommended for fire risk evaluation and planning into its Fire Management Plans for all current flycatcher breeding sites on or adjacent to BLM-administered lands. This planning effort shall be initiated prior to the 2006 wildfire season.
 - B. If additional sites become occupied over the life of the LUP Amendment, BLM shall include them in the yearly Fire Management Plans in cooperation with us, prior to the next wildfire season.

REPORTING REQUIREMENTS

The BLM shall submit annual monitoring reports to the Arizona Ecological Services Field Office by February 1 beginning in year 2009. These reports shall briefly document for the previous calendar year the effectiveness of the terms and conditions and locations of listed species observed, and, if any are found dead, suspected cause of mortality. The report shall also summarize tasks accomplished under the conservation measures and terms and conditions. The report shall make recommendations for modifying or refining conservation measures and terms and conditions to enhance listed species protection or reduce needless hardship on the BLM and its permittees.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a

photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

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. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that BLM coordinate with us to develop specific management actions within ACECs to further protect special status species.
2. We recommend that BLM continue to evaluate the recovery needs of the woundfin and Virgin River chub as described in the Virgin River Fishes Recovery Plan and prepare appropriate planning documents that outline how the BLM could further contribute to the recovery of these species.
3. We recommend that BLM continue to assist Lake Mead National Recreation Area; other BLM offices in Utah, Nevada, and California; and other land managers in the northeastern Mojave recovery unit in the development of regional planning efforts to implement the recovery plan, and in the integration of those plans with the Arizona Strip RMP.
4. We recommend that BLM fully implement the Desert Tortoise Recovery Plan and subsequent revisions of the plan.
5. We recommend that BLM manage activities so that they do not contribute to the proliferation of predators within desert tortoise habitat.
6. We recommend that BLM construct new wildlife guzzlers in desert tortoise habitat only if they are designed so as to exclude desert tortoises, and if sufficient forage is available.
7. We recommend that the BLM coordinate and partner with other local, State, and Federal agencies as well as private groups to sponsor and/or assist with public education regarding desert tortoise conservation to enhance public support for conservation activities. Target groups for education and outreach may include OHV groups, hunting groups, Home Owner Associations, scout troops, public schools, libraries, and other audiences and venues associated with regional land use and/or educational programming.
8. We recommend that BLM support and participate in inventory and annual monitoring of Yuma clapper rails and their habitats within the planning area. The FEIS states that

surveys will be done every other year; however, the multi-agency protocol is for annual surveys.

9. We recommend that BLM require implementation of conservation measures for California condors for all activities within the non-essential experimental population area, unless firefighter or public safety, or the protection of valuable property, improvements, or natural resources, render them infeasible during a particular operation.
10. We recommend that BLM continue to work with Arizona Game and Fish Department to educate and encourage hunters to use non-lead bullets when hunting game in condor habitat.
11. We recommend that BLM conduct comprehensive surveys for MSO in predicted MSO habitat according to current survey protocol.
12. We recommend that BLM develop environmental education and information materials on the SWWF and other riparian species and make these materials available to the public at the ASDO office in St. George, Utah.
13. We recommend that BLM work with us to proactively develop appropriate measures to protect listed plants from the effects of site-specific activities that will be implemented under the proposed action.
14. We recommend that BLM not dispose of land that contains occurrences, habitat, or potential habitat of listed plant species or other special status plant species.
15. We recommend that BLM actively pursue obtaining ownership of the habitat of listed and other sensitive plant species that exists on non-Federal lands in the project area. We recommend BLM work closely with us to identify and prioritize such lands.
16. We recommend new transportation routes in listed plant species habitat not be authorized. We also recommend that existing routes that are resulting in effects to the species be closed or routed away from the species.
17. We recommend installation of physical barriers or designation of parking areas that are necessary to keep vehicles from impacting listed plant species.
18. We recommend that range developments that attract and or concentrate cattle be located away from listed plant species habitat and occurrence.
19. We recommend installation of fences or development of other protective measures (e.g., herding) where cattle are attracted to concentrate in areas in listed plant species habitat.
20. We recommend developing or modifying listed plant species monitoring programs so that they are efficient and effective in achieving desired monitoring results.

21. We recommend conducting research to determine the actual effects of various actions on the plant community dynamics of listed plant species habitat.
22. We recommend that the BLM encourage seasonal restrictions (April 1 to September 30) on mining and other project operations within or adjacent to occupied SWWF breeding habitat, if these activities can disturb nesting birds. The need for this restriction would be assessed during the NEPA analysis and section 7 consultation conducted for the mining plan of operations.
23. We recommend working with Mohave County officials to establish a speed limit on county roads in desert tortoise habitat. Additionally, we recommend instituting a speed limit for grazing permittees during the desert tortoise active season (March 15-October 15) in DWMAs/ACEs.

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

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In keeping with our trust responsibilities to American Indian Tribes, we are providing for participation of the Bureau of Indian Affairs (BIA) in this consultation and, by copy of this memorandum, are notifying the Chemehuevi Tribe, the Havasupai Tribe, the Hopi Tribe, the Kaibab Band of Paiute Indians, the Hualapai Tribe, and the Navajo Nation. We encourage you to coordinate with the BIA and invite all affected Tribes to participate in the consultation process.

We appreciate your efforts to identify and minimize effects to listed species from the proposed action. For further information please contact Brian Wooldridge (x105) or Brenda Smith (x101) at (928) 226-0614.

/s/ Steven L. Spangle

cc: Field Supervisor, Fish and Wildlife Service, Albuquerque, NM
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 Assistant Field Supervisor, Phoenix, AZ (Attn: Greg Beatty)
 Assistant Field Supervisor, Flagstaff, AZ (Attn: Shaula Hedwall)
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 Lesley Fitzpatrick, Fish and Wildlife Service, Phoenix, AZ

Superintendent, Lake Mead National Recreation Area, Boulder City, NV
 Manager, Grand Canyon-Parashant National Monument, St. George, UT
 Manager, Vermilion Cliffs National Monument, St. George, UT
 Chairperson, Chemehuevi Tribe, Havasu Lake, CA
 Chairperson, Havasupai Tribe, Supai, AZ
 Chairperson, Hopi Tribe, Kykotsmovi, AZ
 Chairperson, Kaibab Band of Paiute Indians, Fredonia, AZ
 Chairperson, Hualapai Tribe, Peach Springs, AZ
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TABLES

Table 1. Consultation history for the BLM Arizona Strip Resource Management Plan.

<i>Date</i>	<i>Event</i>
2002 to May 9, 2007	We conducted extensive informal consultation with BLM on the Arizona Strip RMP.
November 25, 2005	We received a draft environmental impact statement.
March 28, 2006	We provided comments on the draft environmental impact statement.
May 30, 2006	We received a draft biological assessment.
August 11, 2006	We provided comments on the draft biological assessment.
May 9, 2007	We received a May 7, 2006, request for formal consultation and a biological assessment.
June 20, 2007	We issued a thirty-day letter regarding the request for formal consultation.
September 28, 2007	We issued a draft biological opinion.
October 15, 2007	We received comments on the draft biological opinion.

Table 2. Estimated rangewide population for the southwestern willow flycatcher based on 1993 to 2005 survey data for Arizona, California, Colorado, New Mexico, Nevada, Utah, and Texas¹.

