

# PROJECT FILE



## United States Department of the Interior FISH AND WILDLIFE SERVICE

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October 16, 2008

In Reply Refer To  
FWS/R6  
ES/UT  
08-F-0058  
6-UT-08-F-022

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### Memorandum

To: Field Office Manager, Bureau of Land Management, Moab Field Office, 82 East Dogwood, Moab, Utah 84532

From: Utah Field Supervisor, U.S. Fish and Wildlife Service, Ecological Services, West Valley City, Utah

Subject: Biological Opinion for BLM Resource Management Plan, Moab Field Office

This document transmits the Fish and Wildlife Service's (USFWS) Biological Opinion based on our review of potential activities described under the Resource Management Plans (RMP) of the Moab Field Office (MFO) Bureau of Land Management (BLM) and their potential effects on the federally threatened Mexican spotted owl (*Strix occidentalis lucida*), and Jones cycladenia (*Cycladenia humilis* var. *jonesii*), and federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). In addition, this document includes the Conference Opinion for the candidate species Yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and the experimental, non-essential population of the endangered California Condor (*Gymnogyps californianus*). Critical habitat was designated for the Mexican spotted owl on February 01, 2001, and was re-designated on August 31, 2004 (66 FR 8530, 69 FR 53181). Critical habitat was designated for the listed Colorado fish (Colorado pikeminnow, humpback chub, bonytail, and razorback sucker) on March 21, 1994 (59 FR 13374). Critical habitat was designated for the southwestern willow flycatcher on October 12, 2004 (69 FR 60705); critical habitat for this species does not occur within the MFO planning area. Your July 18th, 2008 request for formal consultation for all aforementioned species was received on July 21<sup>st</sup>, 2008.

Utah BLM Resource Management Plan proposed activities are categorized into 18 programs, as follows:

Air Quality  
Cultural Resources Management

Palentological Resources Management  
Fire Management  
Healthy and Safety Management  
Lands and Realty Management  
Livestock Grazing Management  
Minerals Management  
Recreation Management  
Riparian Area Management  
Soils and Watershed Management  
Special Designations Management  
Special Status Species Management  
Travel Management  
Vegetation Management  
Visual Resource Management  
Wildlife and Fisheries Management  
Woodlands Resources Management

This Biological Opinion is based on information provided in the July 21<sup>st</sup> Biological Assessment, personal communications between the USFWS's biologists and the BLM's biologists, telephone conversations, email correspondence, conference calls, planning meetings, and other sources of information. A complete administrative record of this consultation is on file at this office.

### **Consultation History**

This section summarizes significant steps in the consultation process. Additional correspondence, email transmissions, telephone conversation records, and conference calls that occurred between December 15, 2004, and April 20, 2007 are documented in the administrative record for this consultation.

- February 19<sup>th</sup>, 2008: The BLM electronically sent a draft Biological Assessment to determine impacts from the new Moab Resource Management Plan.
- April 7- July 14<sup>th</sup> 2008: The USFWS reviewed and provided comments on the draft Biological Assessment;
- July 21<sup>st</sup>, 2008: We received the final version of the MFO Biological Assessment and began formal consultation

# PROGRAMMATIC BIOLOGICAL OPINION

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## DESCRIPTION OF THE PROPOSED ACTION

The proposed action examined in this consultation is the continuation of land management activities described by the revised Resource Management Plan (RMP). The Moab RMP, and the Environmental Impact Statement (EIS), would provide planning guidance for public lands managed by the Moab FO in San Juan and Grand Counties in southeastern Utah for the next 15 to 20 years. RMPs are used by the BLM to guide and control future actions and set standards upon which future decisions on site-specific activities will be based. RMPs only establish general management policy on a broad scale. They are not used to make decisions that commit resources on a small scale such as on specific parcels of land. RMPs also identify desired outcomes, also known as “desired future conditions”. These outcomes are expressed in the RMPs as goals, standards, objectives, and allowable uses and actions needed to achieve desired outcomes. These are often referred to as RMP decisions or resource allocations. It is upon these RMP decisions or resource allocations that the effects determinations in this Biological Opinion are based for:

- Mexican spotted owl (*Strix occidentalis lucida*)
- Southwestern willow flycatcher (*Empidonax trailli extimus*)
- Jones cycladenia (*Cycladenia humilis var. jonesii*)
- Colorado pikeminnow (*Ptychocheilus lucius*)
- Humpback chub (*Gila cypha*)
- Bonytail chub (*Gila elegans*)
- Razorback sucker (*Xyrauchen texanus*)

In addition, our Conference Opinion considers the effects for the following experimental, non-essential and candidate species:

- California condor (*Gymnogyps californianus*)
- Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

The Proposed Action area includes the 1.8 million acres of public land located in San Juan and Grand counties in southeastern Utah, which are managed by the MFO (Proposed Action area). State lands, privately owned lands, Arches National Park, Dead Horse Point State Park, the La Sal Mountains of the Manti-La Sal National Forest, and the Uintah/Ouray Indian Reservation are all located in or adjacent to the MFO; therefore, federally listed species and habitat located on these lands could be indirectly effected by resource management decisions made in the Proposed Action area. In addition, segments of the Colorado and Green rivers located downstream of the Proposed Action area are included in the Proposed Action area because of the potential impact of water withdraws and habitat modification in the Proposed Action area on the four endangered fish species and their habitat downstream.

**Table 1. Federally Protected Utah Species on BLM Lands Analyzed in this Biological Opinion (BO) for the Proposed Resource Management Plan by Moab BLM Field Office.** “Likely to adversely affect” determinations (LAA) are used if a program may have any direct or indirect adverse effect to a threatened or endangered species. “May affect, not likely to adversely affect” (NLAA) determinations conclude that activities occurring under the program are either insignificant or beneficial. “No effect” (NE) determinations conclude that the species and critical habitat will be unaffected by the proposed activities under the program. “Not likely to contribute to Federal listing” (NCFL) are listed for candidate species if the program was determined not to contribute to its listing as a threatened or endangered species. “No Jeopardy” (NJ) are listed if the program was determined not to jeopardize an experimental, non-essential population.

Moab BLM Field Office																		
Programs	Cultura Resources	Paleontological Resources	Fire Management	Health and Safety	Lands and Realty	Livestock Grazing	Minerals and Energy	Recreation	Riparian	Soils and Watershed	Special Designations	Non-WSA areas with wilderness characteristics	Special Status Species Management	Travel Management	Vegetation Management	Visual Resources	Wildlife Management	Woodlands Resources
Common Name (Scientific Name)																		
Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
Southwestern willow Flycatcher ( <i>Empidonax traillii extimus</i> )	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
Jones cycladenia ( <i>Cycladenia humilis var. jonesii</i> )	LAA	LAA	NLAA	NE	LAA	LAA	LAA	LAA	LAA	NLAA	NE	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
Bonytail ( <i>Gila elegans</i> )	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
Humpback chub ( <i>Gila cypha</i> )	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
Razorback sucker ( <i>Xyrauchen texanus</i> )	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	LAA	NLAA	NLAA	LAA	LAA	NLAA	LAA	LAA
California Condor ( <i>Gymnogyps californianus</i> )	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Western Yellow-billed cuckoo ( <i>Coccyzus americanus occidentalis</i> )	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL	NCLF	NCFL	NCFL	NCFL	NCFL	NCFL	NCFL

## **Description of Activities and Management Prescriptions under the Moab RMP**

### Air Quality

The primary objective of air quality management within the Moab planning area is to maintain air quality in accordance with standards prescribed by federal and state laws and regulations. The air quality program does not consider potential impacts to fish and wildlife resources beyond the standards set forth by EPA and the Utah Department of Environmental Quality. Air quality management actions include managing air quality in accordance with standards provided by federal, state and local laws and regulations, compliance of the Clean Air Act, mitigation of actions that compromise ambient air quality standards or visibility within the Class I air areas, and compliance with Utah Administrative Code Regulation R307-205, which prohibits the use, maintenance, or construction of roadways and disturbed areas without taking appropriate dust abatement measures. Compliance would be obtained through special stipulations as a requirement on new projects and through the use of dust abatement control techniques in problem areas.

### Cultural Resources

The objective of the cultural resource management program is to protect, preserve, interpret, and manage significant cultural resources for their informational, educational, recreational, and scientific values. Site-specific inventories for cultural resources are required before the start of surface disturbance or if BLM-administered lands were proposed for transfer out of federal ownership.

The BLM performs inventories as well as land management. During inventory activities, the BLM inventories, categorizes, and preserves cultural resources, conducts field activities, performs excavations; maps and collects surface materials, researches records, and photographs sites and cultural resources. Inventory data collection is used for documentation and development of mitigation plans before other resource program surface disturbance. Inventory activities commonly entail the use of hand tools, power tools, or heavy machinery. Survey intensity varies among inventories and may last from one day to several weeks. A total of 30,000 acres may be inventoried within the following areas: Bookcliffs, Dolores Triangle, North Fork of Mill Creek, South Fork of Mill Creek, Seven Mile, and Ten Mile Wash and its tributaries.

Cultural resource land management may involve: developing interpretive sites; authorizing installation of protective fencing; stabilizing deteriorating buildings; performing certain surface-disturbing activities; pursuing land withdrawals; designating avoidance areas; pursuing cooperative agreements; and identifying and interpreting historic trails. Cultural resource management may restrict certain land uses, close certain areas to exploration and prohibit some surface-disturbing activities. The following sites would be hardened and interpreted for public use: one site in Lower Kane Springs Canyon, and 3 sites in the Wall Street Rock Art District. Sejo Rock Art Site and Wall Street/Colorado River Rock Art District, which have educational and recreational values, would be developed for public visitation and interpretation as long as

such work does not contribute to the deterioration or destruction of the resources being interpreted. To prevent further degradation from occurring, the following areas will be targeted for restoration of damaged cultural resources: South and North Forks of Mill Creek, Bartlett/Hidden Canyon, Hell Roaring uplands, Ten Mile Wash and Wall Street Rock Art District.

Reasonable access to specific sacred sites would be allowed under the American Indian Religious Freedom Act. Cultural plants, once identified by interested tribes, would be managed to insure that ground-disturbing activities on the land do not contribute to the decline of cultural sensitive plant communities. Collection of plant resources would be considered on a case-by-case basis and would be allowed where practical and appropriate.

Surface disturbance is generally avoided near significant cultural resource sites and within ¼ mile of the visual horizon of significant segments of historic trails and canals. Sites listed on, or eligible for, the National Register for Historic Places (NRHP) are protected and would be managed for their local and national significance in compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, the American Indians Religious Freedom Act, and the Native American Graves Protection and Repatriation Act, as appropriate.

### Paleontological Resources

The objective of the paleontological resource management program is to protect, preserve, interpret, and manage significant paleontological resources for their informational, educational, recreational, and scientific values. Site-specific inventories for paleontological resources are required before the start of surface disturbance or if BLM-administered lands were proposed for transfer out of federal ownership.

During inventory activities, the BLM inventories, categorizes, and preserves paleontological resources, conducts field activities, performs excavations; maps and collects surface materials, researches records, and photographs sites and paleontological resources. Inventory data collection is used for documentation and development of mitigation plans before other resource program surface disturbance. Inventory activities commonly entail the use of hand tools, power tools, or heavy machinery.

Paleontological resource land management may involve: developing interpretive sites; authorizing installation of protective fencing; performing certain surface-disturbing activities; pursuing land withdrawals; designating avoidance areas; pursuing cooperative agreements; and identifying and interpreting historic trails. Paleontological resource management may restrict certain land uses, close certain areas to exploration and prohibit some surface-disturbing activities. This program also allows the collection of any fossil vertebrates, significant fossil invertebrates, and plants in all areas except in specified areas with a required paleontological collecting permit. Archeological collections are authorized through a permit system. Recreational permitting is allowed for common invertebrate and plant fossils. This program also includes protection of resources identified as part of the Dinosaur Diamond National Prehistoric Byway, and manages petrified wood collection.

## Fire Management

Objectives of fire management are to protect life, property, and resource values from wildfire and to restore the natural role of fire in the ecosystem. The major activities involved with the BLM fire management program include: wildfire suppression, managing natural ignitions as wildland fire use for resource benefit, prescribed burning, non-fire fuels treatment for hazardous fuels reduction, and emergency stabilization and rehabilitation following wildfires.

Wildfires are suppressed when they threaten values and resources, such as: wildland urban interface areas, developed recreation sites, areas that are unlikely to recover following fire (i.e., areas of noxious weeds or invasive species), sensitive soils, critical TES habitat, or fires with potential to spread to private, state, or other federal lands. Fire suppression methods vary with the intensity of the wildfire and are conducted on an emergency basis. Firelines may be constructed by hand or by heavy equipment to contain the wildfire. Water may be withdrawn from nearby sources to suppress fires. Chemical fire suppression agents and retardants may be used, if necessary. The use of aerial fire retardant is restricted near water resources. After a fire is extinguished, the BLM may use emergency stabilization and rehabilitation techniques, such as seeding and soil stabilization actions, to restore a burned or suppressed area to its previous vegetation cover. These suppression and post-suppression activities often employ the use of off-road vehicles, hand tools, and heavy equipment such as bulldozers.

Wildland fire use is implemented in areas that would benefit from the reintroduction of fire. Some suppression techniques, as described above, may be used to keep the fire within pre-determined boundaries, but no emergency stabilization and rehabilitation actions are taken following wildland fire use.

Prescribed fire and non-fire fuels treatment objectives are to restore natural fire regimes, reduce hazardous fuel loading, and enhance resources such as wildlife habitat. Prescribed fires follow a pre-determined prescription and include activities such as broadcast burning or pile burning following manual or mechanical fuel treatments. Under the proposed plan, fuels management actions include surface-disturbing treatments on 5,000 to 10,000 acres annually. Over the life of the plan, this would result in 75,000 to 150,000 acres of land subject to fuels management. Impacts would be analyzed with site-specific NEPA analysis once it is determined where individual treatments would occur. These actions consist of mechanical and manual treatments, prescribed fire, chemical or biological vegetation control, and aerial/ground seeding.

## Health and Safety Management

The primary objective of health and safety management is to protect public and environmental health and safety on lands administered by BLM. Hazardous materials and waste management policies are integrated into all BLM programs. Several federal, state, and local laws overlap in their requirement of BLM to identify and remediate contaminated sites on public lands. Besides managing pre-existing contamination, BLM seeks to prevent or minimize contamination caused by BLM authorized actions.

State Office and field office contingency plans specify how personnel are supposed to respond to a hazardous substance incident, such as hazard recognition, retreating procedures, record

keeping, and reporting. Contingency plans recommend using signs, fencing, and/or barricades for site security, unless such actions would create an attractive nuisance. Emergency spill response may necessitate containment measures such as building dikes, or overland vehicle and equipment travel.

Removal and remedial actions taken under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended 42 U.S.C. § 9601 et seq. must follow the National Contingency Plan (NCP). Proposed CERCLA removal or remedial actions must address Applicable or Relevant and Appropriate Requirements (ARARs), which include all necessary Endangered Species Act considerations. Non-CERCLA removal and remedial actions, such as RCRA actions, would be reviewed under the NEPA process.

The abandoned mine lands program addresses the environmental and safety hazards associated with AML sites on public lands. Once the site are identified, they are prioritized, and appropriate actions are taken on those historic mine sites that pose health and safety risks. The BLM will identify and clean up unauthorized dumping sites and hazardous materials spills in the MFO as required to comply with applicable State, local, and Federal regulations. The priority for the reclamation of environmentally contaminated sites is based on risk assessments that address threats to human health and threats to the environment. For example, abandoned mine land sites that impact water quality are usually a greater concern and receive a higher priority for reclamation than those that do not impact water quality. As part of the Proposed Action, abandoned mine lands would be prioritized for area reclamation and mitigation. All applicable AML regulations would be complied with, and site-specific NEPA analysis would be required on all potential sites.

### Lands and Realty Management

The objectives of the lands and realty management program are to support multiple-use management goals of other BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights-of-way access to serve administrative and public needs.

Public land tracts that are not critical to current management objectives will be disposed of through the realty management program (reviewed on a case-by-case basis). Non-federal lands may be acquired through exchange in areas with potential for recreation development or in areas containing important wildlife, cultural, scenic, natural, open space, or other resource values. Protective withdrawals may be established to protect and preserve important resource values, but require extensive mineral investigations. The withdrawal of 78,333 acres from mineral entry within the MFO will be continued. The 65,037 acres from the Three Rivers withdrawal and 8,096 acres from the Westwater withdrawal include critical riparian habitat and would be managed as no surface occupancy (NSO).

Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights-of-way. Rights-of-way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights-of-way may be temporary or extend up to 30 years, or in perpetuity. BLM also pursues access across private lands, rehabilitates access roads that are no longer

needed, and proposes easement negotiations. Under the proposed action, utility corridor widths would remain within the 0.5-mile disturbance width on either side of the Interstate 70 (I-70) utility corridor. Furthermore, a Moab Canyon Utility Corridor would be designated and expanded onto Gold Bar Rim, and two corridors south of Spanish Valley would be combined with 2 to 3 miles separating the segments. The existing utility corridor that runs from Cisco to U.S. Highway 191 would be eliminated.

The program pursues cooperative agreements, develops recreation site facilities, considers offsite mitigation, minimizes access in wildlife habitat, fences revegetation sites, blocks linear rights-of-way to vehicle use, considers temporary-use permits, considers new withdrawals, and identifies parcels for landfills under the Recreation & Public Purposes Act. Areas with important resource values will be avoided where possible when planning routes and installation of new facilities. Effects will be mitigated if it becomes necessary to place facilities within avoidance areas.

### Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base, while improving wildlife habitat and watershed condition and meeting Utah's Rangeland Health Standards. Grazing allotments are prioritized by and classified into one of three management categories: maintain (M), improve (I), and custodial (C).

Not all BLM lands are open to livestock grazing due to conflicts with other resource uses. Grazing in portions of allotments would be manipulated to reduce impacts on highly saline soils and to reduce salinity in the Colorado River drainage. Grazing would be excluded from 132,047 acres as part of the Proposed Action. Under the Proposed Action, grazing would be excluded from five riparian areas, totaling 1,635 acres. The recommendations of the National Sage Grouse Habitat Conservation Strategy (BLM 2004b) and the Strategic Management Plan for Sage Grouse (UDWR 2002a) would be followed under the Proposed Action where applicable.

Range management activities may include vegetation treatments such as prescribed fire or mechanical and chemical control of noxious weeds, sagebrush, and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire Management, or vegetative treatments – see Vegetation Management)

Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities. Salt or mineral supplements may be approved to help manage livestock distribution. These projects are designed and constructed to implement grazing systems that are designed to meet Rangeland Health Standards and improve watersheds conditions, wildlife habitat, riparian proper functioning conditions, and forage production. The administration of the range program includes the issuance of grazing permits, monitoring key areas within allotments, developing management plans and agreements, and use supervision to assure compliance with the terms and conditions of the grazing permits.

## Energy and Mineral Resource Management

Mineral development is subject to leasing, location, or sale based on the Federal mineral law covering that particular commodity. The planning area will be open to consideration for exploration, leasing, and development of leasable minerals including oil, gas, coal, oil shale, and geothermal. The minerals program is divided into the three categories of salable, leasable, or locatable minerals.

### *Salable Minerals*

Salable minerals anticipated for development in the project area include sand, gravel, building stone, travertine, clay and humate. Estimated total surface disturbance for these developments encompasses 360 acres. Before issuing contracts or free use permits for salable minerals, the BLM conducts the appropriate environmental analyses including special studies or inventories of cultural resource values, threatened or endangered plant and wildlife species, and other resources. Stipulations or conditions may be included in the terms of the contract to ensure protection of the natural resources and reclamation of the land following project completion. Site reclamation is required following any surface-disturbing activity by mining for salable minerals. Reclamation includes removing surface debris, recontouring, reducing steep slopes, and planting vegetation. All reclamation proposals must conform to federal and state agency requirements.

### *Leasable Minerals*

Leasable minerals anticipated for development include fluid (oil, gas, geothermal, coal-bed methane) and solid minerals such as coal, sodium, phosphate, potash, and uranium. Approximately 1,821,374 acres will be managed for oil and gas leasing in the MFO, as well as there are two coalfields (Sego and La Sal), and eight known potash leasing areas of unspecified size. Most of the increased oil and gas mineral development within BLM-administered lands in the MFO would occur primarily in the Greater Cisco area, and secondarily in the Book Cliffs area. Estimated total surface disturbance for leasable minerals developments encompasses 8830 acres. In Utah, coal is generally extracted using underground mining methods although surface coal mine operations and methods are likely to be proposed for some future operations. Surface facilities include truck/train loadouts, offices, maintenance facilities, change house, electrical substations, and roads. Total surface disturbance is usually less than 20 acres.

Surface coal mining involves the use of draglines, shovels, and haul trucks and results in large areas of surface disturbance from road construction; topsoil and overburden removal; and stock piling of these materials. Reclamation includes recontouring as closely to the original landscape as possible, reconstruction of drainages, reseeding, and monitoring.

Surface disturbance for uranium extraction includes processing plants, equipment maintenance buildings and offices, or other various extraction support facilities disturbing approximately 5-15 acres.

Fluid leasable minerals include oil, gas, and geothermal steam. In areas where development of oil and gas resources would conflict with the protection or management of other resources or public land uses, mitigation measures are identified and may appear on the leases as either

stipulations to uses, or as restrictions on surface occupancy. Once the parcel is sold, it matures into a lease and is authorized for a 10 year period.

Initial geophysical exploration involves use of ATVs and vehicles to lay the geophones and drill the shot holes for charges, or “thumpers” to create the sound waves. Exploration for oil and coal bed natural gas may also include drilling more than one well. Surface disturbance during the exploration phase of drilling includes the construction of roads, well pads, reserve pits, and other facilities.

Development of oil and gas fields includes construction pads, storage tanks, storage tank batteries, oil and gas processing facilities and necessary pipeline, compressor engines and power lines right-of-ways. Generally, each drill site includes a 3 acre pad, 1 mile of road, and 1 mile of pipeline. Directional drilling requires a larger pad size and is dependent on the number of wells drilled from each pad.

Methods to dispose of residual water from oil and gas production include: subsurface re-injection, direct surface discharge, and discharge into a containment pond or pit. Chemically polluted water may be treated before surface discharge or may be reinjected. Geothermal resources are available for exploration, development, and production and are subject to the same surface disturbance restrictions and other stipulations applied to oil and gas exploration, development, and production.

### *Locatable Minerals*

Locatable metallic minerals in the project area include the copper mine at Lisbon Valley. Over the life of the plan, surface disturbance in this area will include 1103 acres. Exploration activities for copper will continue outside the mine site and add to the surface disturbance produced by this category.

Minerals that are normally locatable may be leasable on acquired lands. Minerals are locatable under the 1872 Mining Law. Most public lands are open to location with the exception of withdrawn lands. The Mining Law of 1872 sets the requirements for lode claims, placer claims, and mill sites as well as discovery, location, annual filings, assessment work, and mineral examinations to establish validity. Mining law allows for individuals and corporations to prospect for minerals on public domain lands, and upon making a discovery, to stake (or “locate”) a claim on that deposit. A claim gives the holder the right to develop the minerals and may be “patented” to convey full title to the claimant. This law is under constant scrutiny, and a continuing issue is whether this law should be reformed, and if so, how to balance mineral development with competing land uses. Since October 1, 1994, Congress has imposed a budget moratorium on BLM acceptance of any new mineral patent applications. Until the moratorium is lifted, the BLM will not accept any new applications.

Potential impacts of locatable mineral developments include increased soil erosion resulting in increased sedimentation, some potential for release or exposure to toxic chemicals and wastes, individual mortality, localized population mortality, habitat loss/fragmentation, and reduction of reproductive success.

## Recreation Management

The objectives of recreation management are to identify recreation values on public lands and make decisions which will ensure that these values are maintained on a long-term sustained yield basis to meet the recreational needs of the using public. Recreation management includes allowing recreational access by the public, developing and maintaining recreation areas, issuing special recreation permits for organized groups, competitive events and commercial outfitters and guides, acquiring recreational access, providing information to the public about recreation resources and assessing effects of recreational use to the environment. The BLM monitors recreational use, develops management plans, and evaluates recreational potential.

Through the land use planning process BLM identifies and designates special recreation management areas. These include areas which require greater recreation investment, where more intensive recreation management is needed and recreation is a principal management objective. Recreational activities may include hiking, hunting, mountain biking, boating, and fishing, OHV use (including snowmobiles), horseback riding, and camping.

Backcountry roads and trails provide a wide range of recreation opportunities for Off Highway Vehicle (OHV) users on public lands. These opportunities range from vehicle touring to vehicle access for hiking, hunting, fishing, and other numerous public land uses, as well as unconfined vehicle use at designated open areas.

## Riparian Management

The objective of riparian management in Utah is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. Priority for riparian area management will be given to areas identified as habitat for aquatic species with signed Conservation Agreements and Strategies.

Riparian area management is an integral part of all resources and related management programs. Management actions may include reductions in livestock numbers, adjustments in grazing distribution patterns, fencing, herding, livestock conversions, vegetation treatments, monitoring, and recontouring streambanks. In addition, restrictions are placed on other resource programs that are meant to protect riparian areas including, development restrictions on time, space, and placement, and appropriate buffers. Those activities that affect or are affected by riparian values will account for the riparian areas management objectives and direction. Resource values and uses that affect or are affected by riparian values include wildlife and fisheries habitat, forest resources, livestock grazing, OHV use, visual resources, cultural and historical resources, minerals exploration and development, lands and realty activities, watershed and soils resources, recreation uses, fire management, and access.

## Soils and Watershed Resources

The objectives for the soil and watershed resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland

health standards and other soil protection measures, as well as to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses.

Best Management Practices (BMPs) are incorporated into project level documents and are designed to reduce sedimentation and protect water quality. BMPs are also designed to benefit soil productivity by minimizing erosion. Examples of soil protection measures implemented under this program include seasonal or weather restrictions for use of heavy equipment on moist soils or slope limitations for mechanical harvest equipment. Soil protection measures are often identified in site-specific environmental analyses. Examples of water quality protection measures include identification of heavy sediment loads, monitoring and treating soil erosion, evaluating and restricting surface development, and monitoring water quality. Watershed management activities include some of these same activities through the evaluation of projects, application of seasonal closures, monitoring of public drinking water, and completion of groundwater studies. Some of the field activities involve the use of heavy machinery and hand tools to develop riparian/wetland exclosures and stream improvements. Management of water resources may include the imposition of restrictions on activities such as development, in order to maintain water, and watershed quality. Generally, the program provides information in support of other resource objectives and goals.

Generally, on-the-ground activities are carried out under other programs and their impacts are discussed in the appropriate sections. Restrictions may include but are not limited to the modification of construction design in order to accommodate the preservation of physical and biological soil integrity, timing restrictions to reduce impacts to soils, or use of sediment and salt reducing measures during construction activities. Activity plans will address site-specific problems and include monitoring for salt and sediment loading.

### Special Designations

The following describes special designations, including Areas of Critical Environmental Concern (ACEC); Wild and Scenic Rivers (WSR); and Wilderness Resources which include Wilderness Study Areas (WSAs), and congressionally designated Wilderness.

Areas of Critical Environmental Concern (ACECs) - An ACEC is the principal BLM designation for public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes; or to protect life and safety from natural hazards. ACECs in the MFO include:

- *Behind the Rocks (5,201 acres)* – This area would be designated as an ACEC and managed as NSO for oil and gas and other surface-disturbing activities. No vegetation treatments would be allowed except for the removal of noxious weeds and exotics.
- *Cottonwood-Diamond Watershed (35,830 acres)* – This area would be designated as an ACEC, and would be managed with an emphasis in part to protect natural systems. It would remain closed to livestock grazing, and parts would also be closed to vehicle

access. No new mechanized or motorized routes would be established, and an NSO timing stipulation would apply.

- *Highway 279/Shafer Basin/Long Canyon (13,500 acres)* – This area would be managed in part to protect wildlife and sensitive plant species. Permitted activities would be confined to main roads within crucial bighorn lambing habitat from April 1 through June 15 (minimum impact filming excluded). Mexican spotted owl (MSO) habitat within this ACEC would be managed according to the MSO Recovery Plan. An NSO stipulation for oil and gas leasing and other surface-disturbing activities would be applied.
- *Mill Creek Canyon (3,721 acres)* – This area would be managed in part to protect natural systems, which includes cold-water fisheries, riparian, watershed, and wildlife issues. Grazing would only be permitted in upland areas of the Mill Creek allotment. Motorized competitive events would be prohibited. All recreational events would be confined to designated roads, which would help reduce the adverse effects of anthropogenic noise and vegetation trampling. The South Fork of Mill Creek below the Sheley diversion would be maintained at 3 cubic feet per second (cfs) to provide perennial habitat for cold-water adapted fishes.
- *Ten Mile Wash (4,980 acres)* – This area would be managed in part to protect riparian and wetland systems and wildlife. Livestock grazing would not be permitted in Ten Mile Wash downstream from Dripping Springs. This area would be prioritized for riparian restoration. Additionally, an NSO stipulation for oil and gas leasing and other surface-disturbing activities would be applied.

Book Cliffs, Canyon Rims, Cisco White-tailed Prairie dog Complex, Colorado River Corridor, Labyrinth Canyon, Upper Courthouse, Westwater Canyon, White Wash, Wilson Arch (304,252 acres) but will not be designated as ACECs under the new RMP. Management would default to the prescriptions applicable to the general areas.

Wild and Scenic Rivers - Congress designates rivers into the National Wild and Scenic Rivers system. These can include scenic, wildlife, fish, cultural and recreational values among others. Eligible/suitable rivers are given a tentative classification of wild, scenic, or recreational based upon the amount of disturbance within the river corridor. Both congressionally designated rivers and eligible/suitable segments are managed to protect the free-flowing nature of the river, the tentative classification, and the outstandingly remarkable values. The Proposed Action would manage 84,169 acres of special status species habitat as Wild and Scenic Rivers (WSR), which could benefit riparian sensitive species and habitat.

Wilderness Resources - There are two types of special designations in this category: wilderness study areas, and congressionally designated wilderness. In general this means that there can be no new permanent structures or new disturbance that would require reclamation in order for the area to appear natural. The lands are closed to mineral leasing. With very few exceptions, there can be no new permanent structures or new disturbance, and no motorized or mechanized transport. The lands are closed to mineral leasing and mineral location under the mining laws. Management actions include limiting visitor use, restoration of ecological integrity and functions, limit change in the landscape, and manage natural sound-scapes by prohibiting all motorized vehicles.

