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January 10, 2002

Mr. John C. Bedell
Forest Supervisor
Apache-Sitgreaves National Forest
P.O. Box 640
Springerville, Arizona 85938-0640

Dear Mr. Bedell:

This batch conference opinion responds to the U.S. Fish and Wildlife Service's May 15, 2001, receipt of your May 14, 2001, letter requesting initiation of formal section 7 conferencing under the Endangered Species Act (Act; 16 U.S.C. 1531 et seq.), as amended. The conference concerns 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 (*Rana chiricahuensis*). Other affected species that may be on the above allotments will be addressed in a separate biological opinion. The Apache-Sitgreaves National Forests (Forest) has determined that the above allotments will not jeopardize the continued existence of Chiricahua leopard frogs. However, the Forest has also requested that conferencing be conducted in accordance with the procedures for formal consultation, as provided in 50 CFR 402.10 (d), and has determined that the above allotments are likely to adversely affect the proposed threatened Chiricahua leopard frog.

This conference opinion is based on information provided in the Forest's Biological Assessments, Environmental Assessments, addendums to the Biological Assessments, maps, and other documents associated with the above allotments; telephone conversations and/or electronic mail transmissions with Buck McKinney, Linda White-Trifaro, and Jim Copeland of the Alpine Ranger District; field investigations; and other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

On June 14, 2000, the Chiricahua leopard frog was proposed as a threatened species (USDI 2000), and on April 25, 2000, critical habitat was designated for spikedace (*Meda fulgida*) and loach minnow (*Tiaroga cobitis*; USDI 2000b). During the time that the Chiricahua leopard frog was proposed for listing, and spikedace and loach minnow critical habitat was designated, the Forest Service was permitting livestock grazing on numerous allotments within the Forest. Some allotment management plans had received the benefit of previous section 7 consultation, and others had not.

In November of 2000, the Center for Biological Diversity filed a Complaint for Declaratory and Injunctive Relief against the Forest Service for not having addressed the effects of livestock grazing on the newly designated loach minnow and spikedace critical habitat through section 7 consultation with the Service. The Forest Service subsequently reached an agreement with the United States District Court to initiate (or reinitiate) consultation on pertinent allotments.

On May 15, 2001, we received the Forest's May 14, 2001, letter requesting initiation and reinitiation of formal section 7 consultation. In addition to initiating consultation for loach minnow and spikedace critical habitat, the Forest requested formal conferencing for the proposed Chiricahua leopard frog. The Forest's consultation initiation package contained the basic information required to begin formal consultation and conferencing. We responded to the Forest's request for consultation with a letter on May 30, 2001, confirming initiation of formal consultation. On July 12, 2001, we sent a letter informing the Forest that we would be providing a separate conference opinion for those allotments that exclusively addressed the Chiricahua leopard frog. We requested a 60-day extension on August 21, 2001, to which the Forest agreed in their letter of August 30, 2001. On October 29, 2001, we were notified by the Forest that Mr. Boyd Drachman and Mr. Galyn Knight were granted applicant status as permittees for the Alpine and Colter Creek allotments, respectively, and on September 4, 2001, we were notified by the Forest that Ms. Rose Awtrey was granted applicant status as the permittee for the Beaver Creek Allotment. The Forest's comments on the draft conference opinion were received on November 15, 2001 and December 19, 2001. The Forest included comments as to why, in their opinion, various terms and conditions constituted more than a minor change to their project action. Additional minor editorial comments were received from one applicant. The consultation period for this conference opinion ended on November 26, 2001. The Forest also stated that hannagan and Fish Creek allotments could be removed from consideration. However, since these allotments were with the original request, they have been maintained in this document. Changing the proposed action at such a late date would have resulted in additional extensions or reinitation. The Forest may choose not to adopt these allotments into a biological opinion if they are no longer part of the proposed action when the Chiricahua leopard frog is listed.

CONFERENCE OPINION

Description of Proposed Action

The proposed action includes livestock grazing on eight allotments in the Blue, Black, and San Francisco River watersheds, managed by the Alpine Ranger District. The Forest's action is to permit livestock grazing for allotments covered in this opinion via a ten-year grazing permit. The ten-year permits for each allotment expire as follows: for the Alpine, Beaver Creek, Coyote-Whitmer, Hannagan, and Fish Creek allotments, 2005; for the Grandfather Allotment, 2009; for the Colter Creek Allotment, 2008; and for the Sprucedale-Reno Allotment, 2010. The action area for the proposed action in this conference consists of all covered allotment areas and the watersheds contained therein. Therefore, effects are not restricted to the allotments themselves, but extend for miles downstream or upstream of allotment boundaries, depending on the specific effect.

Sprucedale-Reno Allotment

The Sprucedale-Reno Allotment is located in the central region of the Alpine Ranger District. The allotment consists of fourteen main pastures: North (3,714 acres), Middle (2,368 acres), Rocky Prairie 1 (697 acres), Rocky Prairie 2 (1,040 acres), Horse 1 (469 acres), Horse 2 (583 acres), Hospital (402 acres), Stony Flat (278 acres), Becker (327 acres), Bear Creek (8,878 acres), Conklin (6,100 acres), Double Cienaga (6,553 acres), Black River (1,602 acres), and Perry Springs (3,608 acres).

The proposed action is to permit 231 cow/calves and 85 horses from July 15 to October 31, using a rotational deferred grazing system. The Forest proposes a forage and browse utilization of 45% by weight in riparian areas, and 40% by weight in upland areas outside of threatened, endangered, or sensitive species habitat. Within northern goshawk (*Accipiter gentilis*) territories, the utilization standard is not more than 20% by weight on grasses and forbs (not to exceed 40% in any one area), or 40% on browse (not to exceed 60% in any one area), and within the formerly designated Mexican spotted owl (*Strix occidentalis lucida*) critical habitat, not more than 20-40%. Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective.

The Forest proposed additional actions as protective measures for Apache trout (*Oncorhynchus apache*). These actions include 0.8 miles of fence in the Corduroy Creek drainage to protect a 20-acre meadow; 6.4 miles of fence to protect 3 miles of Double Cienega Creek in reaches 1, 2, and 3; 1 mile of elk-proof fence around Conklin Cienega to protect 40 acres of habitat, and 2 miles of fence in reaches 2 and 3 to protect 2.3 miles of stream; and finally, 10.5 miles of fence in reaches 3 and 4 of Fish Creek to protect 10 miles of stream. Until such fencing is completed, the Forest does not allow livestock grazing on the Conklin Creek, Cienaga Creek, or Fish Creek pastures.

Alpine Allotment

This allotment is proposed as a seven pasture, rotational deferred grazing system. The seven main pastures are A (334 acres), Horse (36 acres) Skousen (1,261 acres), Hamblin (2,343 acres), West Jackson (950 acres), East Jackson (2,404 acres), and Cemetery (679 acres). The Cemetery and holding pastures are located in the northern portion of the allotment, and are disjunct from the remaining pastures. The Skousen Pasture contains Coyote Creek, the only drainage identified as a perennial riparian area by the Forest in their Environmental Assessment.

The proposed action is to permit 59 adult livestock (213 animal months) from July 15 to October 31. The Forest proposes a forage and browse utilization of no more than 45% by weight in riparian areas, and a forage and browse utilization of no more than 40% by weight on upland sites. Within northern goshawk territories, the proposed action is to allow grazing at a 20% average utilization level on grasses and forbs, not to exceed 40% in any one area, and a 40% average utilization level on browse, not to exceed 60% in any one area. Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective.

The Forest determined allotment capacity using existing data, research, and range/livestock management principles. The Alpine Allotment contains approximately 3,451 full capacity acres, 1,169 potential capacity range acres to support livestock grazing, and 3,387 no capacity range acres. Terrestrial Ecosystem Survey data from 1986 estimates forage (both herbaceous and woody) production potential on the ponderosa pine (*Pinus ponderosa*) sites range from 75 to 275 pounds per acre. Current forage production is estimated at 80 to 148 pounds per acres. Terrestrial Ecosystem Survey forage data (both herbaceous and woody) production potential estimates on the mixed conifer sites range from 50 to 225 pounds per acre. Current forage production is estimated at 50 to 157 pounds per acre.

Beaver Creek Allotment

This allotment is proposed as an eleven pasture, rotational deferred grazing system. Each winter pasture is proposed for use during any given year. The eleven pastures are A (6 acres), C (11 acres), Snag Tank Trap (13 acres), West Beaver Trap (101 acres), Castle Creek (1,382 acres), Hawksnest (5,617 acres), Bardman (3,825 acres), Bardman Trap (56 acres), West Beaver (944 acres), East Beaver (1,036 acres), and Fish Bench (approximately 5,000 acres). This allotment contains approximately 17,169 full capacity range acres, 772 potential capacity acres, and 726 no capacity range acres.

The proposed action in the 1995 Environmental Assessment and Decision Notice was to permit 170 cattle (cow/calf) from July 15 to October 31. However, according to the 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

stocking level was a direct result of the Forest's removal of the Fish Bench Pasture from the Beaver Creek Allotment. Thus, the proposed project is to graze 135 cattle on five pastures (Castle Creek, Hawksnest, Bardman, West Beaver, and East Beaver).

The Forest proposes a forage and browse utilization of 45% by weight in riparian areas, and 40% by weight in upland areas outside of threatened, endangered, or sensitive species habitat. Within northern goshawk territories, the utilization standard is not more than 20% by weight on grasses and forbs (not to exceed 40% in any one area), or 40% on browse (not to exceed 60% in any one area), and within the formerly designated Mexican spotted owl critical habitat, not more than 20-40%. Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective.

Colter Creek Allotment

This allotment is proposed as a four pasture, rotational deferred grazing system. The four main pastures are Pat Knoll, Colter, Middle, and North. The Pat Knoll and Colter pastures are high elevation pastures located in the northwest and southwest corner of the allotment, respectively. The Middle Pasture (which will be combined with Holding #1) is located in the center, and the North Pasture is located at the north end of the allotment. The North and Middle pastures are at lower elevations and the warm season growing period extends into mid-September. The allotment is 17,042 acres in size, and contains 11,332 acres of full and potential capacity range. The proposed season of use is from 9/01 to 10/31, and the proposed number of cattle is 223 cows and calves (454 AUMs). The utilization level is proposed at 40% on all herbaceous vegetation, and 25% on shrubs.

