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In Reply Refer To:
AESO/SE
02EAAZ00-2012-F-0296
02EAAZ00-2001-F-313
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02EAAZ00-2001-F-304
02EAAZ00-1995-F-503
02EAAZ00-1995-F-441R
02EAAZ00-1990-F-120R

December 7, 2012

Mr. James E. Zornes, Forest Supervisor
Apache Sitgreaves National Forests
P.O. Box 640
Springerville, Arizona 85938-0640

RE: PS, Beaver Creek, and Grandfather Batched Grazing Allotments, Alpine Ranger District

Dear Mr. Zornes:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated June 25, 2012, and received by us on June 27, 2012. At issue are impacts that may result from the proposed PS, Beaver Creek, and Grandfather batched grazing allotments located on the Alpine Ranger District, Apache-Sitgreaves National Forests (ASNF), Apache County, Arizona. The proposed action may affect loach minnow (*Tiaroga cobitis*) and its critical habitat, Chiricahua leopard frog (*Lithobates chiricahuensis*), and Apache trout (*Oncorhynchus apache*).

For the PS allotment, you determined the proposed action is "likely to adversely affect" loach minnow and its critical habitat, and Chiricahua leopard frog; is "not likely to adversely affect" Apache trout and Mexican spotted owl (*Strix occidentalis lucida*) and its critical habitat; is "not likely to jeopardize the continued existence" of Mexican gray wolf (*Canis lupus baileyi*); and will have "no effect" to critical habitat for Chiricahua leopard frog. For the Beaver Creek allotment, you determined the proposed action is "is not likely to adversely affect" Apache trout, loach minnow, Chiricahua leopard frog, and Mexican spotted owl and its critical habitat; is "not likely to jeopardize the continued existence" of Mexican gray wolf; and will have "no effect" to critical habitat for Chiricahua leopard frog. For the Grandfather allotment, you determined the proposed action is "likely to adversely affect" Chiricahua leopard frog and Apache trout; is "not likely to adversely affect" Mexican spotted owl and its critical habitat; is "not likely to jeopardize the continued existence" of Mexican gray wolf; and will have "no effect" to critical habitat for Chiricahua leopard frog. Critical habitat for

loach minnow is located about 0.13 mile upstream in the East Fork Black River, and is not included in this consultation because Grandfather allotment does not encompass any portion of East Fork Black River.

You have requested formal consultation for your “likely to adversely affect” determinations, and our concurrence with your “not likely to adversely affect” determinations. As previously stated in our 30-Day letter dated July 24, 2012, we concur with your "may affect, not likely to adversely affect" determinations and provide our rationales in Appendix A. Your “no effect” determinations will not be addressed further.

This biological opinion is based on information provided in the May and June 2012 biological assessments (BAs), telephone conversations, electronic mail correspondence, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, livestock grazing and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

January 10, 2002: Issuance of conference opinion concerning possible effects of livestock grazing allotment management plans for the Alpine, Beaver Creek, Colter Creek, Coyote-Whitmer, Fish Creek, Hannagan, Sprucedale-Reno, and Grandfather allotments on the proposed threatened Chiricahua leopard frog.

February 28, 2002: Final Biological Opinion completed for proposed issuance of a 10-year livestock grazing permit for the Udall Allotment and the ongoing grazing activity and its management on the PS and Hayground Allotments.

June 27, 2012: We received Forest Service letter requesting formal consultation for PS, Grandfather, and Beaver Creek allotments.

July 23, 2012: We received project clarification from Forest Service via electronic mail.

July 24, 2012: We received, from Forest Service, project amendments and notification of extension of applicant status to allotment permittees.

July 24, 2012: We provided 30-Day letter acknowledging receipt of all information required to initiate formal consultation and provide BO no later than November 9, 2012.

October 18, 2012: We provided Draft BO to Forest Service for their review and coordination with allotment permittees.

October 30, 2012: We granted 30-day extension of the consultation period.

November 16, 2012: We received comments from Forest Service. Staff noted there were no comments from permittees, but they appreciated opportunity to review.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the re-evaluation of three grazing allotments after the 2011 Wallow Fire. The action area consists of the PS Allotment, Grandfather Allotment, and Beaver Creek Allotment and adjacent areas in the Black River watershed of the ASNF. Grazing will continue as described for a period of 10 years.

PS ALLOTTMENT

Rotation: Three pasture rest rotation grazing system with each pasture being rested every other year. Additionally, three pastures (Caldwell holding pastures) are shared with Grandfather allotment permittee for gathering and shipping livestock. PS allotment is managed with the Stone, Alpine and Foote Creek (summer pastures) allotments for late spring, summer and early fall grazing. Livestock are moved to Cow Flat or Foote Creek (winter pastures) for the rest of the year. Cow Flat and Foote are addressed in separate consultations.

Season of Use: Seasonal from 5/15 to 10/15. Entry date varies annually based on range condition.

Stocking: 126 cow/calf pairs with replacement heifers, yearlings or bulls on a one-to-one substitution basis run as a single herd between two permittees.

Table 1. Allowable Use Guidelines for livestock on the PS allotment.

Percent Use Per Various Range Conditions				
Season of use	Good	Fair	Poor	Very Poor
5/16-10-15	45%	40%	30%	20%
10/16-5/15	45%	15%	35%	20%

Additional Management and Conservation Measures:

- No re-grazing of pastures by livestock within a grazing year and no grazing of rested pastures during year of rest, unless authorized to accomplish a documented resource need objective.

- No early entry into Summer/Fall pastures (entry is generally 5/15).

- When grazing guidelines are met prior to the end of the scheduled pasture use, livestock are moved to the next scheduled pasture or removed from National Forest System Lands if no other pastures remain.

- Livestock are excluded from Home Creek and its floodplain (above the fish barrier).

- Utilization and trend monitoring will be conducted as described in the monitoring plan in Appendix A of the BA.

- As part of the 2012 Continued Implementation of the Land and Resource Management Plan (LRMP) for the ASNF, four conservation measures were developed to protect Chiricahua leopard frog and its critical habitat. The ASNF is incorporating those Conservation Measures into their proposed action. These are listed in Appendix B of the BA.

There are no proposed changes in livestock management since the last consultation in 2001 (02EAAZ00-2001-F-305). There are three pastures scheduled to be grazed on the allotment as summarized below in Table 2 with the fire burn severity from the Wallow Fire of 2011.

The proposed action is the management and associated conservation measures described above to continue livestock grazing for a period of ten years. The BA indicates that the allotment will be managed at conservation forage utilization guidelines. Utilization between 31-40% is considered conservative utilization (S. Coleman, Forest Service, pers. comm.).

Table 2. Pastures on the PS Allotment showing total acres and acres of burn severity.

Pasture	Total acres	Acres of high burn severity	Acres of moderate burn severity	Acres of low burn severity	Acres of underburn
Double Bar K	206	0	0	18	188
PS North	2712	6	91	2295	320
River	550	0	13	377	161

The PS Allotment is within 3 different 6th code watersheds (Lower West Fork Black River 2948 ac., East Fork Black River 835 ac, and Bear Creek-Black River 3 ac). All of these watersheds are within the Black River 4th code watershed and the Upper Black River 5th code watershed.

The Lower West Fork Black River Watershed had about 35% of the total watershed acres (17,083 ac) within the high/moderate burn severity (5,496 ac), with the remaining low/underburned or outside of the fire (11,121 ac). There were 2,948 acres of the PS Allotment within this watershed and 97 ac with high or moderate burn severity. Portions of the Double Bar K (206 ac) and the PS North (2424 ac) pastures are within this watershed were used in 2012 and will be in subsequent years.

The East Fork Black River Watershed had about 31% of the total watershed acres (14,445 ac) within the high/moderate burn severity (5,640 ac), with the remaining low/underburned or outside of the fire (12,827 ac). Of the 835 ac of the PS Allotment within this watershed, 13 ac had high or moderate burn severity. Portions of the PS North (285 ac) and River (550 ac) pastures within this watershed were used in 2012 and will be grazed in subsequent years.

The Bear Creek-Black River Watershed had about 50% of the total watershed acres (14,455 ac) within the high/moderate burn severity (7,160 ac), with the remaining low/underburned or outside of the fire (7,285 ac). Of the 3 ac of the PS Allotment within this watershed none had high or moderate burn severity. Portions of the PS North (3 ac) Pasture is within this watershed and was grazed in 2012 and will be grazed in subsequent years.

While approximately 34,696 acres were seeded or seeded and mulched within the Upper Black River 5th HUC, none of it occurred within the Bear Creek-Black River, East Fork Black River, or Lower West Fork Black River 6th HUCs.

GRANDFATHER ALLOTMENT

Rotation: 4 Pasture rest rotation system (Holding1, West, East, Caldwell HP, and all holding pastures). The sequence of livestock use between the four main pastures would be rotated each year, and the small Holding 3 Pasture (38 acres) would be used for shipping each year. This allotment is managed in conjunction with the Red Hill Allotment (but not evaluated in this consultation) with respect to season of use. The Red Hill Allotment is proposed for grazing from November through May, and the Grandfather Allotment (3,311 acres) is proposed for grazing from June through October.

Season of Use: June 1-Oct 31

Stocking: 45 cow/calf (230 AUMs)

Table 3. Allowable Use Guidelines for livestock on the Grandfather allotment.

Percent Use Per Various Range Conditions					
Season of use	Good	Fair	Poor	Dense Timber	Riparian
6/1-10/31	40%	35%	25%	10%	25%

Additional Management and Conservation Measures:

- No regrazing of pastures.
- Monitoring will be conducted based on the monitoring plan in Appendix A of the BA which includes forage utilization and trend monitoring.
- Build about 0.5 mile of fence near Odart Tank in East Pasture, using bluffs along the rim where possible to prevent river access.
- Realign about 0.5 mile of fence near Turkey Tank in West Pasture (in conjunction with the bluffs) where possible to prevent river access.
- As part of the 2012 Continued Implementation of the Land and Resource Management Plan for the Apache Sitgreaves National Forest, four conservation measures were developed to protect Chiricahua leopard frog and its critical habitat.

The ASNF is incorporating those Conservation Measures for their proposed action. These are listed in Appendix B of the BA.

There are no proposed changes in livestock management since the last consultation. The pastures to be grazed on the allotment are summarized below with the acres of fire burn severity from the Wallow Fire of 2011.

The proposed action is the management and associated conservation measures described above to continue livestock grazing for a period of ten years. The BA indicates that the allotment will be managed at conservation forage utilization guidelines. Utilization between 31-40% is considered conservative utilization (S. Coleman, Forest Service, pers. comm.).

Table 4. Pastures within the Grandfather allotment showing acres within pastures and acres of burn severity from Wallow Fire of 2011.

Pastures	Acres	high severity	moderate severity	low severity	underburn
Caldwell Holding	112	0	0	96	16
East	1152	8	24	890	229
Holding 1	483	0	0	326	156
Holding 2	3	0	0	3	0
Holding 3	17	0	0	16	1
Holding 4	37	0	0	32	5
West	1422	35	116	1128	143
Total	**3226**	**43**	**140**	**2491**	**550**

RANGE MONITORING PLAN

The following range monitoring plan outlines three things: 1) assessments 2) implementation (annual) monitoring and 3) effectiveness (trend) monitoring for the post-fire restocking strategy and allotment management plans. Assessments will define data collected to add pastures into rotations in future years and in riparian areas post-fire. Implementation monitoring will address stated indicators (e.g. utilization) and track mitigations for restocking. Effectiveness monitoring is designed to determine if the grazing strategy (e.g. restocking strategy) is meeting its ecological objectives and moving towards desired conditions.

The Forest Plan (1987 as amended) has guidance for rangeland management, riparian management and stream management; this is incorporated by reference. Many listed species have recovery plans that identify key habitat components; these components will be taken into account for monitoring where applicable for this action.

Assessments

Assessments Prior to grazing

Monitoring of ground cover and vegetation will occur in these pastures to document recovery and provide information for determining when these pastures can sustain livestock grazing. This will be accomplished by collecting ground cover, production and species composition information at existing key areas. Based on Soil Burn Severity and vegetation type mapping, assessments will be prioritized over the next few years. Pastures with less moderate and high severity in vegetation types that will recover faster will be assessed first. Pastures with high percentages of moderate-high burn severity will be assessed later to allow for vegetative recovery. This phased monitoring will occur until pastures are put into the grazing rotation.

Proper Functioning Condition Assessment and Multiple Indicator Monitoring

Allotments with riparian areas burned at high-moderate severity will have Proper Functioning Condition (PFC) reassessed to document fire and flood-related changes. Streams to be reassessed will be identified using Soil Burn Severity (SBS) mapping and knowledge of flood events. These will then be prioritized by extent burned, Burned Area Emergency Rehabilitation (BAER) treatments (seed/mulch) and potential affects to aquatic species. Depending on the number of streams identified for PFC reassessment, this monitoring may occur over the next few years. The PFC assessment will also be utilized to determine reaches where riparian areas were affected post-fire and identify indicators to be monitored long term.

Multiple Indicator Monitoring (MIM) will be used to monitor riparian reaches and indicators identified from PFC monitoring. MIMs monitors many indicators, but the most appropriate for each riparian reach will be chosen.

Monitoring will occur in a phased approach over a ten-year timeframe and be prioritized. Reaches and indicators to monitor have yet to be identified. Prioritization will be based on threatened and endangered species as monitoring sites are identified. Sites without species concerns may be monitored less intensely with MIM or may be simply monitored with a photo point.

