



# United States Department of the Interior

Fish and Wildlife Service

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In reply refer to:

AESO/SE

02EAAZ00-2016-F-0341

May 6, 2016

Ms. Laura Jo West, Forest Supervisor  
Coconino National Forest  
1824 South Thompson Street  
Flagstaff, Arizona 86001-3600

RE: Biological Opinion – Ongoing Grazing on Eight Allotments

Dear Ms. West:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request and biological assessment (BA) were dated March 9, 2016, and received by us on March 14, 2016. This consultation concerns the potential effects of ongoing livestock grazing and management activities associated with ongoing livestock grazing on eight range allotments and one sheep driveway on the Prescott, Coconino, and Kaibab National Forests in Coconino and Yavapai Counties, Arizona. The Forest Service has determined that the proposed action may affect, and is likely to adversely affect, the endangered Gila chub (*Gila intermedia*) on the Apache Maid and Beaver Creek Allotments (Coconino National Forest); and the threatened northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat, proposed critical habitat for the threatened narrow-headed gartersnake (*Thamnophis rufipunctatus*), the threatened yellow-billed cuckoo (*Coccyzus americanus*), and the proposed threatened roundtail chub (*Gila robusta*) on the Beaverhead-Grief Hill sheep driveway (which occurs on all three national forests).

Your letter also requested our concurrence that the proposed action may affect, but is not likely to adversely affect:

- the northern Mexican gartersnake, the narrow-headed gartersnake, the yellow-billed cuckoo, proposed critical habitat for the gartersnakes and cuckoo, and the roundtail chub on the 13 Mile Rock Allotment;
- the northern Mexican gartersnake, the narrow-headed gartersnake, the yellow-billed cuckoo, proposed critical habitat for the gartersnakes and cuckoo, and Gila chub designated critical habitat on the Apache Maid Allotment;
- the yellow-billed cuckoo and its proposed critical habitat, the roundtail chub, and Gila chub designated critical habitat on the Beaver Creek Allotment;

- the northern Mexican gartersnake, the narrow-headed gartersnake, proposed critical habitat for both gartersnakes, the roundtail chub and the proposed threatened headwater chub (*Gila nigra*) on the Fossil Creek Allotment;
- the northern Mexican gartersnake, the narrow-headed gartersnake, and proposed critical habitat for both gartersnakes on the Hackberry Allotment;
- the northern Mexican gartersnake, the narrow-headed gartersnake, and proposed critical habitat for both gartersnakes on the Windmill Allotment; and,
- yellow-billed cuckoo proposed critical habitat on the Sheep Driveway.

We concur with your determinations. The basis for our concurrences is found in Appendix A.

You also determined that the action would have “no effect” for the following:

- the roundtail chub and Gila chub critical habitat on the Apache Maid Allotment;
- the yellow-billed cuckoo and its proposed critical habitat on the Fossil Creek Allotment;
- the roundtail chub on the Hackberry Allotment;
- the northern Mexican gartersnake, the narrow-headed gartersnake, the yellow-billed cuckoo, and proposed critical habitat for the gartersnakes and cuckoo on the Walker Basin Allotment;
- the yellow-billed cuckoo and its proposed critical habitat, the roundtail chub, the Gila chub and its designated critical habitat on the Windmill Allotment; and,
- the narrow-headed gartersnake on the Sheep Driveway.

“No effect” determinations do not require review from the FWS and are not addressed further.

This biological opinion (BO) is based on information provided in the March 2016 BA, conversations and electronic correspondence with your staff, and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern, livestock grazing and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

### **Consultation History**

Details of the consultation history are summarized in Table 1.

**Table 1. Summary of Consultation History**

<b>Date</b>	<b>Event</b>
January 15, 2015	We received a letter from the Coconino National Forest indicating that you would be initiating section 7 consultation for the listed northern Mexican and narrow-headed gartersnakes and their proposed critical habitat for ongoing livestock management.
January 14, 2016	The Forest Service provided a draft BA for review by the FWS.
February 17, 2016	The FWS provided comments to the Forest Service on the draft BA.
March 14, 2016	We received your March 9, 2016, request for formal consultation and the Final BA.
April 1, 2016	We issued a thirty-day letter initiating formal consultation.
May 2, 2016	We submitted a draft BO to the Forest Service for review.
May 4, 2016	We received your comments on the draft BO.

## **BIOLOGICAL OPINION**

### **DESCRIPTION OF THE PROPOSED ACTION**

The complete description of the proposed action and effects analysis can be found in your March 2016 BA and other supporting information in the administrative record. These documents are included herein by reference. The BA did not specify a timeframe for this consultation; however, we specify that this consultation covers effects to the species and their habitats discussed herein for a 10-year period (May 2016 through May 2025), or until a new consultation replaces this document.