Four special emphasis pastures are proposed: Riggs, Nelson, Forest Service Admin Horse Pasture, and UO#5 Pasture. Periods of scheduled use for the special emphasis pastures will typically not exceed 5-7 days, and actual periods of use will be determined by the management objective for the special emphasis pasture including complete rest.

The Riggs Pasture includes former private land along Riggs Creek that was cultivated in the recent past. There are abandoned fields that have the potential to be re-seeded and there is an opportunity to place grade stabilization structures in Riggs Creek to restore meadow function.

The Nelson Pasture is a new pasture proposed to be developed on a mesa top, north of the current North Pasture. The Nelson Pasture may not have seasonally dependable water, and in some years may need to be grazed in common with the North Pasture.

Several small existing pastures that are no longer necessary for the management of the allotment will be eliminated, including Holding #2, UO 4, and the pasture fence around the Greenwood Place in Middle Pasture. The UO 2 parcel along Nutrioso Creek will not be grazed. A small portion of the North Pasture adjacent to the UO 2 parcel (that accesses Nutrioso Creek) will be

fenced along the rock rim above it. The current fencing is poorly located, creating a livestock congregation area, and creating potential conflicts with adjacent, unfenced private land. A series of multiple fence lines, traps and holding pastures in the vicinity of Riggs Creek Reservoir will be cleaned up and made into a single horse pasture with access to the stock water pond. A small horse pasture along Colter Creek, in the southeast corner of the Middle Pasture will also be retained. Horse Pasture utilization will be the same as for the allotment.

Opportunities to rest a pasture will be evaluated annually. A determination to rest a pasture will be made based on the existing resource needs at that time. The evaluation for rest includes the opportunity to apply prescribed fire management practices within the allotment area for two consecutive years. The allotment will receive full growing season rest every year with the exception of the first pasture entered, depending on the elevation. The two high elevation pastures will be entered early in the grazing rotation (Sept.), alternating the first entry pasture every other year. The net result of the high elevation pasture schedule is that the lower elevation pastures will not be entered until October, after the warm season growing period is completed. This grazing system will result in primary growing season rest every year. Average pasture durations for the four main pastures in the grazing system will be approximately 12-15 days every year, although actual use will be adjusted to reflect the size of the pasture.

Coyote-Whitmer Allotment

This allotment is proposed as a seven pasture, rotational deferred grazing system. The seven main pastures are West Coyote (1,244 acres), East Coyote (2,765 acres), Whitmer (3,194 acres), Lookout (70 acres), Little (4,685 acres), Luna Lake (942 acres), and Dump (1,566 acres). The allotment contains approximately 8,500 full capacity range acres, 2,707 potential capacity range acres, and 3,258 no capacity range acres.

The proposed action is to permit 186 cattle from July 15 to October 31. The Forest proposes a forage and browse utilization of 45% by weight in riparian areas, and 40% by weight in upland areas outside of threatened, endangered, or sensitive species habitat. Within northern goshawk territories, the utilization standard is not more than 20% by weight on grasses and forbs (not to exceed 40% in any one area), or 40% on browse (not to exceed 60% in any one area), and within the formerly designated Mexican spotted owl critical habitat, not more than 20-40%. Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective.

The Forest proposes to continue excluding livestock from Coleman Creek, which flows through the allotment, and where livestock were able to access the creek through 6 watergaps, the Forest proposes to fence the 2 gaps where Coleman Creek becomes perennial. Livestock will continue to have access to Coleman Creek at the other 4 water gaps where the creek is intermittent.

Hannagan and Fish Creek allotments

These two allotments are managed collectively by the Forest, and will thus be summarized simultaneously. The Hannagan Allotment is proposed as a five pasture, rotational deferred grazing system. The five main pastures are Balke Trap (16 acres), Primitive (6,929 acres), Horse Pasture (550 acres), Hannagan Horse Trap (23 acres), and Corduroy (3,094 acres). The Fish Creek Allotment is proposed as a three pasture, rotational deferred grazing system. The three main pastures are Lost Lake (2,956 acres), Hoodoo (8,324 acres), and Lost Lake Trap (13 acres). A large portion of the Hannagan Allotment is located in the Blue Range Primitive Area, and the Fish Creek Allotment borders the south side of the Black River and west side of Bear Creek.

The proposed action is to permit 54 livestock (cow/calf) from July 15 to October 31, on the Hannagan Allotment, and 23 livestock (cow/calf) from July 15 to October 24. The Forest proposes a forage and browse utilization of no more than 45% by weight in riparian areas, and a forage and browse utilization of no more than 40% by weight on upland sites. Within northern goshawk territories, the proposed action is to allow grazing at a 20% average utilization level on grasses and forbs, not to exceed 40% in any one area, and a 40% average utilization level on browse, not to exceed 60% in any one area. Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective.

The Forest also proposes several measures to improve conditions on the Hannagan and Fish Creek allotments. The Forest will exlude livestock grazing in Corduroy Creek by terms of the permit, implemented through the annual operating plan. The Forest proposes that the Grant Creek stream corridor would not be used as a driveway; that adequate distribution of cattle would be maintained; in the Hannagan Allotment, 0.5 miles of fence would be built within the Corduroy Pasture, and the Hannagan holding pasture will not be used (these two measures are designed to exclude cattle from using Hannagan Creek); livestock would be removed before utilization exceeds 45% according to monitoring cages; two miles of fence would be constructed at reaches 2 and 3 of Corduroy Creek to protect 2.5 miles of stream; two drift fences totaling 0.5 miles of fence would be constructed at reach 1 of Fish Creek; ten and a half miles of fence would be constructed at portions of reach 3 and all of reach 4 of Fish Creek to protect 10 miles of stream; and a half mile of fence would be constructed around Acker Lake to prevent livestock access on 15 acres around the lake.

Grandfather Allotment

This allotment is managed in conjunction with the Red Hill Allotment with respect to season of use. The Red Hill Allotment is proposed for grazing from November through May, and the Grandfather Allotment is proposed for grazing from June through October. The Grandfather Allotment is proposed as a 3,311 acre, four pasture, rotational deferred grazing system. The four

main pastures are Holding (521 acres), West (1,464 acres), East (1,157 acres), and Caldwell HP (115 acres). 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.

The proposed action is to permit 45 cow/calves (230 animal months) from June 1 to October 31. The Forest proposes a forage and browse utilization of no more than 40% in areas characterized by good range condition, 35% in areas characterized by fair range condition, and 25% in areas characterized by poor range condition. Within potential capacity range, the proposed action is to allow grazing at a 10% average utilization level, regardless of range condition. Within riparian areas, the utilization level is proposed at 25%. Seventy-one percent of the allotment is considered full capacity range, and 29% is considered potential capacity range due to dense timber stands that produce less than 50 pounds of air dried herbaceous forage per acre. Livestock capacity is based on available forage which is determined from the full capacity range areas and, to a lesser degree, from potential capacity areas. Of the available herbaceous forage in this allotment, and under this proposal, 133% is necessary to sustain the proposed number of cattle.

Wild ungulates often make use of forage in these areas. However, depending on what is available, wild ungulates also make use of no capacity areas. The proposed action would not provide for wild ungulate needs from available herbaceous forage.

Utilization measurements are proposed as point in time measurements taken in designated key areas upon which pasture moves are predicated. No regrazing of pastures would be allowed unless it is authorized by the Forest in writing to accomplish a documented resource objective. Utilization measurements will be made just prior to livestock entry of each pasture (to measure wild ungulate use, if any) and at about the mid-point of the scheduled used period for each pasture. These are the 2 minimum measurement periods. Depending on funding and personnel, additional measures of grazing utilization may be made as soon as livestock exit each pasture and again in the fall. A minimum of one check per ungrazed pasture is also planned to check for unauthorized livestock.

The following range developments would be built on the Grandfather Allotment under the proposed action:

1. Build about 0.5 miles of fence near Odart Tank in East Pasture, using bluffs along the rim where possible to prevent river access.

2. Realign about 0.5 miles of fence near Turkey Tank in West Pasture to prevent river access (in conjunction with the bluffs).

Status of the Species (range-wide)

The Chiricahua leopard frog was proposed for listing as a threatened species without critical habitat in a Federal Register notice dated June 14, 2000. The rule included a proposed special

rule to exempt operation and maintenance of livestock tanks on non-Federal lands from the section 9 take prohibitions of the Act. This species is distinguished from other members of the *Rana 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 one to two seconds in duration (Davidson 1996, Platz and Mecham 1979). Snout-vent lengths of adults range from approximately 2.1 to 5.4 inches (Stebbins 1985, Platz and Mecham 1979). The Ramsey Canyon leopard frog *(Rana subaquavocalis*) is similar in appearance to the Chiricahua leopard frog, but it often grows to a larger size and has a distinct call that is typically given under water (Platz 1993).

The Chiricahua leopard frog is an inhabitant of cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations of 3,281 to 8,890 feet in central and southeastern Arizona; west-central and southwestern New Mexico; and in Mexico, northern Sonora, and the Sierra Madre Occidental of Chihuahua, northern Durango and northern Sinaloa (Platz and Mecham 1984, Degenhardt *et al.* 1996, Sredl *et al.* 1997). The distribution of the species in Mexico is unclear due to limited survey work and the presence of closely related taxa (especially *Rana montezumae*) in the southern part of the range of the Chiricahua leopard frog. In New Mexico, of sites occupied by Chiricahua leopard frogs from 1994-1999, 67 percent were creeks or rivers, 17 percent were springs or spring runs, and 12 percent were stock tanks (Painter 2000). In Arizona, slightly more than half of known historic localities are natural lotic systems, a little less than half are stock tanks, and the remainder are lakes and reservoirs (Sredl *et al.* 1997). Sixty-three percent of currently extant populations in Arizona occupy stock tanks (Sredl and Saylor 1998).

Populations on the Mogollon Rim are disjunct from those in southeastern Arizona. Based on preliminary analysis of allozymes, the Rim populations may represent a taxon distinct from the southern populations (James Platz, Creighton University, pers. comm. 2000). However, mitochondrial DNA work at the University of Denver does not support this conclusion (N. Benedict, pers. comm. 1999). Additional work is needed to clarify the genetic relationship among Chiricahua leopard frog populations.