Implementation (Annual) Monitoring

This implementation monitoring plan is to validate restocking assumptions, document that restocking mitigations (soil protection, threatened and endangered species) are followed, and review whether indicators (utilization, stubble height) for restocking livestock post-fire are met. Monitoring will continue over the life of the project.

Range Readiness

Establishment of range readiness dates should be developed annually during the allotment management planning process. However range readiness may vary from year to year depending on weather conditions. Additionally, permittees may request an early on date

which would need to be validated prior to approval. Rangeland grazing readiness is based on soil and plant conditions. Range readiness dates will vary between allotments with different resource attributes and management systems. Representative areas of primary range will be selected for range readiness observation. Properly selected, a location may furnish data for several allotments which are uniform in elevation, exposure, soil, vegetation, climate and prescribed management system.

Rangeland is generally ready for grazing under the following conditions:

1. Soil condition - The soil where grazing occurs is firm and resistant to rutting.

    a. Saturated soils are not present. Soil compaction is minimal.
    b. Standing water and ponding from snowmelt is not present.

2. Vegetative development stage. Cool-season grasses are headed out, forbs are in full bloom, and brush and aspen is leafed out.

Herding Mitigation

The restocking strategy allows for grazing of some pastures with up to 40% moderate and high burn severity as long as permittees are able to keep livestock out of the high burn severity areas. Perennial plants, whether seeded or not, will take time to reestablish and grow enough to not be easily pulled from the ground. Many of these areas occur above streams with federally listed aquatic species. To allow plants to reestablish, ground cover to increase, and reduce sedimentation to streams; permittees are encouraged, but not required, to keep livestock out of high burn severity areas. However it should be noted that in general, moderate and high severity burned areas are on steep slopes and or timbered areas that are inaccessible to livestock and previously considered incapable for livestock grazing.

Monitoring to ensure herding practices are keeping livestock out of higher burn severities areas will occur in pastures identified by the ID Team. Permittees were given options of herding, electric fencing, or any other means they wished to avoid moderate-high severity areas. If compliance checks find livestock are utilizing high-moderate burn severity areas and/or there are concerns for aquatic species (ground cover, sedimentation), livestock will be moved back into authorized areas and/or out of the pasture. As grasses reestablish in moderate-high burn severity areas and concerns have diminished, the need to monitor this restocking mitigation will be eliminated.

Fencing

A general assessment of allotment fencing needs were completed post-fire and based on burn severity mapping. Within allotments there are pastures excluded by decision, riparian exclosures, aspen exclosures, and pastures deferred in 2012 to mitigate potential effects to burned riparian areas and TES species. Permittees were made aware that they will need to herd, fix fencing, install temporary fencing, or find other methods of keeping livestock within a pasture until all infrastructure is repaired within the Wallow Fire area. Sampling of fenceline conditions will occur, to verify if fences are up, if they need to be replaced, or if

other mitigation techniques are effective. This is covered under the Annual Operating Instructions and compliance for distribution of livestock will be completed based on available resources.

Utilization Monitoring

Utilization guidelines defined in the Allotment Management Plans will be maintained, unless a temporary lower utilization level is defined for post-fire restocking to mitigate potential resource damage and effects to aquatic species. The purpose of the utilization monitoring is to ensure that herbaceous vegetation is managed through proper utilization levels to provide for suitable habitat for various prey species of the Mexican Spotted Owl and Northern Goshawk, to meet physiological requirements for the forage and browse plants, provide adequate streambank herbaceous cover and filtering, and improve range and watershed conditions.

Utilization monitoring will be conducted near the midpoint of the grazing period for each pasture. This will allow opportunities to make changes in grazing management. A utilization check at the end of the grazing period will be conducted if deemed necessary to adjust grazing management for the next year. Relative utilization will be collected on an as needed basis, to determine use while livestock are in a pasture or after livestock have left a pasture during the growing season. Evaluations of previously identified monitoring sites (i.e. key areas) should be made to ensure that these sites are applicable. Utilization monitoring of key species will occur on representative areas. The appropriate methods or techniques to be used will be from USFS Region 3 Rangeland Analysis Handbook and/or Utilization Studies and Residual Measurements, Interagency Technical Reference, 1996.

Effectiveness Monitoring for trend indicators

Effectiveness monitoring of allotment management is a long-term monitoring scheme to determine if objectives are being met for southwestern willow flycatcher (*Empidonax traillii extimus*) and New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), species that occur in the area but are not evaluated in this consultation. Methods and criteria are described in detail in the BAs.

Adaptive Management

Adaptive management, within the constraints of the allotment management plan and through the annual operating instructions, will be conducted if monitoring indicates that current management is not progressing towards attainment of resource management objectives, objectives are changed, or conditions change. Management objectives could include maintaining or improving herbaceous ground cover in an effort to lead toward greater streambank stability or reduced sediment transport into perennial surface flow. When monitoring indicates current management is not progressing toward attainment of resource objectives then changes in the management strategy will be accomplished by adjusting one or more aspects of intensity (livestock numbers), timing (when pasture is used), frequency (how often a pasture is used), or duration of grazing.

Utilization guidelines are intended to indicate a level of use or desired stocking rate to be achieved over a period of years. Utilization is one parameter that can be measured to determine whether we are meeting the allowable use guidelines necessary for providing for the physiological needs of perennial grasses or grass like plants but utilization is not a resource objective; it is one of several factors rangeland managers look at to determine whether conditions are leading toward attainment of resource objectives, e.g., maintenance/improvement of herbaceous ground cover and streambank stability. If monitoring of livestock utilization indicates conditions are not providing for the physiological needs of the herbaceous vegetation, e.g., livestock utilization exceeds allowable use, then adaptive management could include modifying either the duration or time the livestock are allowed within the area or the timing of use in an effort to provide for plant regrowth during the growing season. Adaptive management may also include more intense herding of livestock to improve distribution and reduce concentrated use. In the case of changed conditions, i.e. additional fire, it may also include deferral of pastures.

Reinitiation of section 7 consultation with the FWS will be conducted if utilization levels or other attributes (i.e. stream bank stability, plant recruitment, etc.) being monitored reveal that effects of the action may affect listed species or critical habitat in a manner or to an extent not previously analyzed. Alpine Ranger District will report monitoring results annually to FWS within the first quarter of the calendar year. This may include but is not limited to: utilization measurements based on height/weight or ocular estimates, implementation of adaptive management strategies, and/or changed effects to listed species and critical habitat. If attributes being monitored, e.g., utilization levels, recruitment, at any time indicate progress toward attainment of wildlife/aquatic resource management objectives are not occurring, the Forest Service will coordinate with FWS to evaluate the changed circumstances in the context of the reinitiation criteria described at 50 CFR 402.16.

STATUS OF THE SPECIES

Apache trout

Apache trout (*Oncorhynchus apache,* formerly *Salmo apache*) is one of two salmonid subspecies native to Arizona (the other is Gila trout, *Oncorhynchus gilae*). Originally listed as endangered under the Federal Endangered Species Preservation Act of 1966 (USFWS 1967) the Apache trout later became federally protected with passage of the Act. Successful culturing in captivity and greater knowledge of existing populations led to its downlisting to threatened in 1975 (USFWS 1975) without critical habitat. Reclassification to threatened status included a 4(d) rule, allowing Arizona Game and Fish Department (AGFD) to regulate take of the species and to establish sportfishing opportunities. Angler take of Apache trout is not considered incidental take if done in accordance with relevant Tribal or State law (USFWS 2009).

Apache trout evolved in streams primarily above 6,000 feet (ft) elevation, within mixed conifer and ponderosa pine forests. Apache trout generally require water temperatures below 77° F. Adequate stream flow and shading are generally required to prevent lethal temperatures and to maintain pools that are used frequently during periods of drought and temperature extremes. Apache trout are largely opportunistic and feed on a variety of aquatic

and terrestrial organisms. Apache trout require clean coarse gravel substrates for spawning. In White Mountain streams spawning occurs from March through mid-June, and varies with stream elevation. Spawning maturation is estimated to begin at three years of age, with eggs hatching in approximately 30 days, and emergence occurring about 60 days after deposition (Harper 1978). Life-span is typically four years (maximum known is six years) (Behnke 2002). Additional biological information is available in the species' Recovery Plan (USFWS 2009).

The historical distribution of Apache trout included the upper Salt River drainage (Black and White rivers), San Francisco River drainage (Blue River), and headwaters of Little Colorado River in Arizona (Miller 1972). Based on extensive sampling, analysis of physical characteristics and genetic material, and recent GIS mapping, it is generally accepted that Apache trout historically inhabited between approximately 600 miles (mi) and 820 mi of streams above 6,000 ft elevation in the upper White and Black rivers and Little Colorado River basins of east central Arizona's White Mountains.

In the late 1800s, substantial harvest of trout was documented in the areas historically occupied by Apache trout. Introduction of nonnative trout (i.e., brook, brown, rainbow, and cutthroat) species and degradation of habitat associated with modern day settlement rapidly eliminated or reduced most populations of Apache trout during a span of about 50 years (Behnke and Zarn 1976, Harper 1978). Competition with brown trout and brook trout has also been identified as a cause of the decline of Apache trout (Rinne and Minckley 1985). In addition, habitat alterations have occurred through timber harvest, grazing of domestic livestock, road construction, water diversions, reservoir construction, and to a lesser extent mining (sand and gravel operations). These alterations were identified as causes for reduction of Apache trout habitat in the White Mountains of Arizona (USFWS 1983). Such alterations damage riparian vegetation and streambank morphology and stability, which increase stream erosion and can ultimately result in higher sediment loads. These, in turn, increase the species' susceptibility to habitat damage from floods, decrease the quality and quantity of spawning and rearing areas, alter stream flow volume and temperatures, and alter stream productivity and food supply (e.g., stream dwelling insects). Collectively, these factors have varied in intensity, complexity, and damage depending on location, ultimately reducing the total occupied range and the ability of Apache trout to persist at all life stages. Nonnative trout stocking still occurs today, although most often in reservoirs or small lakes. All AGFD and Fish and Wildlife Service fish stocking actions are conducted under auspices of section 7 intra-service consultation with compliance to applicable Federal laws (USFWS 1995 and 2008).

Introductions of nonnative trout have led to hybridization with rainbow trout or cutthroat trout. Evidence of hybridization has been detected among some populations consisting of Apache, cutthroat, and rainbow trouts, with introgression from rainbow trout most prevalent (Carmichael et al. 1993, Wares et al. 2004). To detect hybridization among Apache, cutthroat, and rainbow trout, fish were collected from 31 streams on Fort Apache Indian Reservation (FAIR) and ASNF between 1987 and 1989 (Carmichael et al. 1993). Pure populations of Apache trout were found in 11 streams on the FAIR including East Fork White River, and Boggy/Lofer, Coyote, Crooked, Deep, Elk Canyon, Firebox, Flash, Hurricane, Ord, and Soldier Springs creeks (FAIR). Pure populations of Apache trout on the

FAIR were also confirmed later in Big Bonito Creek (including its tributaries: Hurricane, Hughey, and Peasoup creeks), Little Bonito Creek, and Smith Creek. Samples were again collected in 2007. Five additional populations on the FAIR (Sun, Moon, Little Diamond, Rock, and Marshal Butte Creeks) are now considered pure. These pure populations comprise the 18 relict lineages of Apache trout known to exist on FAIR at present. On the ASNF, the genetic purity of Apache trout populations established through previous stockings was confirmed for Coyote, Hayground, Home, Mineral, Soldier, Stinky, and Wildcat creeks, and the West Fork Black River (Wares et al. 2004).

Conservation of Apache trout was first attempted by the White Mountain Apache Tribe (WMAT) in the late 1940s and 1950s when the only known populations existed on the FAIR. In 1955, WMAT closed most streams containing Apache trout within the FAIR boundaries to fishing (other FAIR streams deemed important to Apache trout conservation were closed to fishing in the early 1990s). Interest in Apache trout continued and substantially increased during the early 1960s, resulting in fishery surveys carried out by the FWS and AGFD in cooperation with WMAT to determine species status. In conjunction with these surveys, AGFD, again in cooperation with WMAT and FWS, entered into a captive propagation program. As part of the Federal and state Apache trout recovery effort, stocking of Apache trout into streams began in 1963 (USFWS 2009). At present, Apache trout propagated at the Williams Creek National Fish Hatchery (WCNFH) and AGFD Silver Creek Fish Hatchery (using eggs from WCNFH) are used to stock streams and lakes on tribal, state, and Federal lands for put-and-take and put-grow-take fisheries only.

Two streams outside historical range have pure replicate populations: North Canyon Creek (Kaibab National Forest [KNF]; Ord Creek stock) and Coleman Creek (ASNF; Soldier Creek stock). North Canyon Creek will be maintained as a refuge population of Apache trout and a source of fish for population establishment or augmentation. Coleman Creek supports pure Apache trout (Soldier Creek stock, 1981 and 1983); however, it is now considered a candidate stream for Gila trout recovery. Fish from Coleman Creek will be used as a source population for establishing or augmenting other populations within the historical range of Apache trout. Once the fish are removed from Coleman Creek, the creek may be renovated and used for Gila trout recovery efforts (USFWS 2009).