State	Number of sites with WIFL territories 1993-05 ²	Percentage of sites with WIFL territories 1993-05	Number of territories ³	Percentage of total territories
Arizona	117	42.5 %	495	40.8 %
California	94	34.2 %	191	15.7 %
Colorado	10	3.6 %	63	5.2 %
Nevada	13	4.7 %	68	5.6 %
New Mexico	38	13.8 %	393	32.4 %
Utah	3	1.1 %	4	0.3%
Texas	?	?	?	?
Total	275	100 %	1,214	100 %

¹Durst *et al.* 2006.
²Site boundaries are not defined uniformly throughout the bird's range.
³Total territory numbers recorded are based upon the most recent years survey information from that site between 1993 and 2005.

Table 5. Formal consultations conducted for actions affecting listed species on the Arizona Strip District.

<i>Number</i>	<i>Title</i>
22410-2007-F-0011	Fire Rehabilitation Plans in the Pakoon Basin
02-21-05-F-0778	Biological Opinion for Grazing Permit Renewal for Six Allotments Containing Siler Pincushion Cactus Habitat
02-21-05-0772	Fire Rehabilitation Plans in Mojave Desert Tortoise Habitat
02-21-05-F-0506	Highway 91 Bridge at Beaver Dam Wash
02-21-03-F-0210	BLM Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management
02-21-02-F-0299	Tilapia Removal Program on the Virgin River
02-21-99-F-002	Kane Ranch Allotment Management Plan
02-21-97-F-166	Removal of Unauthorized Fill from the Virgin River, Hidden Valley Hunting Preserve
02-21-97-F-011	County Road Maintenance Facility NE Beaver Dam
02-21-96-F-443	Pakoon Airstrip Expansion
02-21-96-F-132	Final Mojave Desert Amendment to the Arizona Strip District Resource Management Plan
02-21-96-F-119	12.47 KV Dixie-Escalante Transmission Line Near Scenic, Arizona
02-21-95-F-415	Kellner Jack Installation on Beaver Dam Wash
02-21-95-F-379	Emergency Fire Suppression Pakoon Basin & Programmatic Fire Suppression
02-21-95-F-278	Littlefield School District Recreation & Public Purposes Lease and Patent
02-21-94-F-531	Beaver Dam Access Project
02-21-94-F-388	Emergency Watershed Program Project Beaver Dam Wash, Littlefield, Arizona
02-21-93-F-414	Marble Canyon Area – Management Plan
02-21-94-F-173	Dixie-Escalante Rural Electric Cooperative Powerline
02-21-92-F-104	Rio Virgin Telephone Right-of-Way
01-21-92-F-021	Rio Virgin Telephone Right-of-Way
02-21-90-F-050	Jacobsen Access Road (A-23200)
02-21-91-F-135	Amendment to Right-of-Way A24943 for Arizona Dept. of Transportation Beaver Dam
02-21-91-F-016	Lease Extension Beaver Dam – Littlefield Landfill
02-21-90-F-275	Mohave County Road Right-of-Way
02-21-90-F-189	Bighole Fence Pakoon Spring Allotment
02-21-88-F-127	Amendment 1: Arizona Strip Resource Management Plan
02-21-90-F-147	Valley Wash Pipeline
02-21-90-F-052	Draft Final Wilderness Management Plan Paiute & Beaver Dam Mountains
02-21-90-F-082	Mesquite Nevada Airport
02-21-88-F-127	Arizona Strip Resource Management Plan

APPENDIX A

Conference Report for California Condors on BLM Land Within the Nonessential Experimental Population Area

Federal agencies with lands outside of the National Park System within the nonessential experimental area are required to evaluate their discretionary actions to determine if the actions will jeopardize the continued existence of California condors. If jeopardy is not determined likely, no additional consultation is necessary. However, we continue to recommend that the agency request a conference, and the BLM requested an informal conference for California condors within the nonessential experimental population area, where the species is considered as a proposed species. Conferences allow us to provide consistent advisory recommendations across the range of the condor population. In addition, by monitoring actions that may affect condors, we can better measure the effectiveness of the recommendations to the reintroduction program.

Within the nonessential experimental population area, there are no prohibitions against unavoidable and unintentional take of a California condor, provided that such take is non-negligent and incidental to a lawful activity (such as hunting, driving, or recreational activities) and the take is reported as soon as possible.

The Status of the Species, Environmental Baseline, Effects of the Action, and Cumulative Effects sections of the biological opinion are part of this conference report and are incorporated here by reference.

We believe that continued implementation of section 7(a)(1) responsibilities by Federal agencies is very important in meeting recovery objectives for California condors. Through section 7(a)(2), we provide recommended conservation measures to action agencies that may reduce effects of project activities on condors and further recovery of the species. We recommend the following measures to reduce lead and human-condor interaction in the area addressed by this informal conference:

1. We recommend that, for those activities where ammunition is used in the area and for which BLM has authority, BLM require that only non-lead ammunition will be used.
2. We recommend that, for those activities where ammunition is used in the area and for which BLM does not have authority, BLM educate users and request that only non-lead ammunition will be used.
3. We recommend that, for those activities for which BLM has authority, BLM require the implementation of the condor conservation measures in Appendix B of this biological opinion.

APPENDIX B

The following conservation measures are from Appendix 2.E. of the FEIS (ASDO 2007b) and were referenced in the BA (ASDO 2007a). These conservation measures will be implemented as part of the proposed action for all management activities that BLM authorizes.

Wildland Fire Suppression

The following Conservation Measures will be implemented during fire suppression operations, unless firefighter or public safety, or the protection of property, improvements, or natural resources, render them infeasible during a particular operation. Each Conservation Measure has been given an alphanumeric designation for organizational purposes (e.g., FS-1). Necessary modifications of the Conservation Measures or impacts to federally protected species and habitat during fire suppression operations will be documented by the Resource Advisor, and coordinated with the USFWS.

- FS-1** Protect known locations of habitat occupied by federally listed species. Minimum Impact Suppression Tactics (MIST) will be followed in all areas with known federally protected species or habitat.
- FS-2** Resource Advisors will be designated to coordinate natural resource concerns, including federally protected species. They will also serve as a field contact representative (FCR) responsible for coordination with the USFWS. Duties will include identifying protective measures endorsed by the Field Office Manager, and delivering these measures to the Incident Commander; surveying prospective campsites, aircraft landing and fueling sites; and performing other duties necessary to ensure adverse effects to federally protected species and their habitats are minimized. On-the-ground monitors will be designated and used when fire suppression activities occur within identified occupied or suitable habitat for federally protected species.
- FS-3** All personnel on the fire (firefighters and support personnel) will be briefed and educated by Resource Advisors or designated supervisors about listed species and the importance of minimizing impacts to individuals and their habitats. All personnel will be informed of the conservation measures designed to minimize or eliminate take of the species present. This information is best identified in the incident objectives.
- FS-4** Permanent road construction will not be permitted during fire suppression activities in habitat occupied by federally protected species. Construction of temporary roads is approved only if necessary for safety or the protection of property or resources, including federally protected species habitat. Temporary road construction should be coordinated with the USFWS, through the Resource Advisor.
- FS-5** Crew camps, equipment staging areas, and aircraft landing and fueling areas should be located outside of listed species habitats, and preferably in locations that are disturbed. If camps must be located in listed species habitat, the Resource Advisor would be consulted to ensure habitat damage and other effects to listed species are minimized and

documented. The Resource Advisor should also consider the potential for indirect effects to listed species or their habitat from the siting of camps and staging areas (*e.g.*, if an area is within the water flow pattern, there may be indirect effects to aquatic habitat or species located off-site).