Die-offs of Chiricahua leopard frogs were first noted in former habitats of the Tarahumara frog (*Rana tarahumarae*) in Arizona at Sycamore Canyon in the Pajarito Mountains (1974) and Gardner Canyon in the Santa Rita Mountains (1977-78) (Hale and May 1983). From 1983-1987, Clarkson and Rorabaugh (1989) found Chiricahua leopard frogs at only two of 36 Arizona localities that had supported the species in the 1960s and 1970s. Two new populations were reported. During extensive surveys from 1995-2000, primarily by Arizona Game and Fish Department personnel, Chiricahua leopard frogs were observed at 60 localities in Arizona (Sredl *et al.* 1997, Rosen *et al.* 1996, Service files). In New Mexico, the species was found at 41 sites from 1994 -1999; eight of 31 of those were verified extant during 1998-1999 (Painter 2000). During May-August 2000, the Chiricahua leopard frog was found extant at only eight of 34 sites

where the species occurred in New Mexico during 1994-1999 (C. Painter, pers. comm. 2000). The species has been extirpated from about 75 percent of its historic localities in Arizona and New Mexico. The status of the species in Mexico is unknown.

Based on Painter (2000) and the latest information for Arizona, the species is still extant in all major drainages in Arizona and New Mexico where it occurred historically; however, it has not been found recently in many rivers, valleys, and mountains ranges, including the following in Arizona: White River, East Clear Creek, West Clear Creek, Silver 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, Sonoita Creek, Pinaleno Mountains, Peloncillo mountains, Sulphur Springs Valley, and Huachuca mountains. In many of these regions Chiricahua leopard frogs were not found for a decade or more despite repeated surveys. Recent surveys suggest the species may have recently disappeared from some major drainages in New Mexico (C. Painter, pers. comm. 2000).

Native riparian ecosystems, especially in the arid Southwest, are disappearing rapidly. Because riparian zones often follow the gradual elevation changes of a watershed, they are often desirable for road and pipeline construction leading to greater impacts to riparian ecosystems. In the early years of livestock management, emphasis was on the uplands with very little concern for riparian areas. In fact riparian areas were considered "sacrifice areas" in range management schemes. As a result, serious damage to stream channels and aquatic habitat occurred. It was not until the 1970's that serious consideration was given to managing riparian areas. Riparian areas are widely recognized as crucial to the overall ecological health of rangelands in the western U.S.; however, many are in degraded condition, largely as a result of poorly managed livestock grazing (U.S. General Accounting Office 1988). Livestock tend to congregate in riparian areas for extended periods, eat much of the vegetation, and trample streambanks, often eliminating other benefits of riparian habitat (e.g., fish and wildlife habitat, erosion control, floodwater dissipation). Riparian areas, however, have ecological importance far beyond their relatively small acreage because they have a greater quantity and diversity of plant species than adjoining land.

Threats to this species include predation by nonnative organisms, especially bullfrogs, fish, and crayfish; disease; drought; floods; degradation and destruction of habitat; water diversions and groundwater pumping; disruption of metapopulation dynamics; increased chance of extirpation or extinction resulting from small numbers of populations and individuals; and environmental contamination. Numerous studies indicate that declines and extirpations of Chiricahua leopard frogs are at least in part caused by predation and possibly competition by nonnative organisms, including fish in the family Centrarchidae (*Micropterus* spp., *Lepomis* spp.), bullfrogs (*Rana catesbeiana*), tiger salamanders (*Ambystoma tigrinum mavortium*), crayfish (*Oronectes virilis* and possibly others), and several other species of fish (Fernandez and Rosen 1998, Rosen *et al.* 1996, 1994; Snyder *et al.* 1996; Fernandez and Bagnara 1995; Sredl and Howland 1994; Clarkson and Rorabaugh 1989). 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 *et al.* 1997, Sredl and Howland 1994). 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 recolonized via immigration from nearby populations. However, as numbers of populations declined, populations became more isolated and were less likely to be recolonized if extirpation occurred. Also, most of the larger source populations along major rivers have disappeared.

Fire frequency and intensity in the mountain ranges of southeastern Arizona and southwestern New Mexico are much altered from historic conditions. 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 (Danzer *et al.* 1997, Swetnam and Baisan 1996). 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). Following the 1994 Rattlesnake fire in the Chiricahua Mountains, Arizona, a debris flow filled in Rucker Lake, a historic Chiricahua leopard frog locality. Leopard frogs (either Chiricahua or Ramsey Canyon leopard frogs) apparently disappeared from Miller Canyon in the Huachuca Mountains, Arizona, after a 1977 crown fire in the upper canyon and subsequent erosion and scouring of the canyon during storm events (Tom Beatty, Miller Canyon, pers. comm. 2000). Leopard frogs were historically known from many localities in the Huachuca Mountains; however, natural pool and pond habitat is largely absent now and the only breeding leopard frog populations occur in man-made tanks and ponds. Crown fires followed by scouring floods are a likely cause of this absence of natural leopard frog habitats. Bowers and McLaughlin (1994) list six riparian plant species they believed might have been eliminated from the Huachuca Mountains as a result of floods and debris flow following destructive fires.

Recent evidence suggests a chytridiomycete skin fungi is responsible for observed declines of frogs, toads, and salamanders in portions of Central America (Panama and Costa Rica), South America (Atlantic coast of Brazil, Ecuador, and Uruguay), Australia (eastern and western States), New Zealand (South Island), Europe (Spain and Germany), Africa (South Africa, "western Africa", and Kenya), Mexico (Sonora), and United States (8 States) (Speare and Berger 2000, Longcore *et al.* 1999, Berger *et al.* 1998, S. Hale pers. comm. 2000). Ninety-four species of amphibians have been diagnosed as infected with the chytrid *Batrachochytrium dendrobatidis.* In Arizona, chytrid infections have been reported from four populations of Chiricahua leopard

frogs (M. Sredl, pers. comm. 2000), as well as populations of Rio Grande leopard frog (*Rana berlandieri*), Plains leopard frog (*Rana blairi*), lowland leopard frog (*Rana yavapaiensis*), Tarahumara frog (*Rana tarahumarae*), canyon treefrog (*Hyla arenicolor*), and Sonora tiger salamander (*Ambystoma tigrinum stebbinsi*) (Davidson *et al.* 2000, Sredl and Caldwell 2000, Morell 1999, S. Hale pers. comm. 2000). The disease was recently reported from a metapopulation of Chiricahua leopard frogs from New Mexico; that metapopulation may have been extirpated (C. Painter, pers. comm. 2000). The proximal cause of extinctions of two species, the Australian gastric brooding frogs and the golden toad (*Bufo periglenes*) in Costa Rica, was likely chytridiomycosis. Another species in Australia for which individuals were diagnosed with the disease may be extinct (Daszak 2000).

The role of the fungi in the population dynamics of the Chiricahua leopard frog is as yet undefined; however, it may well prove to be an important contributing factor in observed population decline. Rapid death of recently metamorphosed frogs in stock tank populations of Chiricahua leopard frogs in New Mexico was attributed to post-metamorphic death syndrome (Declining Amphibian Populations Task Force 1993). Hale and May (1983) and Hale and Jarchow (1988) believed toxic airborne emissions from copper smelters killed Tarahumara frogs and Chiricahua leopard frogs in Arizona and Sonora. However in both cases, symptoms of moribund frogs matched those of chytridiomycosis. Chytrids were recently found in a specimen of Tarahumara frog collected during a die off in 1974 in Arizona. This earliest record for chytridiomycosis corresponds to the first observed mass die-offs of ranid frogs in Arizona.

The origin of the disease is unknown, but epizootiological data from Central America and Australia (high mortality rates, wave-like spread of declines, wide host range) suggest introduction of the disease into native populations and the disease subsequently becoming enzootic in some areas. Alternatively, the fungus may be a widespread organism that has emerged as a pathogen because of either higher virulence or an increased host susceptibility caused by other factors such as environmental changes (Berger *et al.* 1998), including global climate change (Daszak 2000, Pounds and Crump 1994). If it is a new introduction, its rapid colonization could be attributable to humans. The fungus does not have an airborne spore, so it must spread via other means. Amphibians in the international pet trade (Europe and USA), outdoor pond supplies (USA), zoo trade (Europe and USA), laboratory supply houses (USA), and species recently introduced (*Bufo marinus* in Australia and bullfrog in the USA) have been found infected with chytrids, suggesting human-induced spread of the disease (Daszak 2000). Chytrids could also be spread by tourists or fieldworkers sampling aquatic habitats (Halliday 1998). The fungus can exist in water or mud and thus could be spread by wet or muddy boots, vehicles, cattle, and other animals moving among aquatic sites, or during scientific sampling of fish, amphibians, or other aquatic organisms. The Service and Arizona Game and Fish Department are employing preventative measures to ensure the disease is not spread by aquatic sampling.

An understanding of the dispersal abilities of Chiricahua leopard frogs is key to determining the likelihood that suitable habitats will be colonized from a nearby extant population of frogs. As a group, leopard frogs are surprisingly good at dispersal. In Michigan, young northern leopard

frogs (*Rana pipiens*) commonly move up to 2,625 feet from their place of metamorphosis, and 3 young males established residency up to 3.23 miles from their place of metamorphosis (Dole 1971). Both adults and juveniles wander widely during wet weather (Dole 1971). In the Cypress Hills, southern Alberta, young-of-the year northern leopard frogs successfully dispersed to downstream ponds 1.3 miles (2.1 km) from the source pond, upstream 0.62 miles, and overland 0.25 miles. At Cypress Hills, a young-of-the-year northern leopard frog moved 8 km in one year (Seburn et al. 1997). The Rio Grande leopard frog *(Rana berlandieri*) in southwestern Arizona has been observed to disperse at least 1 mile from any known water source during the summer rainy season (Rorabaugh in press). After the first rains in the Yucatan Peninsula, Rio Grande leopard frogs have been collected several kilometers from water (Campbell 1998). In New Mexico, Jennings (1987) noted collections of Rio Grande leopard frogs from intermittent water sources and suggested these were frogs that had dispersed from permanent water during wet periods.