Porath and Nielsen (2003) confirmed introgressed populations of Apache trout (with rainbow trout) in four Pinaleno Mountain streams (Ash, Big, Grant, and Marijilda creeks on Coronado National Forest [CNF]) that are now considered outside of historical range for Apache trout. Grant and Big creeks drain into the Willcox Playa, which is a closed basin (Minckley 1973); Ash and Marijilda creeks are tributaries to the Gila River and now considered within historical range of Gila trout (USFWS 2003). In addition, Deadman Creek (CNF) was stocked with Apache trout in 1968 and 1969, and it is uncertain if hybridized trout still persist. Deadman Creek is now considered to be within historical range of Gila trout. KP and Grant creeks (ASNF), tributaries to the Blue River, currently contain hybridized populations of Apache trout and are now considered within historical range of Gila trout (USFWS 2003). Horton Creek (Tonto National Forest) was stocked with hatchery Apache trout in 1971; however, at the time the stream also had rainbow, brook, and brown trout populations. It is likely that any remaining Apache trout are hybridized and would not contribute to recovery.

Our information indicates that, as of 2011 rangewide, 20 formal consultations have been completed or are underway for actions affecting Apache trout (Table 5). Adverse effects to Apache trout have occurred due to these projects and many of these consultations have included reasonable and prudent measures to minimize effects to Apache trout. The Forest Service, White Mountain Apache Tribe, FWS, AGFD, and other cooperators are currently implementing many projects and recovery actions that provide habitat improvement or protection for Apache trout. Until the recent Wallow Fire, overall, population trends were upward, with additional recovery populations in development. Fortunately, the Wallow Fire only affected two of the populations, and of the recovery streams on FS lands (streams on the WMAT were not affected). Most of the affected populations were either hybrids scheduled to be replaced with pure populations, were small and in streams with compromised barriers also due for remedial attention, or have been adversely affected by drought (Lopez 2011, S. Coleman, pers. comm. 2012). Continuing implementation of recovery actions to regain any ground lost is anticipated.

Table 5. Formal Consultation including Apache Trout with Anticipated Incidental Take

Consultation	**Date**	**Project Name**	**Anticipated Incidental Take (Amount/Surrogate)**
22410-90-F-222	November 7, 1990	Pinaleno Mountains Recreation Projects	2 fish/year
22410-91-F-076	December 4, 1992	West Fork Allotment Management Plan Revision	Surrogate Provided
22410-91-F-054	May 7, 1993	Campbell and Isabelle Timber Sale	Surrogate Provided
22410-90-F-120 22410-92-I-666	July 20, 1993	Burro Creek, Hayground, and Reservation Allotment Management Plan Revisions and the Coldwater Fisheries Enhancement Project on the West Fork of the Black River.	Surrogate Provided
22410-94-F-437	December 22, 1994	Apache Trout Habitat Improvement Project	Surrogate Provided

22410-92-F-550 22410-96-F-187	December 11, 1998	EPA's 1996 Modifications to the Arizona Water Quality Standards	Surrogate Provided
22410-90-F-119a	April 17, 2001	Revised Biological Opinion on Transportation and Delivery of Central Arizona Project Water to the Gila River Basin (Hassayampa, Agua Fria, Salt, Verde, San Pedro, Middle and Upper Gila Rivers and Associated Tributaries) in Arizona and New Mexico and its Potential to Introduce and Spread Nonnative Aquatic Species	Surrogate Provided
22410-02-F-030	April 5, 2002	Mineral Ecosystem Management Area	None Anticipated
22410-02-F-0101	April 19, 2002	Apache Trout Enhancement Project	200, and 25% of released population
22410-03-F-0298 22410-03-F-0299 22410-02-F-0501	July 8, 2003	Allotment Management Plan for the Voigt, Greer, and Sheep Springs Allotments	Surrogate Provided
22410-02-F-0101-R2	February 23, 2004	Apache Trout Enhancement Project - 2nd Reinitiation	20 fish
22410-97-F-0229	April 27, 2004	Sunrise Park-Big Lake Road Forest Hwy 43	15 fish/event
22410-02-F-0504	June 21, 2004	U.S. Environmental Protection Agency's approval of the State of Arizona's proposed revisions to existing Water Quality Standards for Surface Waters as submitted by the Arizona Department of Environmental Quality	Surrogate Provided

02-21-04-F-0355	May 20, 2005	26 Bar Grazing Allotment	Surrogate Provided
02-22-03-F-366	June 10, 2005	The Continued Implementation of the Land and Resource Management Plans for the Eleven National Forests of the Southwestern Region	Surrogate Provided
224410-08-F-0149	January 31, 2008	Use of Fire Retardant on Forest Service Lands	None Provided
22410-10-F-0101 R-001	March 11, 2010	Apache Trout Enhancement Project	None Anticipated
22410-10-F-0364	July 22, 2010	North Canyon Trout Habitat Restoration Project	5 Fish
22410-08-F-0486	August 26, 2011	Wildlife and Sport Fish Restoration Funding of Arizona Game and Fish Department's Statewide and Urban Fisheries Stocking Program	Surrogate Provided
22410-11-F-0290	December 20, 2011	Federal Funding of Aquatic Inventory, Survey, and Monitoring Activities, and Conservation Activities for Aquatic Species by AGFD	500 Fish

One objective of the 2009 Recovery Plan is to establish and/or maintain 30 self-sustaining discrete populations of pure Apache trout within its historical range. Many of the recovery and conservation actions implemented to date have resulted in the expansion of populations and habitat protection/restoration within Apache trout historical range.

Chiricahua leopard frog

The Chiricahua leopard frog was listed as a threatened species in a Federal Register notice dated June 13, 2002. Included was a special rule to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of the Act. Critical habitat was later designated on March 20, 2012 (77 FR 16324) and includes sites in Arizona and New Mexico.

The frog is distinguished from other members of the *Lithobates pipiens* complex by a combination of characters, including a distinctive pattern on the rear of the thigh consisting of small, raised, cream-colored spots or tubercles on a dark background; dorsolateral folds that are interrupted and deflected medially; stocky body proportions; relatively rough skin on the back and sides; and often green coloration on the head and back (Platz and Mecham

1979). The species also has a distinctive call consisting of a relatively long snore of 1 to 2 seconds in duration (Platz and Mecham 1979, Davidson 1996). Snout-vent lengths of adults range from approximately 2.1 to 5.4 inches (Platz and Mecham 1979, Stebbins 2003). The Ramsey Canyon leopard frog (*Lithobates* "*subaquavocalis*"), found on the eastern slopes of the Huachuca Mountains, Cochise County, Arizona, has recently been subsumed into *Lithobates chiricahuensis* (Crother 2008) and is recognized by the FWS as part of the listed entity.

The range of the Chiricahua leopard frog includes central and southeastern Arizona; west-central and southwestern New Mexico; and, in Mexico, northeastern Sonora, the Sierra Madre Occidental of northwestern and west-central Chihuahua, and possibly as far south as northern Durango (Platz and Mecham 1984, Degenhardt et al. 1996, Lemos-Espinal and Smith 2007, Rorabaugh 2008). Reports of the species from the State of Aguascalientes (Diaz and Diaz 1997) are questionable. The distribution of the species in Mexico is unclear due to limited survey work and the presence of closely related taxa (especially *Lithobates lemosespinali*) in the southern part of the range of the Chiricahua leopard frog. Historically, the frog was an inhabitant of a wide variety of aquatic habitats, including cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,281 to 8,890 feet. However, the species is now limited primarily to headwater streams, springs and cienegas, and cattle tanks into which nonnative predators (e.g. sportfishes, American bullfrogs, crayfish, and tiger salamanders) have not invaded or where their numbers are low (USFWS 2007). The large valley-bottom cienegas, rivers, and lakes where the species occurred historically are populated with nonnative predators at densities with which the species cannot coexist.

The primary threats to this species are predation by nonnative organisms and die offs caused by a fungal skin disease – chytridiomycosis. Additional threats include drought, floods, degradation and loss of habitat as a result of water diversions and groundwater pumping, poor livestock management, altered fire regimes due to fire suppression and livestock grazing, mining, development, and other human activities; disruption of metapopulation dynamics, increased chance of extirpation or extinction resulting from small numbers of populations and individuals, and environmental contamination (USFWS 2007). Loss of Chiricahua leopard frog populations is part of a pattern of global amphibian decline, suggesting other regional or global causes of decline may be important as well (Carey et al. 2001). Witte et al. (2008) analyzed risk factors associated with disappearances of ranid frogs in Arizona and found that population loss was more common at higher elevations and in areas where other ranid population disappearances occurred. Disappearances were also more likely where introduced crayfish occur, but were less likely in areas close to a source population of frogs.

Based on 2009 data, the species is still extant in the major drainage basins in Arizona and New Mexico where it occurred historically; with the exception of the Little Colorado River drainage in Arizona and possibly the Yaqui drainage in New Mexico. It has not been found recently in many rivers within those major drainage basins, valleys, and mountains ranges, including the following in Arizona: White River, West Clear Creek, Tonto Creek, Verde River mainstem, San Francisco River, San Carlos River, upper San Pedro River mainstem, Santa Cruz River mainstem, Aravaipa Creek, Babocomari River mainstem, and Sonoita

Creek mainstem. In southeastern Arizona, no recent records (1995 to the present) exist for the Pinaleño Mountains or Sulphur Springs Valley; and the species is now apparently extirpated from the Chiricahua Mountains. Moreover, the species is now absent from all but one of the southeastern Arizona valley bottom cienega complexes. In many of these regions Chiricahua leopard frog were not found for a decade or more despite repeated surveys. As of 2009, there were 84 sites in Arizona at which Chiricahua leopard frog occur or are likely to occur in the wild, with an additional four captive or partially captive refugia sites. At least 33 of the wild sites support breeding. In New Mexico, 15-23 breeding sites were known in 2008; the frogs occur at additional dispersal sites. The species has been extirpated from about 80 percent of its historical localities in Arizona and New Mexico. Nineteen and eight localities are known from Sonora and Chihuahua, respectively. The species' current status in Mexico is poorly understood; however, it has been found in recent years in western Chihuahua. Some threats, such as introduced nonnative predators and the threat of catastrophic wildfire, appear to be less important south of the border, particularly in the mountains where Chiricahua leopard frog have been found (Gingrich 2003, Rosen and Melendez 2006, Rorabaugh 2008).

The chytridiomycete skin fungus, *Batrachochytrium dendrobatidis* (*Bd*), the organism that causes chytridiomycosis, is responsible for global declines of frogs, toads, and salamanders (Berger et al. 1998, Longcore et al. 1999, Speare and Berger 2000, Hale 2001). Decline or extinction of about 200 amphibian species worldwide has been linked to the disease (Skerratt et al. 2007). In Arizona, *Bd* infections have been reported from numerous populations of Chiricahua leopard frog in southeastern Arizona and one population on the Tonto National Forest, as well as populations of several other frogs and toads in Arizona (Morell 1999, Davidson et al. 2000, Sredl and Caldwell 2000, Hale 2001, Bradley et al. 2002, USFWS 2007). In New Mexico, chytridiomycosis appears to be widespread in populations in west-central New Mexico, where it often leads to population extirpation. A threats assessment conducted for the species during the development of the recovery plan identified *Bd* as the most important threat to the frog in recovery units 7 and 8 in New Mexico. In recovery unit 6, which includes much of the mountainous region of west-central New Mexico, *Bd* and nonnative predators were together identified as the most important threats. Die-offs from disease typically occur during the cooler months from October-February (USFWS 2007).

Numerous studies indicate that declines and extirpations of Chiricahua leopard frog are at least in part caused by predation and possibly competition by nonnative organisms, including fishes in the family Centrarchidae (*Micropterus* spp., *Lepomis* spp.), bullfrogs, tiger salamanders (*Ambystoma mavortium mavortium*), crayfish (*Orconectes virilis* and possibly others), and several other species of fishes (Clarkson and Rorabaugh 1989, Sredl and Howland 1994, Fernandez and Bagnara 1995, Rosen et al. 1996, 1994, Snyder et al. 1996, Fernandez and Rosen 1996, 1998). For instance, in the Chiricahua region of southeastern Arizona, Rosen et al. (1996) found that almost all perennial waters investigated that lacked introduced predatory vertebrates supported Chiricahua leopard frogs. All waters except three that supported introduced vertebrate predators lacked Chiricahua leopard frogs. Sredl and Howland (1994) noted that Chiricahua leopard frogs were nearly always absent from sites supporting bullfrogs and nonnative predatory fish. Rosen et al. (1996) suggested further study was needed to evaluate the effects of mosquitofish, trout, and catfish on frog presence.

Disruption of metapopulation dynamics is likely an important factor in regional loss of populations (Sredl and Howland 1994, Sredl et al. 1997). Chiricahua leopard frog populations are often small and habitats are dynamic, resulting in a relatively low probability of long-term population persistence. Historically, populations were more numerous and closer together. If populations winked out due to drought, disease, or other causes, extirpated sites could be re-colonized via immigration from nearby populations. However, as numbers of populations declined, populations became more isolated and were less likely to be re-colonized if extirpation occurred. Also, most of the larger source populations along major rivers and in cienega complexes have disappeared.