- FS-6** All fire management protocols to protect federally protected species will be coordinated with local fire suppression agencies that conduct fire suppression on BLM-administered lands to ensure that the agency knows how to minimize impacts to federally protected species in the area.
- FS-7** The effectiveness of fire suppression activities and Conservation Measures for federally protected species should be evaluated after a fire, when practical, and the results shared with the USFWS and AGFD. Revise future fire suppression plans and tactical applications as needed and as practical.

Fuels Treatments, Prescribed Burning and other Fuels Management Actions

The following Conservation Measures are mandatory when implementing wildland fire use, prescribed fires, and proposed vegetation treatments using mechanical, chemical, and/or biological treatment methods:

- FT-1** Biologists will be involved in the development of prescribed burn plans and vegetation treatment plans to minimize effects to federally protected species and their habitats within, adjacent to, and downstream from proposed project sites. Biologists will consider the protection of seasonal and spatial needs of federally protected species (*e.g.*, avoiding or protecting important use areas or structures and maintaining adequate patches of key habitat components) during project planning and implementation.
- FT-2** MIST will be followed in all areas with known federally protected species or habitats.
- FT-3** Pre-project surveys and clearances (biological evaluations/assessments) for federally protected species will be required for each project site before implementation. All applicable Conservation Measures will be applied to areas with unsurveyed suitable habitat for federally protected species, until a survey has been conducted by qualified personnel to clear the area for the treatment activity.
- FT-4** Use of motorized vehicles during prescribed burns or other fuels treatment activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, washes, and temporary fuel breaks or site-access routes. If off-road travel is deemed necessary, any cross-country travel paths would be surveyed prior to use and would be closed and rehabilitated after the prescribed burn or fuels treatment project is completed.
- FT-5** As part of the mandatory fire briefing held prior to prescribed burning, all personnel (firefighters and support personnel) will be briefed and educated by Resource Advisors or designated supervisors about listed species and the importance of minimizing

impacts to individuals and their habitats. All personnel will be informed of the Conservation Measures designed to minimize or eliminate take of the species present.

Rehabilitation and Restoration

- RR-1** When rehabilitating important areas for federally listed species that have been damaged by fire or other fuels treatments, the biologist will give careful consideration to minimizing short-term and long-term impacts. Someone who is familiar with fire impacts and the needs of the affected species will contribute to rehabilitation plan development. Appropriate timing of rehabilitation and spatial needs of federally listed species will be addressed in rehabilitation plans.
- RR-2** Seed from regionally native or sterile alien (non-native) species of grasses and herbaceous vegetation will be used in areas where reseeding is necessary following ground disturbance to stabilize soils and prevent erosion by both wind and water.
- RR-3** Sediment traps or other erosion control methods will be used to reduce or eliminate influx of ash and sediment into aquatic systems.
- RR-4** Use of motorized vehicles during rehabilitation or restoration activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, or washes, and to temporary access roads or fuel breaks created to enable the fire suppression, prescribed burn, or fuels treatment activities to occur. If off-road travel is deemed necessary, any cross-country travel paths would be surveyed prior to use and would be closed and rehabilitated after rehabilitation or restoration activities are completed.
- RR-5** All temporary roads, vehicle tracks, skid trails, and off-road vehicle (ORV) trails resulting from fire suppression and the proposed fire management activities be rehabilitated (water bars, etc.), and be closed or made impassible for future use.
- RR-6** Burned area emergency rehabilitation (BAER) activities and long-term restoration activities should be monitored, and the results provided to the USFWS and AGFD. Section 7 consultation for BAER activities will be conducted independently, if necessary.
- RR-7** **(Recommended)** Develop public education plans that discourage or restrict fires and fire-prone recreation uses during high fire-risk periods. Develop brochures, signs, and other interpretive materials to educate recreationists about the ecological role of fires, and the potential dangers of accidental fires.

Fire Management Activities in Riparian and Aquatic Habitats

The following Conservation Measures be implemented during fire suppression and fuels treatment operations in riparian, wetland, or aquatic habitats, unless firefighter or public safety, or the protection of property, improvements, or natural resources, render them infeasible during a

particular operation. Fuels treatment activities include prescribed fire and mechanical, chemical, and/or biological vegetation treatments in riparian, wetland, and aquatic habitats. Necessary modifications of the Conservation Measures or impacts to federally protected species and habitat during fire suppression operations will be documented by the Resource Advisor, and coordinated with the USFWS.

- RA-1** During wildfire suppression, apply MIST within riparian areas. Fire suppression actions in riparian areas should be prioritized to minimize damage to stands of native vegetation from wildfire or suppression operations. To the extent possible, retain large, downed woody materials and snags that are not a hazard to firefighters.
- RA-2** Fire suppression and rehabilitation in riparian corridors will be coordinated with the Resource Advisor or qualified biologist approved by BLM.
- RA-3** Site-specific implementation plans that include project areas with federally protected aquatic or riparian-obligate species will specify fire management objectives and wildland fire suppression guidance, taking into account the special concerns related to these species.
- RA-4** In riparian areas, use natural barriers or openings in riparian vegetation where possible as the easiest, safest method to manage a riparian wildfire. Where possible and practical, use wet firebreaks in sandy overflow channels rather than constructing firelines by hand or with heavy equipment.
- RA-5** Construction or development of a crossing for motorized vehicles across a perennial stream will not be permitted, unless an established road already exists or where dry, intermittent sections occur.
- RA-6** Avoid the use of fire retardants or chemical foams in riparian habitats or within 300 feet of aquatic habitats, particularly sites occupied by federally protected species. Apply operational guidelines as stated in the *Interagency Standards for Fire and Fire Aviation Operations 2003 (or updates)*, “Environmental Guidelines for Delivery of Retardant or Foam Near Waterways.”
- RA-7** Priority for placement of fire camps, fire staging areas, and aircraft landing or refueling sites will be outside riparian areas or river/stream corridors.
- RA-8** When using water from sources supporting federally protected species, care must be taken to ensure adverse impacts to these species are minimized or prevented. Unused water from fire abatement activities will not be dumped in sites occupied by Federally protected aquatic species to avoid introducing non-native species, diseases, or parasites.
- RA-9** If water is drafted from a stock tank or other body of water for fire suppression, it would not be refilled with water from another tank, lakes, or other water sources that may support non-native fishes, bullfrogs, crayfish, or salamanders.

- RA-10** Use of containment systems for portable pumps to avoid fuel spills in riparian or aquatic systems will be required.
- RA-11 (Recommended)** Develop and implement restoration plans for affected riparian or aquatic areas, including long-term monitoring, to document changes in conditions in the riparian zone and watershed that maintain flood regimes and reduce fire susceptibility. Monitor stream water quality and riparian ecosystem health to determine effects of wildfire and fire management activities. Coordinate efforts and results with the USFWS and AGFD.
- RA-12** Fire management treatments within or adjacent to riparian and aquatic habitats be designed to provide long-term benefits to aquatic and riparian resources by reducing threats associated with dewatering and surface disturbance, or by improving the condition of the watershed and enhancing watershed function.
- RA-13** For priority fire/fuels management areas (e.g., wildlife-urban interface (WUI) areas) with federally protected species or designated critical habitat downstream, BLM biologists and other resource specialists, as appropriate, in coordination with USFWS and AGFD, determine:
- A) The number of acres and the number of projects or phases of projects to occur within one watershed per year.
 - B) An appropriately-sized buffer adjacent to perennial streams in order to minimize soil and ash from entering the stream.
 - C) Where livestock grazing occurs in areas that have been burned, specialists will determine when grazing can be resumed. Such deferments from grazing will only occur when necessary to protect streams from increased ash or sediment flow into streams.²

If agreement cannot be reached or treatment would not meet fuel reduction objectives, BLM will re-initiate consultation. Our authority to make these types of changes is in the regulations at 43 CFR 4110.3-3(b).