Dispersal of leopard frogs away from water in the arid Southwest may occur less commonly than in mesic environments in Alberta, Michigan, or the Yucatan Peninsula during the wet season. However, there is evidence of substantial movements even in Arizona. In August, 1996, Rosen and Schwalbe (1998) found up to 25 young adult and subadult Chiricahua leopard frogs at a roadside puddle in the San Bernardino Valley, Arizona. They believed that the only possible origin of these frogs was a stock tank located 3.4 miles (5.5 km) away. Rosen *et al.* (1996) found small numbers of Chiricahua leopard frogs at two locations in Arizona that supported large populations of nonnative predators. The authors suggested these frogs could not have originated at these locations because successful reproduction would have been precluded by predation. They found that the likely source of these animals were populations 1.25 - 4.35 miles (2-7 km) distant. In the Dragoon Mountains, Arizona, Chiricahua leopard frogs breed at Halfmoon Tank, but frogs occasionally turn up at Cochise Spring (0.8 miles [1.3 km] down canyon in an ephemeral drainage from Halfmoon Tank) and in Stronghold Canyon (1 mile [1.7 km] down canyon from Halfmoon Tank). There is no breeding habitat for Chiricahua leopard frogs at Cochise Spring or Stronghold Canyon, thus it appears observations of frogs at these sites represent immigrants from Halfmoon Tank. In the Chiricahua Mountains, a population of Chiricahua leopard frogs disappeared from Silver Creek stock tank after the tank dried up; but frogs then began to appear in Cave Creek, which is about 0.62 miles (1.0 km) away, again, suggesting immigration. 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).

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

III. 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.

Sprucedale-Reno Allotment

The Sprucedale-Reno Allotment ranges in elevation from 6,700 feet to 9,300 feet. Vegetation found on the allotment includes pine dropseed (*Blepharoneuron tricolepis*), mountain muhly (*Muhlenbergia montana*), spike muhly (*M. wrightii*), screwleaf muhly (*M. virescens*), Arizona fescue (*Festuca arizonica*), junegrass (*Koeleria prymidata*), Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*), redtop bentgrass (*Agrostis stolonifera*), bottlebrush squirreltail (*Sitanion hystrix*), slender wheatgrass (*Agropyron trachycaulum*), nodding brome (*Bromus anomalus*), smooth brome (*Bromus inermis*), tufted hairgrass (*Deschampsis caespitosa*), sedges (*Carex spp.*), rushes (*Juncus spp.*), fleabane (*Erigeron spp.*), cinquefoil (*Potentilla spp.*), flag iris (*Iris missouriensis*), blue grama *(Bouteloua gracilis*), wheatgrass (*Agropyron spp.*), Gambel oak (*Quercus gambelii*), ponderosa pine, white fir (*Abies concolor*), Douglas fir (*Pseudotsuga menziesii*), Engelmann spruce (*Picea engelmannii*), aspen (*Populus tremuloides*), alder (*Alnus spp.*), willows (*Salix spp.*), and numerous forbs. Kentucky bluegrass and Canada bluegrass are non-native to this area, and there are extensive stands of these species within the allotment.

Where skid trails, logging spurs, and landings occur, the following species were seeded and utilized by ungulates: timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), clover (*Trifolium spp.*), sweet clover (*Melilotus spp.*), and alta fescue (*Festuca arundinacea*).

Nine significant drainages were identified by the Forest as riparian areas totaling approximately 30 miles within the Sprucedale-Reno Allotment. They include Corduroy Creek, Double Cienega Creek, Fish Creek, Conklin Creek, Snake Creek, Bear Creek, Black River, Horton Creek, Beaver Creek, and John's Canyon. In summary of the entire allotment, 95% of the riparian habitat is in unsatisfactory condition. Current condition of these riparian areas may be attributed to the effects of weather, ungulate grazing, and past management activities. Under the proposed action, the Forest projects that in 10 years, the allotment will show no improvement in riparian condition. That is, the Forest expects that 95% of riparian areas will remain in unsatisfactory condition. Many streams in the allotment show sloughing banks, and evidence of recreational use damage is clear in Johns Canyon of the Middle Pasture. Off-road vehicles created a road into the canyon, which has resulted in soil erosion, additional sedimentation into the stream, and loss of streambanks.

In 1999, the Forest completed a utilization survey trend/range analysis for this allotment (Painter 1999). The Forest's report constitutes the most recent information from which the condition of the allotment can be assessed. The Forest assessed 10 of the fourteen pastures in the allotment, and determined that 67% of livestock key areas in surveyed pastures did not meet Forest Plan Range Standards, and 58% did not meet Forest Plan Soil Standards. An extensive level of livestock forage utilization was observed in Beaver Creek, Heifer Branch, Johns Canyon, and Horton Creek. The Forest attributed this level of utilization in part to the permittee's lack of distributing cattle during the pasture use period. The permittee's efforts to draw livestock away from riparian zones with salt blocks was unsuccessful.

The 1999 utilization survey estimates that grazing impacts seen in meadows and riparian areas (not including the low density canopies) account for approximately 12.5% of the allotment acreage. Extensive acreage on this allotment has moderate to dense overstory creating needlecast and litter, thus protecting the soil. However, forage production for ungulates in theses areas is minimal. In the uplands, species less palatable for grazing such as screwleaf muhly, pine dropseed and forbs have increased. In riparian areas, a shift to bluegrasses from sedges has occurred. Of the ten pastures surveyed, the Forest found that 80% of the pastures received utilization levels exceeding the 40-45% standard established in the 1995 Permit Issuance/Environmental Assessment and Decision Notice. Four of 8 pastures exceeding the utilization standard showed 70% or greater utilization in areas.

Although the Forest has gradually reduced livestock numbers to those specified in this proposed action, the reduction in livestock numbers and season of use has been adversely offset by a documented increase in cow/calf rations (100:50) for elk. This creates a significant impact on the allotment resources. Despite the continued overutilization and degradation of streambanks within this allotment, and despite the Forest's own projections that riparian conditions within 95% of the allotment will remain unsatisfactory, the Forest has proposed utilization levels that maintain current conditions.

Alpine Allotment

The Alpine Allotment contains the Upper Blue River, Upper Black River, and Upper San Francisco River 5th Code watersheds. The allotment has been primarily utilized during late spring to late fall. Elevation ranges from 8,000 to 9,800 feet. Vegetation is primarily ponderosa pine (3,270 acres), mixed conifer (3,720 acres), and aspen (910 acres) stands. The allotment also contains approximately 911 acres of meadow and riparian vegetation. The overall watershed conditions are satisfactory according to the Environmental Impact Statement for the Apache-Sitgreaves National Forest Plan. Watershed conditions specific to Coleman Creek are satisfactory.

The Forest projects that under the proposed action, the watershed condition would remain satisfactory (Apache-Sitgreaves National Forests 1995). Soil condition across 81% of the allotment is considered stable/satisfactory, and 19% is considered impaired/unsatisfactory.

Under the proposed alternative, the Forest projects that in the next 10 years, soil condition throughout 99% of the allotment will be considered stable/satisfactory, and 1% will be considered impaired/unsatisfactory.

Past grazing practices (late spring/early summer grazing) on this allotment have created a forage distribution problem because use is concentrated primarily in the riparian areas and meadows. Over time there has been a shift in species composition from sedges and native cool season grasses to Kentucky bluegrass, rushes, and forbs. During mid-summer to early fall use, there is somewhat of a shift in grazing area preference. More use occurs in the uplands because warm season species start their growth with the onset of summer rains. However, due to the availability of water, less rugged topography, and a readily accessible supply of green forage, riparian areas still receive use.

Grazing during periods prior to allowing warm season plant growth (May through July) has resulted in livestock concentrating on, and overusing, cool season species which are located primarily in riparian areas and in dry meadows. Spring-summer grazing typically provides no rest during the growing period for plant vigor, reproduction, or litter accumulation, and it generally results in heavy utilization of woody riparian vegetation. Such effects have manifested themselves on the Alpine Allotment. The long term consequence of past grazing practices has been expressed in a shift in composition of riparian areas and dry meadows from native species such as sedges, which are extremely productive and have superior soil holding abilities, to non-natives such as Kentucky bluegrass with lower production and soil holding abilities. Woody species have also been removed from the plant community. Impacts to vegetation are also a function of soil trampling, compaction, loss of structure and drying, and erosion that has resulted in downcutting and lowered water tables.

In upland areas, decades of grazing during the May (or April at lower elevations) through July period have resulted in overutilization of cool season species. Therefore, unless a pasture was rested the previous year, there was inadequate production to support grazing during the May through July period where numbers were based on allotment-wide, year-long production. Riparian condition is considered unsatisfactory throughout 100% of the allotment. This designation indicates that the stream banks of Coyote Creek within the allotment boundary are unstable, head cutting is evident, and riparian vegetation is decreasing in density and vitality. These conditions are a manifestation of the effects of weather, soil type, wild ungulate grazing, and past management activities.

Beaver Creek Allotment

The Beaver Creek Allotment is within the Upper Blue River, and Upper and Lower Black River 5th Code watersheds. The overall watershed conditions are satisfactory according to the Environmental Impact Statement for the Apache-Sitgreaves National Forests Plan. The allotment ranges in elevation from 7,700 to 9,200 feet. Vegetation is primarily ponderosa pine (13,132 acres) with scattered, open draws and small cienegas (227 acres). Riparian habitat

constitutes approximately 48 acres, mostly along Beaver Creek. Mixed conifer (5,155 acres) can be found on the steeper, north-facing slopes. There are about 21 acres of aspen.

Understory vegetation composition in the timber types on Beaver Creek includes squirreltail, muttongrass, junegrass, pine dropseed, screwleaf muhly, mountain muhly, Arizona fescue, mountain brome, Kentucky bluegrass, Ross sedge (*C. rosii*), and silvertop sedge (*C. foenea*). Primary browse species are Gambel oak, mountain mahogany (*Cercocarpus montanus*), rose (*Rosa arizonica*), buckbrush (*Ceanothus fendleri*), and snowberry (*Symphoricarpos oreophilus*). Timber harvesting has had an impact on the understory communities. Skid trails, logging spurs, and landings have been seeded with a variety of non-native herbaceous species such as smooth brome, timothy, orchard grass, weeping lovegrass (*Eragrostis curvula*), and alta fescue. Also, there are extensive stands of screwleaf muhly. Ninety-eight percent of the overstory canopy is considered medium to dense.

The cienegas are composed primarily of iris, Kentucky bluegrass, Canada bluegrass, tufted hairgrass, and redtop bentgrass. The mixed conifer understory is dominated by forbs such as groundsel and fleabane. Arizona fescue and fringed brome also occur. The final Environmental Assessment for the Beaver Creek Allotment states that in 1986, four vegetative transects were sampled. Two scored fair with a downward trend, and two scored poor with a stable trend.