Fire frequency and intensity in Southwestern forests are much altered from historical conditions (Dahms and Geils 1997). Before 1900, surface fires generally occurred at least once per decade in montane forests with a pine component. Beginning about 1870-1900, these frequent ground fires ceased to occur due to intensive livestock grazing that removed fine fuels, followed by effective fire suppression in the mid to late 20th century (Swetnam and Baisan 1996). Absence of ground fires allowed a buildup of woody fuels that precipitated infrequent but intense crown fires (Swetnam and Baisan 1996, Danzer et al. 1997). Absence of vegetation and forest litter following intense crown fires exposes soils to surface and rill erosion during storms, often causing high peak flows, sedimentation, and erosion in downstream drainages (DeBano and Neary 1996). These post-fire events have likely resulted in scouring or sedimentation of frog habitats (Wallace 2003).

Movements away from water do not appear to be random. Streams are important dispersal corridors for young northern leopard frogs (Seburn et al. 1997). Displaced northern leopard frogs will home, and apparently use olfactory and auditory cues, and possibly celestial orientation, as guides (Dole 1968, 1972). Rainfall or humidity may be an important factor in dispersal because odors carry well in moist air, making it easier for frogs to find other wetland sites (Sinsch 1991). Based on these studies, the Chiricahua leopard frog recovery plan (USFWS 2007) provides a general rule on dispersal capabilities. Chiricahua leopard frogs are assumed to be able to disperse one mile overland, three miles along ephemeral drainages, and five miles along perennial water courses. Recovery actions are recommended in each of eight recovery units throughout the range of the species. Management areas are also identified within recovery units where the potential for successful recovery actions is greatest.

Additional information about the Chiricahua leopard frog can be found in Platz and Mecham (1984, 1979), Sredl and Howland (1994), Jennings (1995), Rosen et al. (1996, 1994), Degenhardt et al. (1996), Sredl et al. (1997), Painter (2000), Sredl and Jennings (2005), and USFWS (2007).

Critical habitat

On March 20, 2012, the FWS designated approximately 10,346 acres (4,187 hectares) as critical habitat for the leopard frog in Apache, Cochise, Gila, Graham, Greenlee, Pima, Santa Cruz, and Yavapai Counties, Arizona; and Catron, Grant, Hidalgo, Sierra, and Socorro Counties, New Mexico.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the primary constituent elements essential to the conservation of the Chiricahua leopard frog are:

1) Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:

   (a) Standing bodies of fresh water (with salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present), including natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, off-channel pools, and other ephemeral or permanent water bodies that typically hold water or rarely dry for more than a month. During periods of drought, or less than average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but they would still be considered essential breeding habitat in non-drought years.

   (b) Emergent and or submerged vegetation, root masses, undercut banks, fractured rock substrates, or some combination thereof, but emergent vegetation does not completely cover the surface of water bodies.

   (c) Nonnative predators (e.g., crayfish (*Orconectes virilis*), American bullfrogs (*Lithobates catesbeianus*), nonnative predatory fishes) absent or occurring at levels that do not preclude presence of the Chiricahua leopard frog.

   (d) Absence of chytridiomycosis, or if present, then environmental, physiological, and genetic conditions are such that allow persistence of Chiricahua leopard frogs.

   (e) Upland areas that provide opportunities for foraging and basking that are immediately adjacent to or surrounding breeding aquatic and riparian habitat.

2) Dispersal and nonbreeding habitat, consisting of areas with ephemeral (present for only a short time), intermittent, or perennial water that are generally not suitable for breeding, and associated upland or riparian habitat that provides corridors (overland movement or along wetted drainages) for frogs among breeding sites in a metapopulation with the following characteristics:

   (a) Are not more than 1.0 mile (1.6 kilometers) overland, 3.0 miles (4.8 kilometers) along ephemeral or intermittent drainages, 5.0 miles (8.0 kilometers) along perennial drainages, or some combination thereof not to exceed 5.0 miles (8.0 kilometers).

   (b) In overland and nonwetted corridors, provides some vegetation cover or structural features (e.g., boulders, rocks, organic debris such as downed trees or logs, small mammal burrows, or leaf litter) for shelter, forage, and protection from predators; in wetted corridors, provides some ephemeral, intermittent, or perennial aquatic habitat.

(c) Are free of barriers that block movement by Chiricahua leopard frogs, including, but not limited to, urban, industrial, or agricultural development; reservoirs that are 50 acres (20 hectares) or more in size and contain predatory nonnative fishes, bullfrogs, or crayfish; highways that do not include frog fencing and culverts; and walls, major dams, or other structures that physically block movement.

Loach minnow and critical habitat

Loach minnow was reclassified as an endangered species (77 FR 10810), after originally listed as a threatened species on October 28, 1986 ((51 FR 39468). Critical habitat has been designated (March 8, 1994 - 59 FR 10898) and redesignated (April 25, 2000 – 65 FR 24328; March 21, 2007 – 72 FR 13356) in response to legal concerns and policy changes (see summary discussion at 75 FR 66482, p. 66485). The current critical habitat designation was published simultaneously with the reclassification of loach minnow to endangered status on February 23, 2012 (77 FR 10810).

Background

Loach minnow is a small fish from the minnow family Cyprinidae. Loach minnow are olivaceous in color, and highly blotched with darker spots. Whitish spots are present at the front and back edges of the dorsal fin, and on the dorsal and ventral edges of the caudal fin. A black spot is usually present at the base of the caudal fin. Breeding males have bright red-orange coloration at the bases of the paired fins and on the adjacent body, on the base of the caudal lobe, and often on the abdomen. Breeding females are usually yellowish on the fins and lower body (Minckley 1973, USFWS 1991).

The limited taxonomic and genetic data available for loach minnow indicate there are substantial differences in morphology and genetic makeup between remnant loach minnow populations. Tibbets (1993) concluded that results from mitochondrial DNA and allozyme surveys indicate variation for loach minnow follows drainage patterns, suggesting little gene flow among rivers. The levels of divergence present in the data set indicated that populations within rivers are unique, and represent evolutionarily independent lineages. The main difference between the mtDNA and allozyme data was that mtDNA suggest that the San Francisco/Blue and Gila groups of loach minnow are separate, while the allozyme data places the Gila group within the San Francisco/Blue group. Tibbets (1993) concluded that the level of divergence in both allozyme and mtDNA data indicated that all three main populations (Aravaipa Creek, Blue/San Francisco Rivers, and Gila River) were historically isolated and represent evolutionarily distinct lineages.

Loach minnow is a bottom-dwelling inhabitant of shallow, swift water over gravel, cobble, and rubble substrates (Rinne 1989, Propst and Bestgen 1991). Loach minnow uses the spaces between, and in the lee of, larger substrate for resting and spawning (Propst et al. 1988, Propst and Bestgen 1991, Rinne 1989). It is rare or absent from habitats where fine sediments fill the interstitial spaces (Propst and Bestgen 1991). Some studies have indicated that the presence of filamentous algae may be an important component of loach minnow habitat (Barber and Minckley 1966). Loach minnow feeds exclusively on aquatic insects (Schreiber 1978, Abarca 1987). Loach minnow live two to three years with reproduction

occurring primarily in the second summer of life (Minckley 1973, Sublette et al. 1990). Spawning occurs March through May (Britt 1982, Propst et al. 1988); however, under certain circumstances loach minnow also spawn in the autumn (Vives and Minckley 1990). The eggs of loach minnow are attached to the underside of a rock that forms the roof of a small cavity in the substrate on the downstream side. Limited data indicate that the male loach minnow may guard the nest during incubation (Propst et al. 1988, Vives and Minckley 1990).

Distribution

Loach minnow are believed to occupy approximately 15 to 20 percent of their historical range, and are now restricted to portions of the Gila River and its tributaries, the West, Middle, and East Fork Gila River (Grant, Catron, and Hidalgo Counties, New Mexico) (Paroz and Propst 2007, Propst 2007, Propst et al. 2009); the San Francisco and Tularosa rivers and their tributaries Negrito and Whitewater creeks (Catron County, New Mexico) (Propst 1988,; Arizona State University (ASU) 2002; Paroz and Propst 2007, Propst 2007); the Blue River and its tributaries Dry Blue, Campbell Blue, Pace, and Frieborn creeks (Greenlee County, Arizona and Catron County, New Mexico) (Miller 1998, ASU 2002, Carter 2005, Carter 2008a, pers. comm., Clarkson et al. 2008, Robinson 2009a); Aravaipa Creek and its tributaries Turkey and Deer creeks (Graham and Pinal Counties, Arizona) (Stefferud and Reinthal 2005); Eagle Creek (Graham and Greenlee Counties, Arizona), (Knowles 1994, Bagley and Marsh 1997, Marsh et al. 2003, Carter 2007, Bahm and Robinson 2009); and the North Fork East Fork Black River (Apache and Greenlee Counties, Arizona) (Leon 1989, Lopez 2000, pers. comm., Gurtin 2004, pers. comm., Carter 2007a, Robinson 2009); and possibly the White River and its tributaries, the East and North Fork White River (Apache, Gila, and Navajo Counties, Arizona).

Loach minnow have recently been placed in additional streams as part of the recovery efforts for the species. In 2007, loach minnow were translocated into Hot Springs Canyon, in Cochise County, Arizona, and Redfield Canyon, in Cochise and Pima Counties, Arizona, and these streams were subsequently augmented (Robinson 2008a, Orabutt 2009, pers. comm., Robinson et al. 2010a, Robinson et al. 2010b, Robinson 2011a, pers. comm.). Both Hot Springs and Redfield canyons are tributaries to the San Pedro River. Augmentation efforts have been suspended in Redfield Canyon due to drought and a lack of adequate flowing water. Augmentation efforts have been suspended at Hot Springs Canyon to allow managers to better evaluate if recruitment of loach minnow is occurring without further augmentation. Monitoring will continue at this site, and future augmentations may occur if needed.

In 2007, loach minnow were translocated into Fossil Creek, within the Verde River subbasin (Carter 2007b), with additional fish added in 2008 and 2011 (Carter 2007b, Carter 2008b, Robinson 2009b, Boyarski et al. 2010, Robinson 2011b). In 2008, loach minnow were translocated into Bonita Creek, a tributary to the Gila River in Graham County, Arizona (Blasius 2008, pers. comm., Robinson 2008b, pers. comm.). Augmentations at Bonita Creek have been temporarily suspended due to re-invasion of by nonnative species above the fish barrier. We anticipate that augmentations with additional fish will occur for the next several years at these sites, if adequate numbers of fish are available, and habitats remain suitable. Monitoring at each of these sites is ongoing; however, insufficient time has elapsed to allow

us to determine if these translocation efforts will ultimately be successful and result in establishment of new populations of loach minnow in these locations.

Table 6. Stream occupancy for loach minnow.

Unit	Occupied at time of listing or documented as occupied since listing	Currently occupied	Translocated/ Reintroduced Population
Unit 1 – Verde River Subbasin			
Verde River	Yes	Yes	No
Granite Creek	No	No	No
Oak Creek	No	No	No
Beaver and Wet Beaver Creek	No	No	No
West Clear Creek	No	No	No
Fossil Creek	No	Uncertain	Yes
Unit 2 – Salt River Subbasin			
White River Mainstem	Yes	Yes	No
East Fork White River	Yes	Yes	No
East Fork Black river	No	No	No
North Fork East Fork Black River	Yes	Yes	No
Boneyard Creek	Yes	No	No
Coyote Creek	No	Yes	No
Unit 3 – San Pedro River Subbasin			
San Pedro River	No	No	No
Hot Springs Canyon	No	Yes	Yes
Bass Canyon	No	No	No
Redfield Canyon	No	Uncertain	Yes
Aravaipa Creek	Yes	Yes	No
Deer Creek	Yes	Yes	No
Turkey Creek	Yes	Yes	No
Unit 4 – Bonita Creek Subbasin			
Bonita Creek	No	Uncertain	Yes
Unit 5 – Eagle Creek Subbasin			
Eagle Creek	Yes	Yes	No
Unit 6 – San Francisco River Subbasin			
San Francisco River	Yes	Yes	No
Tularosa River	Yes	Yes	No
Negrito River	Yes	Yes	No
Whitewater Creek	Yes	No	No
Unit 7 – Blue River Subbasin			
Blue River	Yes	Yes	No
Campbell Blue Creek	Yes	Yes	No
Little Blue Creek	Yes	No	No

Pace Creek	Yes	Yes	No
Frieborn Creek	Yes	Yes	No
Dry Blue Creek	Yes	Yes	No
Unit 8 – Gila River Subbasin			
Gila River	Yes	Yes	No
West Fork Gila River	Yes	Yes	No
Middle Fork Gila River	Yes	Yes	No
East Fork Gila River	Yes	Yes	No
Mangas Creek	Yes	Yes	No
Bear Creek	Yes	Yes	No

Critical Habitat

When critical habitat was re-designated in 2012, FWS determined the primary constituent elements (PCEs) for loach minnow. PCEs include those habitat features required for the physiological, behavioral, and ecological needs of the species. The PCEs describe appropriate flow regimes, velocities, and depths; stream microhabitats; stream gradients; water temperatures; and acceptable pollutant and nonnative species levels (see 77 FR 10810, p. 10837), which are summarized in Table 7 below.

Table 7. Primary Constituent Elements (PCEs) for Loach Minnow.