Species Specific Conservation Measures

In addition to the general Conservation Measures listed in **Section 1.0**, the following species-specific Conservation Measures will be applied to management actions in special status species habitats to the extent possible, and will be required during fuels and vegetation treatment activities. Necessary modifications of the Conservation Measures or impacts to federally protected species and habitat during implementation of management actions will be documented by the BLM or NPS biologist, and coordinated with the USFWS.

¹"Project" means any surface-disturbing activities proposed that may cause disturbance of desert tortoise habitat and/or death or injury of a desert tortoise, with the exception of grazing by livestock and activities associated with fire suppression.

Desert tortoise, Mojave population

DT-1. Minimize or eliminate effects to desert tortoise from authorized projects¹.

- DT-1.A.** For each authorized project¹, BLM and/or NPS will designate a field contact representative (FCR) who will be responsible for overseeing compliance with these conservation measures and for coordination on compliance with the U.S. Fish and Wildlife Service (Service). The FCR will be a qualified biologist approved by BLM and/or NPS, and will have the authority and the responsibility to halt all project activities that are in compliance with these conservation measures. These individuals will have a copy of these conservation measures while on the work site.
- DT-1.B.** To the extent possible, project features will be located in previously-disturbed areas or outside of desert tortoise habitat.
- DT-1.C.** To the extent possible, project activities will be scheduled when tortoises are inactive (October 15 through March 15). The following project activities will only be authorized between October 15 through March 15: surface disturbance associated with mineral leasing; organized, non-speed vehicular events; construction and non-emergency maintenance activities in rights-of-ways; and non-emergency maintenance of existing roads.
- DT-1.D.** Pre-construction surveys will be conducted to locate desert tortoises that may be injured or killed as a result of proposed activities. Projects will be altered or tortoises in harm's way will be relocated to avoid lethal take of tortoises in project areas. Prior to any surface-disturbing activities associated with "projects," work sites will be surveyed for desert tortoises by a qualified biologist approved by BLM and/or NPS. Areas of new disturbance will be surveyed with 100-percent coverage.
- DT-1.D.1.** Between October 15 and March 15 any new disturbance will be preceded by 100-percent surveys conducted within one week of the proposed activities. During surveys, occupied desert tortoise burrows in or within 40 feet of areas to be disturbed will be excavated using hand tools under the supervision of an authorized biologist. Tortoises discovered in burrows will be relocated. Burrows will then be collapsed or blocked to prevent entry by tortoises. Desert tortoises and any desert tortoise eggs found in areas to be disturbed will be relocated in accordance with conservation measure DT-1.D.4. All handling of desert tortoises and their eggs will be in accordance with conservation measure DT-1.D.4.
- DT-1.D.2.** For project activities occurring during the desert tortoise active season (March 15 through October 15), surveys will be conducted within 24 hours of initiation of surface-disturbing activities. For surface-disturbing activities conducted from March 15 to October 15 in desert tortoise habitat, construction and operation activities will be monitored by a qualified desert tortoise biologist approved by BLM and/or NPS. The biologist will be present during all activities in which encounters with tortoises may occur. The biologist will watch for tortoises wandering into construction areas, check

under vehicles, check at least three times per day any excavations that might trap tortoises, and conduct other activities necessary to ensure that death or injury of tortoises is minimized.

DT-1.D.3. Only biologists authorized and permitted by the Service and Arizona Game and Fish Department will handle desert tortoises. Additional biologists could be authorized if BLM and/or NPS submits the name(s) of the proposed authorized biologist(s) to the Service for review and approval at least 15 days prior to the onset of activities that could result in a take. Minimum requirements for authorized biologists include attending the Desert Tortoise Council's training course for handling desert tortoises and/or training by an authorized biologist. Authorized biologists must have all valid state and federal permits.

DT-1.D.4. The authorized biologist will maintain a record of all desert tortoises encountered during project activities. This information will include for each desert tortoise:

1. The locations and dates of observation
2. General condition and health, including injuries and state of healing and whether animals voided their bladders
3. Location moved from and location moved to
4. Diagnostic markings (i.e. identification numbers of marked lateral scutes)
Desert tortoises that are handled will be marked for future identification. An identification number (using the acrylic paint/epoxy technique) will be placed on the 4th costal scute (Fish and Wildlife Service 1992). No notching of scutes or replacement of fluids with a syringe is authorized.

DT-1.E. If a tortoise or clutch of tortoise eggs is found in a project area, to the extent practicable activities will be modified to avoid injuring or harming it. If activities cannot be modified, the tortoise/clutch will be moved from harm's way by an the authorized biologist the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection associated with the project or other activities. The authorized biologist will have some discretion to ensure that survival of each relocated desert tortoise/clutch is likely. Desert tortoises/clutches will not be translocated to lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for desert tortoises and their eggs will adhere to protocols outlined in Desert Tortoise Council (1994 with 1996 revisions).

DT-1.F. Areas of new construction or disturbance will be flagged or marked on the ground prior to construction. All construction workers will strictly limit their activities and vehicles to areas that have been marked. Construction personnel will be trained to recognize markers and understand the equipment movement restrictions involved.

DT-1.G. A desert tortoise education program will be presented to all project personnel that may encounter tortoises; such as employees, inspectors, supervisors, contractors, and subcontractors; prior to initiation of activities that may result in disturbance of desert tortoise habitat or death or injury of desert tortoises. The education program will include discussions of the following:

1. legal protection of the desert tortoise and sensitivity of the species to human activities;
2. a brief discussion of desert tortoise distribution and ecology;
3. the terms and conditions of applicable biological opinions;
4. project features designed to reduce adverse effects to desert tortoises and their habitat, and to promote the species' long-term survival;
5. protocols during encounters with desert tortoises and associated reporting requirements; and
6. the definition of take and penalties for violations of Federal and State laws.

DT-1.H. During the tortoise active season (March 15 through October 15), project features that might trap or entangle desert tortoises such as open trenches, pits, open pipes, etc will be covered or modified to prevent entrapment.

DT-1.I. Long-term or permanent project sites in which continued encounters with desert tortoises are expected, such as construction of schools under an R&PP lease, roads, power plants, office buildings, and other permanent or long-term projects will be enclosed with desert tortoise barrier fencing to prevent tortoises from wandering onto the project site where they may be subject to collection, death, or injury. Barrier fencing should consist of wire mesh with a maximum mesh size of 1-inch (horizontal) by 2-inch (vertical) fastened securely to posts. The wire mesh will extend at least 18 inches above the ground and preferably 12 inches below the surface of the ground. Where burial is not possible, the lower 12 inches will be folded outward, away from the enclosed site, and fastened to the ground so as to prevent tortoise entry. Any gates or gaps in the fence will be constructed and operated to prevent desert tortoise entry (such as installing "tortoise guards" similar to cattle guards, and/or keeping gates closed). Specific measures for tortoise-proofing gates and gaps will be addressed project by project. Once fence construction is complete, all tortoises within the fence will be relocated outside the fence in accordance with conservation measure DT-1.D.4. If more than 20 tortoises be relocated from any one area enclosed by a fence, the BLM or NPS will contact the Service in regard to disposition of the animals. After the area within the fence has been cleared of tortoises, construction and operation activities may occur within the fence without the presence and monitoring of a biologist (see conservation measure DT-1.D.).