Grazing during periods prior to allowing warm season plant growth (May through July) has resulted in livestock concentrating on, and overusing, cool season species which are located primarily in riparian areas and in dry meadows. Over time, there has been a shift in species composition from sedges and native cool season grasses to Kentucky bluegrass and forbs. During mid-summer to early fall use, there is a shift in grazing area preference. More use occurs in the uplands because warm season species start their growth with the onset of summer rains. However, due to the availability of water, less rugged topography, and a readily accessible supply of green forage, riparian areas still receive use.

The long term consequence of past grazing practices has been expressed as a shift in composition of riparian areas and dry meadows from native species such as sedges, which are extremely productive and have superior soil holding abilities, to non-natives such as Kentucky bluegrass with lower production and soil holding abilities. Woody species have also been removed from the plant community. Impacts to vegetation are also a function of soil trampling, compaction, loss of structure and drying, and erosion that has resulted in downcutting and lowered water tables.

Soil condition across 95% of the allotment is stable or satisfactory, and 5% is impaired or unsatisfactory. A total of 16 miles of riparian areas were identified on the Beaver Creek Allotment. Eleven drainages comprise these riparian areas. They are Bardman Canyon, Beaver Creek, Castle Creek, Clay Tank, Hawksnest Canyon, Log Canyon, Middle Mountain Canyon, Pearl Canyon, Sprucedale Canyon, Thomas Creek, and Willow Creek. Forty-nine percent of all the riparian areas within this allotment are in unsatisfactory condition. Effects contributing to

unsatisfactory conditions include weather, soils, ungulate grazing, and past management activities. Four miles of Beaver Creek are located within this allotment. It is the professional opinion of Alpine District personnel that 100% of the creek is in unsatisfactory condition according to the definition of satisfactory riparian condition found in the Apache-Sitgreaves Forest Plan.

Colter Creek Allotment

The Colter Creek Allotment is in the Nutrioso Creek Watershed. The allotment ranges in elevation from 7,500 to 9,400 feet. Timber cover dominates most of the landscape in the Pat Knoll and Colter pastures and is comprised of mixed conifer and ponderosa pine. The Colter Pasture (2,679 acres) is one of the two higher elevation pastures and is located in the southwestern corner of the allotment. The pasture is drained by both forks of Colter Creek, the main stem of Colter Creek, and Turkey Creek. Meadow types are associated with the streamside corridors. A majority of the understory species are cool season species such as Canada bluegrass, redtop, and tufted hairgrass in the riparian areas and moister sites. Arizona fescue, Kentucky bluegrass, and muttongrass are associates in the pine vegetation type. The other high elevation pasture, Pat Knoll (3,932 acres), is located in the northwestern corner of the allotment. There are scattered meadows in the mixed conifer and ponderosa pine vegetation types.

The understory species are mountain muhly and Arizona fescue in the grasslands, redtop in the meadows, and Arizona fescue in the open pine vegetation type. The Middle Pasture is located in the center of the allotment and the vegetation type grades from ponderosa pine to pinon-juniper woodland as it descends in elevation to the east. The understory is comprised of junegrass, squirreltail, pine dropseed, and blue grama. The North Pasture is located at the north end of the allotment in the pinon-juniper woodland transition zone, and contains rock outcrops and bluffs, and supports an understory of junegrass, squirreltail, pine dropseed, and blue grama. The small traps and acquired land parcels in the Middle Pasture are in poor condition. Areas around the Middle Pasture have had pinon-juniper control and rabbitbrush control on areas that were formerly cultivated.

Currently, the soil condition in 80% of the allotment is satisfactory, and 20% is impaired or unsatisfactory. Range condition is fair in 11% of the allotment, and poor or very poor in 89% of the allotment. Watershed condition is satisfactory in 80% of the allotment, unsatisfactory in 15% of the allotment, and satisfactory/untreatable in 5% of the allotment. Riggs Creek and Red Hole Draw within this allotment have areas with stream channels that are deeply incised, downcut, or exhibit lateral instability. The incised areas along Riggs Creek have formed flood plains at the bottom of the downcut channels. The flood plains are constricted within the channel bottoms, which reduces the hydrologic function of the stream and makes the stream susceptible to high energy flow events. The watertable in the streamside areas has dropped significantly and reduced the former area of the water-influenced zone along the streambanks.

Coyote-Whitmer Allotment

The Coyote-Whitmer Allotment contains the Upper Blue River, Upper Black River, and Upper San Francisco River 5th Code Watersheds. The allotment has been primarily utilized during mid-spring to early fall. Elevation ranges from 8,650 to 9,350 feet. Vegetation is primarily ponderosa pine (9,670 acres), mixed conifer (3,830 acres), and aspen (190 acres). The allotment also contains approximately 730 acres of meadow vegetation.

The majority of the ponderosa pine canopy cover is classified as medium density (40 to 70% crown cover). The understory is primarily composed of junegrass, squirreltail, muttongrass, pine dropseed, screwleaf muhly, mountain muhly, Arizona fescue, wheatgrass, and sedges. Primary browse species are Gambel oak, buckbrush, and snowberry. The mixed conifer overstory is composed of Douglas fir, white fir, subalpine fir, Engelmann spruce, and Southwest white pine (*P. strobiformis*). Scattered stands of aspen are also present. Primary understory species include Kentucky bluegrass, hairy brome, screwleaf muhly, mountain muhly, American vetch *(Vicia americana*), wild strawberry (*Fragaria ovalis*), Arizona peavine (*Lathyrus arizonica*), and fleabane. Woody species include honey suckle (*Lonicera spp.*), Gambel oak, Oregon grape (*Berberis repens*), maple (*Acer glabrum*), and mountain willow (*S. scouleriana*). Most of the stands are too dense to produce forage.

The meadow and riparian areas contain Kentucky bluegrass, Canada bluegrass, tufted hairgrass, redtop bentgrass, rough bentgrass (*A. scabra*), spike muhly, squirreltail, slender wheatgrass, western wheatgrass, iris, rushes, and sedges. Woody species are usually absent in the meadows, although shrubby cinquefoil may be present. The most recent allotment analysis in 1990 determined an overall rating of low to fair range condition.

The Forest states in the Environmental Assessment for this allotment that the overall watershed condition is satisfactory, and the Forest projects that the proposed action would maintain this satisfactory condition. Soil condition over 75% of the allotment is stable/satisfactory, and 24% is impaired/unsatisfactory. A total of 5 drainages were identified as riparian areas totaling 8.6 miles within this allotment. These include Coyote Creek, Coleman Creek, Little Creek, Stone Creek, and the San Francisco River. Current conditions of the riparian areas were compiled by the Forest using personal communications from field-going personnel on the Alpine District. In summary of the entire allotment, 95% of the riparian habitat is in unsatisfactory condition. Current condition of these riparian areas may be attributed to the cumulative effects of weather, soils, ungulate grazing, and past management activities. The Forest projects that under the proposed action, no improvement will result in the condition of riparian areas.

Hannagan and Fish Creek allotments

The Fish Creek Allotment is within the Upper and Lower Black River 5th code watersheds, and the Hannagan Allotment is within the Upper and Middle Blue River, and Upper and Lower Black River 5th Code watersheds. These allotments have been used primarily from late spring to early

fall. Fish Creek elevations range from 6,900 to 9,000 feet, and Hannagan varies from 7,300 to 9,200 feet. Vegetative cover types on the Hannagan Allotment are primarily spruce/fir, mixed conifer, and aspen comprising 49%, 32%, and 11%, respectively. Ponderosa pine covers approximately 2,500 acres. Open draws, small cienegas, and riparian areas add up to approximately 1,600 acres. Major riparian areas occur along Grant, Hannagan, Corduroy, and Fish creeks. The Fish Creek Allotment is dominated by mixed conifer and ponderosa pine, comprising 75% and 20%, respectively. Open draws, small cienegas and riparian areas add to approximately 200 acres. Major riparian areas occur along Fish Creek.

Understory vegetation composition in the timber vegetation types in Hannagan and Fish Creek allotments includes species such as wolftail (*Lycurus phleoides*), longtongue muhly (*M. longiligula*), mountain muhly, deergrass (*M. rigens*), and threeawns (*Aristida spp*.). Primary browse species are mountain mahogany, buckbrush (*C. greggii*), Emory oak (*Q. emoryi*), cliffrose (*Cowania mexicana*), buckwheat (*Eriogonum spp*.), and Wrights silktassel (*Garrya wrightii*).

Timber harvesting has had an impact on the understory communities. Skid trails, logging spurs, and landings have been seeded with a variety of non-native herbaceous species such as smooth brome, timothy, orchard grass, sweet clover, and alta fescue. Also, there are extensive stands of screwleaf muhly. Ninety-two percent of the overstory canopy is considered medium to dense on Fish Creek, and 98% is considered medium to dense on Hannagan.

The cienegas and riparian areas are composed primarily of iris, Kentucky bluegrass, Canada bluegrass, tufted hairgrass, and redtop bentgrass. Woody species such as willows and shrubby cinquefoil may be present. The final Environmental Assessment for the Fishhook-Steeple Mesa, Hannagan, and Fish Creek allotments states that on the Hannagan Allotment, the latest allotment analysis in 1968 showed that less than 3% of the allotment was rated in fair condition with a stable or downward trend, 28% was rated poor with a stable trend, 52% was rated poor with an upward trend, and 17% was rated very poor with a stable or downward trend. On the Fish Creek Allotment, the 1967 analysis showed that 23% was rated in fair condition with a stable trend, 51% was rated poor with a stable or downward trend, and 26% was rated very poor with a stable or downward trend.

Currently, the soil condition in 97% and 99% of the Fish Creek and Hannagan allotments is satisfactory, 3% is impaired, and 1% is unsatisfactory, respectively. Overall watershed condition is satisfactory, and watershed conditions specific to Fish, Corduroy, Double Cienega, Hannagan, and Grant creeks are also satisfactory.

A total of 4 drainages were identified as riparian areas totaling 9 miles within the Fish Creek Allotment. These drainages include Corduroy Creek, Deep Cienega Creek, Fish Creek, and Lost Cienega Creek. Current conditions of the riparian areas within the Fish Creek Allotment were compiled using personal communications from field-going personnel on the Alpine District. In summary of the entire allotment, 95% of the riparian habitat is in unsatisfactory condition. Four drainages were also identified as riparian areas totaling 16 miles within the Hannagan Allotment. Seventy-five percent of the total stream miles were determined by Alpine District field personnel

to be in unsatisfactory condition. Under the proposed action, the Forest projected that there would be no improvement in the riparian condition of either allotment.