PCE	Description
Flows	Perennial flows or interrupted stream courses that are periodically dewatered but serve as connective corridors between occupied or seasonally occupied habitats
Depth	Generally less than 3.3 feet
Velocities	Slow to swift velocities between 0.0 and 31.5 inches per second
Stream Microhabitats	Pools, runs, riffles, and rapids
Substrate	Gravel, cobble, and rubble with low or moderate amounts of fine sediment and substrate embeddedness
Gradient	Less than 2.5 percent
Elevation	8,200 feet or less
Water Temperatures	46.4 to 77 degrees Fahrenheit

Pollutants	No or low levels present
Nonnative Aquatic Species	None, or present at levels sufficiently low as to allow persistence of loach minnow
Flow Regime	Natural and unregulated, or if modified or regulated, regimes that allow for adequate river functions, such as flows capable of transporting sediments.

The loach minnow critical habitat designation includes eight units based on river subbasins, including the Verde River, Salt River, San Pedro, Bonita Creek, Eagle Creek, San Francisco River, Blue River, and Gila River subbasins. Occupancy within these units is described in Table 6 (See 77 FR 10810 for additional detail on occupancy by subbasin). Critical habitat has been designated in each of these subbasins, as summarized in Table 8 (See 77 FR 10810 for additional detail).

Table 8. Critical habitat by subbasin.

Unit 1 – Verde River Subbasin			
Stream	Total Miles	Area Designated	
		Upstream Point	Downstream Point
Verde River	73.6	Sullivan Dam	Beaver/Wet Beaver Creek Confluence
Granite Creek	2.0	Spring at Township 17 North, Range 2 West, southwest quarter of the southwest quarter of section 13	Verde River Confluence
Oak Creek	33.7	Confluence with unnamed tributary in Township 17 North, Range 5 East, southeast quarter of northeast quarter of section 24	Verde River Confluence
Beaver/Wet Beaver Creek	20.7	Casner Canyon Confluence	Verde River Confluence
West Clear Creek	6.8	Black Mountain Canyon Confluence	Verde River Confluence
Fossil Creek	13.6	Old Fossil Diversion Dam	Verde River Confluence

Unit 2 – Salt River Subbasin			
East Fork Black River	11.9	Unnamed tributary 0.51 miles downstream of the Boneyard Creek confluence	West Fork Black River Confluence
North Fork East Fork Black River	4.4	Unnamed tributary at Township 6 North, Range 29 east, center of section 30	East Fork Black River Confluence
Boneyard Creek	1.4	Unnamed tributary at Township 6 North, Range 29 East, southeast quarter of section 32.	East Fork Black River Confluence
Coyote Creek	2.1	Unnamed confluence at Township 5 North, Range 29 East, northwest quarter of section 10	East Fork Black River Confluence
Unit 3 – San Pedro Subbasin			
Aravaipa Creek	27.9	Stowe Gulch	San Pedro Confluence
Turkey Creek	2.7	Oak Grove Canyon	Aravaipa Creek Confluence
Deer Creek	2.3	Aravaipa Wilderness Boundary	Aravaipa Creek Confluence
Hot Springs Canyon	5.8	Bass Canyon	Township 12 South, Range 20 East, Southeast Quarter of Section 22
Redfield Canyon	4.0	Sycamore Canyon Confluence	Township 11 South, Range 19 East, northeast quarter of section 36
Bass Canyon	3.4	Pine Canyon	Hot Springs Canyon Confluence
Unit 4 – Bonita Creek Subbasin			
Bonita Creek	14.8	Martinez Wash Confluence	Gila River Confluence
Unit 5 – Eagle Creek Subbasin			
Eagle Creek	16.5	East Eagle Creek Confluence	Freeport McMoRan Diversion Dam, excluding lands owned by Freeport McMoRan
Unit 6 – San Francisco River Subbasin			
San Francisco River	117.7	Northern boundary of Township 6 South, Range 19 West, section 2.	Confluence with the Gila River
Tularosa Rive	18.6	Town of Cruzville at Township 6 South, Range 18 West, southern boundary of section 1	San Francisco River Confluence
Negrito Creek	4.2	Cerco Canyon	Tularosa River Confluence
Whitewater Creek	1.2	Little Whitewater Creek Confluence	San Francisco River Confluence

Unit 7 – Blue River Subbasin			
Blue River	50.6	Campbell Blue and Dry Blue Creek Confluence	San Francisco River Confluence
Campbell Blue Creek	7.7	Coleman Canyon	Confluence of Dry Blue and Campbell Blue Creeks
Little Blue Creek	3.1	Canyon mouth at Township 1 North, Range 31 East, northeast quarter section 29	Blue River Confluence
Pace Creek	0.8	Barrier falls at Township 6 South, Range 21 West, northeast quarter of section 29	Dry Blue Creek Confluence
Frieborn Creek	1.1	Unnamed tributary at Township 7 South, Range 21 West, northeast quarter of southwest quarter of section 8	Dry Blue Creek Confluence
Dry Blue Creek	3.0	Pace Creek Confluence	Campbell Blue Creek Confluence
Unit 8 – Gila River Subbasin			
Gila River	95.4	Confluence of the East and West Forks of the Gila River	Moore Canyon Confluence
West Fork Gila River	8.1	EE Canyon	East Fork Gila River Confluence
Middle Fork Gila River	11.9	Brothers West Canyon	West Fork Gila River Confluence
East Fork Gila River	26.2	Beaver and Taylor Creeks Confluence	West Fork Gila River Confluence
Mangas Creek	0.8	Blacksmith Canyon Confluence	Gila River Confluence
Bear Creek	18.4	Confluence of Sycamore and North Fork Walnut Creek	Township 15 South, Range 17 West, eastern boundary of section 33

Our information indicates that, rangewide, more than 390 consultations have been completed or are underway for actions affecting spikedace and loach minnow, which often co-occur. The majority of these opinions concerned the effects of road and bridge construction and maintenance, grazing, water developments, fire, species control efforts, or recreation. There are a high number of consultations for urban development and utilities, however, these projects typically do not result in adverse effects to the species but are for technical assistance only. Small numbers of projects occur for timber, land acquisition, agriculture, sportfish stocking, flooding, Habitat Conservation Planning, native fish restoration efforts, alternative energy development, and mining. Conservation activities and recovery projects are ongoing throughout the range of the species.

ENVIRONMENTAL BASELINE

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

The PS and Grandfather allotments fall within the boundaries of the Wallow Fire that started on May 29, 2011, and burned over 530,000 acres on the ASNFs. The fire was contained on July 12, 2011 and declared the largest fire in Arizona's history to date. The Wallow Fire predominately modified forest structure within high and moderate fire burn severity areas. The fire had substantial influence in establishing current habitat conditions. The forested areas that burned at moderate to high severity are expected to contribute to high levels of dead/dying trees that could contribute to future fire hazards, supporting the need for salvage operations.

Under the Wallow West Project, the ASNF will salvage dead and dying trees, in areas of moderate to high burn severity, on up to 15,403 acres over a three-year period beginning in 2012. On June 7, 2012, we concurred with the ASNF determinations that salvage and associated actions "may affect, but is not likely to adversely affect" threatened and endangered species.

Almost 50% of pastures within the Wallow Fire perimeter were not grazed during 2012 to mitigate potential effects to soil, vegetation, and federally listed species post-fire.

According to the BAs, interest in effectively managing and monitoring streamside vegetation and stream channels has increased in the past two decades. The Forest Plan has standards and guidelines for streambank stability, riparian species composition, and overall riparian health. Some of these areas were affected either during Wallow Fire, by flooding after, or both. PFC assessments were completed on fish bearing streams almost a decade before the Wallow Fire.

Some high burn severity areas received BAER seeding and/or mulching treatments in the fall of 2011 which provided good ground cover with annual barley and triticale. Moderate burn severity areas received no BAER treatments and have only what ground cover remained post-fire and conifer needle cast.

PS ALLOTMENT

The PS Allotment is a total of 3,787 acres in size, ranging in elevation from 7,500 to 8,100 feet within the Black River watershed in Apache County, Arizona. Approximately 11.6 miles of riparian stream occur within the PS Allotment including Home and Horse Creeks, and East and West Forks of the Black River. All streams were impacted to some extent by the Wallow Fire.

In 1999, range condition on PS allotment was rated as mostly fair (S. Coleman, Forest Service, pers. comm.). Forage utilization monitoring from 2001-2008 (approximately 43 total measurements with 6 post grazing/end of growing season measurements) shows an average of 11% overall and 15% post grazing/end of growing season across the PS allotment.

Status of the species and critical habitat within the action area

Loach minnow

Loach minnow are considered to occupy habitat around Three Forks, including the upper two miles of the East Fork Black River downstream to Open Draw, and the lower portions of Boneyard Creek and Coyote Creek, tributaries of East Fork Black River. Loach minnow were collected in the East Fork Black River downstream to the confluence of Open Draw, approximately 6.2 miles upstream of PS allotment between 1996-2002 (Marsh et al. 2003). Loach minnow were last documented there in 2005 (1 individual) after the Three Forks Fire.

Intensive surveys in 2007, 2008, and 2009 in the Three Forks area, including East Fork Black River, have not detected loach minnow. Post-fire fish surveys from fall 2011 also did not find loach minnow (AGFD 2011). The BA states that for the purpose of this analysis, it will be assumed that the species may still be present in sections of the East Fork Black River as described above, in very low numbers that are difficult to detect. In the East Fork Black River, substrate embeddedness, and streambank soil stability currently do not meet current Forest Plan standards. This was exacerbated by post-fire sediment and ash that are still present in slow-water habitats. Riparian condition is estimated to be unsatisfactory. No temperature data are available; temperatures are estimated to be elevated above normal.

Critical Habitat

East Fork Black River—12.2 mi of river on the ASNFs extending from the confluence with the West Fork Black River at T 4 N, R 28 E, section 11 upstream to the confluence with unnamed tributary approximately 0.51 mi downstream of the Boneyard Creek confluence at T 5 N, R 29 E, section 5. The recently finalized rule (77 FR 10810, February 23, 2012) for the change in status and designation of critical habitat for this species includes everything that was included within the 2007 designation of critical habitat, along with the addition of 2.1 miles of Coyote Creek, which is a tributary to the East Fork Black River. The lower 3.16 miles of loach minnow CH along East Fork Black River is within the PS allotment.

Six factors were identified as primary constituent elements for loach minnow critical habitat:

1. Habitat to support all egg, larval, juvenile, and adult loach minnow. This habitat includes perennial flows with a stream depth of generally less than 1 m (3.3 ft), and with slow to swift flow velocities between 0 and 80 cm per second (0.0 and 31.5 in. per second). Appropriate microhabitat types include pools, runs, riffles, and rapids over sand, gravel, cobble, and rubble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Appropriate habitats have low stream gradient of less than 2.5 percent, are at elevations below 2,500 m (8,202 ft). Water temperatures in the general range of 8.0 to 25.0 °C (46.4 to 77 °F);

2. An abundant aquatic insect food base consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies;

3. Streams with no or no more than low levels of pollutants;

4. Perennial flows, or interrupted stream courses that are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted;

5. No nonnative aquatic species, or levels of nonnative aquatic species that are sufficiently low to allow persistence of loach minnow; and

6. Streams with natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of transporting sediments.

Chiricahua leopard frog

No current populations or critical habitat for CLF have been documented within the action area. However, extensive surveys have not been conducted and suitable habitat does exist within the action area; therefore the species is assumed to be present. The nearest CLF observation/release from the PS Allotment occurred at Concho Bill Spring. This location is approximately 2.4 miles north (overland) of PS Allotment and 5.9 miles by stream course (3.6 intermittent in Deer Creek to 2.3 miles perennial in East Fork Black River). The next nearest CLF observation/release occurred at Lake Sierra Blanca. This location is approximately 7.3 miles to the northeast of the PS Allotment and 14.8 miles by perennial stream course (1.3 miles unnamed stream at Lake Sierra Blanca to 3.7 miles in Boneyard Creek to 4.3 miles of the North Fork East Fork Black River to 5.4 miles in East Fork Black River. Both of these occupied habitats are not within reasonable dispersal distances for the species (1 mile overland, 3 miles along ephemeral or intermittent drainage, or 5 miles along a perennial stream).

Firebox Lake in the Black River drainage is a proposed release site for CLF within the next two years. This location is approximately 3.1 miles northwest of the allotment (overland) and 5.4 miles by stream course (1.7 miles intermittent in an unnamed drainage and 3.7 miles perennial in East Fork Black River). Prescribed Tank in the West Fork Black River drainage was stocked with 200-300 frogs on June 11, 2012 as part of recovery efforts for CLF. It is 0.8 mile from Prescribed Tank to West Fork Black River (WFBR) along an intermittent stream course. From there it is less than 0.1 mi along WFBR to the PS allotment boundary and approximately 2.7 miles along WFBR to Grandfather allotment boundary.

Suitable habitat for CLF occurs within the PS allotment and ongoing recovery actions may result in establishing the species during the 10-year life of the project. Perennial stream courses in the form of East Fork Black River (2.6 miles), West Fork Black River (3.5 miles), Home Creek (2.5 miles), and Horse Creek (3.7 miles) occur within the PS Allotment. In addition, an unnamed seasonal marsh, 5 springs, and 2 stock tanks also occur within the allotment.

Construction of stock tanks for livestock water has created leopard frog habitat, and in some cases has replaced destroyed or altered natural wetland habitats (Sredl and Saylor 1998). In some areas of Arizona, stock tanks provide the only suitable habitat available for the frog; however, these habitats are often temporary and can be intermediary "stepping stones" in the dispersal of nonnative species (Rosen et al. 2001) that result in CLF decline (Rosen et al. 1994, Rosen et al. 1996).