The proposed action is the ongoing livestock grazing and the use and maintenance of structural range improvements associated with eight range allotments on the Coconino National Forest and one sheep driveway on the Prescott, Coconino, and Kaibab National Forest. Structural range improvements include use and maintenance of earthen tanks, fences, cattle guards, pipelines, troughs, drinker, and water storage tanks. These range allotments and the sheep driveway include habitat for or are adjacent to habitat for the Gila chub and several recently listed or proposed species (western yellow-billed cuckoo, northern Mexican gartersnake, narrow-headed gartersnake, roundtail chub, and headwater chub).

The eight livestock range allotments included in this consultation are the 13 Mile Rock, Apache Maid, Beaver Creek, Fossil, Hackberry/Pivot Rock, Walker Basin, Windmill, and Windmill West. Also included is the Beaverhead-Grief Hill Sheep Driveway. However, the only range allotments/driveway that will be discussed in this biological opinion are those that include the potential for adverse effects to listed species and/or critical habitat: the Apache Maid Range Allotment, the Beaver Creek Range Allotment, and the Beaverhead-Grief Hill Sheep Driveway.

### Apache Maid Range Allotment

Information for the Apache Maid Range Allotment in the BA was summarized in Table 2 of the BA (pages 4-5). We used additional information from our files to summarize the ongoing action.

The current management for the Apache Maid Allotment was established in 1995. This is a large allotment that straddles the Mogollon Rim from the Verde River to the area southeast of Mormon Lake. The allotment has three grazing management areas: Winter Use Zone in the Verde Valley (3,300-foot [ft] elevation); the Transition Use Zone in the pinyon/juniper woodlands (5,500-ft elevation); and, the Summer Use Zone in the ponderosa pine type (7,000-ft elevation). Current management is based upon the allotment's forage plant phenological growth and an intensive livestock-rotation system utilizing 37 pastures. This management strategy provides for grazing periods of approximately 20 days or less when plants are actively growing and approximately 30 days when plants are dormant. The major drainages located within the allotment are the Verde River, Oak Creek, Wet Beaver Creek, Dry Beaver Creek, and Rarick Canyon.

There are four pastures within the allotment that are the focus of this analysis: the Middle Verde, Red Tank, Winter North, and Winter South pastures. Each of the pastures has ongoing livestock grazing and maintenance of boundary fences. The current ongoing livestock status of each pasture is:

- Within the Middle Verde pasture, there is no authorized access to Oak Creek and fencing precludes access to the creek. Livestock are in this pasture in early spring for approximately 21 days.
- Livestock are trailed through the Red Tank pasture and across Red Tank Draw in one day, but some cows with newborn calves may remain in the area for several days. Livestock are present in the pasture either at the end of December or mid-April depending upon the pasture rotation direction.
- The Winter North pasture includes an enclosure along Dry Beaver Creek. In most years the riparian habitat is excluded from livestock access. However, the Forest Service acknowledges that in some years, high spring run-off in the creek precludes setting up the gap fences across the creek and livestock can gain access to the riparian habitat. Livestock use this pasture in the winter (three weeks) and spring (two weeks).
- Dry Beaver Creek also runs through the Winter South pasture. Livestock use this pasture in the winter (three weeks) and spring (two weeks).

### Beaver Creek Range Allotment

Information for the Beaver Creek Range Allotment in the BA was summarized in Table 2 of the BA (pages 5-6). We used additional information from our files to summarize the ongoing action.

The current management for the Beaver Creek Allotment was established in 1996. This allotment also straddles the Mogollon Rim, extending 23 miles in length from Interstate 17 north of Rimrock to just south of Happy Jack, Arizona. Elevations range from 3,600 ft to 7,639 ft. The allotment has three distinct management zones: Winter Use Zone in the Verde Valley (3,300-ft elevation); the Transition Use Zone in the pinyon/juniper woodlands (5,500-ft elevation); and the Summer Use Zone in the ponderosa pine type (7,000-ft elevation).

Management in 1996 was modified to exclude certain portions of Wet Beaver Creek from livestock grazing with use of creek-side water gaps at hardened (bank protected) sites to facilitate livestock watering. This management action was further strengthened through the 1998 Ongoing Grazing Consultation, when additional enclosure fences, cattleguards, and water gaps excluded the permitted livestock from over 10 miles Wet Beaver Creek's upper-reaches. This livestock enclosure restricts permitted livestock grazing from over 3,300 acres within the Wet Beaver Wilderness, and an additional 1,000 acres of riparian habitat and its immediate uplands. Upper Walker Creek, which forms the southern boundary of the Valley South (Bull) Pasture, is fenced to exclude livestock grazing except for a small (200 ft in stream length) water gap for livestock water during designated grazing periods. The major drainages located within the allotment are Wet Beaver Creek, Beaver Creek, Long Canyon, Walker Creek, Jacks Canyon, Brady Canyon, and Red Tank Draw.