- DT-1.J.** Temporary fencing, such as snow fencing, chain link, and other suitable materials will be used in designated areas as determined by the BLM to reduce encounters with tortoises from March 15 to October 15 on short-term projects, such as construction of power lines, burial of fiber optic cables, etc, where encounters with tortoises are likely.
- DT-1.K.** Blading of work areas will be minimized to the extent possible. Disturbance to shrubs will be avoided if possible. If shrubs cannot be avoided during equipment operation or vehicle use, wherever possible they will be crushed rather than excavated or bladed.
- DT-1.L.** Project vehicle use will be limited to designated routes (existing routes prior to designation) to the extent possible.
- DT-1.M.** At no time will vehicle or equipment fluids be dumped on public lands. All accidental spills must be reported to BLM and NPS and cleaned up immediately, using the best available practices according to the requirements of the law. All spills of federally or State-listed hazardous materials that exceed reportable quantities will be promptly reported to the appropriate State agency and the BLM and NPS.
- DT-1.N.** Vehicles associated with BLM-authorized projects traveling on unpaved roads in desert tortoise habitat will not exceed speed limits established by the BLM as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best-unpaved roads but may be much less than this on some roads.
- DT-1.O.** New paved roads and highways in desert tortoise habitat or major reconstruction or modifications of existing paved roads through desert tortoise habitat will be fenced with desert tortoise barrier fencing (see DT-1.I. and J.). Culverts, to allow safe passage of tortoises, will be constructed approximately every mile of new or reconstructed paved road (culverts can also serve the more typical purpose of conducting water under roads). The culvert diameter needed to encourage tortoise use is correlated with culvert length, but generally short culverts of large diameter are most likely to be used. The floor of the culvert will be covered with dirt and maintenance should be performed as necessary to maintain an open corridor for tortoise movement. Culvert design will be coordinated with and approved by the Service.
- DT-1.P.** Unleashed dogs will be prohibited in project areas.
- DT-1.Q.** Temporary access routes created during project construction will be modified as necessary to prevent further use. Closure of access routes could be achieved by ripping, barricading, posting the route as closed, and/or seeding and planting with native plants.
- DT-1.R.** To reduce attraction of potential desert tortoise predators, project sites in desert tortoise habitat will be maintained in a sanitary condition at all times; waste materials at those sites will be placed in covered receptacles and disposed of promptly at an appropriate waste disposal site. "Waste" refers to all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and

equipment. All reasonable effort will also be taken to reduce or eliminate water sources associated with project activities that might attract ravens and other predators.

DT-1.S. After completion of the project, trenches, pits, and other features in which tortoises could be entrapped or entangled, will be filled in, covered, or otherwise modified so they are no longer a hazard to desert tortoises.

DT-1.T. After project completion, measures will be taken to facilitate restoration. Restoration techniques will be tailored to the characteristics of the site and the nature of project impacts. Techniques may include removal of equipment and debris, recontouring; and seeding, planting, transplanting of cacti and yuccas, etc. Only native plant species, preferably from a source on or near the project area, will be used in restoration.

DT-2 Take appropriate action to suppress all wildfires in desert tortoise habitat.

DT-2.A. As soon as practical, all personnel involved in wildfire suppression (firefighters and support personnel) will be briefed and educated about desert tortoises and the importance of protecting habitat and minimizing take, particularly due to vehicle use. Fire crews will be briefed on the desert tortoise in accordance with Appendix II of Duck *et al.* (1995).

DT-2.B. If wildfire or suppression activities cannot avoid disturbing a tortoise, the Resource Advisor or monitor will relocate the tortoise, if safety permits. The tortoise will be moved into the closest suitable habitat within two miles of the collection site that will ensure the animal is reasonably safe from death, injury, or collection associated with the wildfire or suppression activities. The qualified biologist will be allowed some discretion to ensure that survival of each relocated tortoise is likely. If the extent or direction of movement of a fire makes sites within two miles of the collection site unsuitable or hazardous to the tortoise or biologists attempting to access the area, the tortoise may be held until a suitable site can be found or habitat is safe to access and not in immediate danger of burning. The Resource Advisor will contact the USFWS Arizona Ecological Services Field Office (AESFO) as soon as possible concerning disposition of any animals held for future release. Desert tortoises will not be placed on lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for tortoises, including temporary holding facilities and procedures, will adhere to protocols outlined in Desert Tortoise Council (1994).

DT-2.C. Upon locating a dead, injured, or sick desert tortoise, initial notification must be made to the appropriate USFWS Law Enforcement Office within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. The notification will be sent to the Law Enforcement Office with a copy to the AESFO.

- DT-2.D.** Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. If possible, the remains of intact desert tortoises will be placed with educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, the information noted above will be obtained and the carcass left in place. Arrangements regarding proper disposition of potential museum specimens will be made with the institution prior to implementing the action. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should any treated desert tortoise survive, the USFWS should be contacted regarding final disposition of the animal.
- DT-2.E.** The Resource Advisor or monitor(s) will maintain a record of all desert tortoises encountered during fire suppression activities. This information will include for each desert tortoise: 1) locations and dates of observation; 2) general condition and health, including injuries and state of healing, and whether animals voided their bladders; 3) location moved from and to; and 4) diagnostic markings (i.e., identification numbers of marked lateral scutes). No notching of scutes or replacement of fluids with a syringe is authorized.
- DT-2.F.** Prior to moving a vehicle, personnel will inspect under the vehicle for tortoises. If a tortoise is found under the vehicle, the tortoise will be allowed to move away from the vehicle on its own accord, if possible. Otherwise, an individual will move the tortoise to a safe locality in accordance with FS-2 and DT-1.E.
- DT-2.G.** Off-road vehicle activity will be restricted to the minimum necessary to suppress wildfires. Off-road vehicle activity will not be permitted on NPS lands. Vehicles will be parked as close to roads as possible, and vehicles will use wide spots in roads or disturbed areas to turn around. Whenever possible, a biologist or crewperson trained to recognize tortoises and their shelter sites will precede any vehicle traveling off-road to direct the driver around tortoises and tortoise burrows. Whenever possible, local fire-fighting units should provide direction and leadership during off-road travel because of their expertise and knowledge of area sensitivities.
- DT-2.H.** Fire-related vehicles will drive slow enough to ensure that tortoises on roads can be identified and avoided.
- DT-2.I.** Fire crews or rehabilitation crews will, to the extent possible, obliterate off-road vehicle tracks made during fire suppression in tortoise habitat, especially those of tracked vehicles, to reduce future use.
- DT-2.J.** To the maximum extent practical, campsites, aircraft landing/fueling sites, and equipment staging areas will be located outside of desert tortoise habitat or in previously disturbed areas. If such facilities are located in desert tortoise habitat, 100 percent of the site will be surveyed for desert tortoises by a qualified biologist approved by BLM or NPS, whenever feasible. Any tortoises found will be moved to a safe

location in accordance with FS-2 and DT-1.E. All personnel located at these facilities will avoid disturbing active tortoise shelter sites.