Factors affecting species environment and critical habitat within the action area

Loach minnow

We assume that all or most of the designated constituent elements are, or were, present in the action area. Since the Wallow Fire occurred in 2011, it is also reasonable to assume that given the level of fire impacts in the Upper Black River 5th HUC watershed, that many of these elements are not satisfactory at present, and could take up to several years to return to pre-fire levels. At a minimum, elements 1b, 1d, 2, and 3 were impacted either immediately during and after the fire, or during the monsoon rains in 2011. Impacts can be attributed to the heat of the fire itself, which raised stream temperatures and from the subsequent ash flows and sediment loading as rains began. All four of these elements will likely be impacted for a number of years to varying degrees. Element 5 was not present throughout critical habitat, pre-fire, as crayfish have been noted to be very numerous in East Fork Black River and nonnative trout continue to persist. Nonnative crayfish are likely still present and if they have been impacted by post-fire flooding, have likely been reduced in number (flushed from the system) by high flows, but will likely rebound in the near future. Nonnative trout were found in post-fire fish surveys in East Fork Black River.

This watershed contains critical habitat for the loach minnow along 3.16 miles of the East Fork Black River within the PS allotment. The Wallow Fire burned 29 percent of this watershed at moderate to high severity. The remaining 71 percent was unburned or burned at low severity. This stream course has a severe soil erosion hazard rating along its banks from above the PS allotment boundary to below where it merges with the West Fork Black River. This drainage is at high risk for post-wildfire impacts to the loach minnow population.

In order to mitigate the effects of the Wallow Fire, a total of 3898 acres was seeded in the East Fork Black River watershed; of which 93% (3639 acres) was high burn severity, 5% (213 acres) was moderate burn severity, and 1% (45 acres) was low burn severity. As additional conservation measures, utilization levels will remain at conservative levels and riparian herbaceous vegetation must maintain a stubble height of 6 to 8 inches.

Both sections of the Black River consist of heavily used forest roads and the East Fork contains a campground and receives heavy recreation use such as fishing and hiking. The East Fork Recreation Area (Buffalo Crossing Campground and Horse Spring Campground are within or partly within the PS Allotment boundary) occurs within the River pasture of the PS allotment (and further upstream along the East Fork Black River). The presence of this recreation area precludes establishment of livestock exclosures along this stretch of the East Fork Black River.

Chiricahua leopard frog

Before the Wallow Fire, the decline/disappearance of CLFs from the White Mountains has correlated with the appearance of tiger salamanders and nonnative crayfish, which are now very abundant in CLF habitats. Crayfish occur on the allotment and have been known to remove substantial amounts of aquatic vegetation such as water cress (*Rorippa nasturtium-aquaticum*) and water buttercup (*Ranunculus aquatilis*), which can eliminate refugia for the Chiricahua leopard frog, and may make the frog more vulnerable to predation. The damage caused by crayfish extends to stream health by altering the stream channel by creating extensive burrow tunnels, which leads to bank erosion, increases in water turbidity, and siltation.

Salvage efforts for CLF occurred during the Wallow Fire at Concho Bill Spring and Dry Lake Tank outside of the PS Allotment and action area. No frogs were detected during salvage efforts, and the sites themselves were not heavily burned. Post-fire surveys were conducted at Concho Bill Spring and Dry Lake Tank in fall 2011. Concho Bill Spring and the surrounding watershed experienced high to moderate burn severity. Consequently a visit in September revealed that high flows had gone through the site and sediment had deposited on the northeast and northwest sides of the tank. A reduction in aquatic vegetation was also observed. No CLFs were observed on this visit. Straw waddles were placed on the surrounding hillslopes to protect Concho Bill from filling in any further with ash or sediment. Dry Lake Tank was not severely impacted by the fire or post-fire rains; however, no CLFs were observed. CLF are not likely to signifcantly expand their range during the life of the project.

GRANDFATHER ALLOTMENT

The Grandfather Allotment is 3,311 acres and ranges in elevation from 7,300 to 8,000 feet, and the terrain is generally gentle. Vegetation is mostly ponderosa pine, interspersed with small, open grasslands and scattered aspen stands.

The Grandfather and Red Hill Allotments are permitted to the same permittee. Grandfather Allotment is considered the “summer country” which has included fall use. Approximately 0.25 mile of perennial stream occurs on within the allotment on the West Fork Black River. Most of the allotment was not burned during the Wallow Fire, but 183 of 3226 acres experienced high or moderate burn severity.

In 1999, range condition on Grandfather Allotment was rated as 60% poor (S. Coleman, Forest Service, pers. comm.). Forage utilization monitoring from 2001-2007 (approximately

58 total measurements with 5 post grazing/end of growing season measurements) shows an average of 12.8% overall and 13% post grazing/end of growing season across the Grandfather allotment.

Status of the species and critical habitat within the action area

Chiricahua leopard frog

Historical observations of CLF have occurred across the Alpine RD from the 1950s through the 1980s. In 2007, the AGFD began to restore CLF populations in the Black River Watershed.

The nearest CLF suitable habitat and release site from the Grandfather Allotment is Concho Bill Spring. This location is approximately 4.8 miles northeast of the Grandfather Allotment (overland) and 9.1 miles by stream course (3.6 intermittent in Deer Creek and 5.5 miles perennial in East Fork Black River). The next nearest CLF suitable habitat and release site is Lake Sierra Blanca. This location is approximately 9.9 miles to the northeast of the Grandfather Allotment (overland) and 17.9 miles by perennial stream course (1.3 miles unnamed stream at Lake Sierra Blanca to 3.7 miles in Boneyard Creek to 4.3 miles of the North Fork East Fork Black River to 8.6 miles in East Fork Black River. Both of these sites are not within reasonable dispersal distances for the species (1 mile overland, 3 miles along ephemeral or intermittent drainage, or 5 miles along a perennial stream). Extensive surveys for CLF have not occurred within the West Fork Black River drainage. Past consultations have considered the species likely to occur based on perennial streams and lack of nonnative predators.

Surveys were conducted at Sierra Blanca Lake, Concho Bill Spring, Dry Lake Tank, and Coleman Creek and Campbell Blue Creek in the Blue River in fall 2011, areas near but all outside of the Grandfather Allotment. Lake Sierra Blanca was not severely impacted by the fire or post-fire rains, and no CLF were observed. Concho Bill Spring and the surrounding watershed experienced high to moderate burn severity. Consequently a visit in September 2011 revealed that high flows had gone through the site and sediment had deposited on the northeast and northwest sides of the tank. A reduction in aquatic vegetation was also observed. No CLFs were observed on this visit. Dry Lake Tank was not severely impacted by the fire or post-fire rains; however, no CLFs were observed.

Future recovery actions for CLF are proposed, but not considered as part of the analysis due to actions not yet occurring and uncertainties as to whether or not these actions will be successful. Firebox Lake in the Black River drainage is a proposed release site for CLF within the next two years. Prescribed Tank in the West Fork Black River drainage was stocked with 200-300 frogs on June 11, 2012 as part of recovery efforts for CLF. It is not anticipated that stocked CLF would expand into the allotment boundaries.

Suitable habitat occurs within the Grandfather Allotment in a stream and stock tanks. One perennial stream course, West Fork Black River, flows for 0.2 mile through the northeast corner of the allotment. Three stock tanks exist within East Pasture, three in West Pasture, two in Coldwell Holding Pasture, and one in Steer (holding) Pasture. The West Fork Black

River flows through Steer Pasture, but livestock are fenced out of the river except for a water gap.

The Lower West Fork Black River Watershed had about 35% of the total watershed acres within the high/moderate burn severity, with the remaining low/underburned or outside of the fire. Portions of the Holding 1 (248 ac), Holding 2 (3 ac), Holding 3 (11 ac), Holding 4 (5 ac), and West (12 ac) Pastures are within this watershed and all were grazed in 2012 and will be grazed in subsequent years.

The Centerfire Creek Watershed had about 23% of the total watershed acres within the high/moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 3 ac of the Grandfather Allotment within this watershed none had high or moderate burn severity. Portions of the West (3 ac) Pasture are within this watershed and scheduled for use in 2012.

The Bear Creek-Black River Watershed had about 50% of the total watershed acres within the high/moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 2958 ac of the Grandfather Allotment within this watershed 184 ac had high or moderate burn severity. Portions of the Caldwell Holding (112 ac), East (1152 ac), Holding 1 (235 ac), Holding 3 (5 ac), Holding 4 (32 ac), and West (1407 ac) Pasture are within this watershed were used in 2012 and will be grazed in subsequent years.

Apache trout

The West Fork Black River (and the lower Thompson Creek and Burro Creek) contain Apache trout from White River stock and are managed as a part of the West Fork of the Black River metapopulation due to its connected habitat (USFWS 2009). Surveys conducted post-fire in fall 2011 indicated the West Fork Black River had a complete fish community present, including Apache trout, but in low abundance. It was the least affected Apache trout population post-Wallow Fire. The extent of instream habitat alteration from ash and sedimentation is unknown, but expected to be elevated from pre-fire conditions. Nonnative brown trout still occurred below the existing barriers. Surveys in Black River were unable to detect any fish present. Dead fish on banks were reported multiple times during 2011 monsoons in Black River by ASNF staff conducting BAER activities. Sedimentation and ash deposition have increased and remain present in Black River. No mortality of Apache trout was observed along the West Fork Black River during the Wallow Fire, or post-fire.

Factors affecting species environment and critical habitat within the action area

Chiricahua leopard frog

The disappearance of CLFs from the White Mountains has correlated with the appearance of tiger salamanders and nonnative crayfish, which are now very abundant in CLF habitats. Crayfish occur on the PS Allotment and, as stated earlier, can remove substantial amounts of aquatic vegetation, which can eliminate refugia for the Chiricahua leopard frog, and may make the frog more vulnerable to predation, alter the stream channel by creating burrow tunnels, which leads to bank erosion, increases in water turbidity, and siltation.

Additionally, the ASNF is implementing the following conservation measures for CLF:

1. The ASNF will cooperate with partners including State, Private, and other Federal Agencies in an effort to increase the number of Chiricahua leopard frog breeding populations on the Forest. Sites where efforts will be undertaken may include historically occupied areas but will also include finding new suitable, unoccupied sites that may require renovation or physical habitat improvement, for eventual repatriation of frogs. The Forest will continue to be an active partner of the Mogollon Rim and Upper Gila-Blue River Stakeholders' groups and participate in the development and implementation of annual work and strategy plans for Chiricahua leopard frog recovery actions in those Recovery Units. The Forest will work with the FWS and other partners annually, to report accomplished activities from previous year and to identify new priorities for the duration of this consultation.

2. In cooperation with the Mogollon Rim and Upper Gila-Blue River Stakeholder groups and other partners, the ASNF will participate in the identification and implementation of actions in an attempt to control nonnative invasive species impacting the Chiricahua leopard frog at occupied or possible repatriation sites, where those actions can be reasonably accomplished and reasonably certain to have measurable benefits to the Chiricahua leopard frog.

3. The ASNF in cooperation with partners will create new refugia populations of frogs on the Forest when identified as a priority by the Mogollon Rim and Upper Gila-Blue River Stakeholders' groups.

4. The ASNF will seek opportunities to improve physical habitat conditions within occupied, recently occupied, and historical habitat for the Chiricahua leopard frog on the Forest. Examples might include habitat improvement actions, installing erosion controls, creating or deepening pools, or installing liners or groundwater wells to ensure permanency of water at a given site (within the limits of existing Forest Service water rights and applicable water law).

Apache trout

Federal, State, Tribal, and private parties including the National Fish and Wildlife Foundation are participating in planning and recovery actions for Apache trout. West Fork Black River is an important recovery stream which will continue to be montitored and restored, as funding becomes available. Potential impacts to Apache trout from the recent Wallow Fire include: short- and long-term modification of suitable and occupied habitat due to scouring, sediment and debris flows, and increased peak flows; modifications to water quality due to sediment and ash; changes in food availability; modification of streamside vegetation and stream bank conditions; spread of nonnative fish into occupied habitat; and loss of population due to ash flows (Gresswell 1999). According to the BA for Grandfather Allotment, increased runoff and erosion will continue to occur biannually for several years during spring runoff and summer monsoons until the watershed stabilizes. These changes in habitat can impact aquatic organisms at all life stages including eggs, juveniles and adults. Eggs are especially susceptible to smothering from excessive sedimentation in aquatic habitats.

The Wallow Fire burned 35% of the West Fork Black River watershed at moderate to high severity. The remaining 65% was unburned or burned at low severity.

EFFECTS OF THE ACTION

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

PS ALLOTMENT

Loach minnow and its designated critical habitat

Known locations of loach minnow are greater than 8 miles upstream of the allotment boundary. Any loach minnow population in the action area is expected to be small, but may be highly sensitive to environmental perturbations (e.g., altered stream flow, sedimentation, water temperatures). Degraded aquatic habitat conditions are the result of past and ongoing management actions, although the proposed action attempts to improve some of the ground conditions, these adverse impacts and alterations to hydrologic processes (which are expected to continue with this project) have resulted in changes to stream channel morphology and other physical, biological, and chemical characteristics of aquatic and riparian habitat within and downstream of the allotment. Livestock grazing activities generate sediments and/or nutrients that could degrade occupied loach minnow habitat. Additionally, grazing activities can have an indirect effect on loach minnow critical habitat constituent elements through habitat destruction by trampling and sediment generation.