### Non-WSA Lands with Wilderness Characteristics

The BLM has identified non-WSA lands with wilderness characteristics for management consideration under the RMP. Wilderness characteristics include the appearance of naturalness and outstanding opportunities for solitude or unconfined recreation. Primitive lands and backcountry landscapes would be managed for their undeveloped character, and to provide opportunities for primitive recreational activities and experiences of solitude, as appropriate. Under the Proposed Plan, 47,761 acres of non-WSA lands would be managed to protect, preserve, and maintain wilderness characteristics. An NSO stipulation would be applied to oil and gas leasing in non-WSA lands with wilderness characteristics. In addition, portions of non-WSA lands with wilderness characteristics in the Fisher Towers (5,540 acres within the Richardson Amphitheater), Mary Jane (16,499 acres within the Richardson Amphitheater), and Beaver Creek (25,722 acres) areas would be closed to oil and gas leasing. Also, non-WSA lands with wilderness characteristics would be managed to preclude other surface-disturbing activities including mineral materials sales. These areas would be managed as VRM Class II, woodland harvest would be prohibited, vehicle use would be limited to designated roads, and development of ROWs would be avoided. Generally these areas are managed similar to wildness areas.

### Transportation Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities included under this program include planning and decision making for roads and road designations. This includes the following designations 1,000 acres open to cross-country OHV use, 25,000 acres closed to OHV use, and 528,000 acres limited to designated routes only.

### Special Status Species Management

The Objectives of the special status species program include maintenance of biological diversity of plant and animal (terrestrial and aquatic) species by supporting the State Division of Wildlife Resources' strategic plans for wildlife population objectives to the extent practical and consistent with BLM multiple-use management requirements. Another main objective includes the development of protective measures for federally listed species and other special status species that require special consideration under BLM policy.

In addition, the special status species management program often includes the enforcement of timing restrictions, completion of surveys, and development of conservation measures and best management practices for the mitigation of effects of development deemed to be discretionary actions of the BLM. Activities implemented under this program may include identification and enforcement of timing stipulations; completion of species surveys; and closure of areas containing sensitive species populations or habitat.

## Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

A number of trails would be managed for non-mechanized travel. Because these trails are already established and in use, there is not likely to be an appreciable increase in disturbance of sensitive species and habitat resulting from trail maintenance. There would also be trails and/or areas open to OHV use under all alternatives. As part of the Proposed Action, a total of 1,866 acres would be open to cross-country OHV use, 1,481,334 acres would limit OHV use to designated routes, and 339,298 acres would be closed to OHV use.

## Vegetation Management

Objectives of the vegetation resource management program are to maintain or improve the diversity of plant communities to support livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Vegetation treatments, (e.g., timber harvest, sagebrush spraying or burning, chaining, etc.) will be designed to meet overall resource management objectives, which include the protection of listed plant and animal species. The four types of vegetation control methods include chemical, biological, and mechanical, and cultural practices. Biological control can involve the use of weevils, beetles, or goats. Mechanical methods include dozing, cutting, chopping, and pulling. Cultural controls include education and public awareness campaigns, use of weed free forage, and changes in grazing practices to increase health and vigor of plant communities so that they are more resistant to invasion. Herbicides are often applied in situations where other means are not as effective or cost efficient. Depending on the site and circumstances, these methods can be used individually or in combination. Sagebrush control measures are also implemented by the BLM. These control methods may be chemical or mechanical. Fire is used to improve range forage production, wildlife habitat, timber stands, sale debris disposal, and to reduce hazardous fuel buildup.

Under the Proposed Action, seed gathering and plant collection would be permitted in all areas meeting Utah's Rangeland Health Standards. The spread of noxious, invasive, and non-native weed species would be controlled through implementation of the BLM weed management policies and action plans (BLM 1991 and 2006). Tamarisk (*Tamarix ramosissima*) and Russian olive (*Elaeagnus angustifolia*) would be treated in a number of areas to restore riparian areas. Sagebrush habitat would be managed as described in the Sage-grouse Habitat Conservation Strategy (BLM 2004b). Up to 257,809 acres of sagebrush habitat and shrub steppe ecosystems would be reclaimed or restored. Any loss of sagebrush steppe habitat deemed essential to wildlife would be reclaimed at a ratio of 1:1.

## Visual Resource Management

The objective of visual resource management (VRM) is to manage public lands in a manner that will protect the quality of the scenic (visual) values of the landscape. To accomplish this objective, BLM establishes visual resource management priorities while giving consideration to

other resource values and uses. Visual resources are managed in accordance with objectives classes that have been assigned to all public lands in each FO.

To meet VRM objectives, the BLM designs facilities, such as power lines, oil and gas wells, wildlife guzzlers, and storage tanks to fit with their surroundings. Design considerations include location (e.g., screening or distance), color (painting), building materials, size and scale, and reclamation. Under the proposed action, all WSAs would be managed as VRM I, 358,911 acres would be subject to VRM Class I restrictions, 365,566 to VRM Class II restrictions, and 1,097,291 acres would be subject to VRM Class III or IV restrictions.

### Wildlife and Fisheries Resource Management

The BLM works closely with the UDWR to manage habitat for fish and wildlife (including big game, upland game, waterfowl, neo-tropical migratory birds, small mammals, amphibians, and reptiles) to achieve and maintain suitable habitat for desired population levels and distribution within the decision area. The UDWR is responsible for managing wildlife population levels; the BLM is responsible for managing wildlife and fisheries habitat in a condition that will support desired levels of species. The BLM works cooperatively with the UDWR to maintain and reestablish populations of native species that have used the historic range located within the planning area through habitat management and restoration.

Objectives of the fish and wildlife resource management program include maintenance of habitat quantity, quality, and connectivity to sustain diverse wildlife populations; maintenance and improvement of aquatic habitats to sustain diverse fisheries and aquatic populations; and conservation of migratory bird habitat as directed by Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) and the Migratory Bird Treaty Act and emphasize management of migratory birds listed on the USFWS current list of Birds of Conservation Concern and the Partners-in-Flight priority species.

Fish and wildlife management actions may include surveying; habitat monitoring; habitat and species inventories, habitat improvement, habitat restoration, water developments, riparian habitat improvements, etc., as well as development of habitat management plans.

The BLM develops stipulations and conservation measures to both protect and enhance wildlife and fisheries habitats. These stipulations and conservation measures may include such things as: recommending withdrawal of some areas from mineral entry; limiting access to specific areas by OHVs and pedestrians; and minimizing the impacts of surface development. The BLM may acquire crucial wildlife habitats or easements and conduct inventories of potential habitats for occurrences of threatened, endangered, and sensitive species or their habitat.

### Woodlands Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Under the Proposed Action, 1,168,988 acres of pinyon-juniper woodland vegetation would be open to woodland product harvest. This mainly involves non-commercial harvest of firewood, fence posts, and Christmas trees.

## **Conservation Measures**

As part of the proposed action, in order to minimize the effects of the above management programs, the Moab BLM Field Office has committed to a variety of species-specific conservation measures and, in conjunction with USFWS, developed species-specific lease notices for leases permitted under the Minerals and Energy Program. For a complete listing of the BLM committed conservation measures, lease notices, and Best Management Practices (BMPs), please refer to Appendix A.

## SPECIES ACCOUNTS, EFFECTS, AND CONCLUSIONS

The following section includes species-specific information pertaining to the status and distribution of each species, the environmental baseline, and programmatic-level effects of the proposed action.

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed State or Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process.

“Effects of the action” refers 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 or interdependent with that action, which will be added to the environmental baseline. Direct effects encompass the immediate, often obvious effect of the proposed action on a species or its habitat. Indirect effects are caused by, or result from the proposed action, are later in time, and are reasonably certain to occur. In contrast to direct effects, indirect effects may be more subtle, and may affect species’ populations and habitat quality over an extended period of time, long after RMP activities have been completed.

Interrelated actions are those that are part of a larger action and depend upon the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consultation. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

### **Mexican spotted owl (*Strix occidentalis lucida*)**

#### **Status of the Species**

##### *Species / Critical Habitat Description*

The Mexican spotted owl (*Strix occidentalis lucida*) is one of three subspecies of spotted owl recognized by the American Ornithologists' Union (AOU 1957:285). The other two subspecies are the northern (*S. o. caurina*) and the California spotted owl (*S. o. occidentalis*). The Mexican subspecies is geographically isolated from both the California and northern subspecies.

The spotted owl is mottled in appearance with irregular white and brown spots on its abdomen, back and head. Several thin white bands mark an otherwise brown tail. The spots of the Mexican spotted owl are larger and more numerous than in the other two subspecies, giving it a lighter appearance. *Strix occidentalis* translates as "owl of the west"; *lucida* means "light" or "bright." Unlike most owls, spotted owls have dark eyes.

Adult male and female spotted owls have similar plumage. However, the sexes can be identified by voice and size differentiation. Juveniles, subadults, and adults can be distinguished by plumage characteristics (Forsman 1981; Moen et al. 1991). Juvenile spotted owls (hatchling to

approximately five months) have a downy appearance. Subadults (5 to 26 months) have pointed rectrices with white tips (Forsman 1981, Moen et al. 1991). The rectrices of adult feathers (>27 months) have rounded and mottled tips.

Although the spotted owl is often referred to as a medium-sized owl, it ranks among the largest owls in North America. Of the 19 species of owls that occur in North America, only 4 are larger than the spotted owl (Johnsgard 1988). As a species, the spotted owl averages 41-48 cm (16-19 inches) long (Earhart and Johnson 1970), 107-114 cm (42-45 inches) across the spread wings (Walker 1974), and weighs 547-647 grams (19.5-23 ounces). These measures are expressed as ranges because, similar to other owl species, spotted owls exhibit reversed sexual dimorphism (i.e., females are larger than males).

### *Life history and Population dynamics*

Spotted owls have one of the lowest clutch sizes among North American owls (Johnsgard 1988); females lay one to three eggs, two being the most common. Mexican spotted owls breed sporadically and do not nest every year (Ganey 1988). In good years, most of the population will nest, whereas in other years only a small proportion of pairs will nest successfully (Fletcher and Hollis 1994).

Courtship begins in March and eggs are laid in late March or, more typically, early April. Incubation begins shortly after the first egg is laid, and is performed entirely by the female. Female spotted owls generally incubate for approximately 30 days. During incubation, the female leaves the nest only to defecate, regurgitate pellets, or receive prey delivered by the male, who does most or all of the foraging. The eggs usually hatch in early May (Ganey 1988). Females brood their young almost constantly, leaving their nests for only brief periods during the night. Nestling owls fledge from four to five weeks after hatching, from early to mid-June in most cases (Ganey 1988). Owlets often leave the nest before they can fly, simply jumping from the nest onto surrounding tree branches or the ground. Within a week after leaving the nest, most owlets can make short, clumsy flights. Three weeks after leaving the nest owlets can hold and tear up prey on their own, and by late July most have become proficient at pouncing on crawling insects (Forsman et al. 1984). The young depend on their parents for food during the summer and will eventually disperse out of the natal area in the fall. Reproductive output varies both spatially and temporally (White et al. 1995), but may be higher than the California and the Northern spotted owl (Verner et al. 1992, Thomas et al. 1993).

Forsman et al. (1976) described spotted owls as "perch and pounce" predators. They typically locate prey from an elevated perch by sight or sound, then pounce on the prey and capture it with their talons. Spotted owls have also been observed capturing flying prey such as birds and insects (Verner et al. 1992). Specific prey groups include: woodrats, mice, voles, rabbits, gophers, bats, birds, reptiles, and arthropods. Spotted owls dwelling in canyons of the Colorado Plateau take more woodrats, and fewer birds, than do spotted owls from other areas.

Mortality factors include predation, starvation, and accidents. Little is known about how disease and parasites contribute to mortality of spotted owls. Avian predators include great horned owls, northern goshawks, red-tailed hawks, and golden eagles. The extent of predation is unknown; however both juveniles and adults are preyed upon (Willey 1993). Starvation may result from

low abundance or availability of prey. Most instances of starvation occurred from late fall through winter when prey resources were reduced in abundance and availability (Willey 1993, Block and Ganey, unpub. data). Starvation may also predispose individuals to increased predation. Little data is available on frequency of accidents, and subsequent mortality. Instances of spotted owls being hit by cars have been documented. Owls may also collide with power lines or other obstacles (USFWS 1995).

Based on limited study information, annual survival rates of adult Mexican spotted owls is 0.8-0.9 and juvenile survival is 0.06-0.29 (USFWS 1995). Survival estimates may be biased low, but conclude higher survival of adults than juveniles. Available data is either insufficient or has not been analyzed to estimate population trends.

### *Status and Distribution*

The Mexican spotted owl (*Strix occidentalis lucida*) was listed as a threatened species on March 16, 1993 (58 FR 14248). The primary threats to the species were cited as even-aged timber harvest and catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the Mexican spotted owl population. The Fish and Wildlife Service appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USFWS 1995).

On August 31, 2004, the Service designated approximately 8.6 million acres of critical habitat for the Mexican spotted owl in Arizona, Colorado, New Mexico, and Utah, on Federal lands (69 FR 53181). There are approximately 47,700 acres of designated critical habitat in the decision area on the western boundary adjacent to Zion National Park and southeast of the town of Tropic. However, not all of these acres contain the primary constituent characteristics essential to the conservation of the species. Some of the primary constituent elements for the Mexican spotted owl include: (1) cooler and often more humid conditions than the surrounding area, (2) clumps or stringers of trees and/or canyon walls with crevices, ledges or caves, (3) high percent of ground litter and woody debris, and (4) riparian or woody vegetation. The primary constituent elements related to forest structure include (1) a range of tree species, (2) a shade canopy created by the tree branches covering 40 percent or more of the ground, and (3) large dead trees with a trunk diameter of at least 12 inches (69 Federal Register 53181-5398).

It is important to note that critical habitat is not the only suitable or occupied habitat available for owls. Critical habitat is only a regulatory delineation of habitat meeting primary constituent elements, and was defined based on known localities of nest sites (Protected Activity Centers; PACs) at the time of designation.

The primary constituent elements of the critical habitat designation include those physical and biological features that support nesting, roosting, and foraging. Vegetation communities and structural attributes used by the owl vary across the range of the subspecies, but consist primarily of mixed conifer forests or canyons. The mixed-conifer, pine-oak communities and canyon habitat appear to be the most frequently used communities throughout most portions of the subspecies' range (Skaggs and Raitt 1988; Ganey and Balda 1989, 1994; Gutierrez and Rinkevich 1991; USFWS 1995). In Utah, owls utilize canyon habitats (Willey 1998).

Primary constituent elements related to critical habitat in Utah include one or more of the following: (1) presence of water (often providing cooler temperatures and higher humidity than the surrounding areas); (2) clumps or stringers of mixed conifer, pine-oak, pinyon-juniper, and/or riparian vegetation; (3) canyon walls containing crevices, ledges, or caves; and (4) high percent of ground litter and woody debris. The primary constituent elements provide a qualitative description of those physical and biological features necessary to ensure the conservation of the owl in Utah (69 FR 53181).

Although the Mexican spotted owl's entire range covers a broad area of the southwestern United States and Mexico, the Mexican spotted owl 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 forests but also is known to inhabit a physically diverse landscape in the southwestern United States and Mexico. Owls can be found in forested mountains and canyons from southern Utah and Colorado to the mountains of Arizona, New Mexico, western Texas, and into the mountains of northern and central Mexico.

Steep-walled rocky canyonlands provide typical owl habitat within the Utah portion of the Colorado Plateau Recovery Unit. Canyon habitat is used by owls for nesting, roosting, and foraging and includes landscapes dominated by vertical walled rocky cliffs within complex watersheds, including many tributary side canyons. Rock walls must include caves, ledges, and fracture zones that provide protection for nesting and roosting sites. Breeding sites are located below canyon rims; however, it is known that owls use areas outside of the canyons (i.e., rims and mesa tops). Owls nest and roost primarily on cliff faces using protected caves and ledges, and forage in canyon bottoms, on cliff faces and benches, and along canyon rims and adjacent lands. Although it is difficult to rely upon vegetation alone to identify canyon habitat, these areas frequently contain small clumps or stringers of mixed-conifer, ponderosa pine, pine-oak, pinyon-juniper, and/or riparian vegetation (69 FR 53181). Little is known about patterns of habitat use by foraging owls. Willey (1998) documented owl use in Utah to include canyon bottoms and adjacent rims.

Colorado Plateau canyon habitats in Utah are naturally discontinuous and may explain the patchy locations of owls in the region. A study conducted in Zion National Park found owls nesting and roosting in humid, narrow canyons with dense understories (Rinkevich 1991). These canyons provide large cliffs with escape cover to avoid predation, shaded roost sites to avoid high summer temperatures, patches of forest vegetation, and availability of suitable prey.

Historic population size estimates and range of the Mexican spotted owl are unknown; however present population size and distribution are thought to be similar (USFWS 1995). Ninety-one percent of known owls in 1990-1993 occurred on U.S. Forest Service lands, primarily in Arizona and New Mexico. It is unknown why there are fewer owls in Utah and Colorado, but that may be a function of habitat type. Total range wide population estimates are 1,176 to 2,352 owls (69FR 53181, August 31, 2004). Seamans et al. 1999 reported 10 percent or greater population declines and low survival rates in central Arizona and west-central New Mexico. Gutierrez et al. (2003) documented that the decline in New Mexico was continuing, whereas the decline in Arizona appeared to have stabilized. Wide population fluctuations may be common for Mexican spotted owls (Gutierrez et al. 2003).

## Environmental Baseline

### *Status of the Species within the Action Area*

Dr. David Willey and Dan Spotskey modeled Mexican spotted owl habitat based on vegetation type, slope, elevation, aspect, and other factors in 1997 and 2000 (Willey and Spotskey 1997, 2000). Both the 1997 model and the 2000 model are used within Utah to identify potential habitat. Any projects that occur within the modeled potential habitat should be field-verified for actual habitat suitability and, if appropriate, surveys according to protocol should be conducted to determine if Mexican spotted owls occupy the area. The Mexican spotted owl occurs in the eastern and southern thirds of Utah, including Garfield and Kane counties (UDWR 2003).

The Mexican Spotted Owl Recovery Plan was finalized in 1995. Six Recovery Units in the United States were identified based on similarities, or obvious dividing lines, between the following: physiographic provinces, biotic regimes, perceived threats to habitat or individual birds, administrative boundaries, and owl distribution. Suitable habitat and designated critical habitat on public lands managed by the BLM in Utah are within the Colorado Plateau Recovery Unit (USFWS 1995). Five critical habitat units have been delineated in Utah, including the following units which are located in or adjacent to the planning area:

- Unit CP-11.* This unit is located in Iron, Washington, and Kane Counties in southwest Utah, approximately 22 mi (35 km) northeast of St. George. About half of the unit is on BLM owned lands; Zion National Park is the other land owner.
- Unit CP-12.* This Unit is in the vicinity of the Kaiparowits Plateau and the Cockscomb, in Kane and Garfield Counties. This unit is primarily on the Grand Staircase-Escalante National Monument, which is owned and managed by the BLM. The other land owner is the Forest Service (Dixie National Forest).
- Unit CP-13.* This unit occurs in Wayne, Garfield, Kane, and San Juan Counties, Utah. It is primarily in the Waterpocket Fold landform extending to Lake Powell. The primary land owner in this Unit is the National Park Service (Capitol Reef National Park and Glen Canyon National Recreation Area). The BLM owns and manages lands within this unit primarily on the Grand Staircase-Escalante National Monument and along the eastern edge of the Unit. The Forest Service (Fishlake National Forest) also owns land, but to a much lesser extent.
- Unit CP-14.* This Unit lies in Wayne, Garfield, San Juan, and Grand Counties, Utah. It includes the Dark Canyon Primitive and Wilderness areas of the BLM and FS, respectively. This Unit has lands owned and managed by the National Park Service (Canyonlands National Park and Glen Canyon National Recreation Area), the BLM, and the Forest Service (Manti La-Sal National Forest).
- Unit CP-15.* This unit is located approximately 30 mi (48 km) east of Price, in Carbon and Emery Counties. Situated in the West Tavaputs Plateau, it is located largely along the Desolation Canyon area of the Green River. The BLM is the primary owner and manager of land within this unit.

It is important to note that critical habitat is not the only suitable or occupied habitat available for owls. Critical habitat is only a regulatory delineation of habitat meeting primary constituent elements, and was defined based largely on known localities of nest sites (Protected Activity Centers; PACs) at the time of designation. There is substantial suitable habitat that occurs outside of the designated critical habitat boundaries and these should be assessed using the models and field evaluations as previously described.

Designated critical habitat, suitable habitat, and PACs occur within the Moab BLM Field Office. There are approximately 47,700 acres of Unit CP-11 designated critical habitat in the decision area on the western boundary adjacent to Zion National Park and southeast of the town of Tropic. This includes two PACs on BLM lands, one overlapping Zion National Park and one in Water Canyon.

### *Factors Affecting Species Environment within the Action Area*

Threats to this species and its habitat include recreation, grazing, oil and gas exploration and development, and road improvement and development within canyons; loss, fragmentation, or modification of habitat from catastrophic fire and timber harvest within upland forests potentially used for foraging, dispersal, and wintering; and increased predation associated with habitat fragmentation (USFWS 1995).

## **Effects of the Action**

### Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence, equipment use (including associated auditory or visual disturbances), and surface disturbance in Mexican spotted owl habitat. Associated noise disturbances may adversely affect the behavior of spotted owls during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with cultural resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may site-specific be decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

### Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence, equipment use (including associated auditory or visual disturbances), and surface disturbance in Mexican spotted owl

habitat. Associated noise disturbances may adversely affect the behavior of spotted owls during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with cultural resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may site-specific be decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

### Fire Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the BLM's fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence and equipment and vehicle use (with increased noise disturbance), vegetation treatment or disturbance, decreases in local air quality, and surface disturbance in Mexican spotted owl habitats. Associated noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, roosting, or foraging activities. Vegetation disturbances or vegetation removal may decrease prey habitat and prey abundance. Soil disturbances and increased erosion may indirectly decrease abundance of prey. Localized effects from smoke may adversely affect owlets or displace owls. As a result of these impacts, there may be site-specific decreases in nest initiation or nesting success, and increased owlet and adult mortality.

Potential impacts from wildland fire use and prescribed fire would be similar to those from wildfire suppression. Non-fire fuels treatments and emergency stabilization and rehabilitation following wildfires may be used to retain or improve range conditions and maintain lower fuel loads in grassland and sagebrush habitats. Negative short term impacts include harassment or displacement; or immediate post-project alteration of key prey habitat components from surface disturbance. Additionally, these fire management activities could benefit prey populations of Mexican spotted owls in the long-term due to improved forage quality and quantity.

### Health and Safety Management

The primary objective of health and safety management is to protect public and environmental health and safety on lands administered by BLM. Hazardous materials and waste management policies are integrated into all BLM programs. Several federal, state, and local laws overlap in their requirement of BLM to identify and remediate contaminated sites on public lands. Besides managing pre-existing contamination, BLM seeks to prevent or minimize contamination caused by BLM authorized actions.

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy

equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, and roads occur within all of the planning areas analyzed in this document, and have some potential to occur in Mexican spotted owl habitat. Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely impact prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

### Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Construction of power lines or other infrastructure may result in electrocutions, entanglements, or collisions with flying birds, resulting in possible mortality. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. Exchange or sales of lands may lead to habitat fragmentation and loss. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

### Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The

determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation disturbance; and minor surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation, more invasive plant species, fragmented prey habitat and adverse affects to availability of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. As a result, there may be decreases in nest initiation or nesting success, and increased adult and owlet mortality.

### Minerals Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal-bed methane, coal, sodium, phosphate, potash, and uranium), locatable (copper) and salable minerals (sand, gravel, building stone, travertine, clay and humate). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

These occurrences may increase human presence; equipment and vehicle use; vegetation disturbance or removal; soil disturbances; invasive plant species; and pollutants in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of quality and quantity of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and decrease prey habitat. Some ancillary equipment associated with energy development (e.g., transmission lines, oil pits) may result in direct mortality of owls if they become impinged on the lines or caught in the pits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. Pollutants in the area may affect Mexican spotted owls through adverse effects to prey populations. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult or owlet fitness.

## Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect the availability and quality of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

## Riparian Management

The objective of riparian management in Utah is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. Priority for riparian area management will be given to areas identified as habitat for aquatic species with signed Conservation Agreements and Strategies.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in Mexican spotted owl habitat. Associated noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

## Soils and Watershed Resources

The objectives for the soil and watershed resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures, as well as to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses.

Potential adverse impacts to Mexican spotted owl suitable and designated critical habitat may result from land treatments occurring within watersheds. Many of these activities are meant to benefit soil resources and watersheds by reducing soil loss and reclaiming surface disturbances or unnecessary roads. However, activities occurring under this program may also increase human presence; equipment and vehicle use; vegetation manipulation; and surface disturbance in Mexican spotted owl habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors (associated with noise and visual disturbances); decreased nesting habitat; and decreased prey habitat. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival.

### Special Designations

This program is responsible for the management of special designated areas including Areas of Critical Environmental Concern (ACEC); Wild and Scenic Rivers (WSR); and Wilderness Resources which include Wilderness Study Areas (WSAs), and congressionally designated Wilderness. Generally, designation of an area results in implementation of conservation measures and timing stipulations that are beneficial to wildlife species.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), and surface disturbance in Mexican spotted owl habitat. Associated noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits, and decrease prey habitat quality. Short-term, site-specific adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, and foraging behaviors; decreased nesting success; and decreased insect prey habitat and prey abundance for Mexican spotted owls.

### Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Authorized activities under this program have the potential to increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in Mexican spotted owl habitat. Associated noise and visual disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect the availability and quality of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness. There is some potential for owls to be killed in vehicle collisions on roadways.

## Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey species habitat. As a result, there may be site-specific decreases in nest initiation or nesting success, and decreased owl fitness. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival.

## Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and habitat for prey species. Short-term adverse impacts may include, but not be limited to: fragmentation of prey habitat; decreased nest initiation or nesting success; decreased adult and owlet fitness; and alterations of water distribution within occupied habitat of the Mexican spotted owl. In general, long-term efforts to improve the health of riparian habitats may benefit Mexican spotted owls by increasing prey abundance.

## Woodlands Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance near or in Mexican spotted owl habitat. Associated visual and noise disturbances may adversely affect the behavior of Mexican

spotted owls during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation may adversely affect prey habitat and prey availability, and therefore, adversely affect Mexican spotted owls and their young. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat and prey abundance. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for Mexican spotted owl prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and owlet fitness.

## **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.

Cumulative effects to the Mexican spotted owl and designated critical habitat under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat.
- Encroachment of human development into a species' critical, suitable, or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
  - State of Utah
  - County Governments in Utah
  - Local Governments in Utah
  - Private landholders in Utah

Mexican spotted owls occur throughout the action area, generally as year-around residents (Ganey and Block 2005). In these areas, Mexican spotted owls locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Mexican spotted owls are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, human population expansion and associated infrastructure (increased trails and roads) development, research, and recreation activities (including OHV use and any activities that increase human presence), are expected to continue on State and private lands within the Mexican spotted owl's range. Contributing as cumulative effects to the proposed action, these activities will continue to affect Mexican spotted owls' productivity with disturbances to breeding, nesting, and foraging behaviors and further fragmenting habitat of prey populations.

## **Conclusion**

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

After reviewing the current status of the Mexican spotted owl and its critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the Moab BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Mexican spotted owl, and is not likely to destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

## **Southwestern willow flycatcher (*Empidonax traillii extimus*)**

### **Status of Species**

#### *Species/Critical Habitat Description*

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small passerine bird associated with riparian habitats and a subspecies of *Empidonax traillii*. This species was listed as endangered under the Endangered Species Act of 1973, as amended (ESA), on February 27, 1995 (USFWS 1995). On October 19, 2005, 120,824 acres of critical habitat were designated for southwestern willow flycatchers across Arizona, New Mexico, California, Nevada, and Utah (USFWS 2005). Within Utah, critical habitat was only designated along the Virgin River in Washington County, an area not part of this consultation. Therefore, there will not be any further mention of critical habitat for southwestern willow flycatchers in this consultation.

The southwestern willow flycatcher is a small bird, approximately 15 centimeters (cm) (5.75 inches) long. It has a grayish-green back and wings, whitish throat, light grey-olive breast, and pale yellowish belly. Two wing bars are visible; the eye ring is faint or absent. The upper mandible is dark, the lower is light.

The southwestern willow flycatcher is one of four currently recognized subspecies of the willow flycatcher (*E. traillii*) (Hubbard 1987; Unitt 1987; Sogge 2000; USFWS 2001 and 2002). The *E. t. extimus* subspecies was first described by Phillips (1948) and later re-evaluated and accepted as a subspecies by Unitt (1987) and Browning (1993).

The *E. t. extimus* is paler than the other willow flycatcher subspecies and also differs in morphological characteristics: e.g., wing: tail ratio, wing formula; and bill length (Unitt 1987 and 1997; Browning 1993; USFWS 2001 and 2002). These differences are difficult to distinguish and are not reliable characteristics for field identification. The characteristic song of willow flycatcher species is often referred to as a "fitz-bew". Travis (1996) and Sedgwick (1998 and 2001) suggest that clinal variations in willow flycatcher songs also serve to distinguish between

subspecies, but this too is unreliable as a definitive field identification tool. In southern Utah, southwestern Colorado, and perhaps New Mexico, clinal gradations of the *E. t. extimus* and Great Basin/Rocky Mountain willow flycatcher (*E. t. adastus*) are thought to occur (USFWS 2002). Phillips et al. (1964) suggested that the *E. t. extimus* may be typical of lower elevations, and in northern parts of its range (including Utah), clinal gradation with the Great Basin subspecies may exist with increasing elevation and latitude. Recent research (Paxton 2000) concluded that the *E. t. extimus* is genetically distinct from the other willow flycatcher species. However, clinal gradation increases the difficulty of subspecies identification without genetic testing.

### *Life history and Population dynamics*

Male southwestern willow flycatchers generally arrive at breeding grounds first, with females typically arriving a week or two later. Males are usually monogamous, but polygamy has been recorded (Sogge et al. 1997). Nests are usually built within a week of pair formation. Egg-laying begins as early as May but typically occurs in mid-June. The female provides initial care of the nestlings, the role of the male increases with the age and size of the young. Young typically fledge at 12 to 15 days of age, usually between June and mid-August. Second clutches are common if the first attempt is unsuccessful. Territory size varies among the southwestern willow flycatcher, probably due to differences in population density, habitat quality, and nesting stage.