- DT-2.K.** Elevated predation by common ravens or other predators attributable to fire suppression activities will be reduced to the maximum extent possible. Work areas, including campsites, landing/fueling sites, staging areas, etc. will be maintained in a sanitary condition at all times. Waste materials at those sites will be contained in a manner that will avoid attracting predators of desert tortoises. Waste materials will be disposed of at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
- DT-2.L.** Backfiring operations are permitted where necessary in desert tortoise habitat. Burning out patches of identified habitat within or adjacent to burned areas is not permitted as a standard fire suppression measure unless necessary for firefighter or public safety or to protect property, improvements, or natural resources.
- DT-2.M.** Use of foam or retardant is authorized within desert tortoise habitat.
- DT-2.N.** Rehabilitation of vegetation in tortoise habitat will be considered, including seeding, planting of perennial species, etc.
- DT-2.O.** Recovery of vegetation will be monitored, including establishing and monitoring paired plots, inside and outside burned areas in tortoise habitat. Recovery plans will be coordinated with the USFWS and AGFD.
- DT-2.P.** The effectiveness of wildfire suppression activities and desert tortoise Conservation Measures will be evaluated after a wildfire. Procedures will be revised as needed.

AMPHIBIANS (INCLUDES RELICT LEOPARD FROG)

- AM-1** Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.
- AM-2** All personnel performing fire management activities at any creek crossing will be informed of the potential presence of aquatic amphibians and the need to perform their duties to avoid impacts to the habitat.

California Condor

- CC-1.** Management Guidance for Projects Constructed or Implemented by Authorized or Permitted Members of the Public within the 10(j) Area

- CC-1.A.** Immediately prior to the start of an authorized or permitted project, BLM/NPS will contact personnel monitoring California Condor locations and movements on the Arizona Strip to determine the locations and status of condors in or near the project area.
- CC-1.B.** BLM/NPS will request that permit holders notify the BLM/NPS wildlife team lead or condor biologist if California Condors visit the worksite while permitted activities are underway. BLM/NPS may encourage permit holders to modify, relocate, or delay project activities where adverse effects to condors may result.
- CC-1.C.** Where condor nesting activity is known within 0.5 miles of permitted or authorized activities that include operation of heavy machinery, BLM/NPS may encourage the operator to avoid use of the equipment during the active nesting season (February 1- November 30), or as long as the nest is viable.
- CC-1.D.** Where condors occur within 1.0 mile of permitted or authorized activities that include blasting, BLM/NPS will encourage that blasting be postponed until the condors leave the area or are hazed away by personnel permitted to haze condors. Where condor nesting activity is known within 1.0 mile of the project area, BLM/NPS encourages that blasting activity be delayed until after the active nesting season (February 1- November 30), or as long as the nest is viable. These dates may be modified based on the most current information regarding condor nesting.
- CC-2.** Management Guidance for Projects Constructed or Implemented by BLM/NPS Employees or Contractors Within the 10(j) Area AND For All BLM/NPS-Authorized Actions, Regardless of Proponent, Outside the 10(j) Area on the Arizona Strip.
- CC-2.A.** Immediately prior to the start of a permitted project, BLM/NPS will contact personnel monitoring California Condor locations and movement on the Arizona Strip to determine the locations and status of condors in or near the project area.
- CC-2.B.** Where California Condors visit a worksite while activities are underway, the on-site supervisor will notify the BLM/NPS wildlife team lead or condor biologist. Project workers and supervisors will be instructed to avoid interaction with condors. Project activities will be modified, relocated, or delayed if those activities could have adverse effects on condors. Operations will cease until the bird leaves on its own or until techniques are employed by permitted personnel that results in the individual condor leaving the area.
- CC-2.C.** Where condor nesting activity is known within 0.5 miles of activities that include operation of heavy machinery, BLM/NPS will direct the operator to cease equipment use during the active nesting season (February 1- November 30), or as long as the nest is viable. Where feasible and consistent with NEPA, BLM/NPS may relocate operations to a site greater than 0.5 miles from the condor nest site.

CC-2.D. Where condors occur within 1.0 miles of activities that include blasting, BLM/NPS will require that blasting be postponed until the condors leave the area or are hazed away by personnel permitted to haze condors. Where condor nesting activity is known within 1.0 miles of the project area, BLM/NPS will cease blasting during the active nesting season (February 1- November 30), or as long as the nest is viable. These dates may be modified based on the most current information regarding condor nesting.

CC-3. Management Guidance for All BLM/NPS-Authorized Actions, Regardless of Proponent or location Within the Planning Area.

CC-3.A. The project site will be cleaned up at the end of each day the work is being conducted (e.g., trash removed, scrap materials picked up) to minimize the likelihood of condors visiting the site. BLM/NPS staff may conduct site visits to the area to ensure adequate clean-up measures are taken.

CC-3.B. For projects where potential exists for leakage or spill of hazardous materials, a spill plan will be developed and implemented to prevent water contamination and potential poisoning of condors. The plan will include provisions for immediate clean up of any hazardous substance, and will define how each hazardous substance will be treated in case of leakage or spill. The plan will be reviewed by the BLM condor lead biologist to ensure condors are adequately addressed.

CC-3.C BLM/NPS will implement the protective measures for California Condors that are contained in the March 2004 “Recommended Protection Measures for Pesticide Applications in The Southwest Region of the U.S. Fish and Wildlife Service.”

CC-3.D. Use of non-lead ammunition is strongly encouraged for activities involving the discharge of firearms.

CC-4. Management Guidance for All Actions Involving Use of Aircraft, Regardless of Proponent or location Within the Planning Area.

CC-4.A. Aircraft use along the Vermilion Cliffs, Paria Plateau, or any sites where condors are actively breeding or roosting will be minimized to the extent possible. Known active nest sites will be avoided.

CC-4.B. The BLM condor biologist or Wildlife Program Lead will contact the Peregrine Fund, as appropriate, immediately before operations involving aviation begin to check on possible locations of condors in the subject area.

CC-4.C. All BLM/NPS-authorized aviation personnel will be provided literature and/or instructed regarding condor concerns prior to conducting aerial operations.

CC-4.D. Aircraft will maintain and maximize safe flying separation distances from condors in the air or on the ground unless safety concerns override this restriction. If airborne condors approach aircraft, aircraft will give up airspace to the extent possible, as long

as this action does not jeopardize safety. Aircraft will keep a minimum of 0.25 miles away from condors located on the ground.

CC-5. Management Guidance for Fire Suppression, Fire Use, Prescribed Fire, and Related Actions Within the Planning Area.