Aquatic habitat may be altered by the direct removal of riparian vegetation from livestock grazing and altered channel morphology from bank shearing by trampling hooves. While these effects are often localized, they can contribute to more deleterious indirect effects. Most indirect effects to aquatic habitat and biota from livestock management are the result of upland terrestrial changes that result in changes to sediment and water transport in the watershed. These indirect effects may include: increased sediment, loss of riparian vegetation, altered macroinvertebrate assemblages, lowering of groundwater tables and decreased perennial flows, increased stream temperature, larger peak flows, and changes in channel form (Belsky et al. 1999, Fleischner 1994).

Livestock have direct access to 3.16 miles of East Fork Black River in River and PS North pastures of the PS allotment. All riparian habitat within the PS allotment occurs within the canyon of the East Fork Black River. The BA concludes that livestock grazing along the stream may cause changes in the structure, function, and composition of the riparian community (Szaro and Pase 1983, Warren and Anderson 1987, Platts 1990, Schulz and Leininger 1990, Schulz and Leininger 1991, Stromberg 1993). Reduction in riparian vegetation quantity and health and shifts from deep-rooted to shallow-rooted vegetation can contribute to bank destabilization and collapse and production of fine sediment (Meehan 1991). Loss of riparian shade can result in increased fluctuation in water temperatures with higher summer and lower winter temperatures (Karr and Schlosser 1977, Platts and Nelson 1985). The capacity of riparian vegetation to filter sediment and pollutants to prevent their entry into the river and to build streambanks can be reduced (Lowrance et al. 1984, Elmore 1992). Channel erosion in the form of downcutting or lateral expansion may result (Heede et al. 1990).

Loach minnow and its habitat are likely to experience activities altering the flow regime (water quality, quantity, intensity, and duration), degrading the stream channel, and modifying the riparian vegetation structure and diversity within the action area. These impacts will occur at all levels of cattle presence, regardless of season, but are likely to increase as number of livestock and the length of time the cattle are present increases (Marlow and Pogacnik 1985), depending on local site conditions. Range condition, considered together with soil, watershed, and riparian condition, is assumed to be closely correlated with ecological condition and function. Watershed/ecological effects of grazing are generally expected to be more evident where stocking levels are high, soils are impaired, and /or rangelands are in fair, poor, or very poor condition.

The low incidence of occurrence of loach minnow minimizes the potential for widespread adverse effects to the species. However, the proposed action is likely to adversely affect this stretch of critical habitat, both directly and indirectly, by degrading bank conditions through trampling and removal of vegetation, increasing soil compaction and thereby decreasing infiltration at the stream and within the uplands, decreasing the ability of the stream system to handle high energy flows by removing essential vegetation, and increasing the instability of the river system. The proposed action is likely to contribute to deterioration of PCE #1 because range condition is fair to poor, 110 acres of the PS Allotment burned at moderate to high burn severity, substrate embeddedness and streambank soil stability do not meet Forest Plan standards, and riparian condition is unsatisfactory. Critical habitat is essential to the recovery of the species. Although conservation of the species could be hindered or delayed,

especially with the post-fire conditions, we do not anticipate the PCEs will lose their ability to appreciably contribute to recovery of the species.

Chiricahua leopard frog

Grazing effects on CLF habitat include both the creation of habitat and the loss and degradation of habitat (Sredl and Jennings 2005). Livestock grazing can cause a decline in diversity, abundance, and species composition of riparian herpetofauna communities from direct or indirect threats. These can include: (1) declines in the structural richness of the vegetative community; (2) losses or reductions of the prey base; (3) increased aridity of habitat; (4) loss of thermal cover and protection from predators; and (5) a rise in water temperatures to levels lethal to larval stages of amphibian and fish development (Szaro et al. 1985; Schulz and Leininger 1990; Belsky et al. 1999).

Perennial stream courses within the PS Allotment, including East Fork Black River (3.1 miles), West Fork Black River (3.5 miles), Home Creek (2.5 miles), and Horse Creek (3.7 miles). Suitable habitat for CLF occurs within the PS allotment, but it is unknown whether CLF occur within the allotment due to lack of surveys. The nearest known population is Concho Bill. The recent stocking in Prescribed Tank could lead to CLF dispersal (0.8 mi along intermittent stream) into suitable habitat in West Fork Black River and other streams with in the allotment boundary. In addition, an unnamed seasonal marsh, 5 springs, and 2 stock tanks also occur within the allotment. Livestock use would occur in suitable habitats. Adverse effects to the Chiricahua leopard frog and its habitat as a result of grazing may occur under certain circumstances. These effects could potentially include facilitating dispersal of nonnative predators; trampling of egg masses, tadpoles, and frogs; deterioration of watersheds; erosion and/or siltation of stream courses; elimination of undercut banks that provide cover for frogs; loss of wetland and riparian vegetation and backwater pools; and spread of disease.

Indirect effects of grazing could include elevated levels of sedimentation, loss of wetland and riparian vegetation, and changes in water quality in stock tanks. Sedimentation of deep pools used by frogs could decrease the quality of habitat and alter primary productivity. Conservative utilization levels (31-40%) combined with only grazing 45 head should provide adequate residual ground cover to mitigate some sedimentation into suitable frog habitats. However, West Fork and East Fork Black River flows through the allotment and not all sedimentation can be mitigated. Loss of wetland and riparian vegetation would decrease hiding cover and shading; however, low utilization levels (25%) on riparian vegetation should lead to improved riparian areas. Degraded water quality and reduced vegetation in stock tanks could occur given tanks are not fenced or partially fenced, but the permitted number of livestock is low as is the season of use. Part of the season of use includes summer monsoons, which would increase stock tank water levels and improve water quality through dilution.

Proposed livestock management activities could increase the likelihood of nonnative predators or chytrid fungus. Existing stock tanks provide habitat for bullfrogs or crayfish. Bullfrogs are not present in the West Fork Black River or the Black River drainage, so they are not of concern. Crayfish do exist in high numbers within most the Black River drainage,

and could move into stock tanks. West Fork Black River already has crayfish present, which would likely impact CLF. Chytrid fungus has not been identified as a problem on the ASNFs, but testing for the fungus has only just begun. Potential spread of the fungus, if it does occur, through livestock carrying mud and moving between habitats is a possibility. While stock tanks provide important habitats for CLF survival, they concurrently provide habitat for nonnative predators or disease which are highly detrimental to the CLF.

Although these potential effects are not insignificant, we believe the low probability of occurrence of CLF minimizes the potential for severe adverse effects to the species.

GRANDFATHER ALLOTMENT

Chiricahua leopard frog

No extant populations of CLF are currently known to occur within the action area; however suitable habitat exists and extensive surveys within the West Fork Black River have not occurred. The nearest population is Concho Bill; frogs will likely not disperse down East Fork Black River from Concho Bill springs to the allotment due to brown trout, heavy recreational use, and crayfish. Recent stocking efforts in Prescribed Tank could lead to CLF dispersal, (0.8 mi along intermittent stream) into suitable habitat in West Fork Black River. In addition, the allotment contains stock tanks, springs and streams that provide suitable CLF habitat within the allotment boundary.

If the species does become established during the life of the project, adverse effects to the Chiricahua leopard frog and its habitat as a result of grazing could occur under certain circumstances. While stock tanks provide refugia for populations, these habitats are dynamic and lack habitat complexity. CLF moving into the area would have to adapt to the current grazing regime. Periodic maintenance to remove silt could cause a temporary loss of habitat and mortality of frogs, if present. Livestock use would occur in these areas, though some stream sections are fenced out except for water gaps. Grazing effects could potentially include facilitating dispersal of nonnative predators; trampling of egg masses, tadpoles and adult frogs could occur; deterioration to the watersheds; erosion and/or siltation of stream courses; elimination of undercut banks that provide cover for frogs; loss of wetland and riparian vegetation and backwater pools; and spread of disease.

Indirect effects of grazing can include elevated levels of sedimentation, loss of wetland and riparian vegetation, and changes in water quality in stock tanks. Sedimentation of deep pools used by frogs decreases the quality of habitat and alters primary productivity. The proposed action includes conservative utilization levels (31-40%) combined with only grazing 45 head. This level of grazing should provide adequate residual ground cover to mitigate some sedimentation into suitable frog habitats. However, West Fork Black River flows through a small portion of the allotment and not all sedimentation can be mitigated. Loss of wetland and riparian vegetation has the potential to decrease hiding cover and shading; however, low utilization levels (25%) on riparian vegetation should lead to improved riparian areas over the long run. Degraded water quality and reduced vegetation in stock tanks will likely occur as no tanks are fenced or partially fenced. Part of the season of use includes summer

monsoons, which would increase stock tank water levels and improve water quality through dilution.

Proposed livestock management activities could increase the likelihood of nonnative predators or chytrid fungus. Existing stock tanks provide habitat for CLF as well as bullfrogs should they become established. Bullfrogs are not present in the West Fork Black River or the Black River drainage, so they are not of concern. Crayfish do exist in high numbers within most the Black River drainage, and could move into stock tanks. West Fork Black River already has crayfish present, a known impact to the CLF. Chytrid fungus has not been identified as a problem on the ASNFs, but testing for the fungus has only just begun en masse. Potential spread of the fungus, if it does occur, through livestock carrying mud and moving between habitats is a suspected to be a possibility. While stock tanks provide important habitats for CLF survival, the concurrently provide habitat for nonnative predators which are highly detrimental to the CLF. Without management of stock tanks, CLF may not establish. Although these potential effects are not insignificant, we believe the low probability of occurrence of CLF minimizes the potential for severe adverse effects to the species.

Apache trout

Direct effects to Apache trout could occur in West Fork Black River on the Grandfather Allotment where livestock have access for watering. The potential indirect effects of grazing on streambanks in this post-fire watershed include the shearing or sloughing of streambank soils by either hoof or head action; elimination of streambank vegetation; erosion of streambanks following exposure to water, ice, or wind due to loss of vegetative cover; and an increased streambank angle which increases water width and decreases stream depth. According to Wada (1991) the presence of instream cover and bankcuts are important variables in defining Apache trout habitat and given the lack of vegetation, dead and down material, etc. we anticipated a low incidence of occurrence of Apache trout. In addition, undercut banks, solid debris piles, and logs in contact with the water are very important as cover for Apache trout. As described above, cattle will influence these variables to some extent by grazing within the stream corridor. Documented conservative utilization patterns (13%), low numbers (45 cow/calf), and rest rotation should reduce indirect effects. Although these potential effects are not insignificant, we do not believe they will result in incidental take nor will they appreciably reduce the likelihood of survival and recovery of the 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.

Numerous streams along this boundary have their headwaters located on adjacent tribal lands before they enter and flow onto the ASNF. The Wallow Fire burned approximately 9200 acres on San Carlos Apache and 9200 acres on the White Mountain Apache tribal lands.

These areas impacted by the fire have likely resulted in some changes to the watersheds of Boggy Creek, Wildcat Creek, Soldier Creek, and Bear Wallow Creek.

There are also private lands distributed across the ASNF and the Black River watershed. Although multiple activities may occur on these lands, we have no specific information on private actions in the action area.

CONCLUSION

After reviewing the current status of loach minnow and its critical habitat, Chiricahua leopard frog, and Apache trout, the environmental baseline for the action area, the effects of the proposed grazing and the cumulative effects, it is the FWS's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the loach minnow, Chiricahua leopard frog, and Apache trout, and is not likely to destroy or adversely modify designated critical habitat for loach minnow. We make these findings for the following reasons:

Loach minnow and critical habitat

- The low incidence of occurrence of loach minnow in the PS Allotment, as demonstrated by recent surveys, minimizes the potential for widespread adverse effects to the species.

- Although critical habitat could be adversely affected in the PS Allotment, we do not anticipate the PCEs will lose their ability to appreciably contribute to recovery of the species.

- Potential adverse effects will be minimized through implementation of range monitoring and adaptive management that will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

Chiricahua leopard frog

- CLF have not been documented on either the PS or Grandfather allotments. However, we believe they likely occur on the PS Allotment. Although CLF are likely to be stocked in suitable habitats near, but not within, these allotments, the probability that they will significantly expand within the action area is considered low.

- Potential adverse effects will be minimized through implementation of range monitoring and adaptive management that will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

Apache trout

- Although Apache trout in the West Fork Black River on the Grandfather Allotment could be adversely affected by livestock that have access for watering, we do not believe this would signficantly impact the life history functions including spawning, hatching, rearing, or foraging.

- Potential adverse effects will be minimized through implementation of range monitoring and adaptive management that will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

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

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

The FWS does not anticipate the proposed action will incidentally take loach minnow or Chiricahua leopard frog because these species exhibit a low incidence of occurrence in the action area. The FWS does not anticipate the proposed action will incidentally take Apache trout because the proposed action would not signficantly impact life history functions.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Report results of assessments prior to grazing and mid-season monitoring to FWS so we may evaluate the need for adaptive management.

2. Exclude grazing in areas of moderate or high burn severity.

3. Implement a basin-wide program for monitoring of loach minnow and its accompanying native fish community. Descriptive linear habitat mapping should be conducted along all occupied, suitable, or potential habitat to identify suitability or capability for loach minnow and other components of the native fish community. Surveys and monitoring should be conducted by journey-level fish biologists with expertise in southwestern fishes and desert stream habitats. The monitoring program should be coordinated with any existing monitoring or surveying efforts to avoid over sampling. Monitoring protocols and habitat suitability criteria should be agreed upon with the New Mexico and Arizona Game and Fish Department and the Service to ensure consistency and validity, and to avoid redundancy of effort.