There are six pastures within the allotment that are the focus of this analysis: the Lawrence Crossing, Valley North, Valley South, Miss Cindy, Old Bull South (Walker Creek), and Old Bull pastures. Each of the pastures has ongoing livestock grazing and maintenance of boundary fences. The current ongoing livestock status of each pasture is:

- Livestock are in the Lawrence Crossing pasture for approximately three days each year. While in the pasture, livestock have access to lower Walker Creek (below the private property) and Wet Beaver Creek.
- The Valley North pasture is used by livestock for approximately 10 days in the spring. Currently, livestock have access to Red Tank Draw on National Forest System (NFS) lands. New fencing is slated to be constructed in 2016 that will exclude livestock from Red Tank Draw while in this pasture.
- Livestock do not have access to Red Tank Draw on NFS lands in the Valley South pasture. The pasture is used for approximately 10 days in the spring.
- The Miss Cindy pasture is used by livestock for approximately 10 days in the spring. Livestock have access to Red Tank Draw and an 80-ft water gap on Wet Beaver Creek.
- The Old Bull South (or Walker) pasture is used for three days in the spring and can access Walker Creek downstream of the private property.
- The Old Bull pasture is used for approximately 20 days in the spring. Livestock have access to a 200-ft water gap on Walker Creek.

### Beaverhead-Grief Hill Sheep Driveway

The Beaverhead-Grief Hill Sheep Driveway (Driveway) occurs on the Prescott, Coconino, and Kaibab National Forests; however, the only suitable habitat for the listed species addressed in this consultation occurs on the Coconino and Prescott National Forests. Two grazing permittee's are permitted to use the Driveway; one permittee is administered by the Coconino National Forest and the other permittee is administered by the Kaibab National Forest. Information for the Beaverhead-Grief Hill Sheep Driveway is summarized from the description in the BA and using additional information from our files.

The Beaverhead-Grief Hill Driveway has been a sheep driveway since 1884 when sheep were driven to and from summer range in the Flagstaff area in May and October/November, respectively. The Driveway is approximately 70 miles long and 1 mile wide. Each year from the 1920s until the early 1960s, more than 30,000 sheep traveled along this Driveway. The current term grazing permits for the Beaverhead-Grief Hill Driveway allow for grazing by 5,885 head of sheep in three bands (a band is approximately 2,000 sheep) from May 1 to May 31 as they are trailed across the Prescott and Coconino National Forests enroute to allotments on the Coconino and Kaibab National Forests. These three bands travel up the Driveway with an approximate one-day spacing between bands. The bands travel about three miles a day. Where possible, sheep are herded on the Driveway to one side or the other as they go up each year. Night bedding areas are specified along the entire length of the Driveway. Night bedding areas and midday rest stops are located away from water. Since 1995, sheep have not been allowed to bed or rest within 0.25 mile of riparian areas.

The Driveway crosses the Verde River at a shallow ford called Sheep's Crossing on the Coconino National Forest. The crossing is located approximately 10 miles northwest of Camp Verde and is accessed through private land (Thousand Trails RV Park) on the southwestern side of the river.

The sheep are driven across the Verde River onto the Coconino National Forest (Figure 1). The crossing is within an approximately 100 yard length of the Verde River and is used in early to mid-May of each year. The Coconino National Forest-administered permittee uses the Beaverhead-Grief Hill Driveway with approximately 4,000 sheep. The sheep are driven across the Verde River in two bands, one band per day. Generally, each band arrives at the river in the mid-morning (~1000 hours); the herders rest the sheep until about 1300 hours, and then herd the sheep across the river. Per the permittee, the sheep cross the river in a relatively narrow column (approximately five to six sheep wide). The sheep are not driven across the river in larger groups because they would be difficult to control and the action would likely take a longer time. The Driveway permittee provided information indicating that the sheep use more or less a 20-yard wide area to cross within the 100-yard crossing. The sheep are typically out of the river corridor by the late afternoon (~1500 hours). The Forest Service permits stipulate that bands are not to be bedded at any locations used by a preceding band or within 0.25 mile of water. The Kaibab National Forest-administered permittee uses the Beaverhead-Grief Hill Driveway to move one band of sheep as well. The sheep are driven across the Verde River in early to mid-May in a manner similar to the crossing procedure described for the Coconino National Forest-administered permittee.



**Figure 1.** Aerial view of Sheep's Crossing. Note the open ground used to access the crossing and the road on the east side that the sheep exit the crossing onto.