Grandfather Allotment

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

Range condition on 87% of this allotment is considered poor or very poor, approximately 9.5% is considered fair, and 3.5% is considered good. Woody riparian species on the allotment are primarily willows; however, they are not found extensively. Their age class distribution is poor with few mature plants present and little regeneration. Willows on the West Fork of the Black River are scattered and show little regeneration. Heavy use by ungulates is apparent. The Forest estimates that about 30% of the herbaceous vegetation consists of cool season species, and vigor is low and production is low on most of these species. This is likely a result of a combination of an early grazing season, compaction of moist soils, and high levels of use. Forb species in the allotment are predominately unpalatable.

Proper functioning condition assessments were not conducted on the West Fork of the Black River; however, fish surveys were completed. Such survey data indicates that the West Fork of the Black River does not meet the Forest Plan Standards for riparian condition or embeddedness. A general watershed condition assessment was made using Terrestrial Ecosystem Survey and unpublished forest hydrologic data. About 91% of the allotment is in satisfactory condition, while 9% is rated unsatisfactory.

Status of the Species Within the Action Area

The range of the Chiricahua leopard frog in Arizona can be divided into two general areas: (1) the southeastern part of the state and (2) centered along the Mogollon Rim. Populations occurring on the Alpine District of the Apache-Sitgreaves National Forests occur within the northern portion of the species' range. Threats to the species occur throughout its range, but the populations above the Mogollon Rim in Arizona appear to have relatively poor persistence (J. Rorabaugh, U.S. Fish and Wildlife Service, pers. comm. 2001).

Although Chiricahua leopard frogs occur in the watershed of the allotments, it is not known if this species occurs within the allotment boundaries, as there have not been any surveys conducted specifically for this species on any of the allotments covered in this consultation. However, the allotments contain livestock tanks, springs, cienegas, and streams that drain into the Black River (Sprucedale-Reno and Grandfather), the Blue River (Beaver Creek, Colter Creek, Coyote-Whitmer, Hannagan, and Fish Creek), the San Francisco River, Coleman Creek, and Coyote Creek (Alpine). Furthermore, Chiricahua leopard frogs were translocated into Trinity Reservoir in 1996 (Rudd Creek), and Concho Bills Springs in 2000 and 2001. Both of

these locations are within a relatively close proximity to the allotments proposed in this opinion, which increases the likelihood that habitats within the allotments are occupied by the Chiricahua leopard frog. Thus, these locations are considered to be within the action area of this proposed action, and the frog is considered to occupy the action area.

In the Blue River watershed, Chiricahua leopard frogs were reported during the early 1970's and early 1980's from sites downstream of the allotment along the mainstem of the Blue River and upper tributaries. More recently, this species was collected and photographed by Forest personnel approximately 17 miles upstream of the confluence with the San Francisco River along the mainstem of the Blue River. In 1997, Forest personnel observed a die-off of leopard frogs, approximately 6 miles above the confluence with the San Francisco River, at Juan Miller crossing on the Blue River. Some individuals were collected and sent to Jim Platz, who concluded that, in addition to lowland leopard frogs, some of the individuals were Chiricahua leopard frogs. During 1997, specimens of chytrid fungus were also found at Juan Miller crossing on the Blue River (Mike Sredl, Arizona Game and Fish Department, pers. comm. 2001). The Service considers the Blue River to be occupied by Chiricahua leopard frogs.

The Chiricahua leopard frog also occurs in the North Fork of the East Fork of the Black River at Three Forks. Only rough estimates of frog numbers in the Three Forks area are available. Fernandez and Rosen (1996) conducted cursory surveys from 1986-1996, but the surveys lacked the scientific rigor needed for definitive numbers or trend analysis (e.g., surveys were not conducted at night). However, the authors incidentally noticed that frogs were much more abundant at sites lacking introduced crayfish (*O. virilis*). The crayfish population at Three Forks has steadily grown in the past decade (or more), and crayfish have damaged aquatic vegetation, stream banks, and the invertebrate community of the springs complex. Crayfish have effectively removed substantial amounts of aquatic vegetation such as water cress (*Rorippa nasturtium-aquaticum*) and water buttercup *(Ranunculus aquatilis*) from the springs complex, which eliminates refugia for the Chiricahua leopard frog, and may make the frog more vulnerable to predation.

Since many areas in the Three Forks springs complex are devoid of significant amounts of aquatic vegetation, the invertebrate community that relies on such vegetation is impaired. Crayfish probably also affect invertebrate numbers directly, as supported by the significantly lower numbers of invertebrates in areas occupied by crayfish in the Three Forks area (Fernandez and Rosen 1996). The damage caused by crayfish extends to stream health at Three Forks in other ways which are obvious even to the layperson. Crayfish have altered the stream channel by creating extensive burrow tunnels, which leads to bank erosion, increases in water turbidity, and siltation.

In the Three Forks Springs complex, there exists a small area where water ponds, creating habitat for the Chiricahua leopard frog to breed. This area may be the last natural breeding area for the frog in the White Mountains. Whether this is the case or not, it is important to preserve this area as a breeding locale to maintain the integrity and genetic diversity of Chiricahua leopard frog

populations in the White Mountains. At the time of Fernandez and Rosen's (1996) study, crayfish were not observed in the pond, but in recent years, crayfish have dispersed into the pond (P. Fernandez and T. Meyers, Grand Canyon University and USFS, pers. comm. 2001), potentially rendering egg masses vulnerable to crayfish predation.

Previous Federal actions in the action area which involved consultation on the Chiricahua leopard frog are limited to a single batch conference opinion provided to the Alpine Ranger District of the Apache-Sitgreaves National Forests on July 12, 2001, for the Black River, Nutrioso Summer, Williams Valley, Boneyard, South Escudilla, and Tenney allotments. The primary drainages which were affected from this previous action included the Black River, Coyote Creek, and the San Francisco River. The allotments affected the above drainages through continued stream degredation by permitting cattle to utilize pastures above the level determined by production-utilization studies, allowing livestock to access riparian zones such as Coyote Creek, and mechanical damage associated with grazing along riparian corridors. Take was permitted in this batch opinion, but was indexed to habitat condition. Thus, the relative level of take from this particular previous Federal action is uncertain.

IV. 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.

The effects of livestock grazing on ranid frog populations are not well-studied. Munger *et al*. (1994) found that sites with adult Columbia spotted frogs (*Rana luteiventris*) had significantly less grazing pressure than sites without spotted frogs. However, in a subsequent survey he found no differences (Munger *et al.*1996). Bull and Hayes (2000) evaluated reproduction and recruitment of the Columbia spotted frog in 70 ponds used by cattle and 57 ponds not used by cattle. No significant differences were found in the number of egg masses or recently metamorphosed frogs in grazed and ungrazed sites. Seventeen percent of the sites were livestock tanks. The California red-legged frog (*Rana aurora draytonii*) coexists with managed livestock grazing in many places in California. Ponds created as livestock waters have created habitats for red-legged frogs and livestock may help maintain habitat suitability by reducing coverage by cattails, bulrush, and other emergent vegetation (US Fish and Wildlife Service 2000). On the other hand, exclusion of cattle from the Simas Valley, Contra Costa County, corresponded with reestablishment of native trees and wetland herbs, reestablishment of creek pools, and expansion of red-legged frog populations (Dunne 1995).

Maintenance of viable populations of Chiricahua leopard frogs is thought to be compatible with well-managed livestock grazing. Grazing occurs in most of the habitats occupied by this frog. For instance, a large and healthy population of Chiricahua leopard frogs coexists with cattle and horses on the Tularosa River, New Mexico (Randy Jennings, Western New Mexico University, pers. comm. 1995). Effects of grazing on Chiricahua leopard frog habitat probably include both creation of habitat and loss and degradation of habitats. Construction of tanks for livestock has created important leopard frog habitat, and in some cases has replaced destroyed or altered natural wetland habitats (Sredl and Saylor 1998). Sixty-three percent of extant Chiricahua leopard frog localities in Arizona are stock tanks, versus only 35 percent of extirpated localities (Sredl and Saylor 1998), suggesting Arizona populations of this species have fared better in stock tanks than in natural habitats. Stock tanks provide small patches of habitat, which are often dynamic and subject to drying and elimination of frog populations. However, Sredl and Saylor (1998) also found that stock tanks are occupied less frequently by nonnative predators (with the exception of bullfrogs) than natural sites.

Adverse effects to the Chiricahua leopard frog and its habitat as a result of grazing may occur under certain circumstances. These effects 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 (U.S. Fish and Wildlife Service 2000, Belsky *et al.* 1999, Ohmart 1995, Hendrickson and Minckley 1984, Arizona State University 1979, Jancovich *et al.* 1997). Creation of livestock waters in areas without aquatic habitats may provide the means for nonnative predators, such as bullfrogs and crayfish, to move across arid landscapes that would otherwise serve as a barrier to their movement. The effects from the allotments in this proposed action are expected to be manifested primarily through stream degradation, sloughing banks, and deteriorated riparian condition. The baseline condition of riparian habitats in all allotments in this proposed action is very poor, and the proposed action is only expected to exacerbate this degraded state. Increased erosion in the watershed caused by grazing can accelerate sedimentation of deep pools used by frogs (Gunderson 1968). Sediment can alter primary productivity and fill interstitial spaces in streambed materials with fine particulates that impede water flow, reduce oxygen levels, and restrict waste removal (Chapman 1988). Eggs, tadpoles, and metamorphosing Chiricahua leopard frogs are probably trampled by cattle on the perimeter of stock tanks and in pools along streams (US Fish and Wildlife Service 2000). Juvenile and adult frogs can probably avoid trampling when they are active. However, leopard frogs are known to hibernate on the bottom of ponds (Harding 1997), where they may be subject to trampling during the winter months. Cattle can remove bankline vegetation cover that provides escape cover for frogs and a source of insect prey. However, dense shoreline or emergent vegetation in the absence of grazing may favor some predators, such as garter snakes (*Thamnophis* sp.), and the frogs may benefit from some open ground for basking and foraging. At a tank in the Chiricahua Mountains, Sredl *et al.* (1997) documented heavy cattle use at a stock tank that resulted in degraded water quality, including elevated hydrogen sulfide concentrations. A die off of Chiricahua leopard frogs at the site was attributed to cattle-associated water quality problems, and the species has been extirpated from the site since the die off.