Open, cup-shaped nests are typically constructed in the fork of a branch. Historically, most southwestern willow flycatcher nests (75-80%) were constructed in willows. Currently, the species nests in a variety of plant species, including exotic species such as tamarisk.

Information on breeding site fidelity and persistence is limited. Studies of banded birds (Whitfield and Strong 1995; Whitfield and Enos 1996) report varying rates of nestlings returning to study sites to breed. Sogge and Tibbitts (1994) reported the return of breeding populations to sites that had been unoccupied for several years, indicating that a habitat cannot be assumed unsuitable or unoccupied in the long term based on absence of southwestern willow flycatchers during a single year.

The southwestern willow flycatcher breeds in different types of dense riparian habitats across a large elevational and geographic area. Although the other willow flycatcher subspecies may breed in shrubby habitats away from water, the southwestern willow flycatcher breeds in patchy to dense riparian habitats along streams or other wetlands, near or adjacent to surface water or underlain by saturated soil. Occupied southwestern willow flycatcher sites consist of dense vegetation in the patch interior that is generally 3 to 4 m (10 to 13 ft) above ground, or in aggregates of dense patches interspersed with openings. Saturated soil is present at or near the breeding site during wet or non-drought years (Sogge et al. 1997, Sogge and Marshall 2000, USFWS 2001 and 2002). Rangelwide, common tree and shrub species comprising nesting habitat include willows (*Salix* spp.), seepwillow or mulefat (*Baccharis* spp.), box elder (*Acer negundo*), stinging nettle (*Urtica* spp.), blackberry (*Rubus* spp.) cottonwood (*Populus* spp.) arrowweed (*Tessaria sericea*), tamarisk or saltcedar (*Tamarix ramosissima*), and Russian olive (*Elaeagnus angustifolia*). Dominant plant species, size and shape of habitat patch, canopy structure, vegetation height, etc., vary widely across the *E. t. extimus*'s range. In Utah, the

southwestern willow flycatcher is typically found in mixed native and exotic riparian species habitats, generally dominated by coyote willow, tamarisk and Russian olive (Johnson et al. 1999a and 1999b).

Little specific information is known about migration and wintering ecology of the southwestern willow flycatcher (Yong and Finch 1997, Finch et al. 2000). Willow flycatchers (all subspecies) breed in North America, but winter in Mexico, Central America, and possibly northern South America (Phillips 1948, Stiles and Skutch 1989, Ridgely and Tudor 1994, Howell and Webb 1995, Sogge et al. 1997).

### *Status and distribution*

The historical breeding range of the southwestern willow flycatcher included southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico (Hubbard 1987; Unitt 1987; Browning 1993; USFWS 2002). The flycatcher's current range is similar to the historical range, but the quantity of suitable habitat within that range is much reduced from historical levels. The flycatcher occurs from near sea level to over 2600 m (8500 ft), but is primarily found in lower elevation riparian habitats (USFWS 2002). Throughout its range, the flycatcher's distribution follows that of its riparian habitat; relatively small, isolated, widely dispersed locales in a vast arid region (USFWS 2002 Surveys for the southwestern willow flycatcher have been conducted by the UDWR).

The Recovery Plan (USFWS 2002) divides the southwestern willow flycatcher's breeding range into six Recovery Units, which are subdivided into Management Units. Recovery Units are defined based on large watershed and hydrologic units; standardized boundaries of river basin units within the U.S. Within each of the six Recovery Units, multiple Management Units are delineated based on a geographic area representing all or part of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. The outer limits of both the Recovery Unit and Management Unit boundaries are defined by the southwestern willow flycatchers' range (USFWS 2001 and 2002).

The State of Utah falls within the Lower Colorado and Upper Colorado Recovery Units. The Upper Colorado Recovery Unit covers much of the four-corners area of southern Utah, southwestern Colorado, northeastern Arizona, and northwestern New Mexico. The northern boundary of the Upper Colorado Recovery Unit is delineated by the northern range boundary of the southwestern willow flycatcher. Ecologically, this region may be an area of clinal gradation between the southwestern willow flycatcher and the Great Basin willow flycatcher. The Lower Colorado Recovery Unit is a geographically large and ecologically diverse Recovery Unit, encompassing the Colorado River and its major tributaries, from Glen Canyon Dam downstream to the Mexico border (USFWS 2001 and 2002).

As previously discussed, recent genetic work (Paxton 2000) verified *E. t. extimus* genetic stock in the San Luis Valley of south-central Colorado and the Virgin River in Utah. Paxton's (2000; as cited in USFWS 2002) research showed that the northern boundary for southwestern willow flycatchers was generally consistent with that proposed by Unitt (1987) and Browning (1993), and subsequently used in the Final Recovery Plan (USFWS 2002). Paxton's (2000) research further illustrated that the willow flycatcher in central Utah does not have the genetic markers of

*E. t. extimus* and is more closely related to *E. t. adastus*. However, because of the absence of flycatchers in the lower- to mid-elevations of the Colorado Plateau in southern Utah and southwestern Colorado, Paxton (2000; as cited in USFWS 2002) did not address potential sub-specific differences resulting from elevation or habitat differences and watershed boundaries. Analysis of willow flycatcher vocalizations in central Utah also suggests association with *E. t. adastus*. The Final Recovery Plan (USFWS 2002) adopts a range boundary that reflects Paxton's (2000) and Sedgwick's (2001) results; the northern extent of southwestern willow flycatchers is confined to the southern portions of Utah. In the Recovery Plan, the USFWS acknowledges that new data may result in refinements to the northern range boundary currently recognized (USFWS 2002). This is based on the limited genetic information in portions of central and eastern Utah, particularly along major drainages including the Colorado and Green Rivers. Therefore, the USFWS Utah Field Office considers potential distribution for southwestern willow flycatchers to possibly extend further north than the Recovery Plan boundary.

The reasons for the decline of the southwestern willow flycatcher and current threats to its conservation are numerous, complex and inter-related (USFWS 2001, 2002). The major factors threatening the species include habitat loss and modification; invasion of breeding habitats by exotic plant species; brood parasitism by brown-headed cowbirds; the vulnerability of small southwestern willow flycatcher population numbers; and stresses that occur to the species during migration and in wintering habitats. These factors vary in severity over the southwestern willow flycatcher's range, and several are likely to have cumulative and synergistic effects (USFWS 1997).

For more information regarding the life history and population dynamics, see the Final Recovery Plan for the Southwestern Willow Flycatcher (USFWS 2002).

## **Environmental Baseline**

### *Status of the Species within the Action Area*

*E. t. extimus* may have always been rare in southern Utah (Behle pers. comm. cited in Unitt 1987). However where habitat existed along the Colorado River and its tributaries in southeastern Utah, it was thought to be a locally common breeding and migratory resident (Behle and Higgins 1959). Few data are available on population trends in southern Utah. However, loss and modification of habitat is likely to have reduced populations on the Virgin, Colorado, and San Juan Rivers. These losses have been due to suburban expansion and habitat changes along the Virgin River, inundation by Lake Powell on the Colorado and San Juan Rivers, and encroachment of tamarisk throughout the region (Unitt 1987; BLM unpublished data).

Historically, the southwestern willow flycatcher occurred in the following river systems: Colorado, Moab Creek, San Juan, Virgin, and perhaps Paria (Phillips 1948, Behle et al. 1958, Behle and Higgins 1959, Wauer and Carter 1965, Behle 1985, Browning 1993, USFWS 2002).

Southwestern willow flycatchers generally use the planning area during migration. No known nesting populations of the southwestern willow flycatcher are known to occur in the action area, however it does contain suitable habitat for nesting.

## *Factors Affecting Species Environment within the Action Area*

Where habitat existed along the Colorado River and its tributaries in southeastern Utah, it was thought to be a locally common breeding and migratory resident (Behle and Higgins 1959). Recent surveys conducted by Sogge et al. (2003) and Durst et al. (2005) have found a few breeding locations and territories in southern Utah. Little population trend data are available in Utah. However, loss and modification of habitat is likely to have reduced populations on the Colorado and San Juan Rivers.

The main threats to the species have been attributed to loss, modification, and fragmentation of riparian breeding habitat, loss of wintering habitat, and brood parasitism by the brown-headed cowbird (Whitfield 1990; Sferra et al. 1995; Sogge et al. 1997; McCarthy et al. 1998; USFWS 2002). The southwestern willow flycatcher and its habitat are threatened by urban, recreational, and agricultural development, water diversion and groundwater pumping, channelization, dams, and livestock grazing (USFWS 2002). Fire is an increasing threat to southwestern willow flycatcher habitat (Paxton et al. 1996), especially in monotypic salt cedar vegetation (DeLoach 1991) and where water diversions and/or groundwater pumping desiccates riparian vegetation (Sogge et al. 1997).

Floodplains and associated riparian vegetation were once dominated by a wide band of trees, principally cottonwood and willows (Horton 1977). Arrowweed and mesquite were dominant in many upland areas (Horton 1977). Graf (1982) reports that tamarisk was introduced into the United States in the early 1800s and into the American Southwest by 1856. From 1925 through 1960, tamarisk rapidly spread throughout Utah with the greatest degree of invasion occurring from 1935 to 1955 (Christensen 1962). Tamarisk changes channel morphology from braided, shallow systems to ones that are constrained, centralized, and deeper. Dense tamarisk vegetation reduces the channel capacities of normal flow events and has been cited as the cause of disastrous flooding (Graf 1982). Southwestern willow flycatcher habitat may be very vulnerable to the changes tamarisk invasion brings about in stream morphology and ecology. The effects of tamarisk to breeding southwestern willow flycatchers may not be as apparent as the effects to their habitat. Owen and Sogge (2002) studied 12 parameters of physiological condition of 130 southwestern willow flycatchers in native vegetation and tamarisk and found no evidence that flycatchers breeding in tamarisk exhibit poorer nutritional condition or are suffering negative physiological affects. However, breeding success and the number of species supported within a tamarisk stand is reduced (Anderson et al. 1977).

## **Effects of the Action**

### Cultural Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment and vehicle use; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and

visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging efforts. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. As a result, there may be decreases in nest initiation or nesting success. There is some potential for vegetation removal to result in nestling mortality.

### Paleontological Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment and vehicle use; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging efforts. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. As a result, there may be decreases in nest initiation or nesting success. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### Fire Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal decrease availability of nesting habitat; decrease cover from predators and increase predation; and decrease prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for fire management activities to result in adult or nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### Health and Safety Management

The primary objective of health and safety management is to protect public and environmental health and safety on lands administered by BLM. Hazardous materials and waste management policies are integrated into all BLM programs. Several federal, state, and local laws overlap in

their requirement of BLM to identify and remediate contaminated sites on public lands. Besides managing pre-existing contamination, BLM seeks to prevent or minimize contamination caused by BLM authorized actions.

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, roads, and railroad transportation systems occur within all of the planning areas analyzed in this document, and have the potential to occur in southwestern willow flycatcher habitat. Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in southwestern willow flycatcher habitat. Associated noise disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatchers and their prey species. Exchange or sales of lands may lead to fragmentation and loss of the species suitable habitat. As a result, there may be decreases in nest initiation or nesting success,

and decreased adult and nestling fitness. There is some potential for activities authorized under this program to result in bird mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder some wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence; vegetation disturbance; and minor surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation; an increase in invasive plant species; increased fragmented habitat; reduced availability of nesting habitat; decreased cover from predators and increased predation; and decreased availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for vegetation removal, particularly prescribed fire, to result in nestling or adult mortality; however implementation of the applicant committed conservation measures should minimize this potential.

### Minerals Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal-bed methane, coal, sodium, phosphate, potash, and uranium), locatable (copper) and salable minerals (sand, gravel, building stone, travertine, clay and humate). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence; equipment and vehicle use; surface disturbance; and increased occurrence of chemical leaks in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatcher and their prey species. Pollutants in the area may affect southwestern willow flycatchers, prey populations, and vegetation. As a result of these impacts, there may be decreases in nest initiation or nesting success and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. Ancillary facilities such as oil pits may result in direct mortality of birds if they forage over or become trapped in the pits.

### Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to increase human presence; equipment and vehicle use; vegetation disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatchers and their prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### Riparian Management

The objective of riparian management in Utah is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. Priority for riparian area management will be given to areas identified as habitat for aquatic species with signed Conservation Agreements and Strategies.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance (mechanical, chemical, biological), and surface disturbance in southwestern willow flycatcher habitat. Associated noise disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease insect prey populations. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology. There is some potential for vegetation removal to result in nestling or adult mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. There may also be decreases in nest initiation or nesting success, and decreased adult and nestling fitness. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

### Soils and Watershed Resources

The objectives for the soil and watershed resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures, as well as to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation manipulation; stream alteration; and minor surface disturbance in southwestern willow flycatcher habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, and foraging behaviors (associated with noise and visual disturbances); decreased nesting habitat; decreased cover from predators and increased predation; insect prey habitat; and alterations of water distribution within occupied habitat for southwestern willow flycatchers. There is some potential that work in riparian areas could result in mortality of nestlings; however implementation of the applicant committed conservation measures should greatly minimize this potential. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

### Special Designations

This program is responsible for the management of special designated areas including Areas of Critical Environmental Concern (ACEC); Wild and Scenic Rivers (WSR); and Wilderness Resources which include Wilderness Study Areas (WSAs), and congressionally designated Wilderness. Generally, designation of an area results in implementation of conservation measures and timing stipulations that are beneficial to wildlife species.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance (mechanical, chemical, biological), and surface disturbance in southwestern willow flycatcher habitat. Associated noise disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation alteration, removal, or

inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease insect prey populations. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. There may also be decreases in nest initiation or nesting success, and decreased adult and nestling fitness. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

### Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities occurring under this program may increase human presence; equipment and vehicle use; surface disturbance; and increased occurrence of chemical leaks in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatcher and their prey species. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### Vegetation Resources

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators and increase predation; and decrease insect prey populations. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology.

As a result, there may be decreases in nest initiation or nesting success, and decreased adult or nestling/fledgling fitness. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. Long-term benefits may include: increased nesting success, increased insect prey abundance, and decreased predation.

### Wildlife Management

This program aims to maintain biological diversity, improve habitat on for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of nesting habitat, cover from predators, and insect prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors; decreased nesting habitat; decreased cover from predators and increased predation; decreased insect prey habitat; and alterations of water distribution within occupied habitat for southwestern willow flycatchers. There is some potential for vegetation removal to result in nestling mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential. In some cases, management activities beneficial for one species may be detrimental to another species. In general, long-term efforts to improve the health of riparian habitats may benefit southwestern willow flycatchers by increasing nesting success, increasing insect prey abundance, and decreasing predation.

### Woodlands Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in southwestern willow flycatcher habitat. Associated noise and visual disturbances may adversely affect the behavior of southwestern willow flycatchers during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation decrease availability of nesting habitat; decrease cover from predators and increase predation; and decrease prey populations and prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for southwestern willow flycatchers and their prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult fitness. There is some potential for vegetation removal to result in nestling

mortality; however implementation of the applicant committed conservation measures should greatly minimize this potential.

### **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.

Cumulative effects to federally protected southwestern willow flycatchers under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' suitable or potential habitat.
- Encroachment of human development into a species' suitable, or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
  - State of Utah
  - County Governments in Utah
  - Local Governments in Utah
  - Private landholders in Utah

Few southwestern willow flycatcher breeding sites and territories have been found in Utah. However, potential and suitable habitat occurs within the jurisdictional management boundaries of BLM in the Moab Field Office area. In these areas, southwestern willow flycatcher habitat areas are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Southwestern willow flycatchers are susceptible to activities on State and private lands. Many of these activities, such as urban growth and development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation; road construction; fuels-reduction treatments; research; grazing activities (including alteration or clearing of native habitats for domestic animals); oil and gas exploration and development; introduction of non-native plant or wildlife species (which can alter native habitats and alter prey populations); and other associated actions. Increases or changes in cowbird foraging areas (construction of corrals, grazing of domestic stock, placement of bird feeders) and habitat fragmentation may increase the parasitism rate and decrease southwestern willow flycatcher reproduction. Continued and future conversion of floodplain and near shore lands will likely eliminate opportunities to restore floodplains to develop willow flycatcher habitat. Increased recreation, camping, off-road vehicle use, and river trips may harass and disturb breeding birds or impact nesting habitats. Contributing as cumulative effects to the proposed action, these activities may affect southwestern willow flycatcher productivity with disturbances to breeding, nesting, and foraging behaviors and habitat (including areas of designated critical habitat), and result in fragmented habitat.

## Conclusion

The conclusions of this biological opinion are based on full implementation of the programs as described in the “Description of the Proposed Action” section of this document, including the conservation measures that were incorporated into the project design.

After reviewing the status of the southwestern willow flycatcher, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service’s biological opinion that the Moab BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the southwestern willow flycatcher, and is not likely to destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

## Jones cycladenia (*Cycladenia humilis* var. *jonesii*)

### Status of Species

#### *Species Description*

Jones cycladenia (*C. humilis* var. *jonesii*) is a long-lived perennial in the dogbane family endemic to the Colorado Plateau in Utah and Arizona. This species was first discovered in 1914 by Marcus E. Jones and named after Jones in 1942. Jones cycladenia was listed as threatened under the Endangered Species Act (ESA) May 5, 1986. No critical habitat was designated.

Jones cycladenia is “Perennial caulescent herb 11-36 cm tall glabrous and glaucous, the lower most leaves reduced to subamplexicaul bracts, enlarging and becoming green upwards; main foliage leaves 3.5-9.5 cm long, 2-6.5 cm wide, oval to orbicular or broadly obovate, tapering abruptly to the broad petiole, thickened, entire, the apex rounded to acute; pedicels 5-25 mm long; bracts linear-lanceolate, 3-9 mm long; calyx lobes 5-11 mm long, lance linear, villous pilose, somewhat accrescent in fruit; corolla rose purple, dimorphic, either broadly lobed, or 18-21 mm long, and 13-19 mm wide, rose pink, more or less pilose, follicles 4.5-9.5 cm long; seeds brown, ca 7.5 mm long, the coma ca. 20 mm long. Flowers dimorphic, obligate on gypsophile of semi-barren tracts on geological formations with poor water” (Welsh and Atwood 1975).

#### *Life History and Population Dynamics*

Jones cycladenia is a long-lived perennial. Depending on the location, flowering and fruiting occurs from mid-May through June. Jones cycladenia has various methods of reproduction that include self-pollination, cross pollination and the production of clones through rhizomes. Jones

cycladenia requires a pollen vector for reproduction. A variety of flies, wasps and short tongued bees or butterflies pollinate the threatened species. However, no single pollinator or group of pollinators has been observed consistently pollinating the specie (Sipes et. al 1994). In 1992, enzyme electrophoresis research determined that clones do not extend more than 10 meters in any direction. Heterozygosity was low which suggested inbreeding or population sub-structuring. Genetic variation was great between separated populations (Sipes et. al 1992).

### *Status and Distribution*

Jones cycladenia occurs within desert shrub and scattered Pinyon/Juniper and wild buckwheat - Mormon tea communities at elevations ranging between 1340 to 1830 meters (4,400 to 6,000 feet). Jones cycladenia is known to exist in shallow soils developed from shale originating from the Summerville, Cutler, and Chinle formations of the Colorado Plateau (Sipes and Boettinger 1997). Populations are found on all aspects and on slopes that range from moderate to steep.

Jones cycladenia has been found in four isolated areas in Utah's Emery, Garfield, and Grand Counties and Arizona's Coconino County. The population in Arizona is a historical population. Nine populations occur on lands administered by the Bureau of Land Management Moab field office. Three sites are located on land administered by the Price field office. Six populations are managed by the Grand Staircase-Escalante National Monument. One site is managed by Capitol Reef National Park. Four sites are known to exist in the Glen Canyon National Recreation Area. An unknown number of populations exist in the Uintah and Ouray Indian Reservations, BLM Arizona, Private and State School Trust Lands.

The total population of Jones cycladenia is currently unknown. In 2002, the population size of 5 of the 23 known sites was estimated at a total of 29,300 individuals (Cann 2002). However, the estimates only included 5 sites. Some of the sites have not been visited since 1968. Also, since many of the mature stems are clones of the same plant connected by underground rhizomes, the actual number of plants is hard to determine.

## **Environmental Baseline**

### *Status of the Species within the Action Area*

Several populations of Jones cycladenia exist within the action area. These populations are encompassed by approximately 29,664 acres. This is approximately 2% of the total land in the Proposed Action area.

### *Factors Affecting Species Environment within the Action Area*

Studies have suggested that the genetic variation within sites is small. This is a result of self pollination and cloning due to a lack of pollinating vectors (Sipes and Tepedino 1996). The milkweed bug *Lygaeus kalmii* (Hemiptera) has been observed causing extensive damage to Jones cycladenia plants. However, it has been suggested that population flux of the insect may determine the extent of the damage (Sipes et. al 1994). In addition, based on the type of areas Jones cycladenia is found, there is a possibility of OHV recreational use and threat to the species. Grazing, woodland management and other recreation activities may also impact this species.

## **Effects of the Action**

### Cultural Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance from cultural resource excavations. This program's activities may increase localized foot traffic, motorized traffic, and use of tools in suitable Jones cycladenia habitats. Associated impacts include: trampling or crushing of individuals; increased soil disturbance; removal, degradation, or alteration of key habitat; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment, and increased plant damage or individual mortality.

### Paleontological Resources

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities under this program may increase minor surface disturbance from fossil resource excavations. This program's activities occurring may increase localized foot traffic, motorized traffic, and use of tools in suitable Jones cycladenia habitats. Associated impacts include: trampling or crushing of individuals; increased soil disturbance; removal, degradation, or alteration of key habitat; and increased occurrence of invasive plant species. As a result, there may be decreased recruitment, and increased plant damage or individual mortality.

### Lands and Realty

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate right-of-way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

The activities authorized under the Lands and Realty program, such as rights-of-ways or land exchanges, may adversely impact Jones cycladenia with human- and equipment-related soil disturbances. Associated soil disturbances may impact individual plants, and modify or degrade suitable habitat. There may be decreased recruitment and increased occurrence of plant damage or individual mortality. Designation and use of right-of-way access routes may increase human visitation by providing travel corridors, both legal and illegal. Increased OHV access, both legal and illegal, may result in habitat degradation. There may also be resulting increases in illegal

plant locations. Land exchanges may result in the loss or fragmentation of Jones cycladenia habitat.

### Livestock Grazing

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder other species within the habitat: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase and concentrate domestic ungulate presence, increase motorized traffic, and increase surface disturbance from fence and livestock pond construction in Jones cycladenia suitable habitat. Associated impacts include: trampling or crushing of individuals, modification or degradation to suitable habitat, and removal of suitable habitat. As a result, there may be increased occurrence of plant damage or individual mortality.

### Minerals Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal-bed methane, coal, sodium, phosphate, potash, and uranium), locatable (copper) and salable minerals (sand, gravel, building stone, travertine, clay and humate). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program in the Moab Field Office may increase foot traffic, motorized traffic, and significant soil disturbance in Jones cycladenia habitats. Associated impacts include: trampling or crushing of individuals, removal of suitable habitat, modification or degradation to suitable habitat, disturbance to species' pollinators, and increased occurrences and competition from invasive plant species. As a result, there may be decreased recruitment, and increased occurrence of plant damage or individual mortality.

### Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human, horse, and motorized traffic in Jones cycladenia suitable habitat. Associated impacts include: trampling or crushing of individuals, collection of individuals, modification or degradation to suitable habitat, and increased occurrences of invasive plant species. As a result, there may be decreased recruitment and increased occurrence of plant damage or individual mortality.

### Riparian Management

This program aims to maintain or restore riparian value to enhance forage, habitat, stream quality and quantity. Activities occurring under this program include, reductions of livestock numbers, adjustments in grazing distribution patterns, fencing, herding, livestock conversions, recontouring of streambanks, vegetation treatments, and restrictions on minerals exploration activities that may negatively affect a healthy riparian zone.

Although the riparian management program is not expected to directly impact Jones cycladenia, indirect impacts may occur from activities related to riparian zone management. Activities occurring may increase foot traffic, motorized traffic, and soil disturbance in Jones cycladenia suitable habitat. These activities, primarily related to fence construction or implications from fencing, may lead to trampling or crushing of individuals and degradation to suitable habitat. As a result, there may be increased occurrence of plant damage or individual mortality.

### Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities occurring under this program may increase human and motorized traffic in Jones cycladenia suitable habitat. Associated impacts include: trampling or crushing of individuals, collection of individuals, modification or degradation to suitable habitat, and increased occurrences of invasive plant species. As a result, there may be decreased recruitment and increased occurrence of plant damage or individual mortality.

### Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground

disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Management activities occurring under this program may increase foot traffic, motorized presence, and vegetation treatments in Jones cycladenia suitable habitat. Associated impacts include: trampling or crushing of individuals, modification or degradation to suitable habitat, disturbance to species' pollinators, and increased occurrences of invasive plant species. As a result, there may be decreased recruitment and increased occurrence of plant damage or individual mortality.

### Wildlife Resource Management

This program aims to maintain biological diversity, support UDWR Herd Management Plans, improve habitat on for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase foot traffic, motorized traffic, and/or significant soil disturbance in Jones cycladenia suitable habitat. Associated impacts include: trampling or crushing of individuals, removal of suitable habitat, modification or degradation to suitable habitat, disturbance to species' pollinators, and increased occurrences of invasive plant species. As a result, there may be decreased recruitment and increased occurrence of plant damage or individual mortality.

### Woodlands Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Activities occurring under this program may increase foot traffic, motorized traffic, and significant soil disturbance in Jones cycladenia habitats. Associated impacts include: trampling or crushing of individuals, and modification or degradation to suitable habitat. As a result, there may be decreased recruitment, and increased occurrence of plant damage or individual mortality.

### **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.

Cumulative effects to the Jones cycladenia under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat.

- Program management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
  - State of Utah
  - County Governments in Utah
  - Local Governments in Utah
  - Private landholders in Utah

Jones cycladenia occurs primarily within BLM management boundaries. In these areas, Jones cycladenia locations are surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Jones cycladenia plants are susceptible to activities on State and private lands. Many of these activities, such as uranium mining, recreation activities (e.g. off-road vehicles), and research are expected to continue on State and private lands within the Jones cycladenia's range. Private land concentrated around Moab could be developed for housing or as grazing operations. Oil and gas development will likely continue on private and state lands, as will road building. Contributing as cumulative effects to the proposed action, all these activities will continue to affect Jones cycladenia populations by increasing mortalities, injuring plants, and further adversely impacting occupied and suitable habitat.

## **Conclusion**

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

After reviewing the current status of the Jones cycladenia, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS's biological opinion that the Moab Field Office's Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the Jones cycladenia. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

## **COLORADO RIVER FISH**

### **Bonytail (*Gila elegans*)**

#### **Status of the Species**

##### *Species / Critical Habitat Description*

Bonytail (*Gila elegans*) are medium-sized (less than 600 mm) fish in the minnow family. Adult bonytail are gray or olive colored on the back with silvery sides and a white belly. The adult bonytail have an elongated body with a long, thin caudal peduncle. The head is small and compressed compared to the rest of the body. The mouth is slightly overhung by the snout and there is a smooth low hump behind the head that is not as pronounced as the hump on a humpback chub. The bonytail chub was first listed on April 23, 1980 (45 FR 27710). It is currently designated as endangered throughout its entire range.

A total of 499 km (312 miles) of river has been designated as critical habitat for the bonytail in the Colorado River Basin, representing about 14% of the species' historic range (59 FR 13374). The USFWS has identified water, physical habitat, and the biological environment as the primary constituent elements of critical habitat (59 FR 13374). Water includes a quantity of water of sufficient quality delivered to a specific location in accordance with a hydrologic regime required for the particular life stage for each species. The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. In addition, oxbows, backwaters, and other areas in the 100-year floodplain, when inundated, provide access to spawning, nursery, feeding, and rearing habitats. Food supply, predation, and competition are important elements of the biological environment.

River reaches that have been designated as critical habitat within the State of Utah include (59 FR 13374):

Utah, Uintah County; and Colorado, Moffat County. The Green River from the confluence with the Yampa River in T. 7 N., R. 103 W., section 28 (6th Principal Meridian) to the boundary of Dinosaur National Monument in T. 6 N., R. 24 E., section 30 (Salt Lake Meridian).

Utah, Uintah and Grand Counties. The Green River (Desolation and Gray Canyons) from Sumner's Amphitheater in T. 12 S., R. 18 E., section 5 (Salt Lake Meridian) to Swasey's Rapid (river mile 12) in T. 20 S., R. 16 E., section 3 (Salt Lake Meridian).

Utah, Grand County; and Colorado, Mesa County. The Colorado River from Black Rocks in T.10S., R.104W., sec. 25 (6th Principal Meridian) to Fish Ford in T.21S., R.24E., sec. 35 (Salt Lake Meridian).

Utah, Garfield and San Juan Counties. The Colorado River from Brown Betty Rapid in T.30S., R.18E., sec. 34 (Salt Lake Meridian) to Imperial Canyon in T.31S., R.17E., sec. 28 (Salt Lake Meridian).

### *Life history and Population dynamics*

The bonytail are considered a species that is adapted to mainstem rivers, where it has been observed in pools and eddies (Vanicek 1967, Minckley 1973). Spawning of bonytail has never been observed in a river, but ripe fish were collected in Dinosaur National Monument during late June and early July suggesting that spawning occurred at water temperatures of about 18°C (Vanicek and Kramer 1969). Similar to other closely related *Gila* species, bonytail probably spawn in rivers in spring over rocky substrates; spawning has been observed in reservoirs over rocky shoals and shorelines. It has been recently hypothesized that flooded bottomlands may provide important bonytail nursery habitat. Of five specimens captured most recently in the upper basin, four were captured in deep, swift, rocky canyons (Yampa Canyon, Black Rocks, Cataract Canyon, and Coal Creek Rapid), but the fifth was taken in Lake Powell. Since 1974, all bonytails captured in the lower basin have been caught in reservoirs. The diets of bonytail are presumed similar to that of the humpback chub (USFWS 2002a).

### *Status and Distribution*

Bonytail are endemic to the Colorado River Basin and was historically common to abundant in warm-water reaches of larger rivers of the basin from Mexico to Wyoming. The species experienced a dramatic, but poorly documented, decline starting in about 1950, following construction of several mainstem dams, introduction of nonnative fishes, poor land-use practices, and degraded water quality (USFWS 2002a).