In addition to Sheep's Crossing on the Verde River, the sheep are driven across Dry Beaver Creek on the Coconino National Forest. The sheep crossing at Dry Beaver Creek is conducted similar to the Verde River crossings and there are no extended stays.

## **ANALYTICAL FRAMEWORK FOR THE JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS**

### **Jeopardy Determination**

In accordance with policy and regulation, the jeopardy analysis in this BO relies on four components in our evaluation for each species: (1) the *Status of the Species*, which evaluates the species' range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and, (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the species' current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The jeopardy analysis in this BO places an emphasis on consideration of the range-wide survival and recovery needs of the species and the role of the action area in the survival and recovery of the species as the context for evaluating the significance of the effects of the proposed Federal

action, taken together with cumulative effects, for purposes of making the jeopardy determination.

### **Adverse Modification Determination**

In accordance with policy and regulation, the adverse modification analysis in this BO relies on four components: 1) the *Status of Critical Habitat*, which evaluates the range-wide condition of designated critical habitat for the species in terms of physical biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; 2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; 3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the physical biological features and how they will influence the recovery role of affected critical habitat units (CHUs); and, 4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how they will influence the recovery role of affected CHUs.

For purposes of the adverse modification determination, the effects of the proposed Federal action on each species' critical habitat are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the physical biological features to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the species.

## **STATUS OF THE SPECIES AND CRITICAL HABITAT**

### **Gila Chub**

Gila chub was listed as endangered with critical habitat on November 11, 2005 (USFWS 2005). Currently there is no final recovery plan for the species.

The Gila chub is a moderately-sized, small-finned, deep-bodied (chunky), darkly colored cyprinid that typically attains a size of 150 millimeters (mm) (5.9 inches [in]) total length; females may exceed 200 mm (7.9 in) total length (Minckley 1973, Propst 1999, Rinne 1976, Weedman et al. 1996). Breeding males display red to red-orange basally on paired fins, lower cheeks, posterior of lips, and on ventro-lateral surfaces (Propst 1999). The eyes on breeding males become yellow to yellow-orange and the body is blue-black dorsally with the fins on larger individuals appearing washed with lemon yellow (Minckley 1969). Both genders possess breeding tubercles, although, distribution is less extensive on females (Minckley 1973, Propst 1999).

Gila chub is a member of the roundtail chub complex that also includes headwater chub. The roundtail chub complex has had a turbulent and controversial taxonomic history that includes an assortment of classification schemes. Much of the debate has centered on whether the complex

represents a number of nominal species or subspecies of *Gila robusta*. A nomenclatorial synonymy for Gila chub can be found in Minckley (1973).

In stable, spring-fed systems, reproduction of Gila chub may take place from late winter to early autumn, but the peak season in other areas occurs during late spring and summer (Minckley 1973). Most Gila chub become sexually mature in their second or third year (Griffith and Tiersch 1989). Optimal water temperature for spawning appears to be between 20 and 24 degrees Celsius (68-75.2 degrees Fahrenheit) (Griffith and Tiersch 1989). They feed mainly on aquatic and terrestrial insects, filamentous and diatomaceous algae (Minckley 1973), organic debris, and other fish (Griffith and Tiersch 1989, Rinne and Minckley 1991). They have been observed chasing Gila topminnows (Minckley 1969). The presence of gravel in the gastrointestinal tract suggests the Gila chub may be benthic feeders (Weedman et al. 1996). Adults feed primarily during the crepuscular hours, whereas the young can be observed feeding during daylight hours (Minckley 1973, Griffith and Tiersch 1989). Young Gila chub are active throughout the day and feed on small invertebrates as well as aquatic vegetation (especially filamentous algae) and organic debris (Bestgen 1985, Griffith and Tiersch 1989). Adult Gila chub are crepuscular feeders, consuming a variety of terrestrial and aquatic invertebrates, and fishes (Bestgen 1985, Griffith and Tiersch 1989). Diatoms (algae) were most common by volume. Benthic feeding may also occur, as suggested by presence of small gravel particles in digestive tracts.

Currently, Gila chub occupy pools in smaller streams, springs, cienegas and some artificial impoundments (Minckley 1973, Rinne 1976, Weedman et al. 1996). Minckley (1973) describes them as highly secretive, usually found in deeper water or close to cover. Spawning may occur over beds of aquatic plants (Minckley 1973). Specific habitat associations have been observed to vary ontogenetically and likely seasonally and geographically, for example, Minckley (1969) found young fish in Monkey Spring, Arizona in swifter areas than adult fish, which utilize areas of little or no flow in undercut banks and heavily vegetated margins of the spring run. Griffith and Tiersch (1989) collected Gila chub from both riffles and pools in Redfield Canyon, Arizona.