4. Remove cattle from directly trampling loach minnow critical habitat in the PS allotment through pasture closure or fencing of riparian areas, and reduce forage and browse utilization below 45% by weight in riparian areas.

5. Work with the FWS and the AGFD to reintroduce the Chiricahua leopard frog to suitable habitats.

6. Work with the FWS and the AGFD to begin an aggressive program to control nonnative aquatic organisms on the Forest, particularly bullfrogs, fish, and crayfish.

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

REINITIATION NOTICE

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

Mr. James E. Zornes, Forest Supervisor

The FWS appreciates the Forest Service's efforts to identify and minimize effects to listed species from this project. We also encourage you to coordinate review of this project with the Arizona Game and Fish Department. For further information please contact Mike Martinez (ext. 224) or Debra Bills (ext. 239). Please refer to the consultation number, 02EAAZ00-2012-F-0296 in future correspondence concerning this project.

Sincerely,

/s/ Debra Bills for
Steven L. Spangle
Field Supervisor

cc: Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Ginger Cheney, LWJ Ranches, Springerville, AZ
Doug Stacy, Fay E. Stacy Moore Estate, Duncan, AZ
James (Lamar) Clark, The Clark Revocable Trust, Phoenix, AZ
William & Barbara Marks, Blue, AZ

cc (electronic):
Biologists, Arizona Ecological Services Office, Fish and Wildlife Service, AZ
(Attn: Jeff Servoss, Ryan Gordon, Mary Richardson, and Shaula Hedwall)

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APPENDIX A: CONCURRENCES

PS ALLOTMENT

Apache trout

We concur with your "may affect, not likely to adversely affect" determination for Apache trout for the following reasons:

- The species occurs in low numbers in Home Creek in the action area, minimizing potential effects.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

Mexican Spotted Owl and Critical Habitat

We concur with your "may affect, not likely to adversely affect" determination for Mexican spotted owl and designated critical habitat for the following reasons:

- No MSO PACs occur within the allotment. The PS allotment has a small amount of foraging habitat for MSO.

- Forage utilization will be maintained at conservative levels through minimum stocking rates and pastures being rested every other year.

- Stubble height in high elevation mesic meadows will be maintained at 6 to 8 inches (as opposed to the minimum recommendation of 4.5 inches) in order to maintain cover for the MSOs primary prey species.

- Grazing would likely not occur within mixed conifer habitat because this habitat does not normally provide the forage structure necessary for grazing and, therefore, are not likely to be significantly affected.

- Riparian habitat occurs only within the East Fork Black River. This habitat is somewhat inaccessible to livestock due to steep slopes. Reduced grazing pressure through conservative forage utilization guidelines will allow for structural complexity to be maintained and vegetation to continue developing into the PCEs for riparian habitat.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover that will allow for adequate amounts of herbaceous vegetation to encourage beneficial, low-intensity ground fires and reduce the risk of fuel accumulations developing into high-intensity crown fires).

Mexican Gray Wolf

We concur with your determination that the proposed action "is not likely to jeopardize" the Mexican gray wolf for the following reasons:

- Because of the wolves' status as an experimental, non-essential population, wolves found in Arizona are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

GRANDFATHER ALLOTMENT

Mexican Spotted Owl and Critical Habitat

We concur with your "may affect, not likely to adversely affect" determination for Mexican spotted owl and designated critical habitat for the following reasons:

- No MSO PACs occur within the allotment; therefore, there will be no effect to MSO PACs. The Grandfather allotment has a small amount of foraging habitat for MSO.

- Forage utilization will be maintained at conservative levels through minimum stocking rates and pastures being rested every other year.

- Stubble height in high elevation mesic meadows will be maintained at 6 to 8 inches (as opposed to the minimum recommendation of 4.5 inches) in order to maintain cover for the MSOs primary prey species.

- Grazing would likely not occur within mixed conifer habitat because this habitat does not normally provide the forage structure necessary for grazing and, therefore, are not likely to be significantly affected.

- Riparian habitat occurs only within the East Fork Black River. This habitat is mainly inaccessible to livestock due to steep slopes. Reduced grazing pressure through conservative forage utilization standards will allow for structural complexity to be maintained and vegetation to continue developing into the PCEs for riparian habitat.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover that will allow for adequate amounts of herbaceous vegetation to encourage beneficial, low-intensity ground fires and reduce the risk of fuel accumulations developing into high-intensity crown fires).

Mexican Gray Wolf

We concur with your determination that the proposed action "is not likely to jeopardize" the Mexican gray wolf for the following reasons:

- Because of the wolves' status as an experimental, non-essential population, wolves found in Arizona are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

BEAVER CREEK ALLOTMENT

Description of Proposed Action

The proposed action in the 1995 Environmental Assessment and Decision Notice was to permit 179 cattle (cow/calf) from July 15 to October 31 using a five pasture rest rotation. As a result of a 2001 addendum to the September 25, 1995 BAE for the Bobcat-Johnson and Beaver Creek Allotments, a new permit was issued in February, 2001, for 135 cattle (cow/calf), from July 15 to October 31. This reduced stocking level was a direct result of Fish Bench Pasture being waived back to the Forest from the Beaver Creek Allotment, and will continue for the next ten years.

Rotation: 5 pasture rest rotation system

Season of Use: July 15-Oct 31

Stocking: 135 cow/calf (except Fishbench pasture as discussed below)

The Forest proposes a forage and browse utilization of 0-45% by weight in riparian areas, and 0- 40% by weight in upland areas. Within northern goshawk territories, forage utilization will average of 20% utilization on grasses, forbs, and browse in forested areas, not to exceed 40%. In designated Mexican spotted owl critical habitat, 20-40% utilization is authorized over the grazing season. Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. The BA indicates that the allotment will be managed at conservation forage utilization guidelines. Utilization between 31-40% is considered conservative utilization (S. Coleman, Forest Service, pers. comm.).

Fishbench pasture was requested back by the permittee in 2001 and continues to be part of the grazing rotation. Permitted numbers have increased back to the original EA decision of 179 cattle (cow/calf). Thus, the proposed project is to graze 179 cattle on six pastures (Castle Creek, Hawksnest, Bardman, Fishbench, West Beaver, and East Beaver), plus holdings/traps. For the remainder of Grazing Year 2012, Bardman and Fishbench pastures are to be rested due to a high percentage of moderate to high fire severity within these pastures (Table 1). A total of 18,613 acres burned on the Beaver Creek Allotment. Table 1 lists the pastures and

traps; the total acres of the pasture; the amounts of each burn severity; and also the acres that were mulched and/or seeded.

Additional management:

- No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective.

- Monitoring will be accomplished following the plan in Appendix A of the BA.

The proposed action is the management and associated conservation measures described above to continue livestock grazing for a period of ten years.

The Beaver Creek Allotment is within 5 different 6th code watersheds (Campbell Blue Creek 1227 ac, Upper Beaver Creek 9308 ac, Lower Beaver Creek 2690 ac, Fish Creek 1756 ac, and Bear Creek-Black River 3775 ac). The Campbell Blue Creek is within the San Francisco River 4th code Watershed and a part of the Upper Blue River 5th code Watershed. The other watersheds are within the Black River 4th code, and the Upper Black River 5th code.

The Campbell Blue Creek Watershed had about 35% of the total watershed acres within the high/moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 1,227 acres of the Beaver Creek Allotment within this watershed, 481 ac had high or moderate burn severity. Portions of the Bardman (133 ac), Castle (1003 ac), and Hawksnest (90 ac) Pastures are within this watershed and experienced variable levels of burn severity. Bardman and Castle were deferred in 2012.

The Upper Beaver Creek Watershed had about 31% of the total watershed acres within the High/Moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 9,308 ac of the Beaver Creek Allotment within this watershed 2,273 ac had High or Moderate burn severity. Portions of the Bardman (1,365 ac), Castle (389 ac), East Beaver (1,031 ac), Hawksnest (5,531 ac), Holding (11 ac), Snag Tank Trap (13 ac), Trap (258 ac), and West Beaver (566 ac) Pastures are within this watershed. The East Beaver, Holding, Snag Tank Trap, Trap, Castle, Bardman and West Beaver pastures are proposed to be used in 2012. Most of the High and Moderate burn severity was deferred during 2012, with only 123 acres of High/Moderate grazed.

The Lower Beaver Creek Watershed had about 30% of the total watershed acres within the High/Moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 2690 ac of the Beaver Creek Allotment within this watershed, 971 ac had high or moderate burn severity. Portions of the Bardman (2325 ac) and West Beaver (365 ac) pastures are within this watershed and the West Beaver were used in 2012. All of the High and Moderate Severity was deferred during 2012.

Table 1. Pastures within the Beaver Creek allotment showing acres in pastures, acres (and %) of burn severity (high, moderate, low, underburned), and acres seeded and/or mulched.

Pasture	Acres	High severity	Moderate severity	Low severity	Underburn	Acres of seed and/or mulch
Bardman*	3824	745 (19.5%)	553 (14.5%)	2433 (63.6%)	92 (2.4%)	717
Castle Creek	1392	113 (8.1%)	309 (22.2%)	964 (69.2%)	7 (0.5%)	0
East Beaver	1031	26 (2.5%)	87 (8.4%)	800 (77.6%)	118 (11.4%)	0
Fish Bench*	5532	2916 (52.7%)	1399 (25.3%)	1177 (21.3%)	40 (0.7%)	2871
Hawksnest	5621	789 (14.0%)	1079 (19.2%)	3733 (66.4%)	20 (0.3%)	558
Holding	11	0 (0%)	1 (9.1%)	10 (90.1%)	0 (0%)	0
Snag Tank Trap	13	0 (0%)	0 (0%)	12 (92.3%)	1 (7.7%)	0
Trap	258	0 (0%)	7 (2.7%)	239 (92.6%)	12 (4.6%)	0
West Beaver	931	0 (0%)	2 (0.2%)	829 (89%)	100 (10.7%)	0
Total Acres	**18613**	**4589 (24.6%)**	**3437 (18.4%)**	**10197 (54.8%)**	**390 (2.1%)**	**4146**

*Denotes pastures deferred in Grazing Year 2012.

The Fish Creek Watershed had about 24% of the total watershed acres within the high/moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 1756 ac of the Beaver Creek Allotment within this watershed 1142 ac had high or moderate burn severity. Portions of the Fish Bench (1756 ac) Pasture is within this watershed and was deferred in 2012.

The Bear Creek-Black River Watershed had about 50% of the total watershed acres within the high/moderate burn severity, with the remaining low/underburned or outside of the fire. Of the 3775 ac of the Beaver Creek Allotment within this watershed 3173 ac had high or moderate burn severity. Portions of the Fish Bench (3775 ac) Pasture is within this watershed and was deferred in 2012.

Range monitoring as described for the PS and Grandfather allotments will be implemented for Beaver Creek Allotment as well.

Loach Minnow

We concur with your "may affect, not likely to adversely affect" determination for loach minnow for the following reasons:

- Loach minnow and its CH are not present within the allotment boundary, but do occur about 4.6 miles downstream in Campbell Blue Creek.

- Indirect effects could occur from sedimentation into Castle Creek. However, Castle Creek is a highly intermittent drainage that only flows during snowmelt and monsoon rains. Transport of sediment to Campbell Blue Creek would be very limited. Additionally, Castle Creek flows along the allotment boundary and only a portion of the allotment drains into the creek. The majority of the allotment drains into Beaver Creek and mainstem Black River where neither loach minnow nor its CH occur.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

Chiricahua leopard frog

We concur with your determination that the proposed action "may affect, but is not likely to adversely affect" the Chiricahua leopard frog for the following reasons:

- The species either does not occur, or occurs in low numbers in portions of the action area.

- Forage utilization will be maintained at conservative levels through minimum stocking rates and pastures being rested every other year.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

Apache trout

We concur with your "may affect, not likely to adversely affect" determination for Apache trout for the following reasons:

- The species either does not occur, or occurs in low numbers in portions of the action area.

- Forage utilization will be maintained at conservative levels through minimum stocking rates and pastures being rested every other year.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover and streambank stability).

Mexican Spotted Owl and Critical Habitat

We concur with your "may affect, not likely to adversely affect" determination for Mexican spotted owl and designated critical habitat for the following reasons:

- Although four MSO PACs occur within the allotment, grazing on pastures containing PACs were deferred in 2012.

- All pastures with a high percentage of moderate-high burn severity will be rested in 2012.

- Forage utilization will be maintained at conservative levels through minimum stocking rates and pastures being rested every other year.

- Grazing will not occur within mixed conifer habitat because this habitat does not provide the forage structure necessary for grazing.

- Implementation of range monitoring and adaptive management will ensure forage utilization is maintained at conservative levels and meets resource objectives (maintenance/improvement of herbaceous ground cover that will allow for adequate amounts of herbaceous vegetation to encourage beneficial, low-intensity ground fires and reduce the risk of fuel accumulations developing into high-intensity crown fires).

Mexican Gray Wolf

We concur with your determination that the proposed action "is not likely to jeopardize" the Mexican gray wolf for the following reasons:

- Because of the wolves' status as an experimental, non-essential population, wolves found in Arizona are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.