Currently, no self-sustaining populations of bonytail are known to exist in the wild, and very few individuals have been caught anywhere within the basin. An unknown, but small number of wild adults exist in Lake Mohave on the mainstem Colorado River. Since 1977, only 11 wild adults have been reported from the upper basin (Valdez et al. 1994).

Bonytail are the rarest native fish in the Colorado River. Little is known about its specific habitat requirements or cause of decline, because the bonytail was extirpated from most of its historic range prior to extensive fishery surveys. It was listed as endangered on April 23, 1980. Currently, no documented self-sustaining populations exist in the wild. Formerly reported as widespread and abundant in mainstem rivers (Jordan and Evermann 1896), its populations have been greatly reduced. Remnant populations presently occur in the wild in low numbers in Lake Mohave and several fish have been captured in Lake Powell and Lake Havasu (USFWS 2002a). The last known riverine area where bonytail were common was the Green River in Dinosaur National Monument, where Vanicek (1967) and Holden and Stalnaker (1970) collected 91 specimens during 1962-1966. From 1977 to 1983, no bonytail were collected from the Colorado or Gunnison rivers in Colorado or Utah (Wick et al. 1979, 1981; Valdez et al. 1982; Miller et al. 1984). However, in 1984, a single bonytail was collected from Black Rocks on the Colorado River (Kaeding et al. 1986). Several suspected bonytail were captured in Cataract Canyon in 1985-1987 (Valdez 1990). Current stocking plans are planned to continue for at least two more years, however, catch rates indicate stocking will continue until at least 2010 and probably longer (Thomas Czaplá, personal communication).

## **Environmental Baseline**

### *Status of the Species within the Action Area*

Bonytail were once widespread in the large rivers of the Colorado River Basin (Cope and Yarrow 1875, Jordan 1891, Jordan and Evermann 1896, Gilbert and Scofield 1898, Kirsch 1889, Chamberlain 1904). The species experienced a dramatic, but poorly documented, decline starting in about 1950, following construction of mainstem dams, introduction of nonnative fishes, poor land-use practices, and degraded water quality (Miller 1961, Ono et al. 1983). A stocking program is being implemented to reestablish populations in the upper Colorado River basin.

In the Green River, Vanicek (1967) reported that bonytails were generally found in pools and eddies in the absence of, although occasionally adjacent to, strong current and at varying depths generally over silt and silt-boulder substrates. Adult bonytail captured in Cataract, Desolation, and Gray Canyons were sympatric with humpback chub in shoreline eddies among emergent boulders and cobble, and adjacent to swift current (Valdez 1990).

The USFWS designated seven reaches of the Colorado River system as critical habitat for the bonytail (59 FR 13374). This represents approximately 14 percent of the historical habitat of the species. Critical habitat for bonytail includes canyon reaches of the Yampa, Green and Colorado rivers. The designated critical habitat within the MFO is found on the Green River between the Yampa River and the Colorado River (74,644 meters) as well as between the Desolation area and the Gray Canyons area (130,729 meters) (USFWS 2002b).

### *Factors Affecting Species Environment within the Action Area*

The primary threats to bonytail are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; hybridization with other native *Gila* species; and pesticides and pollutants (USFWS 2002a). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. The threats to bonytail in relation to flow regulation and habitat modification, predation by nonnative fishes, and pesticides and pollutants are essentially the same threats identified for Colorado pikeminnow. Threats to bonytail in relation to hybridization are essentially the same threats identified for humpback chub.

Management actions identified in the recovery goals for bonytail (USFWS 2002a) to minimize or remove threats to the species include:

- provide and legally protect habitat (including flow regimes necessary to restore and maintain required environmental conditions) necessary to provide adequate habitat and sufficient range for all life stages to support recovered populations;
- provide passage over barriers within occupied habitat to allow unimpeded movement and, potentially, range expansion;
- investigate options for providing appropriate water temperatures in the Gunnison River;
- minimize entrainment of subadults and adults at diversion/out-take structures;
- investigate habitat requirements for all life stages and provide those habitats;

- ensure adequate protection from overutilization;
- ensure adequate protection from diseases and parasites;
- regulate nonnative fish releases and escapement into the main river, floodplain, and tributaries;
- control problematic nonnative fishes as needed;
- minimize the risk of increased hybridization among *Gila* spp.;
- minimize the risk of hazardous-materials spills in critical habitat; and remediate water-quality problems.

## Colorado pikeminnow (*Pychocheilus lucius*)

### Status of the Species

#### *Species / Critical Habitat Description*

The Colorado pikeminnow (*Pychocheilus lucius*) are the largest cyprinid fish (minnow family) native to North America and it evolved as the main predator in the Colorado River system. It is an elongated pike-like fish that during predevelopment times may have grown as large as 6 feet in length and weighed nearly 100 pounds (Behnke and Benson 1983). Today, Colorado pikeminnow rarely exceed 3 feet in length or weigh more than 18 pounds; such fish are estimated to be 45-55 years old (Osmundson et al. 1997). The mouth of this species is large and nearly horizontal with long slender pharyngeal teeth (located in the throat), adapted for grasping and holding prey. The diet of Colorado pikeminnow longer than 3 or 4 inches consists almost entirely of other fishes (Vanicek and Kramer 1969). Males become sexually mature earlier and at a smaller size than do females, though all are mature by about age 7 and 500 mm (20 inches) in length (Vanicek and Kramer 1969, Seethaler 1978, Hamman 1981). Adults are strongly countershaded with a dark, olive back, and a white belly. Young are silvery and usually have a dark, wedge-shaped spot at the base of the caudal fin.

The Colorado pikeminnow was first listed on March 11, 1967 (32 FR 4001). It is currently designated as endangered throughout its range, except in the Salt and Verde River drainages in Arizona.

The USFWS designated six reaches of the Colorado River System as critical habitat for the Colorado pikeminnow on March 21, 1994 (59 FR 13374). These reaches total 1,848 km (1,148 mi) as measured along the center line of each reach. Designated critical habitat makes up about 29% of the species' original range and occurs exclusively in the Upper Colorado River Basin. Critical habitat is designated in portions of the Colorado, Green, Yampa, White, and San Juan Rivers in the Upper Basin.

The USFWS has identified water, physical habitat, and the biological environment as the primary constituent elements of critical habitat (59 FR 13374). Water includes a quantity of water of sufficient quality delivered to a specific location in accordance with a hydrologic regime required for the particular life stage for each species. The physical habitat includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning and feeding, as a nursery, or serve as corridors between these areas. In addition, oxbows, backwaters, and other areas in the 100-year floodplain, when inundated, provide access to

spawning, nursery, feeding, and rearing habitats. Food supply, predation, and competition are important elements of the biological environment.

### *Life history and Population dynamics*

The Colorado pikeminnow are long-distance migrators; adults move hundreds of miles to and from spawning areas, and require long sections of river with unimpeded passage. Adults require pools, deep runs, and eddy habitats maintained by high spring flows. These high spring flows maintain channel and habitat diversity, flush sediments from spawning areas, rejuvenate food production, form gravel and cobble deposits used for spawning, and rejuvenate backwater nursery habitats. Spawning occurs after spring runoff at water temperatures typically between 18 and 23°C. Spawning has occurred as early as June 15<sup>th</sup> in some years and as late as August 15<sup>th</sup>. After hatching and emerging from spawning substrate, larvae drift downstream to nursery backwaters that are restructured by high spring flows and maintained by relatively stable base flows. Flow recommendations have been developed that specifically consider flow-habitat relationships in habitats occupied by Colorado pikeminnow in the upper basin, and were designed to enhance habitat complexity and to restore and maintain ecological processes. The following is a description of observed habitat uses in the Upper Colorado River Basin.

Colorado pikeminnow live in warm-water reaches of the Colorado River mainstem and larger tributaries, and require uninterrupted stream passage for spawning migrations and dispersal of young. The species is adapted to a hydrologic cycle characterized by large spring peaks of snow-melt runoff and low, relatively stable base flows. High spring flows create and maintain in-channel habitats, and reconnect floodplain and riverine habitats, a phenomenon described as the spring flood-pulse (Junk et al. 1989, Johnson et al. 1995). Throughout most of the year, juvenile, subadult, and adult Colorado pikeminnow use relatively deep, low-velocity eddies, pools, and runs that occur in near-shore areas of main river channels (Tyus and McAda 1984; Valdez and Masslich 1989; Tyus 1990, 1991; Osmundson et al. 1995). In spring, however, Colorado pikeminnow adults use floodplain habitats, flooded tributary mouths, flooded side canyons, and eddies that are available only during high flows (Tyus 1990, 1991; Osmundson et al. 1995). Such environments may be particularly beneficial for Colorado pikeminnow because other riverine fishes gather in floodplain habitats to exploit food and temperature resources, and may serve as prey. Such low-velocity environments also may serve as resting areas for Colorado pikeminnow. River reaches of high habitat complexity appear to be preferred.

Because of their mobility and environmental tolerances, adult Colorado pikeminnow are more widely distributed than other life stages. Distribution patterns of adults are stable during most of the year (Tyus 1990, 1991; Irving and Modde 2000), but distribution of adults changes in late spring and early summer, when most mature fish migrate to spawning areas (Tyus and McAda 1984; Tyus 1985, 1990, 1991; Irving and Modde 2000). High spring flows provide an important cue to prepare adults for migration and also ensure that conditions at spawning areas are suitable for reproduction once adults arrive. Specifically, bankfull or much larger floods mobilize coarse sediment to build or reshape cobble bars, and they create side channels that Colorado pikeminnow sometimes use for spawning (Harvey et al. 1993).

Colorado pikeminnow spawning sites in the Green River subbasin have been well documented. The two principal locations are in Yampa Canyon on the lower Yampa River and in Gray

Canyon on the lower Green River (Tyus 1990 and 1991). These reaches are 42 and 72 km long, respectively, but most spawning is believed to occur at one or two short segments within each of the two reaches. Another spawning area may occur in Desolation Canyon on the lower Green River (Irving and Modde 2000), but the location and importance of this area has not been verified. Although direct observation of Colorado pikeminnow spawning was not possible because of high turbidity, radiotelemetry indicated spawning occurred over cobble-bottomed riffles (Tyus 1990). High spring flows and subsequent post-peak summer flows are important for construction and maintenance of spawning substrates (Harvey et al. 1993). In contrast with the Green River subbasin, where known spawning sites are in canyon-bound reaches, currently suspected spawning sites in the upper Colorado River subbasin are at six locations in meandering, alluvial reaches (McAda 2000).

After hatching and emerging from the spawning substrate, Colorado pikeminnow larvae drift downstream to backwaters in sandy, alluvial regions, where they remain through most of their first year of life (Holden 1977, Tyus and Haines 1991, Muth and Snyder 1995). Backwaters and the physical factors that create them are vital to successful recruitment of early life stages of Colorado pikeminnow, and age-0 Colorado pikeminnow in backwaters have received much research attention (e.g., Tyus and Karp 1989, Haines and Tyus 1990, Tyus 1991, Tyus and Haines 1991, Bestgen et al. 1997). It is important to note that these backwaters are formed after cessation of spring runoff within the active channel and are not floodplain features. Colorado pikeminnow larvae occupy these in-channel backwaters soon after hatching. They tend to occur in backwaters that are large, warm, deep (average, about 0.3 m in the Green River), and turbid (Tyus and Haines 1991). Recent research (Day et al. 1999a and 1999b; Trammell and Chart 1999) has confirmed these preferences and suggested that a particular type of backwater is preferred by Colorado pikeminnow larvae and juveniles. Such backwaters are created when a secondary channel is cut off at the upper end, but remains connected to the river at the downstream end. These chute channels are deep and may persist even when discharge levels change dramatically. An optimal river-reach environment for growth and survival of early life stages of Colorado pikeminnow have warm, relatively stable backwaters, warm river channels, and abundant food (Muth et al. 2000).

### *Status and Distribution*

Based on early fish collection records, archaeological finds, and other observations, the Colorado pikeminnow was once found throughout warm water reaches of the entire Colorado River Basin down to the Gulf of California, and including reaches of the upper Colorado River and its major tributaries, the Green River and its major tributaries, and the Gila River system in Arizona (Seethaler 1978). Colorado pikeminnow apparently were never found in colder, headwater areas. The species was abundant in suitable habitat throughout the entire Colorado River Basin prior to the 1850s (Seethaler 1978). By the 1970s they were extirpated from the entire lower basin (downstream of Glen Canyon Dam) and portions of the upper basin as a result of major alterations to the riverine environment. Having lost some 75 to 80 percent of its former range due to habitat loss, the Colorado pikeminnow was federally listed as an endangered species in 1967 (Miller 1961, Moyle 1976, Tyus 1991, Osmundson and Burnham 1998). Full protection under the Act of 1973 occurred on January 4, 1974.

Colorado pikeminnow are presently restricted to the Upper Colorado River Basin and inhabit warm water reaches of the Colorado, Green, and San Juan rivers and associated tributaries (Figure 5). The Colorado pikeminnow recovery goals (USFWS 2002a) identify occupied habitat of wild Colorado pikeminnow as follows: the Green River from Lodore Canyon to the confluence of the Colorado River; the Yampa River downstream of Craig, Colorado; the Little Snake River from its confluence with the Yampa River upstream into Wyoming; the White River downstream of Taylor Draw Dam; the lower 89 miles of the Price River; the lower Duchesne River; the upper Colorado River from Palisade, Colorado, to Lake Powell; the lower 34 miles of the Gunnison River; the lower mile of the Dolores River; and 150 miles of the San Juan River downstream from Shiprock, New Mexico, to Lake Powell. Colorado pikeminnow have been stocked in recent years, changes to the stocking plan are awaiting population estimates. In recent years the pikeminnow has been increasing the Colorado river but decreasing in the Green river (Thomas Czapl, personal communication).

## **Environmental Baseline**

### *Status of the Species within the Action Area*

Preliminary population estimates presented in the Recovery Goals (USFWS 2002) for the three Colorado pikeminnow populations ranged from approximately 6,600 to 8,900 wild adults: Green River Subbasin, 6,000–8,000 (Nesler 2000, USFWS 2002); Upper Colorado River Subbasin, 600–900 (Nesler 2000, Osmundson 2002 [includes some subadults]); and San Juan River Subbasin, 19–50 (Holden 1999, USFWS 2002). The San Juan River Subbasin is not located in the project area. These numbers provided a general indication of the total wild adult population size at the time the Recovery Goals were developed, however, it was also recognized that the accuracy of the estimates vary among populations. Monitoring of Colorado pikeminnow populations is ongoing, and sampling protocols and the reliability of the population estimates are being assessed by the USFWS and cooperating entities.

For the period 1986–1997, the catch of adult Colorado pikeminnow per hour of electrofishing in the Green River steadily increased (McAda et al. 1998). Catch rates from the 1986–1988 period to the 1996–1997 period increased by three-fold from about 0.8 fish/hour to about 2.5 fish/hour. Relative condition of adult Colorado pikeminnow in the Green River declined between these two time periods, suggesting that the population was at or near carrying capacity under existing conditions. Recently, small adult Colorado pikeminnow have moved into the Price River, where they were not reported from surveys in the 1970's (Cavalli 1999), this also suggests dispersal as a result of carrying capacity (USFWS 2002). Studies indicate that significant recruitment of Colorado pikeminnow may not occur every year, but occurs in episodic intervals of several years (Osmundson and Burnham 1998).

Currently, two primary reaches of Colorado pikeminnow nursery habitat are present in the Green River system. The project area contains one of these reaches, occurring from near Green River, Utah, downstream to the Colorado River confluence (Tyus and Haines 1991, McAda et al. 1994a, McAda et al. 1994b, McAda et al. 1997). The reach of the Green River defined mostly by Desolation and Gray Canyons also provides nursery habitat for Colorado pikeminnow (Tyus and Haines 1991, Day et al. 1999b). These backwaters are especially important during the Colorado pikeminnow's critical first year of life.

Colorado River downstream of Westwater Canyon increased from 224 in 1992 to 512 in 1993 but decreased to 297 in 1994, for an average of 344 fish, or about 2 fish/km. Condition of Colorado pikeminnow declined following the 1991–1994 period, suggesting that the population was also at or near carrying capacity at current conditions (Osmundson 1999). In 1998, the estimates of Colorado pikeminnow upstream and downstream of Westwater Canyon were 435 and 330, respectively for a total of 765. Total estimates in 1999 and 2000 were 768 and 801 fish, respectively. Concurrent with these increases in population estimates, catch of adult Colorado pikeminnow per hour of electrofishing increased steadily for the period 1986–1997 (McAda et al. 1998). Catch rates from the 1986–1990 period to the 1995–1997 period increased by over ten times from about 0.1 fish/hour to about 1.2 fish/hour.

### *Factors Affecting Species Environment within the Action Area*

The primary threats to Colorado pikeminnow are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; and pesticides and pollutants (USFWS 2002a). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. These impairments are described in further detail below.

Stream flow regulation includes mainstem dams that cause the following adverse effects to Colorado pikeminnow and its habitat:

- block migration corridors,
- changes in flow patterns, reduced peak flows and increased base flows,
- release cold water, making temperature regimes less than optimal,
- change river habitat into lake habitat, and
- retain sediment that is important for forming and maintaining backwater habitats.

Cold water releases from dams eliminate suitable habitat for native fishes, including Colorado pikeminnow, from river reaches downstream for approximately 50 miles. In addition to main stem dams, many dams and water diversion structures occur in and upstream from critical habitat that reduce flows and alter flow patterns, which adversely affect critical habitat. Diversion structures in critical habitat divert fish into canals and pipes where the fish are permanently lost to the river system. It is unknown how many endangered fish are lost in irrigation systems, but in some years, in some river reaches, majority of the river flow is diverted into unscreened canals. High spring flows maintain habitat diversity, flush sediments from spawning habitat, increase invertebrate food production, form gravel and cobble deposits important for spawning, and maintain backwater nursery habitats (McAda 2000, Muth et al. 2000).

Predation and competition from nonnative fishes have been clearly implicated in the population reductions or elimination of native fishes in the Colorado River Basin (Dill 1944, Osmundson and Kaeding 1989, Behnke 1980, Joseph et al. 1977, Lanigan and Berry 1979, Minckley and Deacon 1968, Meffe 1985, Propst and Bestgen 1991, Rinne 1991). Data collected by Osmundson and Kaeding (1991) indicated that during low water years nonnative minnows capable of preying on or competing with larval endangered fishes greatly increased in numbers.

More than 50 nonnative fish species were intentionally introduced in the Colorado River Basin prior to 1980 for sportfishing, forage fish, biological control and ornamental purposes (Minckley 1982, Tyus et al. 1982, Carlson and Muth 1989). Nonnative fishes compete with native fishes in several ways. The capacity of a particular area to support aquatic life is limited by physical habitat conditions. Increasing the number of species in an area usually results in a smaller population of most species. The size of each species population is controlled by the ability of each life stage to compete for space and food resources and to avoid predation. Some life stages of nonnative fishes appear to have a greater ability to compete for space and food and to avoid predation in the existing altered habitat than do some life stages of native fishes. Tyus and Saunders (1996) cite numerous examples of both indirect and direct evidence of predation on razorback sucker eggs and larvae by nonnative species.

Threats from pesticides and pollutants include accidental spills of petroleum products and hazardous materials; discharge of pollutants from uranium mill tailings; and high selenium concentration in the water and food chain (USFWS 2002a). Accidental spills of hazardous material into critical habitat can cause immediate mortality when lethal toxicity levels are exceeded. Pollutants from uranium mill tailings cause high levels of ammonia that exceed water quality standards. High selenium levels may adversely affect reproduction and recruitment (Hamilton and Wiedmeyer 1990, Stephens et al. 1992, Hamilton and Waddell 1994, Hamilton et al. 1996, Stephens and Waddell 1998, Osmundson et al. 2000).

## **Humpback chub (*Gila cypha*)**

### **Status of the Species**

#### *Species / Critical Habitat Description*

The humpback chub (*Gila cypha*) are a medium-sized freshwater fish (less than 500 mm) of the minnow family. The adults have a pronounced dorsal hump, a narrow flattened head, a fleshy snout with an inferior-subterminal mouth, and small eyes. It has silvery sides with a brown or olive colored back. The humpback chub are endemic to the Colorado River Basin and is part of a native fish fauna traced to the Miocene epoch in fossil records (Miller 1946, Minckley et al. 1986). Humpback chub remains have been dated to about 4000 B.C., but the fish was not described as a species until the 1940s (Miller 1946), presumably because of its restricted distribution in remote white water canyons (USFWS 1990). Because of this, its original distribution is not known. The humpback chub was listed as endangered on March 11, 1967.

Until the 1950s, the humpback chub was known only from Grand Canyon. During surveys in the 1950s and 1960s humpback chub were found in the upper Green River including specimens from Echo Park, Island Park, and Swallow Canyon (Smith 1960, Vanicek et al. 1970). Individuals were also reported from the lower Yampa River (Holden and Stalnaker 1975), the White River in Utah (Sigler and Miller 1963), Desolation Canyon of the Green River (Holden and Stalnaker 1970) and the Colorado River near Moab (Sigler and Miller 1963).

The USFWS designated seven reaches of the Colorado River system as critical habitat for the humpback chub on March 21, 1994 (59 FR 13374). These reaches total 610 km (379 mi) as measured along the center line of the subject reaches. Designated critical habitat makes up about

28% of the species' original range and occurs in both the Upper and Lower Colorado River Basins. Critical habitat for the humpback chub are designated for portions of the Colorado, Green, and Yampa Rivers in the Upper Basin and the Colorado and Little Colorado Rivers in the Lower Basin. The primary constituent elements are the same as those described for Colorado pikeminnow.

#### *Life history and Population dynamics*

Unlike Colorado pikeminnow and razorback sucker, which are known to make extended migrations of up to several hundred miles to spawning areas, humpback chubs do not appear to make extensive migrations (Karp and Tyus 1990). Generally, humpback chub show fidelity for canyon reaches and move very little (Miller et al. 1982; Archer et al. 1985; Burdick and Kaeding 1985, Kaeding et al. 1990). Humpback chubs in Black Rocks (Valdez and Clemmer 1982), Westwater Canyon (Chart and Lentsch 1999a), and Desolation and Gray Canyons (Chart and Lentsch 1999b) do not migrate to spawn and movements of adult humpback chub in Black Rocks on the Colorado River were essentially restricted to a 1-mile reach. These results were based on the recapture of Carlin-tagged fish and radiotelemetry studies conducted from 1979 to 1981 (Valdez et al. 1982) and 1983 to 1985 (Archer et al. 1985, USFWS 1986, Kaeding et al. 1990).

In the Green River and upper Colorado River, humpback chubs spawned in spring and summer as flows declined shortly after the spring peak (Valdez and Clemmer 1982, Valdez et al. 1982, Kaeding and Zimmerman 1983, Tyus and Karp 1989, Karp and Tyus 1990, Chart and Lentsch 1999a and 1999b). Similar spawning periods were reported from Grand Canyon (Kaeding and Zimmerman 1983; Valdez and Ryel 1995, 1997). Although humpback chub are believed to broadcast eggs over mid-channel cobble and gravel bars, spawning in the wild has not been observed for this species. Gorman and Stone (1999) reported that ripe male humpback chubs in the Little Colorado River (LCR) aggregated in areas of complex habitat structure (i.e., matrix of large boulders and travertine masses combined with chutes, runs, and eddies, 0.5–2.0 m deep) and were associated with deposits of clean gravel.

Chart and Lentsch (1999b) estimated hatching dates for young *Gila* collected from Desolation and Gray Canyons between 1992 and 1995. They determined that hatching occurred on the descending limb of the hydrograph as early as 9 June 1992 at a flow of 139 m<sup>3</sup>/s and as late as 1 July 1995 at a flow of 731 m<sup>3</sup>/s. Instantaneous daily river temperatures on hatching dates over all years ranged from 20 to 22 °C.

Newly hatched larvae average 6.3–7.5 mm TL (Holden 1973, Suttkus and Clemmer 1977, Minckley 1973, Snyder 1981, Hamman 1982, Behnke and Benson 1983, Muth 1990), and 1-month-old fish are approximately 20 mm long (Hamman 1982). Unlike Colorado pikeminnow and razorback sucker, no evidence exists of long-distance larval drift (Miller and Hubert 1990, Robinson et al. 1998). Upon emergence from spawning gravels, humpback chub larvae remain in the vicinity of bottom surfaces (Marsh 1985) near spawning areas (Chart and Lentsch 1999a).

Backwaters, eddies, and runs have been reported as common capture locations for young-of-year humpback chub (Valdez and Clemmer 1982). These data indicate that in Black Rocks and Westwater Canyon, young utilize shallow areas. Habitat suitability index curves developed by

Valdez et al. (1990) indicate young-of-year prefer average depths of 2.1 feet with a maximum of 5.1 feet. Average velocities were reported at 0.2 feet per second.

Valdez et al. (1982), Wick et al. (1979), and Wick et al. (1981) found adult humpback chub in Black Rocks and Westwater Canyons in water averaging 50 feet in depth with a maximum depth of 92 feet. In these localities, humpback chub were associated with large boulders and steep cliffs.

### *Status and Distribution*

Historic abundance of the humpback chub are unknown, and historic distribution is surmised from various reports and collections that indicate the species presently occupies about 68% of its historic habitat and is restricted to about 756 km of river. The species exists primarily in relatively inaccessible canyons of the Colorado River Basin and was rare in early collections (Tyus 1998). Common use of the name “bonytail” for all six Colorado River species or subspecies of the genus *Gila* confounded an accurate early assessment of distribution and abundance (Holden and Stalnaker 1975, Valdez and Clemmer 1982, Minckley 1996). Of three closely related and sympatric *Gila* species, the roundtail chub (*G. robusta*) and bonytail (*G. elegans*) were described in 1853 by Baird and Girard (Sitgreaves 1853, Girard 1856), but the humpback chub was the last big-river fish species to be described from the Colorado River Basin in 1946 (Miller 1946). Also, extensive human alterations throughout the basin prior to faunal surveys may have depleted or eliminated the species from some river reaches before its occurrence was documented.

It is surmised that the humpback chub speciated from a *G. robusta*-like form in canyons of northern Arizona (i.e., Grand Canyon) about 3–5 million years ago (Miller 1946, Uyeno and Miller 1965, Holden 1968, Minckley et al. 1986) during the mid-Pliocene and early Pleistocene epochs. Earliest evidence of the species are skeletal remains from 4,000-year old flood deposits in Stanton’s Cave in Grand Canyon (Miller 1955, Euler 1978, Miller and Smith 1984), from a 750–1,100-year old archeological site in Catclaw Cave near present-day Hoover Dam (Miller 1955, Jones 1985), and from 1,000-year old archeological sites in Dinosaur National Monument, Colorado (Tyus 1998).

Earliest collections of humpback chub are anecdotal and related to early explorations of the Colorado River Basin that pre-date the species description in 1946. In 1911, Elsworth and Emory Kolb (Kolb and Kolb 1914) reported a large aggregation of “*bony tail*” in the lower Little Colorado River (LCR) in Grand Canyon; photographs show that the fish were humpback chub. A specimen in the fish collection at Grand Canyon National Park, caught in 1932 by angler N.N. Dodge at Bright Angel Creek, was examined in fall 1942 and used as the holotype for the species description (Miller 1946), along with a second specimen of unknown origin. In the 1940's, five specimens of humpback chub were collected from the Grand Canyon region along with 16 specimens of *G. elegans* and six *G. robusta* (Miller 1944, Bookstein et al. 1985). In 1950, juvenile humpback chub were reported from Spencer Creek in lower Grand Canyon (Wallis 1951, Kubly 1990), but ichthyofaunal surveys in 1958–1959 (McDonald and Dotson 1960) failed to find humpback chub immediately upstream in the gentle meandering reaches of Glen Canyon.

Following completion of Glen Canyon Dam in 1963, humpback chub were consistently reported by Arizona Game and Fish Department creel surveys from Lee Ferry during 1963–1968 (Stone 1964 and 1966, Stone and Queenan 1967, Stone and Rathbun 1968). However, Stone and Rathbun (1968) failed to find humpback chub in seven tributaries sampled between Lee Ferry and Lake Mead in 1968, excluding the LCR. Humpback chub were captured in July 1967 and August 1970 (Holden and Stalnaker 1975), all within “...a few hundred meters downstream of Glen Canyon Dam” (personal communication, P. Holden, Bio/West, Inc.). Humpback chub have not been captured in this reach since the dam began releasing cold hypolimnetic waters in about 1970. Humpback chub have consistently been reported in the LCR and Colorado River in Grand Canyon since 1967 as a result of better sampling gear and a better understanding of the life history of the species (Stone and Rathbun 1968, Miller and Smith 1972, Holden and Stalnaker 1975, Suttkus 1976, Minckley and Blinn 1976, Suttkus and Clemmer 1977, Kaeding and Zimmerman 1983, Maddux et al. 1987, Valdez and Ryel 1995, Arizona Game and Fish Department 1996, Douglas and Marsh 1996).

Five specimens were reported from Lake Powell in the late 1960's (Holden and Stalnaker 1970) following completion of Glen Canyon Dam in 1963 and impoundment of the upper Colorado River through Glen, Narrow, and Cataract canyons. Reproducing populations of humpback chub were first reported from Black Rocks, Colorado in 1977 (Kidd 1977), and from Westwater and Cataract canyons, Utah, in 1979 (Valdez et al. 1982, Valdez and Clemmer 1982).

Humpback chub were first reported in the Upper Colorado River Basin in the 1940's from Castle Park, Yampa River, Colorado, in June and July 1948 (Tyus 1998). Pre-impoundment surveys of Flaming Gorge Dam on the Green River in 1958–1959 (Bosley 1960, Gaufin et al. 1960, McDonald and Dotson 1960) treated all *Gila* as “*bonytail*”, which were common downstream of Green River, Wyoming. Humpback chub were reported from Hideout Canyon in the upper Green River (Smith 1960), although a checklist of fish killed by a massive rotenone operation from Hideout Canyon to Brown's Park in September 1962 stated that “...no humpback chub were collected...” (Binns 1967). Post-impoundment investigations (Vanicek et al. 1970) reported three humpback chub from the Green River downstream of Flaming Gorge Dam; one each from Echo Park, Island Park, and Swallow Canyon. Specimens were collected in Desolation Canyon on the Green River in 1967 (Holden and Stalnaker 1970), in Yampa Canyon in 1969 (Holden and Stalnaker 1975), in Cross Mountain Canyon of the Yampa River in the 1970's, and an individual specimen was reported from the White River in Utah in the 1950's (Sigler and Miller 1963). Seven suspected humpback chub were captured in the Little Snake River, a tributary of the Yampa River in 1988 (Wick et al. 1991). Surveys downstream of Flaming Gorge Dam, including Lodore Canyon, have not yielded humpback chub in that region of the Green River, despite warmer dam releases (Holden and Crist 1981, Bestgen and Crist 2000).