Chytrid fungus can survive in wet or muddy environments, and could conceivably be spread by cattle carrying mud on their hooves and moving among frog habitats. The disease could also be spread by ranch hands working at an infected tank or aquatic site and then traveling to another site with mud or water from the first site. Chytrids could be carried inadvertently in mud clinging to wheel wells or tires, or on shovels, boots, or other equipment. Chytrids cannot survive complete drying, thus, if equipment is allowed to thoroughly dry, the likelihood of disease transmission is much reduced. Bleach or other disinfectants can also be used to kill chytrids (Longcore 2000). Chytrids, if not already present, could immigrate to the allotments naturally via frogs or other animals. Chytridiomycosis is not known to occur within the allotments of this proposed action, but it is known to occur within the broad vicinity of the allotments (M. Sredl, Arizona Game and Fish Department, pers. comm. 2001) at Juan Miller crossing on the Blue River. Thus, if chytrids are not already present, there may be a high probability of immigration to the action area.

Maintenance of roads and tanks needed for the grazing program could provide fishing opportunities and facilitate access by anglers, hunters, or other recreationists, who may inadvertently introduce chytrids or may intentionally introduce nonnative predators for angling or other purposes. Chytrids could be moved among aquatic sites during intentional introductions of fish or other aquatic organisms. Anglers commonly move fish, tiger salamanders, and crayfish among tanks and other aquatic sites to establish a fishery or a source of bait, or in some cases bait is released at an aquatic site during angling. Water, salamanders, or perhaps fish and crayfish could all be carriers of chytrids. In addition to possibly introducing chytrids, such activities would also facilitate introduction of nonnative predators with which the Chiricahua leopard frog cannot coexist.

For all of the allotments in this conference opinion, stock tank maintenance would typically occur when tanks are dry or nearly dry. At that time, dams would be repaired or silt would be dredged out of the tanks. During drought, many leopard frogs probably disperse from drying tanks or are killed by predators as waters recede. However, some frogs persist in cracks in the mud of pond bottoms (M. Sredl, Arizona Game and Fish Department, pers. comm. 1999) or in clumps of emergent vegetation. Halfmoon Tank in the Dragoon Mountains went dry during June 1996 for 30 days or more. On July 21, 1996, 29 frogs of several different size classes were counted after the tank refilled with the summer monsoons (J. Rorabaugh, USFWS, pers. comm.). Frogs probably took refuge in thick mats of cattails around the tank, but may have also stayed in cracks in the drying mud of the pond bottom, in rodent burrows, or other retreats that stayed moist. Frogs present in mud or in emergent vegetation could be killed or injured during silt removal or berm repair. If not killed, they may be flushed from moist retreats and die of exposure or dessication, or be killed by predators. If remaining wetted soils and emergent vegetation are completely disturbed or removed during cleaning out of a tank, a frog population could possibly be eliminated.

Generally, the Forest proposes a forage and browse utilization of no more than 45% by weight in riparian areas, and a forage and browse utilization of no more than 40% by weight on upland

sites for Sprucedale-Reno, Alpine, Beaver, Coyote-Whitmer, Hannagan, and Fish Creek allotments. The Forest also proposes a utilization level of 40% on all herbaceous vegetation and 25% on shrubs for the Colter Creek Allotment, and on the Grandfather Allotment, 40% utilization on areas characterized by good range condition, 35% on areas characterized by fair range condition, and 25% on riparian areas and those areas with poor range condition. These utilization levels were established despite that riparian condition is considered unsatisfactory throughout 100% of the Beaver, Grandfather, and Alpine allotments, and unsatisfactory throughout 95% of the Sprucedale-Reno, Coyote-Whitmer, Hannagan, and Fish Creek allotments. The Colter Creek Allotment shows heavily incised and downcut streambanks in Riggs Creek and Red Hole Draw, and the range condition is poor or very poor in 89% of the allotment. The Forest predicts that in 10 years, riparian condition on all allotments will not improve at all by virtue of their proposed action. The Service believes that this is due to two primary effects. The first is through a high utilization level that has shown to degrade riparian and upland areas, and the second is through allowing livestock direct access to riparian corridors.

Livestock have access to all of Coyote Creek within the Alpine Allotment; access to 4 miles of Beaver Creek within the Beaver Creek Allotment; access to Riggs Creek, Colter Creek, Turkey Creek, and Red Hole Draw within the Colter Creek Allotment; access to 8.6 miles of Coyote Creek, Coleman Creek, Little Creek, Stone Creek, and the San Francisco River within the Coyote-Whitmer Allotment; access to approximately 11 river miles of riparian habitat (including the Black River) within the Sprucedale-Reno Allotment, access to about one-quarter of a mile of the West Fork of the Black River within the Grandfather Allotment; access to about 16 miles of Corduroy Creek within the Hannagan Allotment; and access to approximately 2 miles of riparian habitat including Corduroy Creek, Deep Cienega Creek, and Lost Cienega Creek in the Fish Creek Allotment.

In addition to the mechanical damage (trampling) associated with livestock grazing in riparian areas, livestock trampling along drainages and in the upper watershed may generate sediments and/or nutrients that could enter potentially occupied leopard frog habitat along the drainages listed above. Such drainages are also near enough to occupied sites (Three Forks, Concho Bill, and Trinity Reservoir), that they may serve as a migration corridor to other suitable habitats. Sediments and/or nutrients may impact this species in the following ways: (1) sediments and/or nutrients may influence the invertebrate food base in some undefined manner by impacting the physical and vegetative characteristics of the aquatic habitat; and (2) sediments may be detrimental to successful reproduction by smothering egg masses and early larval stages. As discussed in the environmental baseline of this document, overgrazing contributes to reducing the quality and quantity of riparian and wetland habitats through deterioration of watersheds, erosion and/or siltation of stream courses, elimination of undercut banks that provide cover for frogs, and loss of wetland and riparian vegetation and backwater pools. In addition, eggs and tadpoles of Chiricahua leopard frogs may be trampled by domestic livestock along the perimeters of stock tanks and in pools along streams. Cattle also contribute to degraded water quality at stock tanks, including elevated hydrogen sulfide concentrations, which are toxic to frogs (Sredl *et. al* 1997).

Summary

The effects to the Chiricahua leopard frog from the proposed action will occur in the riparian areas (in or associated with wetter areas), wetland communities, and stock tanks within the Alpine, Beaver Creek, Colter Creek, Coyote-Whitmer, Fish Creek, Hannagan, Sprucedale-Reno, and Grandfather allotments. Grazing effects also result from the trampling of egg masses, tadpoles, and frogs from livestock having direct access to aquatic habitat or stock tanks. Diseases such as chytrids can be moved among aquatic sites by cattle and operations.

V. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this conference opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. A majority of the lands in the action area and adjacent areas are owned and managed by the Forest Service. Thus, the effects of most activities likely to occur in the project area would not be considered cumulative effects. However, some private inholdings occur within the allotments in this opinion. Activities could occur on this land, such as construction of roads, buildings, or other structures, that might adversely affect the Chiricahua leopard frog. Some activities on private lands in Arizona may require Federal permits, such as 404 Clean Water Act permits from the US Army Corps of Engineers. Effects of these activities would be covered by the section 7 process and are not considered cumulative. Effects of activities in Arizona that do not have a Federal nexus could be addressed by a section 10(a)(1)(B) incidental take permit, if the Chiricahua leopard frog is subsequently listed, and if the action may result in take of frogs.

Further cumulative effects include the impact of elk and antelope that utilize the allotments prior to, during, and after livestock use. Non-native aquatic species such as brown trout, fathead minnows, and crayfish are all potential predators of the leopard frog (perhaps more as a tadpole) and its eggs. The direct impact of non-native aquatic species requires further investigation. However, the effect of crayfish on the habitat of the Chiricahua leopard frog is clearly negative. These effects have been discussed in the “Status of the Species within the Action Area” section of this document.

VI. CONCLUSION

After reviewing the current status of the Chiricahua leopard frog, the environmental baseline for the action area, and the anticipated effects of proposed livestock grazing activities on the Alpine, Beaver Creek, Colter Creek, Coyote-Whitmer, Fish Creek, Hannagan, Sprucedale-Reno, and Grandfather allotments, and the cumulative effects, it is the Service's conference opinion that the proposed action is not likely to jeopardize the continued existence of the Chiricahua leopard frog. No critical habitat has been proposed, thus none would be affected. We make these findings for the following reasons:

1. The Chiricahua leopard frog occurs over a large area of eastern Arizona, western New Mexico and portions of northwestern Mexico. The proposed action affects a very small portion of the species' range.

2. Chiricahua leopard frogs can coexist with well-managed livestock grazing.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation 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 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 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.

The prohibitions against taking the species found in section 9 of the Act do not apply until the species is listed. However, the Service advises the Forest Service to consider implementing the following reasonable and prudent measures. If this conference opinion is adopted as a biological opinion following a listing or designation, these measures, with their implementing terms and conditions, will be nondiscretionary, and must be undertaken by the Forest Service so that they become binding conditions of any grant or permit issued to the permittee, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to assume and implement the terms and conditions or (2) fails to require the permittee to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Forest Service or permittee must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

I. AMOUNT OR EXTENT OF TAKE

Although the occurrence of Chiricahua leopard frogs in the project area is certain, the abundance of frogs in the action area is uncertain. Also, because the status of the species could change over time through immigration, emigration, and loss or creation of habitats, the precise level of take

resulting from this action cannot be quantified. However, given the presence of Chiricahua leopard frogs in areas and suitable habitat throughout the action area , Chiricahua leopard frogs are likely to occur during the life of the project (10 years). We estimate that take could occur in the following fashion:

1. Mortality of all frogs at numerous livestock tanks due to maintenance activities.

2. Trampling and destruction of egg masses, small tadpoles, and metamorphs.

3. Mortality of recently metamorphosed frogs at certain localities (livestock tanks, streams, or springs) due to unintentional introduction of chytridiomycosis resulting from cattle moving among frog populations or unintentional transport of water or mud among aquatic sites by ranch hands.

4. Mortality and lost productivity due to sedimentation of pools, loss of bankline and emergent cover, and other forms of habitat degradation in sites where Chiricahua leopard frogs may occur.