Historically, the Gila chub was found throughout the Gila River Basin of southern Arizona, southwestern New Mexico, and northeastern Sonora, Mexico (Minckley 1973, Bestgen and Propst 1989). Recent literatures indicates Gila chub remain in approximately 25 higher-order streams and most are small, isolated, and face one or more threats (Weedman et al. 1996, USFWS 2005, Clarkson et al 2012). The biological status of several of these populations is uncertain, and the number of localities currently occupied may overestimate the number of remnant populations in that some might not persist if its core connected population was extirpated.

The Gila chub occurs in the Agua Fria River, the Verde River, Santa Cruz, San Pedro, and Upper Gila subbasins. The Verde River subbasin is within the project area and is discussed further in the environmental baseline. Information regarding the Santa Cruz, San Pedro, and Upper Gila subbasins is included in FWS files.

## Roundtail Chub

The FWS proposed threatened status for the roundtail chub in 2015 (USFWS 2015) with a Distinct Population Segment (DPS) that includes the Gila River Basin in Arizona and New Mexico, the Little Colorado River Basin in Arizona, and the Bill Williams River Basin in Arizona. Detailed information about the roundtail chub can be found in Voeltz (2002), Jones et al. (2014), and USFWS (2015).

The roundtail chub is a cyprinid fish (member of Cyprinidae, the minnow family) with a streamlined body shape. Color in roundtail chub is usually olive gray to silvery, with the belly lighter, and sometimes with dark blotches on the sides. Roundtail chub are generally nine to 14 in. (25 to 35 cm) in length, but can reach 20 in. (50 cm) (Minckley 1973, Sublette et al. 1990, Propst 1999, Minckley and DeMarais 2000, Voeltz 2002).

The roundtail chub is a member of the roundtail chub complex that also includes Gila and headwater chub. The roundtail chub complex has had a turbulent and controversial taxonomic history that includes an assortment of classification schemes. Much of the debate has centered on whether the complex represents a number of nominal species or subspecies of *Gila robusta*. A nomenclatorial synonymy for Gila chub can be found in Minckley (1973).

Roundtail chub in the lower Colorado River basin are found in cool to warm waters of rivers and streams, and often occupy the deepest pools and eddies of large streams (Minckley 1973, Brouder et al. 2000, Minckley and DeMarais 2000, Bezzerides and Bestgen 2002). Although roundtail chub are often associated with various cover features, such as boulders, vegetation, and undercut banks, they are less likely to use cover than other related species such as the headwater chub and Gila chub (Minckley and DeMarais 2000). Spawning occurs from February through June in pool, run, and riffle habitats, with slow to moderate water velocities (Neve 1976, Bestgen 1985, Propst 1999, Brouder et al. 2000, Voeltz 2002). Roundtail chub live for five to seven years and spawn from age two on (Bestgen 1985, Brouder et al. 2000). Roundtail chub are omnivores, consuming foods proportional to their availability, including aquatic and terrestrial invertebrates, aquatic plants, detritus, and fish and other vertebrates; algae and aquatic insects can be major portions of the diet (Bestgen 1985, Schreiber and Minckley 1981, Propst 1999).

Threats to roundtail chub include loss of habitat due to water withdrawals and other modifications to streamflow, channelization, improper livestock grazing, mining, roads, logging, and development activities has been significant and continues to occur. Climate change may also have an effect on the availability of habitat in the future if droughts continue, and drought conditions lead to high-severity landscape scale wildfires. Stormwater runoff following wildfire can result in highly sedimented and ash-laden waters and very unstable stream channels. Wildfire can have dramatic effects on streams and on populations of native fishes.

Direct predation by nonnative fishes on, and competition of nonnative fishes with, the roundtail chub has resulted in rangewide population declines and local extirpations. Nonnative aquatic organisms negatively affect native fish through predation, aggression and harassment, resource competition, habitat alteration, aquatic community disruption, introduction of diseases and parasites, and hybridization (USFWS 2008). Based on survey information, nonnative species

occur in most known populations of roundtail chub (Voeltz 2002) except in Fossil Creek above the constructed fish barrier where non-native fish were eliminated. The continuing presence of nonnative fish that prey on and/or compete with roundtail chub are a serious and persistent threat to the continued existence of this species.