- CC-5.A.** The Resource Advisor will contact the Peregrine Fund daily (at 520-606-5155 or 520-380-4667) to check on locations of condors during fire suppression or fuels treatment activities involving aviation. This information will be communicated to the Incident Commander and aviation personnel.
- CC-5.B.** Any presence of condors in the general area of an active fire will be reported immediately to the Resource Advisor, who will in turn advise the BLM condor biologist, as appropriate. The BLM condor biologist or the AZ Strip F.O wildlife team lead will be the primary contacts with the U.S. Fish and Wildlife Service and the Peregrine Fund when such contacts are needed regarding condor concerns.
- CC-5.C.** Fire dispatch will immediately notify the Peregrine Fund at either (208) 362-3811 or (928) 355-2270 whenever a fire or other event on the Paria Plateau is reported which may conceivably threaten the condor holding pens and facilities atop the Vermilion Cliffs.
- CC-5.D.** If condors arrive at any area of human activity associated with fire suppression or fuels treatment projects (wildland fire use, prescribed fire, vegetation treatments), the birds will be avoided. The assigned Resource Advisor or a qualified wildlife biologist approved by BLM will be notified, and only permitted personnel will haze the birds from the area.
- CC-5.E.** All District BLM/NPS fire personnel, including helicopter pilots, will be provided literature or instructed regarding condor concerns. Normally this will be done by the BLM condor biologist when the fire crews first come on and are trained on various subjects, including desert tortoise concerns. If additional pilots come on during the summer, fire dispatch will notify the BLM condor biologist (435 688-3224) so that they can also be briefed.
- CC-5.F.** All helicopter dip tanks containing water will be covered when not in use or personnel will be stationed nearby until a cover is in place.
- CC-5.G.** If any fire retardant chemicals must be used in areas where condors are in the vicinity, the application area will be surveyed and any contaminated carcasses will be removed as soon as practical to prevent them from becoming condor food sources.
- CC-5.H.** Smoke from prescribed fire projects will be prevented from negatively affecting condor holding pens and breeding, nesting, and chick rearing sites. A proposed prescribed fire will not be initiated, or an existing fire use event will be modified or terminated, in order to prevent or stop significant amounts of smoke, or smoke that will remain in

place for an extended period of time, or chronic smoke events, from occurring in area(s) where condors are held or attempting to breed, nest, or rear chicks.

CC-5.I. BLM will adhere to the air quality standards set by the Arizona Department of Environmental Quality.

CC-5.J. All camp areas will be kept free from trash.

Southwestern willow flycatcher

WF-1. Management Guidance for Fire Suppression and Related Actions

WF-1.A. Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.

WF-1.B. Except where fires are active in occupied habitat, minimize unnecessary low-level helicopter flights during the breeding season (April 1 – September 30). Approach bucket dip sites at a 90-degree direction to rivers to minimize flight time over the river corridor and occupied riparian habitats. Locate landing sites for helicopters at least ¼ mile from occupied sites to avoid impacts to willow flycatchers and their habitat.

WF-1.C. Minimize use of chainsaws or bulldozers to construct firelines through occupied or suitable habitat except where necessary to reduce the overall acreage of occupied habitat or other important habitat areas that otherwise be burned.

WF-1.D. Implement activities to reduce hazardous fuels or improve riparian habitats (prescribed burning or vegetation treatments) within occupied or unsurveyed suitable habitat for southwestern willow flycatchers only during the non-breeding season (October 1 to March 31).

WF-1.E. Avoid developing access roads that result in fragmentation or a reduction in habitat quality. Close and rehabilitate all roads that were necessary for project implementation.

WF-1.F. Prescribed burning will only be allowed within ½ mile of occupied or unsurveyed suitable habitat when weather conditions allow smoke to disperse away from the habitat when birds may be present (breeding season of April 1 – September 30).

WF-1.G. Vegetation treatment projects adjacent to occupied or unsurveyed suitable habitat will only be conducted when willow flycatchers are not present (October 1 – March 31).

WF-1.H. Continue to implement the riparian fire management plan to minimize fire damage in riparian areas, especially those with suitable or potential flycatcher habitat.

Yuma clapper rail

CR-1. Management Guidance for Fire Suppression and Related Actions

- CR-1.A.** Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.
- CR-1.B.** Any prescribed fire or vegetation treatment project in occupied or suitable marsh habitat only occur between September 1 and March 15 to avoid the Yuma clapper rail breeding and molting seasons.
- CR-1.C.** Mechanical removal of overstory habitat (e.g. tamarisk) could occur as early as August 15, after the breeding season for Yuma clapper rails.
- CR-1.D.** Herbicide application will not occur in Yuma clapper rail habitat and drift-inhibiting agents will be used to assure that the herbicide does not enter adjacent marsh areas.
- CR-1.E.** Evaluate past surveys for Yuma clapper rails as part of the planning for prescribed fire projects. Post-project surveys should also be conducted to document the re-growth of cattail habitats and occupancy by clapper rails.
- CR-1.F.** After fire suppression is completed in Yuma clapper rail habitat, review any available survey records of the burn site and record in the fire report the number of rails recorded from the vicinity during these surveys.

Bald eagle

BE-1. Management Guidance for Fire Suppression and Related Actions

- BE-1.A.** No human activity associated with fire management will be authorized within ½ mile of known bald eagle nest sites between December 1 and June 30.
- BE-1.B.** No tree cutting will be authorized within ¼ mile of known bald eagle nest trees.
- BE-1.C.** No human activity associated with fire management will be authorized within ¼ mile of known bald eagle winter roost areas between October 15 and April 15.
- BE-1.D.** No tree cutting will be authorized within the area immediately around winter roost sites as determined by BLM biologists.
- BE-1.E.** No helicopter or aircraft activity or aerial retardant application associated with fire management activities will be authorized within ½ mile of bald eagle nest sites between December 1 and June 30 or winter roost sites between October 15 and April 15.
- BE-1.F.** Prescribed burn activities outside of nesting season will be conducted in a manner to ensure nest and winter roost sites are more than ½ mile from downwind smoke effects.

- BE-1.G.** Provide reasonable protective measures so fire prescription or fuels treatment will not consume dominant, large trees as identified by the Resource Advisor or qualified biologist approved by BLM within ½ mile of known nests and roosts of bald eagles. Pre-treatment efforts should provide reasonable protection of identified nesting and roosting trees.
- BE-1.H.** Prepare and implement BAER plans for burned areas that have the potential to cause future erosion problems in the watershed, riparian, or aquatic areas. Objectives of these plans, within watersheds containing bald eagle breeding areas and/or potential habitat, will be to reduce erosion and sedimentation into these habitats.

Mexican spotted owl

SO-3. Management Guidance for Grazing Management

- SO-3.A.** Determine the effectiveness of current grazing standards and guidelines as they relate to the owl's needs, and devise grazing strategies that can benefit the owl and its prey.
- SO-3.B.** Monitor grazing use by livestock to determine any changes in the relative composition of herbaceous and woody plants to maintain habitat for owls and their prey.
- SO-3.C.** Minimize or eliminate disturbance, injury, mortality, or other forms of take of Mexican spotted owls resulting from grazing by livestock.

SO-1. Management Guidance for Fire Suppression and Related Actions

- SO-1.A.** BLM wildlife biologists will be involved early in the decision-making process for fuels management treatments (wildland fire use, prescribed fires, vegetation treatments) that are planned within suitable habitat for Mexican spotted owls.
- SO-1.B.** Suitable habitat for Mexican spotted owls will be surveyed prior to implementing prescribed fire or vegetation treatment activities on BLM-administered lands to determine if owls are present and their breeding status. These fire management activities will only be implemented within suitable habitat if birds are not present.
- SO-1.C.** If a spotted owl is discovered during fire suppression or fuels treatment activities (wildland fire use, prescribed fire, vegetation treatments), the Resource Advisor or a qualified wildlife biologist will document the find and assess potential harm to the owl and advise the Incident Commander or project crew boss of methods to prevent harm. The information will include for each owl the location, date, and time of observation and the general condition of the owl. The Resource Advisor or biologist will contact the appropriate USFWS office.
- SO-1.D.** The following measures will be followed in suitable habitat (occupied or unoccupied) whenever consistent with objectives to reduce hazardous fuels:

1. Incorporate natural variation, such as irregular tree spacing and various stand/patch sizes, into management prescriptions and attempt to mimic natural disturbance patterns.
2. Maintain all species of native vegetation in the landscape, including early seral species. To allow for variation in existing stand structures and provide species
3. diversity, both uneven-aged and even-aged systems may be used as appropriate.
4. Allow natural canopy gap processes to occur, thus producing horizontal variation in stand structure.
5. Retain hardwoods, large down logs, large trees, and snags. Emphasize a mix of size and age classes of trees. The mix should include large mature trees, vertical diversity, and other structural and floristic characteristics that typify natural forest conditions.