Six humpback chub populations are currently identified: (1) Black Rocks, Colorado; (2) Westwater Canyon, Utah; (3) Lower Colorado Region and Colorado rivers in Grand Canyon, Arizona; (4) Yampa Canyon, Colorado; (5) Desolation/Gray Canyons, Utah; and (6) Cataract Canyon, Utah (see Figure 1 in section 3.1.2; Valdez and Clemmer 1982, USFWS 1990a). Each population consists of a discrete group of fish, geographically separated from the other populations, but with some exchange of individuals. River length occupied by each population varies from 3.7 km in Black Rocks to 73.6 km in Yampa Canyon. Humpback chub have yet to be stocked, however, the Fish and Wildlife Service Hatchery system is collecting Yampa Canyon

individuals for captivity to preserve their unique genetics (Thomas Czapla, personal communication)

Recovery goals for the humpback chub (USFWS 2002) were approved on August 1, 2002. According to these recovery goals, downlisting can be considered if, over a 5-year period:

- the trend in adult (age 4+; > 200 mm total length) point estimates for each of the six extant populations does not decline significantly; and
- mean estimated recruitment of age-3 (150–199 mm total length) naturally produced fish equals or exceeds mean annual adult mortality for each of the six extant populations; and
- two genetically and demographically viable, self-sustaining core populations are maintained, such that each point estimate for each core population exceeds 2,100 adults (2,100 is the estimated minimum viable population needed to ensure long-term genetic and demographic viability); and
- certain site-specific management tasks to minimize or remove threats have been identified, developed, and implemented.

## **Environmental Baseline**

### *Status of the Species within the Action Area*

Six self-sustaining populations of humpback chub are known to exist, three of which are in the action area:

Westwater Canyon, Colorado River, Utah – 2,900-6,500

Desolation/Gray Canyons, Green River, Utah -- 1,500

Cataract Canyon, Colorado River, Utah – 500

Each population consists of a discrete group of fish, geographically separated from the other populations, but with some exchange of individuals. The designated critical habitat within the MFO is found on the Green River between the Desolation area and the Gray Canyons area (130,729 meters), and on the Colorado River from Westwater Canyon Area (125,972 meters).

Peak hatch of *Gila* larvae in Westwater Canyon on the Colorado River appears to occur on the descending limb of the hydrograph following spring runoff at maximum daily water temperatures of approximately 20 to 21 °C (Chart and Lentsch 1999a). Tyus and Karp (1989) reported that humpback chubs occupy and spawn in and near shoreline eddy habitats and that spring peak flows were important for reproductive success because availability of these habitats is greatest during spring runoff. The presence of a juvenile population suggests spawning may occur in the Upper Colorado River at Black Rocks, Westwater Canyon, Cataract Canyon, and Desolation/Gray Canyon (UDWR 2007).

### *Factors Affecting Species Environment within the Action Area*

Although historic data are limited, the apparent range-wide decline in humpback chubs is likely due to a combination of factors including alteration of river habitats by reservoir inundation, changes in stream discharge and temperature, competition with and predation by introduced fish

species, and other factors such as changes in food resources resulting from stream alterations (USFWS 1990).

The primary threats to humpback chub are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; parasitism; hybridization with other native *Gila* species; and pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. The threats to humpback chub in relation to flow regulation and habitat modification, predation by nonnative fishes, and pesticides and pollutants are essentially the same threats identified for Colorado pikeminnow.

Hybridization with roundtail chub (*Gila robusta*) and bonytail, where they occur with humpback chub, is recognized as a threat to humpback chub. A larger proportion of roundtail chub have been found in Black Rocks and Westwater Canyon during low flow years (Kaeding et al. 1990, Chart and Lentsch 2000), which increase the chances for hybridization.

Management actions identified in the recovery goals for humpback chub (USFWS 2002) to minimize or remove threats to the species included:

- provide and legally protect habitat (including flow regimes necessary to restore and maintain required environmental conditions) necessary to provide adequate habitat and sufficient range for all life stages to support recovered populations,
- investigate the role of the mainstem Colorado River in maintaining the Grand Canyon population,
- investigate the anticipated effects of and options for providing warmer water temperatures in the mainstem Colorado River through Grand Canyon,
- ensure adequate protection from overutilization,
- ensure adequate protection from diseases and parasites,
- regulate nonnative fish releases and escapement into the main river, floodplain, and tributaries,
- control problematic nonnative fishes as needed,
- minimize the risk of increased hybridization among *Gila* spp., and
- minimize the risk of hazardous-materials spills in critical habitat.

## **Razorback sucker (*Xyrauchen texanus*)**

### **Status of the Species**

#### *Species / Critical Habitat Description*

Like all suckers (family Catostomidae, meaning “down mouth”), the razorback sucker (*Xyrauchen texanus*) have ventral mouths with thick lips covered with papillae and no scales on its head. In general, suckers are bottom browsers, sucking up or scraping off small invertebrates, algae, and organic matter with their fleshy, protrusible lips (Moyle 1976). The razorback suckers are the only sucker with an abrupt sharp-edged dorsal keel behind its head. The keel becomes more massive with age. The head and keel are dark, the back is olive-colored, the sides are brownish or reddish, and the abdomen is yellowish white (Sublette et al.. 1990). Adults often

exceed 3 kg (6 pounds) in weight and 600 mm (2 feet) in length. Like Colorado pikeminnow, razorback suckers are long-lived, living 40-plus years. The Razorback sucker was first listed on October 23, 1991 (56 FR 54957). It is currently designated as endangered throughout the entire range.

The USFWS designated 15 reaches of the Colorado River system as critical habitat for the razorback sucker. These reaches total 2,776 km (1,724 mi) as measured along the center line of the river within the subject reaches. Designated critical habitat makes up about 49% of the species' original range and occurs in both the Upper and Lower Colorado River Basins (USFWS 1994). In the Upper Basin, critical habitat is designated for portions of the Green, Yampa, Duchesne, Colorado, White, Gunnison, and San Juan Rivers. Portions of the Colorado, Gila, Salt, and Verde Rivers are designated in the Lower Basin. Critical habitat was designated for razorback sucker on March 21, 1994 (59 FR 13374). The primary constituent elements are the same as those described for Colorado pikeminnow.

#### *Life history and Population dynamics*

McAda and Wydoski (1980) and Tyus (1987) reported springtime aggregations of razorback suckers in off-channel habitats and tributaries; such aggregations are believed to be associated with reproductive activities. Tyus and Karp (1990) and Osmundson and Kaeding (1991) reported off-channel habitats to be much warmer than the mainstem river and that razorback suckers presumably moved to these areas for feeding, resting, sexual maturation, spawning, and other activities associated with their reproductive cycle. Prior to construction of large mainstem dams and the suppression of spring peak flows, low velocity, off-channel habitats (seasonally flooded bottomlands and shorelines) were commonly available throughout the Upper Basin (Tyus and Karp 1989, Osmundson and Kaeding 1991). Dams changed riverine ecosystems into lakes by impounding water, which eliminated these off-channel habitats in reservoirs. Reduction in spring peak flows eliminates or reduces the frequency of inundation of off-channel habitats. The absence of these seasonally flooded riverine habitats is believed to be a limiting factor in the successful recruitment of razorback suckers in their native environment (Tyus and Karp 1989, Osmundson and Kaeding 1991). Wydoski and Wick (1998) identified starvation of larval razorback suckers due to low zooplankton densities in the main channel and loss of floodplain habitats which provide adequate zooplankton densities for larval food as one of the most important factors limiting recruitment.

These fish can spawn as early as age 3 or 4, when they are 14 or more inches long. Depending on water temperature, spawning can take place as early as November or as late as June. In the upper Colorado River basin, razorbacks typically spawn between mid-April and mid-June. These fish reportedly migrate long distances to spawn, congregating in large numbers in spawning areas. While razorback suckers have never been directly observed spawning in turbid riverine environments within the Upper Basin, captures of ripe specimens (in spawning condition), both males and females, have been recorded (Valdez et al. 1982, McAda and Wydoski 1980, Tyus 1987, Osmundson and Kaeding 1989, Tyus and Karp 1989, Tyus and Karp 1990, Osmundson and Kaeding 1991, Platania 1990) in the Yampa, Green, Colorado, and San Juan rivers. Sexually mature razorback suckers are generally collected on the ascending limb of the hydrograph from mid-April through June and are associated with coarse gravel substrates (depending on the specific location).

Outside of the spawning season, adult razorback suckers occupy a variety of shoreline and main channel habitats including slow runs, shallow to deep pools, backwaters, eddies, and other relatively slow velocity areas associated with sand substrates (Tyus 1987, Tyus and Karp 1989, Osmundson and Kaeding 1989, Valdez and Masslich 1989, Osmundson and Kaeding 1991, Tyus and Karp 1990).

Habitat requirements of young and juvenile razorback suckers in the wild are not well known, particularly in native riverine environments. Prior to 1991, the last confirmed documentation of a razorback sucker juvenile in the Upper Basin was a capture in the Colorado River near Moab, Utah (Taba et al. 1965). In 1991, two early juvenile (36.6 and 39.3 mm total length (TL)) razorback suckers were collected in the lower Green River near Hell Roaring Canyon (Gutermuth et al. 1994). Juvenile razorback suckers have been collected in recent years from Old Charley Wash, a wetland adjacent to the Green River (Modde 1996). Between 1992 and 1995 larval razorback suckers were collected in the middle and lower Green River and within the Colorado River inflow to Lake Powell (Muth 1995). In 2002, eight larval razorback suckers were collected in the Gunnison River (Osmundson 2002). No young razorback suckers have been collected in recent times in the Colorado River.

The razorback suckers are adapted to the widely fluctuating physical environment of the historical Colorado River. Adults can live 44-50 years and, once reaching maturity between two and seven years of age (Minckley 1983), apparently produce viable gametes even when quite old. Survival adaptations included the ability to spawn in a variety of habitats and flows regimes, and over a long season. In the event of several consecutive years with little or no recruitment (due to either too much or too little water), the demographics of the population as a whole might shift, but future reproduction would not be compromised. Average fecundity recorded in studies ranged from 100,800 to 46,740 eggs per female (Bestgen 1990). With varying age of maturity and the fecundity of the species, historically it would have been possible to quickly repopulate after a catastrophic loss of adults.

#### *Status and distribution*

On March 14, 1989, the USFWS was petitioned to conduct a status review of the razorback sucker. Subsequently, the razorback sucker was designated as endangered under a final rule published on October 23, 1991 (56 FR 54957). The final rule stated “Little evidence of natural recruitment has been found in the past 30 years, and numbers of adult fish captured in the last 10 years demonstrate a downward trend relative to historic abundance. Significant changes have occurred in razorback sucker habitat through diversion and depletion of water, introduction of nonnative fishes, and construction and operation of dams” (56 FR 54957). Recruitment of razorback suckers to the population continues to be a problem.

Historically, razorback suckers were found in the mainstem Colorado River and major tributaries in Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming, and in Mexico (Ellis 1914, Minckley 1983). Bestgen (1990) reported that this species was once so numerous that it was commonly used as food by early settlers and, further, that commercially marketable quantities were caught in Arizona as recently as 1949. In the Upper Basin, razorback suckers were reported in the Green River to be very abundant near Green River, Utah, in the late 1800s (Jordan 1891). An account in Osmundson and Kaeding (1989) reported that residents living

along the Colorado River near Clifton, Colorado, observed several thousand razorback suckers during spring runoff in the 1930s and early 1940s. In the San Juan River drainage, Platania and Young (1989) relayed historical accounts of razorback suckers ascending the Animas River to Durango, Colorado, around the turn of the century.

Currently, the largest concentration of razorback sucker remaining in the Colorado River Basin is in Lake Mohave on the border of Arizona and California. Estimates of the wild stock in Lake Mohave have fallen precipitously in recent years from 60,000 as late as 1991, to 25,000 in 1993 (Marsh 1993, Holden 1994), to about 9,000 in 2000 (USFWS 2002b). Until recently, efforts to introduce young razorback sucker into Lake Mohave have failed because of predation by non-native species (Minckley et al. 1991, Clarkson et al. 1993, Burke 1994). While limited numbers of razorback suckers persist in other locations in the Lower Colorado River, they are considered rare or incidental and may be continuing to decline.

In the Upper Colorado River Basin, above Glen Canyon Dam, razorback suckers are found in limited numbers in both lentic (lake-like) and riverine environments. The largest populations of razorback suckers in the upper basin are found in the upper Green and lower Yampa rivers (Tyus 1987). In the Colorado River, most razorback suckers occur in the Grand Valley area near Grand Junction, Colorado; however, they are increasingly rare. Osmundson and Kaeding (1991) reported that the number of razorback sucker captures in the Grand Junction area has declined dramatically since 1974. Between 1984 and 1990, intensive collecting effort captured only 12 individuals in the Grand Valley (Osmundson and Kaeding 1991). The wild razorback sucker population is considered extirpated from the Gunnison River (Burdick and Bonar 1997).

Razorback suckers are in imminent danger of extirpation in the wild. The virtual absence of any recruitment suggests a combination of biological, physical, and/or chemical factors that may be affecting the survival and recruitment of early life stages of razorback suckers. Within the Upper Basin, recovery efforts endorsed by the Recovery Program include the capture and removal of razorback suckers from all known locations for genetic analyses and development of discrete brood stocks. These measures have been undertaken to develop refugia populations of the razorback sucker from the same genetic parentage as their wild counterparts such that, if these fish are genetically unique by subbasin or individual population, then separate stocks will be available for future augmentation. Such augmentation may be a necessary step to prevent the extinction of razorback suckers in the Upper Basin. Razorback suckers will be stocked until at least 2010, current population estimates that stocking will likely continue after that date as well (Thomas Czapl, personal communication).

## **Environmental Baseline**

### *Status of the Species within the Action Area*

In the action area, the razorback sucker currently occupies parts of the Green River Subbasin and the Upper Colorado River Subbasin (Upper Colorado River), and the San Juan River Subbasin (San Juan River) (USFWS 2002; 54 FR 54967; 54 FR 13374;).

The designated critical habitat within the MFO is found on the Green River between the Yampa River and the Colorado River (74,644 meters), between the Desolation area and the Gray

Canyons area (130,729 meters), on the Colorado River from I-70 to the boundary with the Monticello FO (13,210 meters), and on the Colorado River from Westwater Canyon Area (125,972 meters).

Recently, tuberculate or ripe razorback suckers have been collected from reaches of the lower Green River in Labyrinth Canyon near the mouth of the San Rafael River at RM 97 (Tyus 1987, Miller and Hubert 1990, Muth 1995, Chart et al. 1999). Muth et al. (1998) suggested that many of the 439 razorback sucker larvae collected from the lower Green River between RM 28 and 97 during spring and early summer 1993–1996 had been spawned downstream of RM 110 (lower end of the Green River Valley reach), possibly near the mouth of the San Rafael River.

Collections in the lower Green River during 1993–1996 produced the first ever captures of razorback sucker larvae from this section of river. Razorback sucker larvae were collected each year in the Green River during 1992–1996. Mean catch per unit effort (CPUE) was highly variable among years and river reaches but it is unclear whether this was a true measure of population abundance or was biased by differences in sampling efficiency (Muth et al. 1998). Numbers of razorback sucker larvae captured per year ranged from 5 in 1995 to 222 in 1996 for the lower Green River.

Historically, floodplain habitats inundated and connected to the main channel by over-bank flooding during spring-runoff discharges would have been available as nursery areas for young razorback suckers in the Green River. Tyus and Karp (1990) associated low recruitment with reductions in floodplain inundation since 1962 (closure of Flaming Gorge Dam), and Modde et al. (1996) associated years of high spring discharge and floodplain inundation in the middle Green River (1983, 1984, and 1986) with subsequent suspected recruitment of young adult razorback suckers. These floodplain habitats are essential for the survival and recruitment of larval fish. Relatively high zooplankton densities in these warm, productive habitats are necessary to provide adequate zooplankton densities for larval food. Loss or degradation of these productive floodplain habitats probably represents one of the most important factors limiting recruitment in this species (Wydoski and Wick 1998). The importance of these habitats is further underscored by the relationship between larval growth and mortality due to non-native predators (Bestgen et al. 1997). Predation by adult red shiners on larvae of native catostomids in flooded and backwater habitats of the Green or Colorado Rivers was documented by Ruppert et al. (1993) and Muth and Wick (1997). Water depletions and changes in timing of flows may reduce the quantity and availability of floodplain habitat, thus reducing larval growth and recruitment.

In the Upper Colorado River subbasin, the number of razorback sucker captured has decreased dramatically since 1974. There are only a few scattered adults in the mainstem Colorado River (Osmundson and Kaeding 1991). During a 2-year study (1979–1981), Valdez et al. (1982) captured only 52 individuals, all old adults, in a 465-km reach of the Colorado River from Rifle, Colorado, to Hite, Utah. No young razorback sucker have been captured anywhere in the upper Colorado River since the mid-1960s (Osmundson and Kaeding 1991).

### *Factors Affecting Species Environment within the Action Area*

The primary threats to razorback sucker are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; and pesticides and pollutants (USFWS 2002b). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. The threats to razorback sucker are essentially the same threats identified for Colorado pikeminnow.

Management actions identified in the recovery goals for razorback sucker (USFWS 2002b) to minimize or remove threats to the species included:

- provide and legally protect habitat (including flow regimes necessary to restore and maintain required environmental conditions) necessary to provide adequate habitat and sufficient range for all life stages to support recovered populations;
- provide passage over barriers within occupied habitat to allow unimpeded movement and, potentially, range expansion;
- investigate options for providing appropriate water temperatures in the Gunnison River;
- minimize entrainment of subadults and adults in diversion/out-take structures;
- ensure adequate protection from overutilization;
- ensure adequate protection from diseases and parasites;
- regulate nonnative fish releases and escapement into the main river, floodplain, and tributaries;
- control problematic nonnative fishes as needed;
- minimize the risk of hazardous-materials spills in critical habitat;
- remediate water-quality problems; and
- minimize the threat of hybridization with white sucker.

### **Effects of the Action**

#### Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Surface-disturbing actions under this program could result in soil erosion and removal of upland vegetation within watersheds containing listed fish species could result in increased erosion and sediment that degrade water quantity (reducing ground water discharge into the stream, river, or lake) and water quality (changes in water chemistry, such as pH and dissolved oxygen; temperature; sediment loads; and nutrient availability). These changes in water quantity or quality can directly or indirectly affect listed fish species. Cultural resource activities may negatively affect the primary constituent elements for the Colorado River fish species designated critical habitat. Increased erosion may degrade water quality and increase sediment in the water. This could increase water temperature, decrease food supply, increase turbidity, and deplete oxygen. This could alter a specific hydraulic water regime which is required by a particular life stage for each species. In doing so, there may be decreases in quantity and quality of breeding,

spawning, and nursery habitats and degradation of foraging habitats. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Surface-disturbing actions under this program could result in soil erosion and removal of upland vegetation within watersheds containing listed fish species could result in increased erosion and sediment that degrade water quantity (reducing ground water discharge into the stream, river, or lake) and water quality (changes in water chemistry, such as pH and dissolved oxygen; temperature; sediment loads; and nutrient availability). These changes in water quantity or quality can directly or indirectly affect listed fish species. Cultural resource activities may negatively affect the primary constituent elements for the Colorado River fish species designated critical habitat. Increased erosion may degrade water quality and increase sediment in the water. This could increase water temperature, decrease food supply, increase turbidity, and deplete oxygen. This could alter a specific hydraulic water regime which is required by a particular life stage for each species. In doing so, there may be decreases in quantity and quality of breeding, spawning, and nursery habitats and degradation of foraging habitats. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Fire Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the BLM's fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Increased vegetation disturbance or vegetation removal to support fire suppression activities or fires (wildland or prescribed), fire retardant or chemical treatment to vegetation, soil disturbance, and water removal may adversely impact Colorado fish. Associated impacts may include loss of vegetation cover, soil stability and forage base; and changes to water chemistry, water temperature, and nutrient levels, negatively affecting the primary constituent elements for Colorado fish species. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Health and Safety Management

The primary objective of health and safety management is to protect public and environmental health and safety on lands administered by BLM. Hazardous materials and waste management policies are integrated into all programs. Several federal, state, and local laws overlap in their

requirement of BLM to identify and remediate contaminated sites on public lands. Besides managing pre-existing contamination, BLM seeks to prevent or minimize contamination caused by authorized actions.

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation treatment or disturbance, and surface disturbance in drainages of Colorado River fish habitat. Associated impacts from vegetation disturbances or vegetation removal (including chemical treatment of vegetation) include: increased invasive plant species, adversely affects on: cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult). Other indirect, adverse effects to special status fish species and their habitat include temporary, localized, and downstream water quality degradation, while indirect, beneficial effects of health and safety management decisions include the reduction of water toxicants and sediment over time. Health and safety management decisions may negatively affect the primary constituent elements for the Colorado River fish species designated critical habitat. Increased erosion associated with surface disturbance may degrade water quality and increase sediment in the water. This could increase water temperature, decrease food supply, increase turbidity, and deplete oxygen. This could alter a specific hydraulic water regime which is required by a particular life stage for each species. As a result there may be decreases in quantity and quality of breeding, spawning, and nursery habitats and degradation of foraging habitats. In consequence, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in direct water channel disturbance, vegetation disturbance or removal, increased occurrence of invasive plant species, and soil disturbance. Lands and realty management decisions may negatively affect the primary constituent elements for the

Colorado River fish species designated critical habitat. Direct stream disturbances may adversely change the water channel morphology, structure, and water quality. Vegetation disturbances or removal (including chemical treatment of vegetation), may adversely affect cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. Land exchanges or disposals may fragment the watersheds in the action area, increasing the previously mentioned impacts. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Activities occurring under this program may increase equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in vegetation disturbance, removal, alteration; and soil disturbance. Vegetation alteration or removal may decrease: cover, soil stability, stream morphology, forage base, water chemistry, water temperature, and nutrient levels. Livestock management decisions may negatively affect the primary constituent elements for the Colorado River fish species designated critical habitat. Increased erosion associated with surface disturbance may degrade water quality and increase sediment in the water. This could increase water temperature, decrease food supply, increase turbidity, and deplete oxygen. This could alter a specific hydraulic water regime which is required by a particular life stage for each species. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Minerals Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal-bed methane, coal, sodium, phosphate, potash, and uranium), locatable (copper) and salable minerals (sand, gravel, building stone, travertine, clay and humate). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence, equipment use, surface disturbance in Colorado River fish habitat. These actions may increase the occurrence of chemical leaks into drainages, vegetation disturbances or removal, soil disturbances, increased occurrence of invasive plant species, and pollutants in drainages of Colorado fish habitat. Vegetation disturbances or vegetation removal (including chemical treatment of vegetation), and increased invasive plant species may adversely affect cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may affect Colorado

River fish by decreasing water quality and impacting the forage base. Lethal and sublethal impacts may result from chemical spills. There may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in direct water channel disturbance, vegetation disturbance or removal, increased occurrence of invasive plant species, and soil disturbance. Direct stream disturbances may adversely change the water channel morphology, structure, and water quality. Vegetation disturbances or removal (including chemical treatment of vegetation), may adversely affect: cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Riparian Management

The objective of riparian management in Utah is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. Priority for riparian area management will be given to areas identified as habitat for aquatic species with signed Conservation Agreements and Strategies.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in direct water channel disturbance, vegetation disturbance or removal, increased occurrence of invasive plant species, and soil disturbance. Direct stream disturbances may adversely change the water channel morphology, structure, and water quality. Vegetation disturbances or removal (including chemical treatment of vegetation), may adversely affect: cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Soils and Watershed Resources

The objectives for the soil and watershed resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland

health standards and other soil protection measures, as well as to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in direct water channel disturbance, vegetation disturbance or removal, increased occurrence of invasive plant species, and soil disturbance. Direct stream disturbances may adversely change the water channel morphology, structure, and water quality. Vegetation disturbances or removal (including chemical treatment of vegetation), may adversely affect: cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Special Designations

This program is responsible for the management of special designated areas including Areas of Critical Environmental Concern (ACEC); Wild and Scenic Rivers (WSR); and Wilderness Resources which include Wilderness Study Areas (WSAs), and congressionally designated Wilderness. Generally, designation of an area results in implementation of conservation measures and timing stipulations that are beneficial to wildlife species.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in direct water channel disturbance, vegetation disturbance or removal, increased occurrence of invasive plant species, and soil disturbance. Direct stream disturbances may adversely change the water channel morphology, structure, and water quality. Vegetation disturbances or removal (including chemical treatment of vegetation), may adversely affect: cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation disturbance, and surface disturbance in the drainages of Colorado River fish habitats. These activities may result in direct water channel disturbance, vegetation disturbance or removal, increased occurrence of invasive plant species, and soil disturbance. Direct stream disturbances may adversely change the water channel morphology, structure, and water quality.

Vegetation disturbances or removal (including chemical treatment of vegetation), may adversely affect: cover, soil stability, forage base, water chemistry, water temperature, and nutrient levels. Pollutants in the area may decrease water quality and adversely impact the forage base. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation treatment or disturbance (mechanical, chemical, biological), and surface disturbance in drainages of Colorado River fish habitats. These activities may result in vegetation disturbance or removal, adverse chemical treatment to vegetation, increased occurrence of invasive plant species, and soil disturbance. Vegetation disturbances, vegetation removal, chemical treatment of vegetation, or increased invasive plant species may adversely affect availability of riparian vegetation cover and water quality. In doing so, there may be decreases in quantity and quality of breeding, spawning, and nursery habitats and degradation of foraging habitats. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase equipment and vehicle use, vegetation treatment or disturbance, and surface disturbance in drainages of Colorado River fish habitats. In the short-term, vegetation disturbances or vegetation removal may adversely affect availability of riparian vegetation, thereby impacting the watershed stability, vegetation cover, forage base, and water quality. Long-term benefits may include: increased bank stability, availability of habitat, and forage base. As a result of short-term and long-term effects, Colorado River fishes may have increased reproductive success and increased survival at all life stages.

### Woodlands Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Activities occurring under this program may increase human presence, equipment and vehicle use, vegetation treatment or disturbance, and surface disturbance in drainages of Colorado River fish habitats. Associated impacts include: vegetation disturbance or removal, adverse chemical treatment to vegetation, increased occurrence of invasive plant species, and soil disturbance. Vegetation disturbances, vegetation removal, chemical treatment of vegetation, or increased invasive plant species may adversely affect availability of riparian vegetation cover and water quality. In doing so, there may be decreases in quantity and quality of breeding, spawning, and nursery habitats and degradation of foraging habitats. As a result, there may be decreases in reproductive success, and decreases in survival at all life stages (egg, larval, young of year, juvenile, and adult).

### Water Depletions

Water depletions from the Upper Colorado River Basin are a major factor in the decline of the threatened and endangered Colorado River fish. The USFWS determined that any depletion will jeopardize their continued existence and will likely contribute to the destruction or adverse modification of their critical habitat (USDI, Fish and Wildlife Service, Region 6 Memorandum, dated July 8, 1997). However, the Recovery Program was established specifically to offset the negative effects of water depletions to the endangered fish populations, and to act as the Reasonable and Prudent Alternative for these depletions. Actual water depletions will be determined, and section 7 consultation reinitiated on a project-specific basis.

### **Cumulative Effects for the Bonytail, Colorado Pikeminnow, Humpback Chub, and Razorback Sucker**

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.

Cumulative effects to bonytail, Colorado pikeminnow, humpback chub, and razorback sucker under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns that would further fragment, modify, or destroy potential spawning sites or designated critical habitat.
- Shoreline recreational activities and encroachment of human development that would remove upland or riparian/wetland vegetation and potentially degrade water quality.
- Competition with, and predation by, exotic fish species introduced by anglers or other sources.
- Program management actions that would reduce the potential for catastrophic wildland fires, vegetation loss, and negative changes to water quality by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
  - State of Utah
  - County Governments in Utah
  - Local Governments in Utah
  - Private landholders in Utah

Colorado fishes occur throughout the Upper Colorado River Basin of the action area for the proposed RMP amendment. The watersheds affecting Colorado fishes include a checkerboard pattern of land ownership including Federal, State, and private landowners. Colorado fishes are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing; research; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; oil and gas exploration and development; human population expansion and associated infrastructure (increased trails and roads); and recreation activities (e.g. off-road vehicles), are expected to continue on State and private lands within the Colorado fishes' range. Contributing as cumulative effects to the proposed action, these activities will continue to affect Colorado fishes' persistence with impacts to staging areas, spawning habitats, nursery habitats, and foraging habitat (including designated critical habitat), further degrading habitat, and increasing non-native fish populations.

### **Conclusion for the Bonytail, Colorado Pikeminnow, Humpback Chub, and Razorback Sucker**

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

It is our opinion that the proposed action are not likely to jeopardize the continued existence of the Colorado River Fishes, and are not likely to jeopardize the continued existence of these species or adversely modify their habitat. We base our conclusion on the following:

1. Treatment sizes will be limited during any single year, both in space and time, in the species range. Vegetation removed during project related activities will not impact large portions of the Upper Colorado River Basin and, with conservation measures applied, are not expected to significantly affect water quality or flows to impact the bonytail or its critical habitat.
2. In addition, the Recovery Programs for the endangered Colorado River fishes conduct intensive fish community monitoring throughout the potentially affected area. The USFWS is a participant on both programs and we believe that those monitoring programs, although not specifically designed to determine cause and affect relationships, will provide useful information to assess site-specific projects under the proposed action. The USFWS will rely heavily on the results of Recovery Program monitoring to determine if additional Section 7 consultation is required.
3. All site-specific projects designed under the proposed Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

## EXPERIMENTAL POPULATIONS SPECIES FOUND IN THE ACTION AREA

### California Condor (*Gymnogyps californianus*)

#### Status of the Species

##### *Species / Critical Habitat Description*

The California condor is a member of the family Cathartidae, the New World vultures, a family of seven species, including the closely related Andean condor (*Vultur gryphus*) and the sympatric turkey vulture (*Cathartes aura*) (61 FR 54043). California condors are among the largest flying birds in the world (USFWS 1996; 61 FR 54043). Adults weigh approximately 10 kilograms (22 pounds) and have a wing span up to 2.9 meters (9.5 feet) (61 FR 54043). Adults are black except for prominent white underwing linings and edges of the upper secondary coverts. The head and neck are mostly naked, and the bare skin is gray, grading into various shades of yellow, red, and orange. Males and females cannot be distinguished by size or plumage characteristics. The heads of juveniles up to 3 years old are grayish black, and their wing linings are variously mottled or completely dark. During the third year the head develops yellow coloration, and the wing linings become gradually whiter (N.J. Schmitt in litt. 1995; 61 FR 54043). By the time individuals are 5 or 6 years of age, they are essentially indistinguishable from adults (Koford 1953; Wilbur 1975; Snyder et al. 1987; 61 FR 54043), but full development of the adult wing patterns may not be completed until 7 or 8 years of age (N.J. Schmitt in litt. 1995; 61 FR 54043). Habitat includes caves, cliffs and steep slopes.