Roundtail chub in the lower Colorado River basin in Arizona currently occur in two tributaries of the Little Colorado River; several tributaries of the Bill Williams River; the Salt River and four of its tributaries; the Verde River and several of its tributaries; Aravaipa Creek (a tributary of the San Pedro River); Eagle Creek (a tributary of the Gila River); and, in New Mexico, in the upper Gila River (Voeltz 2002). The Salt River and Verde River are occupied in several reaches that are fragmented and separated by two large dams and reservoirs on the Verde River, and four large dams and reservoirs on the Salt River. Roundtail chub also occur in canals in Phoenix that are fed by the lower Salt and Verde Rivers. Roundtail chub inhabit several streams in the Salt River drainage, although survey information on the San Carlos Apache Reservation and White Mountain Apache Reservation is proprietary and confidential, and their status is not currently known; these streams include Canyon, Carrizo, Cedar, Cibecue, and Corduroy creeks, portions of the Black River, and the White River (Voeltz 2002).

### **Northern Mexican Gartersnake and Proposed Critical Habitat**

The northern Mexican gartersnake was listed as threatened (USFWS 2014a) on July 8, 2014. The USFWS also proposed critical habitat (USFWS 2013), but a final rule has not yet been published. A full description of threats to the northern Mexican gartersnake is presented in our Final Rule listing the northern Mexican gartersnake and is summarized below (USFWS 2014a). Currently there is no recovery plan for the northern Mexican gartersnake.

Rangewide, the northern Mexican gartersnake occurs at elevations from 130 to 8,497 ft (40 to 2,590 meters [m]). Within Arizona and New Mexico, records generally come from elevations ranging from 130 to 6,200 ft. Areas with protected backwaters, braided side channels and beaver ponds, isolated pools near the river mainstem, and edges of dense emergent vegetation that offer cover and foraging opportunities are important for acquisition of primary prey which includes native fish and amphibians. Sexual maturity occurs at two years of age in males and at two to three years of age in females. Mating has been documented in April and May followed by the live birth of between seven and 38 newborns in June, July, and August.

The northern Mexican gartersnake is generally found in riparian areas when not engaged in dispersal, gestation, or hibernation behaviors; often found in streams, rivers, cienegas, stock tanks, ephemeral pools, and spring sources within large river riparian woodlands, forests, streamside gallery forests, and grasslands.

Threats to the species include predation by non-native aquatic species (Centrarchids, Ictalurids); bullfrogs and crayfish; reduction or removal of prey base; natural or anthropogenic dewatering of aquatic habitat; indirect effects from fisheries management activities; road construction, use, and maintenance; adverse interactions with humans; livestock grazing in the presence of harmful nonnative species; and to a lesser extent, ash flows from wildfires that remove the prey base or habitat for prey species.

The northern Mexican gartersnake is generally found where water was relatively permanent and supported suitable habitat. The northern Mexican gartersnake has been documented historically in every county and nearly every subbasin within Arizona, but its historical distribution was essentially the southern two-thirds of Arizona. It was known from several perennial or intermittent creeks, streams, and rivers as well as lentic (still, non-flowing water) wetlands such as cienegas, ponds, or stock tanks. Records documenting northern Mexican gartersnake exist within the following subbasins in Arizona: Colorado River, Bill Williams River, Agua Fria River, Salt River, Tonto Creek, Verde River, Santa Cruz River, Cienega Creek, San Pedro River, Babocomari River, and the Rio San Bernardino (Black Draw).

Currently, there are only five known northern Mexican gartersnake populations in the United States, where the subspecies remains reliably detected and is considered viable, and all are located in Arizona. The five known populations are: 1) The Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek; 2) lower Tonto Creek; 3) the upper Santa Cruz River in the San Rafael Valley; 4) the Bill Williams River; and, 5) the upper and middle Verde River. In New Mexico, the northern Mexican gartersnake was last documented in 2013 along the Gila River in the vicinity of the Highway 180 crossing and is considered to occur in extremely low population densities within its historical distribution along the Gila River and Mule Creek. Northern Mexican gartersnake is probably extirpated from Spring Canyon (New Mexico), and Mimbres River (New Mexico) and likely not viable in Gila River (Arizona and New Mexico), and Mule Creek (New Mexico). The northern Mexican gartersnake is probably extirpated from the lower Santa Cruz River and from the Salt River downstream of Roosevelt Dam.

#### *Proposed critical habitat*

Critical habitat for northern Mexican gartersnake was proposed in 14 sub-basin and national wildlife refuge units in Arizona and New Mexico on July 10, 2013 (USFWS 2013). In Arizona, proposed critical habitat is located in portions of the Verde, Agua Fria, Bill Williams, Upper Salt, San Pedro, Babocomari, Upper Santa Cruz and Upper Gila rivers, Tonto and Cienega Creeks, Redrock Canyon, and Buenos Aires and San Bernardino National Wildlife Refuges. In New Mexico, proposed critical habitat is located in portions of Mule Creek and the Upper Gila River. Sheep's Crossing is located within the Verde River Subbasin and the Upper Verde River Subunit Critical Habitat Unit (CHU).