SO-1.E. The effects of fire suppression and fuels treatment activities on Mexican spotted owls and their habitat, and the effectiveness of these conservation measures, will be assessed after each fire event or fuels treatment project by the Resource Advisor or local biologist to allow evaluation of these guidelines. Prescriptions for wildland fire use, prescribed fires, and vegetation treatments will be adjusted, if necessary.

Yellow-billed cuckoo

YC-1. Management Guidance for Fire Suppression and Related Actions

- YC-1.A.** Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.
- YC-1.B.** Any prescribed fire or vegetation treatment project in occupied or suitable marsh habitat only occur between September 1 and March 15 to avoid adverse effects to breeding birds.
- YC-1.C.** Mechanical removal of overstory habitat (e.g. tamarisk) could occur as early as September 1, after the breeding season for yellow-billed cuckoos.
- YC-1.D.** Evaluate past surveys for yellow-billed cuckoos as part of the planning for prescribed fire projects. Post-project surveys should also be conducted to document the re-growth of mature cottonwood-willow gallery forests and occupancy by cuckoos.
- YC-1.E.** After fire suppression is completed in yellow-billed cuckoo habitat, review any available survey records of the burn site and record in the fire report the number of cuckoos recorded from the vicinity during these surveys.

YC-1.F. Continue to implement the riparian fire management plan to minimize fire damage in riparian areas, especially those with suitable or potential flycatcher habitat.

Peregrine Falcon

Continue post-delisting recovery monitoring of selected peregrine falcon nest sites in cooperation with the Arizona Game and Fish Department and the U.S. Fish and Wildlife Service. The monitoring plan calls for five sampling periods at three-year intervals throughout the life of this RMP. Monitoring protocol requires a minimum of two, four-hour visits to a site unless a nest is located sooner.

PF-1. Management Guidance for Fire Suppression and Related Actions

PF-1.A. BLM wildlife biologists will be involved early in the decision-making process for fuels management treatments (wildland fire use, prescribed fires, vegetation treatments) that are planned within ½ mile of active nest sites of peregrine falcon.

PF-1.B. Prior to implementing prescribed fire or vegetation treatment activities on BLM-administered lands, areas within ½ mile of cliff faces that could contain suitable habitat for peregrine falcon will be surveyed. Fire management activities will only be implemented when peregrine falcons are not present.

PF-1.C. If a peregrine falcon is discovered during fire suppression or fuels treatment activities (wildland fire use, prescribed fire, vegetation treatments), the Resource Advisor or a qualified wildlife biologist will document the find, assess potential harm to the falcon, and advise the Incident Commander or project crew boss of methods to prevent harm.

Virgin River chub and Woundfin Minnow

VF-1. Management Guidance for Fire Suppression and Related Actions

VF-1.A. Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.

VF-1.B. Minimize fire damage in riparian by giving riparian habitat the highest priority for fire response and suppression efforts (second only to human life and property). Focus attention on minimizing fire damage to stands of native vegetation areas.

VF-1.C. Using natural barriers or openings in riparian vegetation is the easiest, safest method to manage a riparian wildfire. Where possible and practical, use wet fire breaks in developing or sandy overflow channels rather than dry breaks.

- VF-1.D.** Where possible, avoid use chainsaws and/or bulldozers to construct fireline through habitat. When necessary to do so, weigh the potential impacts of such an action against the habitat losses likely to result. Consider firefighter safety and potential gains in managing the fire.
- VF-1.E.** Avoid use of backfires during fire suppression activities except where doing so reduces the overall risk in these areas except where necessary to reduce or eliminate severe fire risk.
- VF-1.F.** Avoid use of chemical foams or retardants in riparian areas.
- VF-1.G.** Avoid developing access roads that result in fragmentation or a reduction in habitat quality. Close and rehabilitate all roads that were necessary for project implementation.
- VF-1.H.** Cooperate with other agencies to develop emergency protocols to decrease the impacts of fire suppression and fuels treatment activities on Federally listed fish species.

Flowering Plants

PL-1. Management Guidance for Fire Suppression and Related Actions

- PL-1.A.** Known locations and potential habitat for plant populations will be mapped to facilitate planning for wildland fire use, prescribed fires, and vegetation treatments, and to ensure protection of these populations during fire suppression.
- PL-1.B.** Delineate buffer areas around plant populations prior to prescribed fire and vegetation treatment activities. Coordinate with USFWS during any emergency response and wildland fire use activities to ensure protection of plant populations from fire and fire suppression activities.
- PL-1.C.** No staging of equipment or personnel will be permitted within 100 meters of identified individuals or populations of special status plant species during fire suppression, wildland fire use, or prescribed fire. Off-road vehicles will not be allowed within the 100-meter buffer area, unless necessary for firefighter or public safety or the protection of property, improvements, or other resources.
- PL-1.D.** No prescribed burning will be implemented within 100 meters of identified locations or unsurveyed suitable habitat of special status plant species unless specifically designed.

APPENDIX C

DESERT TORTOISE MONITOR AND BIOLOGIST RESPONSIBILITIES AND QUALIFICATIONS

DESERT TORTOISE MONITOR -- Approved by the Fish and Wildlife Service to monitor project activities within desert tortoise habitat, ensure proper implementation of protective measures, and record and report desert tortoise and sign observations in accordance with approved protocol. The monitor will report incidents of noncompliance in accordance with a biological opinion or permit, and move desert tortoises from harm's way when desert tortoises enter project sites and place these animals in "safe areas" pre-selected by Authorized Biologists, or maintain the desert tortoises in their immediate possession until an Authorized Biologist assumes care of the animal. Monitors assist Authorized Biologists during surveys and often serve as "apprentices" to acquire experience. Monitors are not authorized to conduct presence/absence or clearance surveys unless directly supervised by an Authorized Biologist; "directly supervised" means the Authorized Biologist is in direct voice and sight contact with the Monitor.

AUTHORIZED BIOLOGIST – Approved by the Fish and Wildlife Service to conduct all activities described in the previous section for Desert Tortoise Monitors, and to locate desert tortoises and their sign (i.e., conduct presence/absence and clearance surveys) and ensure that the effects of the project on the desert tortoise and its habitat are minimized in accordance with this biological opinion incidental take permit. Authorized Biologists must keep current with the latest information on U.S. Fish and Wildlife Service protocols and guidelines. An Authorized Biologist must have thorough and current knowledge of desert tortoise behavior, natural history, and ecology, physiology, and demonstrated substantial field experience and training to safely and successfully:

- handle and temporarily hold desert tortoises
- excavate burrows to locate desert tortoise or eggs
- relocate/translocate desert tortoises
- reconstruct desert tortoise burrows
- unearth and relocate desert tortoise eggs
- locate, identify, and record all forms of desert tortoise sign