##### *Life history and Population dynamics*

Condors reach sexual maturity by 5 to 6 years of age and breeding occurs between 6 and 8 years of age. Courtship and nest site selection occurs from December through the spring (USFWS 1996). Nest sites include: caves, cliffs, or a crevice among boulders on a steep slope. Breeding California condors normally lay a single egg between late January and early April, every other year (USFWS 1996). The condor provides an extensive amount of parental care and the average incubation period for a condor egg is about 56 days (USFWS 1996). Both parents share responsibilities for feeding the nestling. Fledging occurs at six months of age; however, juvenile condors may be dependant on their parents for more than a year (Peregrine Fund, Calif. Condor 2005). The California condor life span is unknown, but may possibly extend up to 60 years (San Diego Zoo 2005). Condors are strict scavengers. Unlike turkey vultures, condors do not have an exceptional sense of smell (National Park Service 2005). They locate their food visually, often by investigating the activity of ravens, coyotes, eagles, and other scavengers. Without the guidance of their parents, young inexperienced juvenile condors may also investigate the activity of humans. As young condors learn and mature this human directed curiosity diminishes (National Park Service 2005).

### *Status and distribution*

The California condor (*Gymnogyps californianus*) was listed as endangered on March 11, 1967 (32 FR 4001). California condors remain one of the world's rarest and most imperiled vertebrate species (Cooper 1890; Koford 1953; Wilbur 1978) with California being listed as the only critical habitat. Fossil records indicate that California condors once ranged over much of the southern United States. The main reason for the decline of the condors is an unsustainable mortality rate of free-flying birds combined with a naturally low reproductive rate.

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 first released back to the wild in California in early 1992. "On October 6, 1996, the USFWS announced its intention to reintroduce California condors into northern Arizona and southern Utah, and designate the released birds as a nonessential, experimental population (NEP) under Section 10(j) of the ESA (61 FR 54043). On October 29, 1996, six California condors were released at the Vermilion Cliffs in Coconino County of northern Arizona. Since then, additional birds have been released. The designated experimental population area (ExPA) includes remote federal (BLM, USFS, and NPS) and Native American Reservation lands, and some private lands in northern Arizona, southern Utah and southeastern Nevada (61 FR 54043). The primary release site and current nesting sites occur at Grand Canyon National Park and Vermilion Cliffs, Arizona" (Diana Whittington, personal communication).

### **Environmental Baseline**

#### *Status of the Species within the Action Area*

The California condor is a federally-listed endangered species with non-essential, experimental status in Utah south of Interstate 70 and west of Highway 191. Condors that travel north of Interstate 70 and east of Highway 191 are not considered part of the non-essential experimental population, and are listed as endangered. Interstate 70 bisects the MFO and Highway 191 runs through the eastern portion of the action area from the southern border to I-70. Approximately half of the action area is part of non-essential experimental designation.

California condors have been identified as far North as Flaming Gorge for foraging and traveling and have likely traveled across the planning area. Regular sightings occur in southern Utah, particularly in the vicinity of Zion National Park/Kolob Canyons.

Although California condors have not been specifically identified within the planning area, the following effects determination is written to assess impacts should condors use the planning area more frequently for foraging and possibly for nesting. The RMP planning process is a long-term planning effort, and thus we are analyzing activities for this potential.

## *Factors Affecting Species Environment within the Action Area*

Most California condor deaths in recent years have been directly or indirectly related to human activity. Shootings, poisoning, lead poisoning, and collisions with power lines are considered the condors' major threats. In addition, illegal collection of eggs and birds, poisoning from predator control and an increase in roads and houses throughout the open country needed by condors for foraging have contributed to their decline. Their slow rate of reproduction and high number of years spent reaching breeding maturity make the condor population as a whole more vulnerable to these threats.

### **Effects of the Action**

#### Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment use; and surface disturbance in potential California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with cultural resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may be site-specific decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

#### Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence; equipment use; and surface disturbance in potential California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, roosting, or foraging efforts. Vegetation disturbances or removal associated with cultural resources excavations may reduce availability of prey habitat and prey abundance, at least in the short term. As a result, there may be site-specific decreases in nest initiation or nesting success, and displacement. These effects are likely to be short-term and relatively small scale due to the type of activity.

#### Fire Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the BLM's

fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment; and surface disturbance; and decrease local air quality in California condor habitats. Associated noise and visual disturbances may adversely affect the behavior of California condor, and result in displacement during breeding, nesting, roosting, or foraging activities. Vegetation disturbances or vegetation removal may decrease roosting sites, prey habitat, and prey abundance. Soil disturbances and increased erosion may indirectly decrease abundance of prey. Smoke could interfere with visually based flight and foraging, and increased air traffic could result in collisions. As a result of these impacts, there may be site-specific decreases in nest initiation or nesting success, and possible mortality.

Potential impacts from wildland fire use and prescribed fire would be similar to those from wildfire suppression. Non-fire fuels treatments and emergency stabilization and rehabilitation following wildfires may be used to retain or improve range conditions and maintain lower fuel loads in grassland and sagebrush habitats. Negative impacts include harassment or displacement; or immediate post-project alteration of key prey habitat components from surface disturbance. Additionally, these fire management activities could benefit prey populations of California condors in the long-term due to improved forage quality and quantity.

### Health and Safety Management

Activities conducted under the health and safety program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, and roads occur within all of the planning areas analyzed in this document, and have some potential to occur in California condor habitat. Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely impact prey habitat. As a result, there may be decreases in nest initiation or nesting success, and increased mortality.

### Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines,

pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Construction of power lines or other infrastructure may result in electrocutions, entanglements, or collisions with flying birds, resulting in possible mortality. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for California condor prey species. Exchange or sales of lands may lead to habitat fragmentation and loss. As a result, there may be decreases in nest initiation or nesting success, and increased adult nestling/juvenile fitness.

### Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation, more invasive plant species, fragmented prey habitat and adverse affects to availability of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased fitness.

## Minerals Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal-bed methane, coal, sodium, phosphate, potash, and uranium), locatable (copper) and salable minerals (sand, gravel, building stone, travertine, clay and humate). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; surface disturbance; and pollutants in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of quality and quantity of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and decrease prey habitat. Increased occurrence of invasive plant species may change the vegetation community and change the habitat for prey species. Pollutants in the area may affect California condors through adverse effects to prey populations. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult fitness. There is some potential for mortality in the following instances: 1) increased oil and gas/energy development truck traffic may increase the potential for condor road mortalities if the birds are scavenging on other road-killed carcasses, 2) increased development of powerlines which can result in electrocution and collisions with wires.

## Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Increased human presence, particularly during hunting seasons may indirectly result in increased exposure of condors to carcasses with lead fragments, with the potential for injury or mortality related to lead poisoning. Vegetation disturbances or vegetation removal may adversely affect the availability and quality of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat. Increased occurrence of invasive plant species may change the vegetation community and change the habitat for California condor prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness.

## Riparian Management

The objective of riparian management in Utah is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. Priority for riparian area management will be given to areas identified as habitat for aquatic species with signed Conservation Agreements and Strategies.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in California condor habitat. Associated noise disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat and prey abundance. Soil disturbances may increase erosion, adversely affect soil stability, and adversely impact prey habitat. As a result, there may be decreases in nest initiation or nesting success, and decreased adult and nestling/fledgling fitness.

## Soils and Watershed Resources

The objectives for the soil and watershed resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures, as well as to protect, maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses.

Potential adverse impacts to California condor may result from land treatments occurring within watersheds. Many of these activities are meant to benefit soil resources and watersheds by reducing soil loss and reclaiming surface disturbances or unnecessary roads. However, activities occurring under this program may also increase human presence; equipment and vehicle use; vegetation manipulation; and surface disturbance in condor habitat. Short-term adverse impacts may include, but not be limited to: disruption of normal breeding, nesting, foraging, and roosting behaviors (associated with noise and visual disturbances); and decreased prey habitat. Long-term benefits may include increased nesting success, increased prey abundance, and increased survival due to maintenance and improvement of soil resources.

## Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; surface disturbance; and pollutants in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior California

condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of quality and quantity of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and decrease prey habitat. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for prey species. Pollutants in the area may affect California condor through adverse effects to prey populations. As a result of these impacts, there may be decreases in nest initiation or nesting success, and decreased adult fitness.

### Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance (mechanical, chemical, biological); and surface disturbance in condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, or foraging activities. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey species habitat. As a result, there may be site-specific decreases in nest initiation or nesting success.

### Wildlife Management

This program aims to maintain biological diversity, improve habitat for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of condors during breeding, nesting, or foraging activities. Vegetation disturbances or vegetation removal may adversely affect availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and habitat for prey species. Short-term adverse impacts may include, but not be limited to: fragmented prey habitat; decreases in nest initiation or nesting success; and decreased adult and nestling/juvenile fitness; and alterations of water distribution within occupied habitat of the California condor. In general, long-term efforts to improve the health of riparian habitats may benefit California condors by increasing prey abundance.

### Woodland Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of

forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Activities occurring under this program may increase human presence; equipment and vehicle use; vegetation treatment or disturbance; and surface disturbance in California condor habitat. Associated noise and visual disturbances may adversely affect the behavior of California condors during breeding, nesting, or foraging activities. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation may adversely affect prey habitat and prey availability, and therefore, adversely affect California condors and their young. Soil disturbances may increase erosion, adversely affect soil stability, and adversely affect prey habitat and prey abundance. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for prey species. As a result, there may be decreases in nest initiation or nesting success, and decreased fitness.

### **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 conference 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.

Cumulative effects to candidate species western yellow-billed cuckoo under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' suitable or potential habitat.
- Encroachment of human development into a species' suitable or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
  - State of Utah
  - County Governments in Utah
  - Local Governments in Utah
  - Private landholders in Utah

California condors have the capability to occur throughout the action area. The action area is surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. California condors are susceptible to activities on State and private lands. Many of these activities, such as livestock grazing, oil and gas exploration and development, human population expansion and associated infrastructure (increased trails and roads) development, research, and recreation activities (including OHV use and any activities that increase human presence), are expected to continue on State and private lands within the California Condor's range. Contributing as cumulative effects to the proposed action, these activities will continue to affect California condors productivity with disturbances to breeding, nesting, and foraging behaviors and further fragmenting habitat of prey populations.

## Conclusions

The conclusions of this conference opinion are based on full implementation of the project as described in the “Description of the Proposed Action” section of this document, including the resource protection measures that were incorporated into the project design.

After reviewing the current status of the California Condor, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the USFWS’s conference opinion that the Moab BLM Field Office Resource Management Plan, as proposed, is not likely to jeopardize the continued existence of the California condor. In areas outside the experimental, non-essential population boundaries, the Moab BLM Field Office Resource Management Plan, as proposed, may affect but is unlikely to affect the California condor. Critical habitat has not been designated for this species. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.
2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

## CANDIDATE SPECIES FOUND IN THE ACTION AREA

### Western yellow-billed cuckoo (*Coccyzus americanus*)

#### Status of the Species

##### *Species Description*

The western yellow-billed cuckoo is one of two subspecies of the western yellow-billed cuckoo (UDWR 2003). The western yellow-billed cuckoo is approximately 12 in (31 cm) in length. The bird is brownish above and white below; with rusty colored flight feathers. The upper mandible of the bill is black and the lower mandible is yellow. The under side of the tail has pairs of large white spots.

The western subspecies is found intermittently throughout the western United States in dense riparian vegetation, including cottonwood and willow stands, tamarisk thickets, Russian olive, willows, and orchards. They primarily consume insects such as caterpillars, cicadas, beetles, grasshoppers, and katydids, as well as lizards, frogs, eggs of other birds, berries, and small fruits.

##### *Life history and Population dynamics*

Yellow-billed cuckoos are one of the latest migrants to arrive and breed in Utah. They arrive in extremely late May or early June and breed in late June through July. Cuckoos typically start their southerly migration by late August or early September. Yellow-billed cuckoos feed almost entirely on large insects that they glean from tree and shrub foliage. They feed primarily on caterpillars, including tent caterpillars. They also feed frequently on grasshoppers, cicadas, beetles, and katydids, occasionally on lizards, frogs, and eggs of other birds, and rarely on berries and fruits (Ehrlich et al. 1988, Kaufmann 1996).

Nesting habitat is classified as dense lowland riparian characterized by a dense sub-canopy or shrub layer (regenerating canopy trees, willows, or other riparian shrubs) within 100 m of water. Over story in these habitats may be either large, gallery-forming trees or developing trees, usually cottonwoods. Nesting habitats are found at low to mid-elevations (750-1820 m) in Utah. Cuckoos may require large tracts (40-80 ha) of contiguous riparian nesting habitat; however, cuckoos are not strongly territorial and home ranges may overlap during the breeding season. Nests are usually 1.2-2.4 m above the ground on the horizontal limb of a deciduous tree or shrub, but nest heights may range from 1-6 m and higher. The nest is a loosely arranged platform of twigs lined with softer materials such as grass, rootlets, and dried leaves. Nests are built in 1-3 days. The female lays 1-8 (usually 3) eggs over a period of several days; laying often begins before the nest is complete. Both males and females incubate eggs for a period of 9-11 days, beginning when the first egg is laid. Nestlings are altricial and hatch asynchronously over several days. Young are brooded by both adults for 7-8 days before leaving the nest, an unusually rapid development for a bird this size. Young climb on branches for about 2 weeks after leaving the nest until they are capable of flight at about 3 weeks of age. Both adults tend the fledglings, and in some cases early fledglings are attended by the male and later fledglings

are attended by the female. It is not known whether cuckoos have more than one brood per season in Utah, but multiple brooding has been recorded in California.

Yellow-billed cuckoo nesting behavior may be closely tied to food abundance. In years of low food abundance, cuckoos may forego nesting; in years when the food supply is abundant, cuckoos may lay a large number of eggs and even parasitize the nests of other species (Nolan and Thompson 1975). Cuckoos are rarely hosts to brown-headed cowbirds.

#### *Status and distribution*

In 2001, the western subspecies of the western yellow-billed cuckoo was designated as a candidate for listing (threatened or endangered status) under the ESA (66 Federal Register 38611-38626). The USFWS has found that the species population status warrants listing but other, higher priority listing actions prevent them from addressing the cuckoo's status at this time.

This species occurs intermittently across the state. Historically, breeding was recorded in Weber, Salt Lake, Utah, and Washington Counties. Recent breeding has been confirmed in Salt Lake, Grand, and Uintah Counties. Although it is not known to breed throughout the state, it has been recorded in the riparian habitats of the following 14 counties: Wayne, Garfield, Box Elder, Cache, Davis, Salt Lake, Wasatch, Utah, Uintah, Grand, San Juan, Washington, Iron, and Juab. It is considered a candidate for listing in all of Utah's 29 counties except Rich (UDWR 2003).

### **Environmental Baseline**

#### *Status of the Species within the Action Area*

The Western Yellow-billed Cuckoo is listed as a candidate species due to loss of riparian habitat from agricultural use, water use, road development, and urban development. This species of cuckoo is a neotropical migrant that utilizes riparian valleys throughout the state. While no known population of this species exists at present within the MFO, there is potentially suitable habitat in the larger riparian areas throughout the MFO.

#### *Factors Affecting Species Environment within the Action Area*

Threats to the western yellow-billed cuckoo are related to habitat destruction and degradation from the invasion of tamarisk, livestock use of riparian areas, water withdrawals, and human development (UDWR 2003). The availability of suitable western yellow-billed cuckoo habitats in the Moab region is seriously limited by dry conditions, narrowness of existing riparian zones, grazing and the presence of brown headed cowbirds.

### **Effects of the Action**

#### Cultural Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up

to several weeks. Inventories for cultural resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), and surface disturbance in potential western yellow-billed cuckoo habitat. Noise disturbances may cause avoidance of potential habitat. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Paleontological Resources Management

This program includes surveys, inventories, excavation activities, surface material collection, and interpretive site development. Surveys may involve multiple people and vehicles and can last up to several weeks. Inventories for paleontological resources commonly entail the use of hand tools, power tools, or heavy machinery.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), and surface disturbance in potential western yellow-billed cuckoo habitat. Noise disturbances may cause avoidance of potential habitat. Vegetation disturbances or removal may decrease the availability of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Fire Management

Objectives of fire management are to protect life, property, and resources values from wildfire and restore the natural role of fire in the ecosystem. Major activities associated with the fire management program include: wildfire suppression, wildland fire use, prescribed burning, non-fire fuels treatments (mechanical and chemical), and emergency stabilization and rehabilitation following wildfires. Fire suppression methods may involve: fireline construction, use of fire suppression agents and retardants, and water withdrawals.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in potential western yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of these habitats. Vegetation disturbances or vegetation removal decrease availability of nesting habitat; decrease cover from predator; and decrease prey habitat. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species. Long-term benefits of this program, as vegetation is reestablished, may include: increased insect prey abundance and increased potential habitat.

### Health and Safety Management

Activities conducted under the hazardous materials program include providing warnings, securing and disposing of hazardous waste discharged on public lands, establishing precautions, and responding to emergencies. Activities may involve increased human presence, use of heavy equipment, and removal of contaminated soils. These activities have the potential to occur in locations where mineral development or transport occurs.

Mineral developments, pipelines, roads, and railroad transportation systems occur within all of the planning areas analyzed in this document, and have the potential to occur in yellow-billed cuckoo habitat. Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in potential yellow-billed cuckoo habitat. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Lands and Realty Management

Objectives of the lands and realty management program are to support multiple-use management goals of the BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire and designate rights of way access to serve administrative and public needs. Realty management authorizes occupancy of public lands for roads, power lines, pipelines, communication sites, and irrigation ditches authorized by granting rights of way. Rights of way management actions respond to public requests for access, land authorizations, sales, and exchanges. These rights of way may be temporary or extend up to 30 years, or even in perpetuity.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in yellow-billed cuckoo habitat. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. Exchange or sales of lands may lead to habitat fragmentation and loss. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Livestock Grazing Management

The objective of livestock grazing management is to maintain or improve forage production and range condition as a sustainable resource base for livestock grazing on BLM land. Livestock management includes designating the kind and class of livestock, seasons of use, locations of use and the numbers of livestock that are permitted to use BLM lands.

Range management activities may include vegetation treatments such as prescribed fire, mechanical and chemical control of noxious weeds, sagebrush and other target species. The determinations and effects analyses associated with the potential impacts of these treatments can be located under the other appropriate program headings (i.e., fire treatments – see Fire Management, or vegetative treatments – see Vegetation Management). Other range improvements authorized by the livestock grazing management program may include fence construction, water developments, exclosures, and livestock handling facilities.

There are four primary ways livestock manipulate habitats to favor/hinder some wildlife species: 1) alteration of vegetation composition, 2) cause increased/decreased productivity of selected plant species, 3) increase/decrease the nutritive quality of available forage, and/or 4) increase/decrease the diversity of habitats by altering structure (Severson and Urness 1994).

Activities occurring under this program may increase human presence (including associated noise disturbances), vegetation disturbance, and minor surface disturbance in yellow-billed cuckoo habitat. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation; an increase in invasive plant species; increased fragmented habitat; reduced availability of nesting habitat; decreased cover from predators; and decreased availability prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

#### Minerals Management

The planning area will be open to consideration for exploration, leasing, and development of leasable minerals (oil, gas, coal-bed methane, coal, sodium, phosphate, potash, and uranium), locatable (copper) and salable minerals (sand, gravel, building stone, travertine, clay and humate). Although stipulations or conditions may be included in the terms of these mineral contracts, there are potential impacts associated with these various activities. Mineral exploration and extraction often results in surface disturbance from road and facility construction, removal of topsoil and overburden, stock piling of these materials, and post-mining reclamation and recontouring.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), surface disturbance, and increased occurrence of chemical leaks in yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitats. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. Pollutants in the area may affect prey populations, and vegetation. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

## Recreation Management

The recreation program includes providing for and managing recreational access, developing and maintaining recreation areas, issuing special recreation permits, providing information to the public about BLM's recreational resources, and assessing effects of recreational use on the natural resources. Under this program, OHV use, camping, rafting, hiking, fishing, boating, swimming, and other activities are allowed in designated areas.

Authorized activities under this program have the potential to increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation disturbance, and surface disturbance in potential yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitat. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

## Riparian Management

The objective of riparian management in Utah is to establish an aggressive riparian area management program that will identify, maintain, restore, and/or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits in order to provide watershed protection while still preserving quality riparian dependent aquatic and terrestrial species habitats and, as appropriate, allow for reasonable resource uses. Priority for riparian area management will be given to areas identified as habitat for aquatic species with signed Conservation Agreements and Strategies.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), surface disturbance, and increased occurrence of chemical leaks in yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitats. Vegetation disturbances or vegetation removal may decrease the availability and quality of nesting habitat; decrease cover from predators; and decrease the availability of prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. Pollutants in the area may affect prey populations, and vegetation. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

## Soils and Watershed Resources

The objectives for the soil and watershed resources management program are to maintain and improve soil integrity, and long-term soil productivity through implementation of rangeland health standards and other soil protection measures, as well as to protect, maintain or improve

surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards and to provide for availability of water to facilitate authorized uses.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation manipulation, stream alteration, and minor surface disturbance in western yellow-billed cuckoo habitat. Short-term adverse impacts may include, but not be limited to: decreased nesting habitat; decreased cover from predators; decreased prey habitat; and alterations of water distribution within suitable habitat for western yellow-billed cuckoos. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Travel Management

The objectives of the transportation management program include maintenance of access for public and administrative needs; establishment of a route system that contributes to protection of sensitive resources; accommodates a variety of uses and minimizes user conflicts; and coordination of OHV management.

Activities occurring under this program may increase human presence (including associated noise disturbances), vegetation disturbance, and minor surface disturbance in yellow-billed cuckoo habitat. Vegetation disturbances, vegetation removal, or vegetation alteration may result in less dense vegetation; an increase in invasive plant species; increased fragmented habitat; reduced availability of nesting habitat; decreased cover from predators; and decreased availability prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Vegetation Management

Program objectives are to maintain or improve the diversity of plant communities to support timber production, livestock needs, wildlife habitat, watershed protection, and acceptable visual resources. Therefore, this program includes mechanical, chemical, biological, cultural vegetation management methodologies. These management methodologies may result in ground disturbing activities, chemical impacts, human disturbances, and impacts to vegetation from biological management techniques.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance (mechanical, chemical, biological), and surface disturbance in western yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of available habitat. Vegetation alteration, removal, or inadvertent chemical treatment may adversely affect availability and quality of nesting habitat; decrease cover from predators; and decrease insect prey populations. Soil disturbances may increase erosion, adversely affect soil stability, increase sediment deposits, and alter channel morphology. As a result, there may be a decrease in the fitness of adults and

nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Wildlife Management

This program aims to maintain biological diversity, improve habitat on for wildlife and fisheries, and provide habitats for threatened and endangered species.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in potential western yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of habitat. Vegetation disturbances or vegetation removal may adversely affect availability of nesting habitat, cover from predators, and insect prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### Woodland Management

Woodlands management objectives are to maintain and enhance the health, productivity, sustainability, and biological diversity of forest and woodland ecosystems and to provide a balance of natural resource benefits and uses, including opportunities non-commercial harvest of forest and woodland products on a sustainable basis. The BLM manages forests for multiple uses, such as recreation, livestock grazing, wildlife habitat.

Activities occurring under this program may increase human presence, equipment and vehicle use (including associated noise disturbances), vegetation treatment or disturbance, and surface disturbance in yellow-billed cuckoo habitat. Associated noise disturbances may cause avoidance of potential habitat. Vegetation disturbances, vegetation removal, or chemical treatment of vegetation decrease availability of nesting habitat and decrease prey populations and prey habitat. Soil disturbances may increase erosion, adversely affect soil stability, and increase sediment deposits. Increased occurrence of invasive plants species may change the vegetation community and change the habitat for yellow-billed cuckoo and their prey species. As a result, there may be a decrease in the fitness of adults and nestlings, and potential western yellow-billed cuckoo habitat may become degraded and unable to support this species.

### **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.

Cumulative effects to candidate species western yellow-billed cuckoo under the Proposed Actions would include, but are not limited to, the following broad types of impacts:

- Changes in land use patterns or practices that adversely affect a species' critical, suitable, or potential habitat.

- Encroachment of human development into a species' critical, suitable, or potential habitat.
- Fire management actions by some, or all, of the following groups, on lands adjoining or upstream of BLM-administered lands:
  - State of Utah
  - County Governments in Utah
  - Local Governments in Utah
  - Private landholders in Utah

Western yellow-billed cuckoo have not been found in the planning area. However, small amounts potential and suitable habitat occurs within the jurisdictional management boundaries of BLM in the Moab Field Office area. In these areas, western yellow-billed cuckoo habitat is surrounded by a checkerboard pattern of land ownership including Federal, State, and private landowners. Western yellow-billed cuckoo are susceptible to activities on State and private lands. Many of these activities, such as urban growth and development; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation; road construction; fuels-reduction treatments; research; grazing activities (including alteration or clearing of native habitats for domestic animals); oil and gas exploration and development; introduction of non-native plant or wildlife species (which can alter native habitats and alter prey populations); and other associated actions. Increases or changes in cowbird foraging areas (construction of corrals, grazing of domestic stock, placement of bird feeders) and habitat fragmentation may increase the parasitism rate and prevent western yellow-billed cuckoo habitat use in the planning area. Increased recreation, camping, off-road vehicle use, and river trips may harass and disturb breeding birds or impact nesting habitats. Contributing as cumulative effects to the proposed action, these activities will continue to affect western yellow-billed cuckoo presence with disturbances to breeding, nesting, and foraging behaviors and habitat (including areas of designated critical habitat), and further fragmenting habitat.

## **Conclusion**

The conclusions of this conference opinion are based on full implementation of the programs as described in the "Description of the Proposed Action" section of this document, including the conservation measures that were incorporated into the project design.

After reviewing the status of western yellow-billed cuckoo, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the USFWS's conference opinion that the Moab BLM Field Office Resource Management Plan, as proposed, is not likely to contribute to listing of western yellow-billed cuckoo. We base our conclusion on the following:

1. The applicant committed resource protection measures will be incorporated into site-specific projects designed under the BLM Resource Management Plan. If project design can not adhere to all applicant committed resource protection measures, consultation under Section 7 of the Endangered Species Act will be initiated.

2. All site-specific projects designed under the proposed BLM Resource Management Plan would be subject to consultation requirements under Section 7 of the Endangered Species Act.

## INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3).

Actual take levels are unquantifiable because Moab Field Office Resource Management Plan implementation includes all possible projects authorized on the entirety lands managed by the Moab Field Office and may occur within threatened or endangered species' habitats. However, although unquantifiable, take may occur through harm and harassment.

No exemption from Section 9 of the Act is granted in this biological opinion. BLM's continued implementation of Resource Management Plans is likely to adversely affect listed species. The likelihood of incidental take, and the identification of reasonable and prudent measures and terms and conditions to minimize such take, will be addressed in project-level consultations. Levels of incidental take and measures to reduce such take cannot be effectively identified at the level of proposed action because of the broad geographic scope and time frame, and the lack of site specific information. Rather, incidental take and reasonable and prudent measures may be identified adequately through subsequent actions subject to section 7 consultations at the project-specific scale.

## **REASONABLE AND PRUDENT MEASURES / TERMS AND CONDITIONS**

BLM coordinated and developed, with the USFWS, species-specific conservation measures. These conservation measures were included as part of the Resource Management Plan project description. Therefore, the USFWS believes that Reasonable and Prudent Measures and Terms and Conditions will not be necessary in this programmatic opinion due to the BLM's proactive initiation to minimize impacts on listed species. We commend BLM's efforts to conserve and protect threatened and endangered species. It is possible that additional reasonable and prudent measures and terms and conditions may be required on a project-specific level, in a tiered consultation to this programmatic opinion.

### **RECOMMENDED CONSERVATION MEASURES**

The USFWS recommends incorporating the following guidance into the Resource Management Plan to ensure successful management, protection, and recovery of listed species and their habitats at the landscape and site-specific levels. The USFWS understands that Recommended Measures are not always feasible or applicable for all projects. Available Recovery Plans, Conservation Agreements/Strategies, Scientific Literature, and other available information should consistently be applied to occupied, suitable, and potentially suitable habitats of listed species. The following recommendations should be used in conjunction with available species-specific plans and literature and appropriately applied at the landscape and site-specific planning levels in a manner that ensures conservation and recovery of listed and sensitive species. In general, these guidelines should apply to listed and sensitive species habitats in areas of known and likely occurrence, particularly where recovery and conservation objectives have been identified by available species-specific plans.

#### **All Species**

- Avoid land trades/disposals of listed and sensitive species habitats.
- Avoid the broad-scale use of pesticides and insecticides in habitats of listed species, during sensitive time periods such as breeding and nesting seasons.
- Avoid use of pesticides in riparian habitats and areas adjacent to riparian areas. If used, avoid drift and apply non-persistent pesticides with low bioaccumulation potential.
- Encourage management that maintains sagebrush ecological sites.
- Avoid practices that permanently convert sagebrush shrubland to nonnative grassland.
- Implement management strategies that maintain or improve degraded riparian communities; protect natural flow requirements; protect water quality; manage for stable non-eroding banks; and manage for year-round flows.