The following are the primary constituent elements (PCEs)<sup>1</sup> proposed for northern Mexican gartersnake critical habitat:

1. Aquatic or riparian habitat that includes:

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<sup>1</sup> The term "primary constituent elements" was introduced in critical habitat designation regulations (50 CFR 424.12) to describe aspects of "physical or biological features," which are referenced in the statutory definition of "critical habitat." The FWS has removed the term "primary constituent elements" and returned to use of the statutory term "physical or biological features" (79 FR 27066). Existing critical habitat designations will not be republished to make this change; however, in future rules we will discontinue the use of the term "primary constituent elements" and instead will be using "physical and biological features".

- a. Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess a natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads; or
  - b. Lentic wetlands such as livestock tanks, springs, and cienegas; and
  - c. Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter); and
  - d. Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the northern Mexican gartersnake or the maintenance of prey populations.
2. Adequate terrestrial space (600 ft. lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation (extended inactivity).
  3. A prey base consisting of viable populations of native amphibian and native fish species.
  4. An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis*, *P. clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.

### **Narrow-headed gartersnake Proposed Critical Habitat**

Critical habitat for narrow-headed gartersnake was proposed in 6 units in Arizona and New Mexico on July 10, 2013 (USFWS 2013). All proposed critical habitat units are considered occupied. Critical habitat units occur in Greenlee, Graham, Apache, Yavapai, Navajo, Gila, and Coconino Counties in Arizona, as well as in Grant, Hidalgo, Sierra, and Catron Counties in New Mexico. Sheep's Crossing is located within the Verde River Subbasin and the Verde River Subunit CHU.

Within these areas, the PCEs of the physical or biological features essential to the conservation of the narrow-headed gartersnake consist of the following four components:

1. Stream habitat, which includes:
  - a. Perennial or spatially intermittent streams with sand, cobble, and boulder substrate and low or moderate amounts of fine sediment and substrate

- embeddedness, and that possess appropriate amounts of pool, riffle, and run habitat to sustain native fish populations;
- b. A natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads;
  - c. Shoreline habitat with adequate organic and inorganic structural complexity (e.g., boulders, cobble bars, vegetation, and organic debris such as downed trees or logs, debris jams), with appropriate amounts of shrub-and sapling-sized plants to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities; and
  - d. Aquatic habitat with no pollutants or, if pollutants are present, levels that do not affect survival of any age class of the narrow-headed gartersnake or the maintenance of prey populations.
2. Adequate terrestrial space (600 ft., 182.9 m) lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation.
  3. A prey base consisting of viable populations of native fish species or soft-rayed nonnative fish species.
  4. An absence of nonnative fish species of the families *Centrarchidae* and *Ictaluridae*, bullfrogs (*Lithobates catesbeianus*), and/or crayfish (*Orconectes virilis*, *Procambarus clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of narrow-headed gartersnakes and maintenance of viable native fish or soft-rayed nonnative fish populations (prey) is still occurring.

Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

### **Yellow-billed cuckoo**

The western yellow-billed cuckoo (*Coccyzus americanus*) (yellow-billed cuckoo, cuckoo) was listed as threatened on October 3, 2014 (USFWS 2014c) and critical habitat was proposed on August 15, 2014 (USFWS 2014b). A full description of the yellow-billed cuckoo life history requirements and threats is presented in final rule listing the cuckoo (USFWS 2014c), and is herein incorporated by reference. Currently there is no recovery plan for the yellow-billed cuckoo.

The yellow-billed cuckoo is a Neotropical migrant bird that winters in South America and breeds in North America. The cuckoo is typically a secretive and hard-to-detect bird, but mating yellow-billed cuckoos have a distinct call. Little information exists on the lifespan for the yellow-billed cuckoo. The oldest known record of a banded bird is eight years (S. McNeil, Southern Sierra Research Station, personal communication to S. Sferra, USFWS, July 16, 2015).

In the Southwest, the western yellow-billed cuckoo usually occurs in association with large blocks of mature riparian cottonwood-willow woodlands and dense mesquite associations. However, recent survey efforts in Madrean oak and pine-oak woodland, juniper woodland, and dense Sonoran desert scrub have documented yellow-billed cuckoo breeding in these atypical vegetation types. This species is historically known from parts of the 12 states west of the continental divide including: Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, and parts of Montana, Wyoming, Colorado, New Mexico, and Texas. Cuckoos can travel over 1.6 kilometer (km) (1 mile [mi]) a day within their home ranges, including in adjacent upland foraging habitat (Sechrist et al. 2009). The average greatest distance traveled seasonally is 1.5 km (0.9 mi). The greatest distance traveled by an individual seasonally is 3.2 km (2.0 mi).