In cases where the extent of anticipated take cannot be quantified accurately in terms of number of individuals, the Service may anticipate take in terms of loss of a surrogate species, food, cover, or other essential habitat elements, such as water quality or quantity. Thus, incidental take will be exceeded if the following condition occurs:

1. Ecological conditions do not improve under the proposed livestock management. Improving conditions can be defined through measurable improvements in watershed condition, soil condition, trend and condition of rangelands, riparian conditions, and stream channel conditions within the natural capabilities of the landscape in all representative reaches on all above named allotments. Ecological conditions on all allotments will be assessed every 3 years as is directed in term and condition 3.1.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If the Chiricahua leopard frog is listed and this conference opinion is subsequently accepted by the Service as a biological opinion, the following conditions apply: 1) If incidental take anticipated in the preceding paragraphs is met, the Forest should immediately notify the Service in writing. 2) If, during the course of the action, the level of anticipated incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation. In the interim, the Forest must cease the activity resulting in the take if it is determined that the impact of additional taking will cause an irreversible and adverse impact on the species. 3) The Forest must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures. 4) This conference opinion does not authorize any form of take not incidental to the Forest's proposed action as described herein.

II. EFFECT OF TAKE

In this conference opinion, the Service finds the anticipated level of take is not likely to jeopardize the continued existence of the Chiricahua leopard frog.

III. REASONABLE AND PRUDENT MEASURES

If the Chiricahua leopard frog is listed, the following reasonable and prudent measures are necessary and appropriate to minimize take of the Chiricahua leopard frog:

1. The Forest shall continue to monitor the Chiricahua leopard frog within allotments covered in this opinion.

2. Measures shall be implemented to minimize the spread of predators and diseases, and to reduce trampling of egg masses, tadpoles, and metamorph frogs.

3. Actions shall be taken to improve ecological conditions (watershed, soil, range, riparian, and stream channel conditions) on allotments within this opinion to document levels of take.

4. Reduce impacts to stream courses and aquatic habitats from the impacts of livestock use.

IV. TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure number one:

    1.1. During the first spring after a final listing of the species, the Forest shall, in coordination with the Service and Arizona Game and Fish Department, identify potential habitat within the Alpine, Beaver Creek, Colter Creek, Coyote-Whitmer, Fish Creek, Hannagan, Sprucedale-Reno, and Grandfather allotments and survey[1] those sites for the presence of Chiricahua leopard frogs. Where frogs are found, the Forest shall work with the Service to evaluate effects of the action on the frog and its habitat, and shall develop a plan with the Service within 90 days to minimize the effects of the action on the frog. The plan shall be approved by the Service.

2. The following terms and conditions implement reasonable and prudent measure number two:

2.1 Live fish, crayfish, bullfrogs, leopard frogs, salamanders, or other aquatic organisms shall not be moved among livestock tanks or other aquatic sites.

2.2 Where new or existing sites occupied by Chiricahua leopard frogs occur, water shall not be hauled to the site from another aquatic site or tank that supports leopard frogs, bullfrogs, crayfish, or fish.

2.3 Where new or existing sites occupied by Chiricahua leopard frogs occur on the Alpine, Beaver Creek, Colter Creek, Coyote-Whitmer, Fish Creek, Hannagan, Sprucedale-Reno, and Grandfather allotments, the permittee shall be required to clean any equipment, boots, etc. used at an aquatic site and treat with a 10 percent bleach solution, or allow such equipment, boots, etc. to dry thoroughly, before using the same equipment, boots, etc. at another aquatic site on the allotment.

2.4 All ranch hands, construction personnel, and others implementing the proposed action shall be given a copy of these terms and conditions, and informed of the need to comply with them.

2.5 At least 20 days prior to maintaining or cleaning out livestock tanks, the permittee shall inform the Forest of planned activities. The Forest shall survey the tank for Chiricahua leopard frogs[1], and if frogs are found, shall work with the Service to develop and implement a plan to minimize take of frogs. Measures to minimize take should include salvage and temporary holding of frogs, limiting disturbance and work areas to the minimum area practicable, leaving stands of emergent vegetation in place, and/or measures to minimize that likelihood of disease transmission. Plans to minimize take shall be approved by the Service.

3. The following terms and conditions implement reasonable and prudent measure number three:

3.1 Monitoring will take place at a minimum of every 3 years (beginning in 2002) in select drainages in each allotment. Data collected for monitoring must adhere to the following guidelines at a minimum: 1) a journey-level fish biologist must design, review, and approve the data collection, 2) monitoring must be standardized so that the same variables are measured for each of the three years, 3) monitoring must include soil transects located at heavily-used areas on several, lower-end portions of all pertinent drainages, and 4) data on embeddedness and water temperature (using a

[1]Surveys shall include a night visit to prospective habitat during which all or at least 1,200 feet of the best habitat along creeks and the entire perimeter of tanks are searched for frogs. Surveys shall be carried out with flashlights/headlamps, and a dip net shall be used to sample for tadpoles and frogs concealed in undercut banks or at the base of emergent vegetation. Surveyors shall also listen for the distinctive call of the Chiricahua leopard frog (Davidson 1996) and watch for egg masses. Surveys shall be carried out from April-September when frogs are most active.

data-logger type device) will be collected, and photopoints will be taken at the soil transect locations. Other measurements might include: vegetative litter; plant vigor and species diversity; bank, terrace, and floodplain morphology; channel profile; base flow; and other riparian and aquatic habitat measures. If monitoring does not show improvement of unsatisfactory conditions or maintenance of existing satisfactory conditions during the period covered by this consultation, evaluate the grazing management and identify and implement changes as appropriate. Ensure that the language in the term grazing permit allows for this type of adaptive management. After every monitoring event, the Forest shall submit a report to the Arizona Ecological Services Field Office within 90 days of monitoring completion.

4. The following terms and conditions implement reasonable and prudent measure number four:

4.1 Alpine Allotment:
- Implement a utilization standard of 20% on all herbaceous and other vegetation in riparian areas of East Jackson and Hamblin pastures.

4.2 Coyote-Whitmer Allotment:
- Implement a utilization standard of 20% on all herbaceous and other vegetation in riparian areas within this allotment.

4.3 Sprucedale-Reno Allotment:
- Implement a utilization standard of 20% on all herbaceous and other vegetation in riparian areas within this allotment.

4.4 Colter Creek:
- Implement a utilization standard of 20% on all herbaceous and other vegetation in riparian areas within this allotment.

4.5 Beaver Creek Allotment:
- Implement a utilization standard of 20% on all herbaceous and other vegetation in riparian areas within this allotment.

4.6 Fish Creek and Hannagan Creek allotments:
- Implement a utilization standard of 20% on all herbaceous and other vegetation in riparian areas within this allotment.

Disposition of Dead or Injured Listed Animals

Upon finding a dead or injured threatened or endangered animal, initial notification must be made to the Service's Division of Law Enforcement, Federal Building, Room 8, 26 North McDonald, Mesa, Arizona (480/835-8289) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of

the animal, a photograph, and any other pertinent information. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible condition. If feasible, the remains of intact specimens of listed animal species shall be submitted as soon as possible to this office or the nearest AGFD office, educational, or research institutions (e.g., Arizona State University in Tempe) holding appropriate State and Federal permits.

Arrangements regarding proper disposition of potential museum specimens shall be made with the institution before implementation of the action. A qualified biologist should transport injured animals to a qualified veterinarian. Should any treated listed animal survive, the Service should be contacted regarding the final disposition of the animal.

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. We recommend implementation of 2 through 5, below, whether or not the species is listed.

1. If listed, we recommend the Forest assist the Service in development and implementation of a recovery plan for the species.

2. We recommend the Forest work with the Service and Arizona Game and Fish Department to reintroduce the Chiricahua leopard frog to suitable habitats.

3. We recommend the Forest work with the Service and Arizona Game and Fish Department to begin an aggressive program to control nonnative aquatic organisms on the Forest, particularly bullfrogs, fish, and crayfish.

4. We recommend that the Forest take proactive measures to eliminate off-road vehicle damage in John's Canyon within the Middle Pasture of the Sprucedale-Reno Allotment.

5. Initiate a cooperative effort with the Arizona Game and Fish Department to ameliorate the impacts of elk on the above allotments. Of particular concern are Coyote Creek, Black River, West Fork of the Black River, Colter Creek, Corduroy Creek, Double Cienega Creek, Conklin Cienega, Conklin Creek, Fish Creek, Beaver Creek, Castle Creek, Riggs Creek, Nelson Reservoir, Nutrioso Creek, Coleman Creek, Hannagan Creek, Acker Lake, Snake Creek, Bear Creek, Horton Creek, Johns Canyon, Bardman Canyon, Hawksnest Canyon, Clay Tank, Log Canyon, Middle Mountain Canyon, Pearl Canyon, Sprucedale Canyon, Thomas Creek, Willow Creek, Turkey Creek, Little Creek, San Francisco River, Grant Creek,

Deep Cienega Creek, Lost Cienega Creek, Red Hole Draw, and Rudd Creek, which have experienced bank degradation, soil compaction, and increased turbidity due, in part, to elk foraging, trampling and wallowing. Efforts to alleviate such impacts would benefit the Chiricahua leopard frog.

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

REINITIATION NOTICE

This concludes the conference for the livestock grazing allotment management plans for the Alpine, Beaver Creek, Colter Creek, Coyote-Whitmer, Fish Creek, Hannagan, Sprucedale-Reno, and Grandfather allotments. You may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if the Chiricahua leopard frog is listed. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary.

After listing of the Chiricahua leopard frog as threatened and any subsequent adoption of this conference opinion, the Federal agency shall request reinitiation of formal consultation 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 conference 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 conference opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

The incidental take statement provided in this conference opinion does not become effective until the species is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the Chiricahua leopard frog has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect that take. No take of the species is authorized between the listing of the Chiricahua leopard frog and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

We appreciate your interest in furthering the conservation of this species. If we can be of further assistance, please contact Darrin Thome (x250) or Debra Bills (x239) at the Arizona Ecological

Services Field Office. Please refer to the consultation numbers provided on the cover page in future correspondence concerning this consultation.

Sincerely,

/s/ David L. Harlow
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
(Attn: Cindy Schulz)
District Ranger, Alpine Ranger District, Apache-Sitgreaves National Forests, Alpine, AZ
District Ranger, Springerville Ranger District, Apache-Sitgreaves National Forests, Springerville, AZ

John Kennedy, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Ms. Rose Awtrey, P.O. Box 84, Blue, AZ 85922
Mr. Boyd Drachman, 2090 N. Kolb Rd., Suite 100, Tucson, AZ 85715
Mr. Galyn Knight, P.O. Box 1014, Springerville, AZ 85938

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