- Manage riparian areas from a watershed perspective. Ensure that riparian areas within the project are as continuous as possible along the entire drainage and are as wide as the soil and water table will allow riparian vegetation to exist.
- Manage riparian areas to ensure a multi-aged, multi-layered structure, allowing for retention of snags and diseased trees. Provide multiple layers of vegetation (vertical structure) within 10 feet of the ground.
- Enhance the protection of wetland functions by emphasizing the protection of natural wetland structure, composition, and ecological processes.
- Establish appropriate buffers between wetlands and incompatible land uses adequate to preserve the functional integrity of the wetlands.
- Discourage development of natural water sources under BLM's management.
- When considering spring development/redevelopment, evaluate springs for occurrence of flora and fauna, with particular focus on detecting rare or unique species. Maintain sufficient water to sustain native flora and fauna. Return unused or overflow water to its original drainage. Protect the spring source area from detrimental impacts, e.g. from livestock, recreationists. Protect the spring source from risk of degradation of water quality.
- Fully mitigate all unavoidable habitat losses for listed and migratory birds, at a suggested ratio of 1:1. Mitigate all unavoidable riparian losses at a suggested ratio of 2:1. This ratio may be increased if mitigation does not occur prior to disturbance, if replacement habitat is less valuable than lost habitat, if habitat fragmentation is causing broad-scale impacts to remaining available habitats, or other reasons. Both direct and indirect habitat losses will be considered and fully mitigated.
- Increase 1:1 ratio of sagebrush steppe habitat mitigation if mitigation will occur off-site, be completed after the impact, or is otherwise unequal to the loss of habitat.
- Include native forbs and grasses in seeding mixtures where feasible.
- Monitor condition of habitat in occupied, suitable, or potentially suitable habitat for listed and sensitive species to ensure maintenance of good to excellent ecological conditions; restoration and conservation of good to excellent aquatic habitat conditions; and consistent with available species-specific habitat requirements.
- Consider wildlife use when designing spring enclosures.
- If water developments occur, divert water several hundred feet downstream of the water source to allow wildlife to benefit, hydric species to perpetuate, and water quality to remain high.

- Limit the amount of time livestock spend in pastures with riparian areas; base grazing seasons/length on condition of riparian vegetation.
- Maintain or modify existing grazing regimes to promote growth of desirable vegetation and maintain desirable understory vegetation. Temporarily remove grazing from degraded habitats and habitats recovering from fire and other disturbances.
- Manage grazing to maintain riparian habitats with all desirable vegetation structure and age classes.
- Avoid construction or expansion of recreation facilities within occupied, suitable, and potentially suitable habitat for listed and sensitive species.
- Limit the number of new roadways in project areas when possible to protect wildlife and plant resources. Decommission unnecessary roads and reclaim unauthorized illegal trails in habitats important to listed and sensitive species.
- Where appropriate at designated recreation sites, design recreation activities that are predictable for wildlife; i.e. provide well-marked trails or boardwalks to encourage controlled and predictable human use away from listed and sensitive species habitats, and discourage off-trail hiking and creation of alternate routes.
- Avoid constructing new trails along or parallel to riparian areas.
- Reduce or restrict recreational uses including, but not limited to, all-terrain vehicles, bicycles, horses, birdwatchers, and hikers in riparian areas.
- Where recreation conflicts with use by listed and sensitive species, and area closures are not practical, provide on-site monitoring to educate users and control use.
- Sponsor programs and post signs that educate users about the value of riparian habitat to listed and sensitive species.
- Provide interpretive site and literature on recognition and value of protecting biological soil crusts at major access points in areas of extensive or unique crust formation.
- Avoid building new roads and trails in riparian areas, and avoid stream crossings.
- Close affected watersheds and/or riparian areas to livestock grazing for one or more years to allow for recovery of riparian vegetation. The appropriate length of time for closure to grazing will depend on site-specific characteristics.
- Avoid or restrict mineral development activities in riparian habitats.
- Disturbances of all suitable habitats for listed and sensitive species will be improved to provide adequate habitat (pre-disturbance condition or better).

### **Yellow-billed cuckoo**

- Avoid destruction of existing native cottonwood-willow dominated riparian forests and restore riparian habitats where possible.
- Eliminate loss of dense shrub layers in existing riparian areas and restore shrub areas where absent, when ecologically appropriate.
- Closely monitor grazing, recreational, and other impacts on cottonwood and willow seedlings in riparian systems and reduce or remove sources when seedlings are being impacted.
- Avoid habitat altering activities in riparian areas.

### **Mexican spotted owl**

- Consider seasonal (March 1 – August 31) and spatial (0.5 mile) closures for recreational activities within PAC areas and suitable owl habitats.
- Maintenance of existing facilities within occupied (including PACs) and suitable Mexican spotted owl habitats should be avoided during the breeding season (March 1 – August 31).
- Implement recreational restrictions that protect occupied (including PACs) and suitable Mexican spotted owl habitats. Include these restrictions as part of all special recreation permits. Examples include, but are not limited to group size limits, length of stay, allowed use areas.
- Avoid road or trail building within PACs.
- Assess the presence and intensity of recreational activities in PACs, and apply appropriate measures to minimize impacts to the Mexican spotted owl and its habitat, in accordance with Recovery Plan recommendation and best available scientific information.
- Limit OHV and Guided Vehicle Tour uses to designated road and trails in Mexican spotted owl habitat and PACs.
- Conduct pre- and post-monitoring of Mexican spotted owl habitat conditions in PAC areas for surface disturbing activities.

### **Southwestern willow flycatcher**

- Provide that areas of stop over and potentially suitable habitat the southwestern willow flycatcher are protected from impacts associated with recreational use; i.e. confine

camping areas, restore impacted habitats, minimize attractants to scavengers, predators, and brown-headed cowbirds as appropriate.

- Minimize noise disturbance near suitable and potentially suitable southwestern willow flycatcher habitat. Measures may include, but are not limited to, rerouting trails and day use areas away from habitats, controlling the number of visitors, and discouraging use of loud equipment near breeding locations.
- Restore or maintain perennial surface flows and shallow groundwater in suitable southwestern willow flycatcher habitats, and areas targeted for restoration of suitable habitat.
- Avoid habitat altering activities in riparian areas.
- Unavoidable disturbances of riparian habitats suitable for southwestern willow flycatchers will be restored (pre-disturbance conditions or better) to provided adequate habitat for the species.

### **Jones cycladenia**

- Avoid use of aerosol insecticides within 3 miles of listed plant populations to protect pollinators.
- Direct recreational activities away from occupied habitats of listed and sensitive plant species.

### **Colorado Fish Species**

- Implement INFISH standards or other appropriate methodologies based on soil and terrain conditions, to provide riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability.
- In accordance with INFISH, no disturbance should occur within a buffer zone of 300' on each side of perennial fish bearing streams, 150' on each side of perennial non-fish bearing streams, and between 50' - 100' on each side of intermittent streams.
- Encourage activities to eliminate competing nonnative species and discourage any introduction of nonnative species into aquatic systems.
- Allow for translocations, fish control and removal, transfers, and other movement of fish for conservation and recovery of the species.
- Implement management strategies to restore fish passage, restore and retain natural hydrograph and hydrology, restore and ensure an appropriate distribution of aquatic habitats with special attention to native aquatic species, and restore and protect natural stream processes and function.

- In watersheds that are adjacent to the Colorado, Green, and White Rivers (and their important tributaries), and within major seleniferous formations (e.g., Mancos Shale and Duchesne), manage biological soil crusts to reduce erosion of selenium-bearing soils to habitat for endangered Colorado River fish.
- Provide resource protection measures associated with fishing access, i.e. provide well-marked trails or boardwalks to encourage controlled and predictable human use and discourage off-trail hiking and creation of alternate routes particularly in riparian areas.
- Implement INFISH standards (i.e., riparian buffers), or other appropriate methodologies based on soil and terrain conditions, to provide riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability.
- Avoid construction of fire lines using mechanized equipment so that they cross stream channels or terminate at the stream channel.
- Avoid mixing or applying fire suppressant chemicals (i.e. surfactant foam or retardant formulations) within 300 feet of the stream channel, except when a threat to human life or property exists.
- Avoid transferring water from one watershed into another for the purpose of water drops, as this may aid in spread of water-borne diseases such as whirling disease.
- Manage fire regimens (prescribe and wild) to protect or improve riparian and flood plain habitats.
- Pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand floods of extreme magnitude to prevent breakage and subsequent accidental contamination of runoff during high flow events.
- Surface crossings must be constructed high enough to remain above the highest possible stream flows at each crossing, and subsurface crossings must be buried deep enough to remain undisturbed by scour throughout passage of the peak flow.
- To avoid repeated maintenance of pipeline crossings, hydraulic analysis should be completed in the design phase to eliminate costly repair and potential environmental degradation associated with pipeline breaks at stream crossings.

## RE-INITIATION STATEMENT

This is a program-level document that does not include project specific detail for actions authorized by the existing RMPs. Additional consultation with USFWS will be necessary for any authorized project specific action that may impact any listed species

This concludes formal consultation on the on the continued implementation of Utah BLMs existing Resource Management Plans. As provided in 50 CFR §402.16, re-initiation of formal consultation is required if: 1) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion, 2) 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, 3) a new species is listed or critical habitat designated that may be affected by the action, or 4) water depletions are expected to occur.

Thank you for your interest in conserving threatened and endangered species. If we can be of further assistance, please contact Katherine Richardson at (801) 975-3330 ext. 125 or Laura Romin at ext. 123.

bcc: Project File  
Reading File

RICHARDSON/jrc:10/16/08

File: Formal Files 6-UT-08-F-022

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A handwritten signature in black ink, appearing to be "Laura Romin", with a long horizontal line extending to the right.

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## APPENDIX A

### Conservation Measures for T & E Species of Utah from the Use Plan Programmatic BAs and Section 7 Consultations

As part of the proposed action, the BLM has included conservation measures to minimize or eliminate adverse impacts to federally listed species. The species with potential to inhabit the Moab planning area are: Mexican spotted owl, southwestern willow flycatcher, Jones cycladenia, California Condor, and the four Colorado river fishes.

#### Mexican spotted owl (*Strix occidentalis lucida*) Conservation Measures

The following list of measures provides species-specific guidance, intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Mexican spotted owl (*Strix occidentalis lucida*). This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the Service.

BLM will place restrictions on all authorized (permitted) activities that may adversely affect the Mexican spotted owl in identified PACs, breeding habitat, or designated critical habitat, to reduce the potential for adverse impacts to the species. Restrictions and procedures have been adapted from guidance published in the Utah Field Office Guidelines for Raptor Protection from Human and Land-use Disturbances (USFWS 2002b), as well as coordination between BLM and the Service. Measures include: Surveys, according to USFWS protocol, will be required prior to any disturbance related activities that have been identified to have the potential to impact Mexican spotted owl, unless current species occupancy and distribution information is complete and available. All surveys must be conducted by USFWS certified individuals, and approved by the BLM authorized officer.

Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the appropriate conservation measures below if project activities occur within 0.5 mile of suitable owl habitat, dependent in part on if the action is temporary<sup>1</sup> or permanent<sup>2</sup>:

For all temporary actions that may impact owls or suitable habitat:

- If action occurs entirely outside of the owl breeding season, and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey.

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<sup>1</sup> Temporary activities are defined as those that are completed prior to the start of the following raptor breeding season, leaving no permanent structures and resulting in no permanent habitat loss.

<sup>2</sup> Permanent activities continue for more than one breeding season and/or cause a loss of owl habitat or displaces owls through disturbances, e.g., creation of a permanent structure including but not limited to well pads, roads, pipelines, electrical power line.

- If action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, activity should be delayed until outside of the breeding season.
- Eliminate access routes created by a project through such means as raking out scars, revegetation, gating access points, etc.

For all permanent actions that may impact owls or suitable habitat:

- Survey two consecutive years for owls according to established protocol prior to commencing of activity.
- If owls are found, no actions will occur within 0.5 mile of identified nest site.
- If nest site is unknown, no activity will occur within the designated Protected Activity Center (PAC).
- Avoid placing permanent structures within 0.5 mi of suitable habitat unless surveyed and not occupied.
- Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims (Delaney et al. 1997). Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.5 mile buffer for suitable habitat, including canyon rims.
- Limit disturbances to and within suitable owl habitat by staying on designated routes.
- Limit new access routes created by the project.

1. BLM will, as a condition of approval (COA) on any project proposed within identified PACs, designated critical habitat, or within spatial buffers for Mexican spotted owl nests (0.5 mile), ensure that project proponents are notified as to their responsibilities for rehabilitation of temporary access routes and other temporary surface disturbances, created by their project, according to individual BLM Field Office standards and procedures, or those determined in the project-specific Section 7 Consultation.

2. BLM will require monitoring of activities in designated critical habitat, identified PACs, or breeding habitats, wherein it has been determined that there is a potential for take. If any adverse impacts are observed to occur in a manner, or to an extent that was not considered in the project-specific Section 7 Consultation, then consultation must be reinitiated.

- Monitoring results should document what, if any, impacts to individuals or habitat occur during project construction/implementation. In addition, monitoring should document successes or failures of any impact minimization, or mitigation measures. Monitoring results would be considered an opportunity for adaptive management, and as such, would be carried forward in the design and implementation of future projects.

3. For all survey and monitoring actions:

- Reports must be provided to affected field offices within 15 days of completion of survey or monitoring efforts.

- Report any detection of Mexican spotted owls during survey or monitoring to the authorized officer within 48 hours.
4. BLM will, in areas of designated critical habitat, ensure that any physical or biological factors (i.e., the primary constituent elements), as identified in determining and designating such habitat, remains intact during implementation of any BLM-authorized activity.
  5. For all BLM actions that “*may adversely affect*” the primary constituent elements in any suitable Mexican spotted owl habitat, BLM will implement measures as appropriate to minimize habitat loss or fragmentation, including rehabilitation of access routes created by the project through such means as raking out scars, revegetation, gating access points, etc.
  6. Where technically and economically feasible, use directional drilling from single drilling pads to reduce surface disturbance, and minimize or eliminate need to drilling in canyon habitats suitable for Mexican spotted owl nesting.
  7. Prior to surface-disturbing activities in Mexican spotted owl PACs, breeding habitats, or designated critical habitat, specific principles should be considered to control erosion. These principles include:
    - Conduct long-range transportation planning for large areas to ensure that roads will serve future needs. This will result in less total surface disturbance.
    - Avoid surface disturbance in areas with high erosion hazards to the greatest extent possible. Avoid mid-slope locations, headwalls at the source of tributary drainages, inner valley gorges, and excessively wet slopes such as those near springs. In addition, avoid areas where large cuts and fills would be required.
    - Locate roads to minimize roadway drainage areas and to avoid modifying the natural drainage areas of small streams.
  8. Project developments should be designed, and located to avoid direct or indirect loss or modification of Mexican spotted owl nesting and/or identified roosting habitats.
  9. Water production associated with BLM authorized actions should be managed to ensure maintenance or enhancement of riparian habitats.

### **Southwestern willow flycatcher (*Empidonax traillii extimus*) Conservation Measures**

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Southwestern willow flycatcher (*Empidonax traillii extimus*). This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Surveys will be required prior to operations that “*may adversely affect*” the Southwestern willow flycatcher unless species occupancy data and distribution information is complete and available. Surveys will only be conducted by BLM-approved personnel. In the event species occurrence is verified, project proponents may be required to modify operational plans at the

discretion of the authorized officer. Modifications may include appropriate measures for minimization of adverse effects to the Southwestern willow flycatcher and its habitat.

2. BLM will monitor and restrict, when and where necessary, authorized or casual use activities that “*may adversely affect*” the Southwestern willow flycatcher, including but not limited to, recreation, mining, and oil and gas activities. Monitoring results should be considered in the design and implementation of future projects.

3. To monitor the impacts of BLM-authorized projects determined “*likely to adversely affect*” the Southwestern willow flycatcher, BLM should prepare a short report describing progress, including success of implementation of all associated mitigation. Reports shall be submitted annually to the USFWS Utah Field Office by March 1<sup>st</sup> beginning one full year from date of implementation of the proposed action. The report shall list and describe the following items:

- When, or if, the level of anticipated take (as allowed by separate Incidental Take Statements from site- Any unforeseen adverse effects resulting from activities of each site-specific project (may also require reinitiation of formal Consultation);
- When, and if, any level of anticipated incidental take is approached (as allowed by separate Incidental Take Statements of site-specific Formal Section 7 Consultation efforts);
- Specific formal consultations) is exceeded; and
- Results of annual, periodic monitoring which evaluate the effectiveness of the reasonable and prudent measures or terms and conditions of the site-specific Consultation.

4. BLM should avoid granting activity permits or authorizing development actions in Southwestern willow flycatcher habitat. Unoccupied potential habitat should be protected in order to preserve them for future management actions associated with the recovery of the Southwestern willow flycatcher.

5. BLM will ensure project design incorporates measures to avoid direct disturbance to populations and suitable habitats where possible. At a minimum, project designs should include consideration of water flows, slope, seasonal and spatial buffers, possible fencing, and pre-activity flagging of critical areas for avoidance.

6. The BLM will continue to address illegal and unauthorized OHV use and activity upon BLM administered lands. In order to protect, conserve, and recover the Southwestern willow flycatcher in areas of heavy unauthorized use, temporary closures, or use restrictions beyond those which are already in place, may be imposed. As funding allows, BLM should complete a comprehensive assessment of all OHV use areas that interface with Southwestern willow flycatcher populations. Comparison of Southwestern willow flycatcher populations and OHV use areas using GIS would give BLM personnel another tool to manage and/or minimize impacts.

7. All surface-disturbing activities should be restricted within a 0.25 mile buffer from suitable riparian habitats and permanent surface disturbances should be avoided within 0.5 mile of suitable Southwestern willow flycatcher habitat.

- Unavoidable ground disturbing activities in occupied Southwestern willow flycatcher habitat should only be conducted when preceded by current year survey, should only occur between August 16 and April 30 (the period when Southwestern willow flycatcher are not likely to be breeding), and should be monitored to ensure that adverse impacts to Southwestern willow flycatcher are minimized or avoided, and to document the success of project specific protection measures. As monitoring is relatively undefined, project specific requirements must be identified.

8. BLM will properly consider nesting periods for Southwestern willow flycatcher when conducting horse gathering operations in the vicinity of habitat.
9. BLM will ensure that plans for water extraction and disposal are designed to avoid changes in the hydrologic regime that would likely result in loss or undue degradation of riparian habitat.
10. Native species will be preferred over non-native for revegetation of habitat in disturbed areas.
11. BLM will coordinate with other agencies and private landowners to identify voluntary opportunities to modify current land stewardship practices that may impact the Southwestern willow flycatcher and its habitats.
12. Limit disturbances to within suitable habitat by staying on designated routes.
13. Ground-disturbing activities will require monitoring throughout the duration of the project to ensure that adverse impacts to Southwestern willow flycatcher are avoided. Monitoring results should document what, if any, impacts to individuals or habitat occur during project construction/implementation. In addition, monitoring should document successes or failures of any impact minimization or mitigation measures. Monitoring results would be considered an opportunity for adaptive management and, as such, would be carried forward in the design and implementation of future projects.
14. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in Southwestern willow flycatcher habitat.
15. Habitat disturbances (i.e., organized recreational activities requiring special use permits, drilling activities, etc.) will be avoided within 0.25 mile of suitable Southwestern willow flycatcher habitat from May 1 to August 15. Grazing allotments that contain habitat for the species will be managed with consideration for recommendations provided by the Southwestern Willow Flycatcher Recovery Plan, and other applicable research.

### **Jones cycladenia (*Cycladenia humilis* var. *jonesii*) Conservation Measures**

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Jones cycladenia (*Cycladenia humilis* var. *jonesii*). This list is not comprehensive. Additional conservation measures, or other modified versions of these

measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Prior to surface-disturbing activities in habitat for the species, presence/absence surveys of potentially affected areas will be conducted in accordance with established protocols.
2. Appropriate avoidance/protection/mitigation will be used to manage potential impacts of similar subsequent projects. These measures should include, but are not be limited to:
  - the stabilization of soils to minimize or avoid impacts related to soil erosion;
  - marking/flagging of suitable and/or occupied habitat (including predetermined buffers) prior to development to avoid trampling by crew members or equipment during disturbance related activities; and
  - require project proponents to conduct surveys and monitoring actions using BLM approved specialists to document population effects and individual impacts.
3. BLM shall continue to document new populations of Jones cycladenia (*Cycladenia humilis* var. *jonesii*) as they are encountered.
4. To assist and support recovery efforts, BLM will minimize or avoid surface disturbances in habitats that support the species.
5. BLM will encourage and assist project proponents in development and design of their proposed actions in order to avoid direct disturbance to populations or individuals where feasible. Designs should consider water flow, slope, appropriate buffer distances, possible fencing needs, and pre-activity flagging of sensitive areas that are planned for avoidance.
6. BLM will consider emergency OHV closure or additional restrictions to protect, conserve, and recover the species.
7. In areas where dispersed recreational uses are identified as threats to populations of the species, BLM will consider the development of new recreational facilities/opportunities that concentrate dispersed recreational use away from habitat, especially occupied habitat.
8. Cultural and paleontological survey/recovery technicians (i.e., archeologists and/or paleontologists), conducting work in the vicinity of known populations, will be educated in the identification of listed species in order to avoid inadvertent trampling or removal during survey, mapping, or excavation of cultural or paleontological resources.
9. Areas of viable habitat, in the vicinity of populations considered for prescribed burning, will be surveyed according to established protocols for new or undocumented populations of the species.
10. Lands being considered for exchange or disposal that contain suitable habitat for the species will be surveyed for undocumented populations, according to established protocols, prior to approval of such disposal. Lands supporting populations shall not be disposed of unless it is determined that the action will not threaten the survival and recovery of the species in accordance with the ESA and BLM Guidance and Policy Manual 6840 – Special Status Species Management.

11. BLM will encourage the avoidance of key habitats during livestock herding and trailing activities on BLM administered lands. (Key habitats are those that are deemed necessary for the conservation of the species including, but not necessarily limited to, designated critical habitat and other occupied or unoccupied habitats considered important for the species survival and recovery as determined in coordination with the USFWS).

## **COLORADO RIVER ENDANGERED FISHES CONSERVATION MEASURES**

### **Bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), and Razorback sucker (*Xyrauchen texanus*)**

The following list of measures provides species-specific guidance intended to avoid, minimize, or reduce potential adverse impacts from implementation of BLM actions under the authority of current Utah BLM LUPs on the Colorado pikeminnow, Humpback chub, bonytail, and razorback sucker, herein referred to as the Colorado River fishes. This list is not comprehensive. Additional conservation measures, or other modified versions of these measures, may be applied for any given BLM-authorized activity upon further analysis, review, coordination efforts, and/or appropriate levels of section 7 consultation with the USFWS.

1. Monitoring of impacts of site-specific projects authorized by the BLM will result in the preparation of a report describing the progress of each site-specific project, including implementation of any associated reasonable and prudent measures or reasonable and prudent alternatives. This will be a requirement of project proponents and will be included as a condition of approval (COA) on future proposed actions that have been determined to have the potential for take. Reports will be submitted annually to the USFWS - Utah Field Office, beginning after the first full year of implementation of the project, and shall list and describe:

- Any unforeseen direct or indirect adverse impacts that result from activities of each site-specific project;
- Estimated levels of impact or water depletion, in relation to those described in the original project-level Consultation effort, in order to inform the Service of any intentions to reinitiate Section 7 Consultation; and
- Results of annual, periodic monitoring which evaluates the effectiveness of any site-specific terms and conditions that are part of the formal Consultation process. This will include items such as an assessment of whether implementation of each site-specific project is consistent with that described in the BA, and whether the project has complied with terms and conditions.

2. The BLM shall notify the USFWS immediately of any unforeseen impacts detected during project implementation. Any implementation action that may be contributing to the introduction of toxic materials or other causes of fish mortality must be immediately stopped until the situation is remedied. If investigative monitoring efforts demonstrate that the source of fish mortality is not related to the authorized activity, the action may proceed only after notification of USFWS authorities.

3. Unoccupied, suitable habitat areas should be protected in order to preserve them for future management actions associated with the recovery of the Endangered Colorado River Fish, as well as approved reintroduction, or relocation efforts.

- BLM will avoid impacts where feasible, to habitats considered most representative of prime suitable habitat for these species.
- Surface-disturbing activities will be restricted within ¼ mile of the channel centerline of the Colorado, Green, Duchesne, Price, White, and San Rafael Rivers
- Surface-disturbing activities proposed to occur within floodplains or riparian areas will be avoided unless there is no practical alternative or the development would enhance riparian/aquatic values. If activities must occur in these areas, construction will be designed to include mitigation efforts to maintain, restore, and/or improve riparian and aquatic conditions. If conditions could not be maintained, offsite mitigation strategies should be considered.

4. BLM will ensure project proponents are aware that designs must avoid as much direct disturbance to current populations and known habitats as is feasible. Designs should include:

- protections against toxic spills into rivers and floodplains;
- plans for sedimentation reduction;
- minimization of riparian vegetation loss or degradation;
- pre-activity flagging of critical areas for avoidance;
- design of stream-crossings for adequate passage of fish; and
- measures to avoid or minimize impacts on water quality at the 25-year frequency runoff

5. Prior to surface-disturbing activities, specific principles will be considered to control erosion. These principles include:

- Conduct long-range transportation planning for large areas to ensure that roads will serve future needs. This will result in less total surface disturbance.
- Avoid, where possible, surface disturbance in areas with high erosion hazards.
- Avoid mid-slope location of drill pads, headwalls at the source of tributary drainages, inner valley gorges, excessively wet slopes such as those near springs and avoid areas where large cuts and fills would be required.
- Design and locate roads to minimize roadway drainage areas and to avoid modifying the natural drainage areas of small streams.

6. Where technically and economically feasible, project proponents will use directional drilling or multiple wells from a single pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such drilling does not intercept or degrade alluvial aquifers. Drilling will not occur within 100 year floodplains that contain listed fish species or their designated critical habitats.

7. The Utah Oil and Gas Pipeline Crossing Guidance (BLM National Science and Technology Center), or other applicable guidance, will be implemented for oil and gas pipeline river/stream crossings.

8. In areas adjacent to 100-year floodplains, particularly in systems prone to flash floods, BLM will analyze the risk for flash floods to impact facilities. Potential techniques may include the use of closed loop drilling and pipeline burial or suspension as necessary to minimize the potential for equipment damage and resultant leaks or spills.

9. Water depletions from any portion of the Upper Colorado River drainage basin above Lake Powell are considered to adversely affect and adversely modify the critical habitat of these endangered fish species. Section 7 consultation will be completed with the Service prior to any such water depletions.

10. Design stream-crossings for adequate passage of fish (if present), minimum impact on water quality, and at a minimum, a 25-year frequency run-off.

### **Resource Protection Measures Incorporated from the Utah Land-Use Plan Amendment for Fire and Fuels Management (UT-USO-04-01)**

1. Initiate emergency Section 7 consultation with U.S. Fish and Wildlife Service upon the determination that wildfire suppression may pose a potential threat to any listed threatened or endangered species or adverse modification of designated critical habitat.

2. Prior to planned fire management actions, survey for listed threatened and endangered and non-listed sensitive species. Initiate Section 7 consultation with U.S. Fish and Wildlife Service as necessary if proposed project may affect any listed species. Review appropriate management, conservation and recovery plans and include recovery plan direction into project proposals. For non-listed special status plant and animal species, follow the direction contained in the BLM 6840 Manual. Ensure that any proposed project conserves non-listed sensitive species and their habitats and ensure that any action authorized, funded or carried out by the BLM does not contribute to the need for any species to become listed.

3. Follow Terms and Conditions identified in the Biological Opinion accompanying the Utah Land-use Plan Amendment for Fire and Fuels Management

### **Conservation Measures from the Biological Opinion for the Utah BLM Land Use Plans (LUP) Amendments BA and Fire Management Plans (FMP) BAs**

Firefighter and public safety is the first priority in every fire management activity. Setting priorities among protecting human communities, community infrastructure, other property and improvements, and natural and cultural resources must be based on the values to be protected, human health and safety, and costs of protection. The Applicant Committed Resource Protection Measures will apply to the species covered in this consultation, unless a threat to human life or property exists. During the wildfire suppression activities, the Incident Commander has the final decision making authority for suppression operations and tactics, including implementation of resource protection operations, thereby minimizing or avoiding many effects to federally protected species. However, in the event that measures cannot be implemented during fire

suppression operations due to safety concerns, some effects may occur to federally protected species. In these cases, BLM would initiate emergency consultation with the Service for these fire suppression efforts.

## **Land Use Plan Amendment**

The project proponent commits to the following resource protection measures as identified in the March 4, 2005 Biological Assessment. These measures have been developed as part of the proposed action to provide statewide consistency in reducing the effects of fire management activities on listed, proposed, and candidate species and their habitats. Resource protection measures for fire management practices use the following codes to represent which actions fall within each of the measures:

SUP: wildland fire suppression

WFU: wildland fire use for resource benefit

RX: prescribed fire

NF: non-fire fuel treatments

ESR: Emergency Stabilization and Rehabilitation

### **Measures designed to protect air quality include:**

A-1 Evaluate weather conditions, including wind speed and atmospheric stability, to predict impacts from smoke from prescribed fires and wildland fire uses. Coordinate with Utah Department of Environmental Quality for prescribed fires and wildland fire use (RX, WFU).

A-2 When using chemical fuels reduction methods, follow all label requirements for herbicide application (NF).

### **Measures designed to protect soil and water quality include:**

SW-1 Avoid heavy equipment use on highly erosive soils (soils with low soil loss tolerance), wet or boggy soils and slopes greater than 30%, unless otherwise analyzed and allowed under appropriate NEPA evaluation with implementation of additional erosion control and other soil protection mitigation measures. (SUP, WFU, RX, NF, ESR)

SW-2 There may be situations where high intensity fire will occur on sensitive and erosive soil types during wildland fire, wildland fire use or prescribed fire. If significant areas show evidence of high severity fire, then evaluate area for soil erosion potential and downstream values at risk and implement appropriate or necessary soil stabilization actions such as mulching or seeding to avoid excessive wind and water erosion. (SUP, WFU, RX)

SW-3 Complete necessary rehabilitation on fire lines or other areas of direct soil disturbance, including but not limited to water barring fire lines, covering and mulching fire lines with slash, tilling and/or sub soiling compacted areas, scarification of vehicle tracks, OHV closures, seeding and/or mulching for erosion protection. (SUP, WFU, RX)

SW-4 When using mechanical fuels reduction treatments, limit tractor and heavy equipment use to periods of low soil moisture to reduce the risk of soil compaction. If this is not practical, evaluate sites, post treatment and if necessary, implement appropriate remediation, such as sub soiling, as part of the operation. (NF)

SW-5 Treatments such as chaining, plowing and roller chopping shall be conducted as much as practical on the contour to reduce soil erosion. (NF, ESR)

SW-6 When using chemical fuel reduction treatments follow all label directions, additional mitigations identified in project NEPA evaluation and the Approved Pesticide Use Permit. At a minimum, provide a 100-foot-wide riparian buffer strip for aerial application, 25 feet for vehicle application and 10 feet for hand application. Any deviations must be accordance with the label. Herbicides would be applied to individual plants within 10 feet of water where application is critical. (NF)

SW-7 Avoid heavy equipment in riparian or wetland areas. During fire suppression or wildland fire use, consult a Resource Advisor before using heavy equipment in riparian or wetland areas. (SUP, WFU, RX, NF, ESR)

SW-8 Limit ignition within native riparian or wetland areas. Allow low-intensity fire to burn into riparian areas. (RX)

SW-9 Suppress wildfires consistently with compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] water bodies. Do not use retardant within 300 feet of water bodies. (SUP, WFU)

SW-10 Plan and implement projects consistent with compliance strategies for restoring or maintaining the restoration of water quality impaired [303(d) listed] water bodies. Planned activities should take into account the potential impacts on water quality, including increased water yields that can threaten fisheries and aquatic habitat; improvements at channel crossings; channel stability; and downstream values. Of special concern are small headwaters of moderate to steep watersheds, erosive or saline soils; multiple channel crossings; at-risk fisheries, and downstream residents. (RX, NF, ESR)

**Measures designed to protect vegetation include:**

V-1 When restoring or rehabilitating disturbed rangelands, non-intrusive, non-native plant species are appropriate for use when native species: (1) are not available; (2) are not economically feasible; (3) cannot achieve ecological objectives as well as non-native species; and/or (4) cannot compete with already established native species. (RX, NF, ESR)

V-2 In areas known to have weed infestations, aggressive action should be taken in rehabilitating fire lines, seeding and follow-up monitoring and treatment to reduce the spread of noxious weeds. Monitor burned areas and treat as necessary. All seed used would be tested for purity and for noxious weeds. Seed with noxious weeds would be rejected. (SUP, WFU, RX, NF, ESR)

**Measures designed to protect special status species (including threatened and endangered species) include:**

SSS-1 Initiate emergency Section 7 consultation with United States Fish and Wildlife Service (Service) upon the determination that wildfire suppression may pose a potential threat to any listed threatened or endangered species or adverse modification of designated critical habitat. (SUP)

SSS-2 Prior to planned fire management actions, survey for listed threatened, endangered, and non-listed sensitive species. Initiate Section 7 consultation with the Service as necessary if a proposed project may affect any listed species. Review appropriate management, conservation and recovery plans and include recovery plan direction into project proposals. For non-listed special status plant and animal species, follow the direction contained in the BLM 6840 Manual. Ensure that any proposed project conserves nonlisted sensitive species and their habitats and ensure that any action authorized, funded, or carried out by BLM does not contribute to the need for any species to become listed. (RX, NF, ESR)

SSS-3 Incorporate site-specific conservation measures identified in this BA. (SUP, WFU, RX,NF, ESR)

**Measures designed to protect fish and wildlife resources include:**

FW-1 Avoid treatments during nesting, fawning, spawning, or other critical periods for wildlife or fish. (RX, NF, ESR)

FW-2 Avoid if possible or limit the size of, wildland fires in important wildlife habitats such as, mule deer winter range, riparian and occupied sage grouse habitat. Use Resource Advisors to help prioritize resources and develop Wildland Fire Situation Analyses (WFSAs) and Wildland Fire Implementation Analyses (WFSAs) and Wildland Fire Implementation Plans (WFIPs) when important habitats may be impacted. (SUP, WFU)

FW-3 Minimize wildfire size and frequency in sagebrush communities where sage grouse habitat objectives will not be met if a fire occurs. Prioritize wildfire suppression in sagebrush habitat with an understory of invasive, annual species. Retain unburned islands and patches of sagebrush unless there are compelling safety, private property and resource protection or control objectives at risk. Minimize burn out operations (to minimize burned acres) in occupied sage-grouse habitats when there are not threats to human life and/or important resources. (SUP)

FW-4 Establish fuel treatment projects at strategic locations to minimize size of wildfires and to limit further loss of sagebrush. Fuel treatments may include green stripping to help reduce the spread of wildfires into sagebrush communities. (RX, NF)

FW-5 Use wildland fire to meet wildlife objectives. Evaluate impacts to sage grouse habitat in areas where wildland fire use for resource benefit may be implemented. (WFU, RX)

FW-6 Create small openings in continuous or dense sagebrush (>30% canopy cover) to create a mosaic of multiple-age classes and associated understory diversity across the landscape to benefit sagebrush-dependent species. (WFU, RX, NF)

FW-7 On sites that are currently occupied by forests or woodlands, but historically supported sagebrush communities, implement treatments (fire, cutting, chaining, seeding, etc.) to reestablish sagebrush communities. (RX, NF)

FW-8 Evaluate and monitor burned areas and continue management restrictions until the recovering and/or seeded plant community reflect the desired condition. (SUP, WFU, RX, ESR)

FW-9 Utilize the Emergency Stabilization and Rehabilitation program to apply appropriate post fire treatments within crucial wildlife habitats, including sage grouse habitats. Minimize seeding with non-native species that may create a continuous perennial grass cover and restrict establishment of native vegetation. Seed mixtures should be designed to reestablish important seasonal habitat components for sage grouse. Leks should not be reseeded with plants that change the vegetation heights previously found on the lek. Forbs should be stressed in early and late brood-rearing habitats. In situations of limited funds for emergency stabilization and rehabilitation actions, prioritize rehabilitation of sage grouse habitats. (ESR)

**Measures designed to protect wild horses and burros include:**

WHB-1 Avoid fencing that would restrict access to water. (RX, NF, ESR)

**Measures designed to protect cultural resources include:**

CR-1 Cultural Resource Advisors should be contacted when fires occur in areas containing sensitive cultural resources. (SUP)

CR-2 Wildland fire use is discouraged in areas containing sensitive cultural resources. A Programmatic Agreement is being prepared between the Utah State Historic Preservation Office, BLM, and the Advisory Council to cover the finding of adverse effects to cultural resources associated with wildland fire use. (WFU)

CR-3 Potential impacts of proposed treatments should be evaluated for compliance with the National Historic Preservation Act (NHPA) and the Utah Statewide Protocol. This should be conducted prior to the proposed treatment. (RX, NF, ESR)

**Measures designed to protect paleontology resources include:**

P-1 Planned projects should be consistent with BLM Manual and Handbook H-8270-1, Chapter III (A) and III (B) to avoid areas where significant fossils are known or predicted to occur or to provide for other mitigation of possible adverse effects. (RX, NF, ESR)

P-2 In the event that paleontological resources are discovered in the course of surface fire management activities, including fires suppression, efforts should be made to protect these resources. (SUP, WFU, RX, NF, ESR)

**Measures designed to protect forestry resources include:**

F-1 Planned projects should be consistent with HFRA Section 102(e)(2) to maintain or contribute to the restoration of old-growth stands to a pre-fire suppression condition and to retain large trees contributing to old-growth structure. (SUP, WFU, RX, NF)

F-2 During planning, evaluate opportunities to utilize forest and woodland products prior to implementing prescribed fire activities. Include opportunities to use forest and woodland stands, consider developing silvicultural prescriptions concurrently with fuel treatments prescriptions. (RX, NF)

**Measures designed to protect livestock grazing resources include:**

LG-1 Coordinate with permittees regarding the requirements for non-use or rest of treated areas. (SUP, WFU, RX, NF, ESR)

LG-2 Rangelands that have been burned by wildfire, prescribed fire, or wildland fire use, would be ungrazed for a minimum of one complete growing season following the burn. (SUP, WFU, RX)

LG-3 Rangelands that have been re-seeded or otherwise treated to alter vegetation composition, chemically or mechanically, would be ungrazed for a minimum of two complete growing seasons. (RX, NF, ESR)

**Measures designed to protect recreation and visitor services include:**

Rec-1 Wildland fire suppression efforts would preferentially protect Special Recreation Management Areas and recreation site infrastructure in line with fire management goals and objectives. (SUP)

Rec-2 Vehicle tracks created off of established routes would be obliterated after fire management actions in order to reduce unauthorized OHV travel. (SUP, WFU, RX, NF, ESR)

**Measures designed to protect land and reality resources include:**

LR-1 Fire management practices would be designed to avoid or otherwise ensure the protection of authorized rights-of-way and other facilities located on the public lands, including coordination with holders of major rights-of-way systems within rights-of-way corridors and communication sites. (WFU, RX, NF, ESR)

LR-2 Fire management actions must not destroy, deface, change or remove to another place any monument or witness tree of the Public Land Survey System. (SUP, WFU, RX, NF,ESR)

**Measures designed to minimize impacts confounded by hazardous waste include:**

HW-1 Recognize hazardous wastes and move fire personnel to a safe distance from dumped chemicals, unexploded ordnance, drug labs, wire burn sites, or any other hazardous wastes. Immediately notify BLM Field Office hazmat coordinator or state hazmat coordinator upon discovery of any hazardous materials, following the BLM hazardous materials contingency plan. (SUP, WFU, RX, NF, ESR)

**Measures designed to protect mineral resources include:**

M-1 A safety buffer should be maintained between fire management activities and at-risk facilities. (SUP, WFU, RX)

**Measures designed to protect wilderness and wilderness study areas (WSAs) include:**

Wild-1 The use of earth-moving equipment must be authorized by the field office manager. (SUP, WFU, RX, ESR)

Wild-2 Fire management actions would rely on the most effective methods of suppression that are least damaging to wilderness values, other resources and the environment, while requiring the least expenditure of public funds. (SUP, WFU)

Wild-3 A Resource Advisor should be consulted when fire occurs in Wilderness and WSAs.(SUP, WFU)

### **Additional resource protection measures:**

In addition to the resource protection measures listed in the LUP Amendment and five FMPs, the following conservation measures were developed through the Section 7 (of the ESA)consultation process. The BLM has incorporated these measures into the six Proposed Actions by reference to their BA, and include:

- Manage natural and prescribed Fire Regimes to protect or improve Utah prairie dog habitat.
- Within Utah prairie dog habitat, reseedling would be implemented according to the Utah Prairie Dog Recovery Plan.
- Manage prescribed fire and wildland fire use within Mexican spotted owl Protected Activity Centers (PACs) to ensure protection of nesting, roosting, and foraging habitats.
- Wildland fire suppression would be prioritized for use in Mexican spotted owl PACs. When feasible, fire camps associated with suppression efforts would be built outside of the PACs and nest protection areas.
- For treatments within suitable habitat for listed species, pre- and post-monitoring would take place as determined on a case-by-case basis.
- Incorporate the standards and guidelines recommended by the Inland Native Fish Strategy (USFS 1995)
- As per the decision of the Resource Advisor, avoid construction of fire lines using mechanized equipment across the stream channel. If used, the mechanized equipment would terminate at, and not cross, the stream channel.
- Avoid transferring water from one watershed into another for the purpose of water drops, as this could aid in the spread of water-borne diseases such as whirling disease.
- Avoid retardant use in any riparian/wetland communities.
- Restrict use of mechanical treatments and hand tools.
- Per-burn acreage limitations of 5-100 acres, as long as human life or property are not threatened.

If the white-tailed prairie dog is listed, initiate emergency Section 7 consultation with the Service upon the determination that wildland fire suppression may pose a potential threat to the species. (SUP) Prior to planned fire management actions, survey for listed threatened and endangered and nonlisted sensitive species. Initiate Section 7 consultation with the Service as necessary if proposed projects may impact the white-tailed prairie dog, if listed. Review appropriate management, conservation, and recovery plans and include recovery plan direction into project proposals, if listed. Until the white-tailed prairie dog is listed, follow the direction contained in the BLM 6840 Manual. Ensure that any proposed project conserves non-listed sensitive species and their habitats and ensure that any action, authorized, funded or carried out by BLM does not contribute to the need for any species to become listed.

## **Measures Specific to the Moab Fire Region**

Restoration and rehabilitation measures may follow prescribed and non-fire management actions. They would emphasize the re-establishment and perpetuation of habitat diversity and prevention of reduction of invasive weeds species. The short-term objective would be to stabilize soils, reduce potential impacts to values at risk (cultural, watershed, fish and wildlife, and any adjacent private holdings), and prevent the establishment of non-native invasive species. Long-term objectives include further stabilization of sites to assist in the re-establishment of the native vegetation community that existed prior to the disturbance. Restoration and rehabilitation efforts are selectively applied to planned management actions. Emergency stabilization and rehabilitation is a part of wildland fire suppression action and is considered separately from standard restoration and rehabilitation.

## **Stipulations and Environmental Best Practices Applicable to Oil and Gas Leasing and Other Surface-Disturbing Activities**

This appendix lists by alternative the stipulations for oil and gas leasing referred to throughout the Biological Assessment. These stipulations would also apply, where appropriate and practical, to other surface-disturbing activities (and occupancy) associated with land-use authorizations, permits, and leases issued on BLM lands. The stipulations would not apply to activities and uses where they are contrary to laws, regulations, or specific program guidance. The intent is to maintain consistency, to the extent possible, in applying stipulations to all surface-disturbing activities.

Surface-disturbing activities are those that normally result in more than negligible disturbance to public lands and accelerate the natural erosive process. Surface disturbance may, but does not always, require reclamation. These activities normally involve use and/or occupancy of the surface, cause disturbance to soils and vegetation, and are usually caused by motorized or mechanical actions. They include, but are not limited to: the use of mechanized earth-moving equipment; truck-mounted drilling and geophysical exploration equipment; off-road vehicle travel in areas designated as limited or closed to off-road vehicle use; vegetation treatments; construction of facilities such as power lines, pipelines, oil and gas wells; recreation sites, improvements for range and wildlife; new road construction; and use of pyrotechnics and explosives. Surface disturbance is not normally caused by casual-use activities. Activities that are not considered surface-disturbing include, but are not limited to: livestock grazing, crosscountry hiking, minimum impact filming, and vehicular travel on designated routes.

### **Description of Stipulations**

The following lists resources of concern and stipulations including exceptions, modifications, and waivers by alternative. Three types of stipulations could be applied to land use authorizations: 1) no surface occupancy (NSO), 2) timing limitations (TL), and 3) controlled surface use (CSU). All other areas are open to oil and gas leasing subject to standard terms and conditions.

Areas identified as NSO are open to oil and gas leasing but surface-disturbing activities can not be conducted on the surface of the land. Access to oil and gas deposits would require horizontal

drilling from outside the boundaries of the NSO areas. NSO areas are avoidance areas for rights-of-way; no rights-of-ways would be granted in NSO areas unless there are no feasible alternatives. Where necessary in the future, NSO areas could be recommended for withdrawal from operations conducted under the mining laws (locatable minerals) if unacceptable resource impacts are occurring or could occur. A NSO stipulation cannot be applied to operations conducted under the mining laws without a withdrawal. A withdrawal is not a land-use planning decision because it must be approved by the Secretary of Interior. Therefore, unless withdrawn, areas identified as NSO are open to operations conducted under the mining laws subject only to TL and CSU stipulations, which are consistent with the rights granted under the mining laws.

Areas identified as TL are open to oil and gas leasing but would be closed to surface-disturbing activities during identified time frames. This stipulation would not apply to operation and maintenance activities, including associated vehicle travel, unless otherwise specified. Areas identified as CSU are open to oil and gas leasing but would require proposals for surface disturbing activities to be authorized only according to the controls or constraints specified. Areas identified as closed are not open to oil and gas leasing. Exceptions, modifications, and waivers do not apply to closed areas. Closed areas are exclusion areas for rights-of-way. WSAs and wilderness areas are closed to oil and gas leasing by the regulations found at 43 CFR 3100.0-3(a)(2)viii and xi. Also, areas identified with wilderness characteristics are closed in Alternative B.

Other areas are partially closed to oil and gas leasing where it is not reasonable to apply a NSO stipulation across the entire area. This includes areas where the oil and gas resources are physically inaccessible by current directional drilling technology (1 mile) from outside the NSO area. These lands closed to oil and gas leasing are retained with a NSO stipulation for all other surface-disturbing activities and exceptions, modifications, and waivers apply to these activities. Closed areas identified with wilderness characteristics in Alternative B could be recommended for withdrawal of operations conducted under the mining laws. WSAs and wilderness areas are already protected from these activities by withdrawal or existing laws, regulations, and policies.

### **Exceptions, Modifications, and Waivers**

Stipulations could be excepted, modified, or waived by the authorized officer. An exception exempts the holder of the land-use authorization document from the stipulation on a one-time basis. A modification changes the language or provisions of a surface stipulation, either temporarily or permanently. A waiver permanently exempts the surface stipulation. The environmental analysis document prepared for site specific proposals such as oil and gas development (i.e., APDs, sundry notices) also would need to address proposals to exempt, modify, or waive a surface stipulation.

### **Standard Terms and Conditions**

All surface-disturbing activities are subject to standard terms and conditions. These include the restrictions that are required for proposed actions in order to protect special status species and to comply with the Endangered Species Act. Standard terms and conditions for oil and gas leasing provide for relocation of proposed operations up to 200 meters, and provide for prohibiting surface-disturbing operations for a period not exceeding 60 days. The stipulations below are

within the parameters of 200 meters and 60 days are considered open to oil and gas leasing subject to standard terms and conditions.

The placement of production facilities on hilltops and ridgelines will be prohibited where they are highly visible.

## **Environmental Best Management Practices (BMP) for Oil and Gas Operations**

Best Management Practices (BMP) are state-of-the-art mitigation measures applied on a site-specific basis to reduce, prevent, or avoid adverse environmental or social impacts. BMPs are applied to management actions to aid in achieving desired outcomes for safe, environmentally sound, resource development by preventing, minimizing, or mitigating adverse impacts and reducing conflicts. For each proposed action, a number of BMPs may be applied as necessary to mitigate expected impacts. The following typical environmental BMPs will be applied on individual Applications for Permit to Drill and associated rights-of-way in the Moab Field Office. These procedures are consistent with current national guidance and the Surface Operating Standards and Guidelines for Oil and Gas Development (Gold Book), 2007. This list is not comprehensive and may be modified over time as conditions change and new practices are identified.

- Interim reclamation of the well and access road will begin as soon as practicable after a well is placed in production. Facilities will be grouped on the pads to allow for maximum interim reclamation. Interim reclamation will include road cuts and fills and will extend to within close proximity of the wellhead and production facilities.
- All aboveground facilities including power boxes, building doors, roofs, and any visible equipment will be painted a color selected from the latest national color charts that best allows the facility to blend into the background.
- All new roads will be designed and constructed to a safe and appropriate standard, “no higher than necessary” to accommodate intended vehicular use. Roads will follow the contour of the land where practical. Existing oil and gas roads that are in eroded condition or contribute to other resource concerns will be brought to BLM standards within a reasonable period of time.
- Final reclamation of all oil and gas disturbance will involve re-contouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography and revegetating all disturbed areas.
- Raptor perch avoidance devices will be installed on all new power lines and existing lines that present a potential hazard to raptors.
- All power lines to individual well locations (excluding major power source lines to the operating oil or gas field) and all flow lines will be buried in or immediately adjacent to the access roads.
- In developing oil and gas fields, all production facilities will be centralized to avoid tanks and associated facilities on each well pad.
- The use of submersible pumps will be strongly encouraged, especially in VRM Class I, II or III areas or any area visible by the visiting public.

- The use of partial or completely below-grade wellheads will be strongly encouraged in high visibility areas as well as VRM Class I, II or III areas.
- Multiple wells will be drilled from a single well pad wherever feasible.
- Noise reduction techniques and designs will be used to reduce noise from compressors or other motorized equipment.
- Seasonal restrictions on public vehicular access will be evaluated where there are wildlife conflict or road damage/maintenance issues.
- The placement of production facilities on hilltops and ridgelines will be prohibited where they are highly visible.
- Monitoring of wildlife will occur to evaluate the effects of oil and gas development.
- The placement of production facilities on hilltops and ridgelines will be avoided.
- Facilities will be screened from view.
- Oil field wastes and spills will be bio-remediated.
- Common utility or right-of-way corridors containing roads, power lines, and pipelines will be used.

### **Species-Specific Standard Terms and Conditions (Oil and Gas Lease Notices)**

#### **MEXICAN SPOTTED OWL**

In areas that contain suitable habitat for MSO or designated Critical Habitat, actions would be avoided or restricted that may cause stress and disturbance during nesting and rearing of their young. Appropriate measures would depend on whether the action is temporary or permanent and whether it occurs within or outside the owl nesting season. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of owl habitat or displaces owls through disturbances, i.e., creation of a permanent structure.

Current avoidance and minimization measures include the following:

- Surveys will be required prior to implementation of the proposed action. All surveys must be conducted by qualified individual(s) acceptable to the BLM.
- Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews.
- Apply the conservation measures below if project activities occur within 0.5 mile of suitable owl habitat.
- Determine potential effects of actions to owls and their habitat.
- Document type of activity, acreage and location of direct habitat impacts, type and extent of indirect impacts relative to location of suitable owl habitat.
- Document if action is temporary or permanent. Activities may require monitoring throughout the duration of the project. To ensure desired results are being achieved,

minimization measures will be evaluated, and, if necessary, Section 7 consultation reinitiated.

- Any activity that includes water production should be managed to ensure maintenance of enhancement of riparian habitat. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in canyon habitat suitable for MSO nesting.
- For all temporary actions that may impact owls or suitable habitat:
  - a. If the action occurs entirely outside of the owl breeding season from **March 1 through August 31**, and leaves no permanent structure or permanent habitat disturbance, the action can proceed without an occupancy survey.
  - b. If the action will occur during a breeding season, a survey for owls is required prior to commencing the activity. If owls are found, the activity should be delayed until outside of the breeding season.
  - c. Rehabilitate access routes created by the project through such means as raking out scars, revegetation, gating access points, etc.
- For all permanent actions that may impact owls or suitable habitat:
  - a. Survey two consecutive years for owls according to accepted protocol prior to commencing activities.
  - b. If owls are found, no disturbing actions will occur within 0.5 mile of an identified site. If nest site is unknown, no activity will occur within the designated current and historic Protected Activity Center (PAC).
  - c. Avoid permanent structures within 0.5 mile of suitable habitat unless surveyed and not occupied.
  - d. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be contingent upon a noise analysis to ensure noise does not encroach upon a 0.5 mile buffer for suitable habitat, including canyon rims.
  - e. Limit disturbances to and within suitable habitat by staying on designated and/or approved routes.
  - f. Limit new access routes created by the project. Modifications to the Surface Use Plan of Operations may be required in order to protect the MSO and/or habitat in accordance with Section 6 of the lease terms, the Endangered Species Act, and the regulations at 43 CFR 3101.1-2.

**Purpose:** To protect MSO habitat.

**Exception:** An exception may be granted by the Field Manager if authorization is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature or the conduct of the actions would not impair the primary constituent element determined necessary for the survival and recovery of the MSO and USFWS concurs with this determination.

**Modification:** The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates and USFWS (through applicable provisions of the ESA) determines a portion of the area is not being used as Critical Habitat.

**Waiver:** A waiver may be granted if the MSO is delisted and the Critical Habitat is determined by USFWS as not necessary for the survival and recovery of the MSO.

## SOUTHWESTERN WILLOW FLYCATCHER

In areas that contain riparian habitat within the range for the Southwestern willow flycatcher, actions would be avoided or restricted that may cause stress and disturbance during nesting and rearing of their young. Appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside the nesting season. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of habitat or displaces flycatchers through disturbances, i.e., creation of a permanent structure. Current avoidance and minimization measures include the following:

1. Surveys would be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s) and be conducted according to protocol.
2. Activities would require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures would be evaluated and, if necessary, Section 7 consultation reinitiated.
3. Water production would be managed to ensure maintenance or enhancement of riparian habitat.
4. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
5. Activities would maintain a 300 feet buffer from suitable riparian habitat year long.
6. Activities within 0.25 mile of occupied breeding habitat would not occur during the breeding season of **May 1 to August 15**.
7. Ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat.
8. Re-vegetate with native species all areas of surface disturbance within riparian areas and/or adjacent land.

Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the USFWS between the lease sale stage and lease development stage to ensure continued compliance with the ESA.

**Purpose:** To protect southwestern willow flycatcher habitat.

**Exception:** An exception may be granted by the Field Manager if authorization is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature of the conduct of the actions, as proposed or conditioned, would not impair the primary constituent element determined necessary for the survival and recovery of the southwestern willow flycatcher and USFWS concurs with this determination.

**Modification:** The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates, and USFWS (through applicable provisions of the ESA) determines that a portion of the area is not being used as southwestern willow flycatcher habitat.

**Waiver:** May be granted if the southwestern willow flycatcher is de-listed and if USFWS determines it is not necessary for the survival and recovery of the southwestern willow flycatcher.

#### WESTERN YELLOW-BILLED CUCKOO

No surface-disturbing activities would be conducted within 100 meters of Yellow-billed Cuckoo habitat (riparian areas) from May 15th through July 20th.

**Purpose:** To manage Yellow-billed Cuckoo habitat.

**Exception:** An exception may be granted by the Field Manager if authorization is obtained from USFWS (through applicable provisions of the ESA). The Field Manager may also grant an exception if an environmental analysis indicates that the nature of the conduct of the actions, as proposed or conditioned, would not impair the primary constituent element determined necessary for the survival and recovery of the Yellow-billed Cuckoo and USFWS concurs with this determination.

**Modification:** The Field Manager may modify the boundaries of the stipulation area if an environmental analysis indicates, and USFWS (through applicable provisions of the ESA) determines that a portion of the area is not being used as Yellow-billed Cuckoo habitat.

**Waiver:** May be granted if the Yellow-billed Cuckoo is de-listed and if USFWS determines it is not necessary for the survival and recovery of the Yellow-billed Cuckoo.

#### COLORADO RIVER FISH

Surface-disturbing activities within the 100 year floodplain of the Colorado River, Green River, and at the Dolores/Colorado River confluence would not be allowed. Other avoidance and minimization measures include:

- Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individuals.
- Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated.

- Water production will be managed to ensure maintenance or enhancement of riparian habitat.
- Avoid loss or disturbance of riparian habitats.
- Conduct watershed analysis for leases in designated critical habitat and overlapping major tributaries in order to determine toxicity risk from permanent facilities
- Implement the Utah Oil and Gas Pipeline Crossing Guidance.
- In areas adjacent to 100 year floodplains, particularly in systems prone to flash floods, analyze the risk for flash floods to impact facilities, and use closed loop drilling, and pipeline burial or suspension according to the Utah Oil and Gas Pipeline Crossing Guidance, to minimize the potential for equipment damage and resulting leaks or spills.

**Purpose:** To protect critical habitat of the endangered Colorado River fishes.

**Exception:** An exception may be granted by the Field Manager if:

1. There is no practical alternative, and
2. the development would enhance riparian/aquatic values.

This exception would require consultation with the USFWS. The Field Manager may also grant an exception if an environmental analysis indicates that the nature or the conduct of the actions, as proposed or conditioned, would not impair the primary constituent element determined necessary for the survival and recovery of the Endangered Colorado River , fishes.

**Modification:** The Field Manager may modify the boundaries of the stipulation area if an environmental, analysis indicates, and USFWS (through applicable provisions of the ESA) determines a portion of the area is not being used as Critical Habitat.

**Waiver:** A waiver may be granted if the Endangered Colorado River Fishes are de-listed and the Critical Habitat is determined by USFWS as not necessary for the survival and recovery of the Endangered Colorado River fishes.

## CALIFORNIA CONDOR

Avoidance or use restrictions may be placed on portions on areas known or suspected to be used by condors. Application of appropriate measures will depend on whether the action is temporary or permanent, and whether it occurs within or outside potential habitat. A temporary action is completed prior to the following important season of use, leaving for habitat functionality. A permanent action continues for more than one season of habitat use, and/or causes a loss of condor habitat function or displaces condors through continued disturbance (i.e. creation of a permanent structure requiring repetitious maintenance, or emits disruptive levels of noise).

Current avoidance and minimization measures include the following:

- Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s) approved by the BLM, and must be conducted according to approved

protocol. If surveys result in positive identification of condor use, all lease activities will require monitoring throughout the duration of the project to ensure desired results of applied mitigation and protection.

- Minimization measures will be evaluated during development and, if necessary, Section 7 consultation may be reinitiated.
- Temporary activities within 1.0 mile of nest sites will not occur during the breeding season.
- Temporary activities within 0.5 miles of established roosting sites or areas will not occur during the season of use, August 1 to November 31, unless the area has been surveyed according to protocol and determined to be unoccupied.
- No permanent infrastructure will be placed within 1.0 miles of nest sites.
- No permanent infrastructure will be placed within 0.5 miles of established roosting sites or areas.
- Remove big game carrion to 100 feet from on lease roadways occurring within foraging range.
- Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats.
- Ensure that such directional drilling does not intercept or degrade alluvial aquifers.
- Reinitiation of section 7 consultation with the Service will be sought immediately if mortality or disturbance to California condors is anticipated as a result of project activities.
- Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA. Additional measures may also be employed to avoid or minimize effects to the species between the lease sale and lease development stages. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the Endangered Species Act.

## JONES CYCLADENIA

Potential, suitable, and occupied habitat are defined as follows: *Potential habitat* is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain clay reed mustard; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>. *Occupied habitat* is defined as areas currently or historically known to support clay reed-mustard; synonymous with “known habitat.” Current avoidance and minimization measures include the following:

1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Jones cycladenia habitat is present.

2. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, in general, 300’ buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories:

- Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,
- Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually May 15<sup>st</sup> to June 30th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower ),
- Will occur within 300’ from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300’ from the perimeter of disturbance for the proposed well pad including the well pad, d. Will include, but not be limited to, plant species lists and habitat characteristics, and
- Will be valid until May 1st the following year.

3. Design project infrastructure to minimize impacts within suitable habitat:

- Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300’ buffers, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- Reduce well pad size to the minimum needed, without compromising safety,
- Where technically and economically feasible, use directional drilling or multiple wells from the same pad,
- Limit new access routes created by the project,
- Roads and utilities should share common right-of ways where possible,
- Reduce the width of right-of-ways and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,
- Place signing to limit off-road travel in sensitive areas, and
- Stay on designated routes and other cleared/approved areas.
- All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas.

4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:

- Follow the above recommendations (#3) for project design within suitable habitats,
- To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged,
- Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,
- Roads will be graveled within occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from May 15<sup>th</sup> to June 30<sup>th</sup> (flowering period); dust abatement applications will be comprised of water only,
- The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crosses suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat,
- Construction activities will not occur from May 15<sup>th</sup> through June 30<sup>th</sup> within occupied habitat,
- Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.,
- Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and
- Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.

5. Occupied Jones cycladenia habitats within 300' of the edge of the surface pipelines' right of ways, 300' of the edge of the roads' right of ways, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.

6. Reinitiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Jones cycladenia is anticipated as a result of project activities. Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.