A full list of rivers and population size of each location are listed in the listing of the species in New Mexico and Arizona. In Western New Mexico, yellow-billed cuckoo were historically common along portions of the Rio Grande, portions of the Gila, San Francisco, and San Juan Rivers. In Arizona, cuckoos were historically widespread and locally common on the lower Colorado River and its five major tributaries. A yellow-billed cuckoo population greater than ten pairs are found on 12 locations in Arizona such as Bill Williams River, Colorado River, Gila River, Verde River, San Pedro River, Santa Cruz River, and Agua Fria River and their tributaries. Sites with smaller populations are found at sites such as the Roosevelt Lake Complex, Upper Tonto Creek, Pinto Creek, Oak Creek, Pinal Creek, Bonito Creek, and Babocomari River, Granite Creek, Mimbres River, and many canyons in the Coronado National Forest. Many additional occupied areas may be found as cuckoo surveys are completed.

## **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 that are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation. The environmental baseline descriptions provided below are a summary of the available information. A complete description of the environmental baseline for each species can be found in the administrative record for this consultation.

The project area is dominated by ponderosa pine and mixed conifer forest communities. Inclusions of aspen, meadows, ephemeral drainages, and springs also occur across the analysis area. Southwestern ponderosa pine and dry mixed conifer forest are fire-adapted ecosystems with relatively frequent fire return intervals dominated by low severity surface fire. The project area also includes wet (mesic) mixed conifer forest which is likely less adapted to frequent fire.

### **Description of the action area**

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action

on the environment. The action area consists of NFS lands and includes the area within the Apache Maid and Beaver Creek Range Allotments (for the Gila chub) and the Beaverhead-Grief Hill Sheep driveway stream crossings for the remaining species and proposed critical habitat.

## **Gila Chub**

### ***A. Status of the species within the action area***

Gila chub and/or their habitat are present within the Apache Maid Range Allotment in Red Tank Draw, and on the Beaver Creek Range Allotment in Red Tank Draw and Walker Creek.

Red Tank Draw is approximately 6.9 miles long and extends from the National Park Service boundary just upstream of its confluence with Wet Beaver Creek upstream to the confluence of Mullican and Rarick canyons. Red Tank Draw is an intermittent stream that maintains several perennial pools in which Gila chub continue to persist. In Red Tank Draw, Gila chub are known to occur upstream of the Forest Road 645A crossing and are regularly found in the pools from this point upstream. Historic and recent surveys have not detected Gila chub downstream of this location.

Walker Creek is approximately 4.7 miles long and extends from Coconino National Forest Road 618 upstream to its confluence with Spring Creek. The earliest known collection of Gila chub was in 1978 by J. Rinne (Weedman 1996) and Gila chub continue to be found in the stream, upstream of the private property.

### ***B. Factors affecting the species within the action area***

Red Tank Draw contains nonnative fishes (e.g., green sunfish, yellow-bullhead), and virile crayfish are present in the downstream reaches. Although Red Tank Draw contains perennial pools and the necessary vegetation to provide cover, these pools are small and in dry years, many of these pools are small and likely result in increased predation and competition to Gila chub from nonnative fish species.

During the summer, irrigation uses on the private land at the bottom of Walker Creek cause the creek to dry up below the private property. The benefit of this is that the ephemeral nature of the lower end of Walker Creek appears to be limiting the invasion of nonnative species from Wet Beaver Creek into the occupied stretch above the private property (Weedman et al. 1996).

## **Roundtail Chub**

### ***A. Status of the species within the action area***

Within the Beaverhead-Grief Hill Sheep Driveway roundtail chub and their habitat could occur on the Verde River at Sheep's Crossing. Sheep's Crossing is located in a reach of the Verde River often referred to as the "Middle Verde River." This portion of the Verde River is often defined as running from TAPCO to Beasley Flat and contains a relatively robust population of

roundtail chub (AGFD Draft Verde Management Plan, 2014) scattered throughout the reach, likely including the area at Sheep's Crossing.

### ***B. Factors affecting the species within the action area***

The reach of the Verde River from TAPCO to Beasley Flat is highly altered by water diversions in the main channel for Verde Valley irrigation use. In addition, six river access points on NFS lands scattered throughout this reach receive high recreational use. This reach also contains many nonnative fishes and crayfish, all of which can affect roundtail chub through predation and competition.

## **Northern Mexican gartersnake and Proposed Critical Habitat**

### ***A. Status of the species and proposed critical habitat within the action area***

The northern Mexican gartersnake likely occurs and has potential habitat within and adjacent to Sheep's Crossing on the Beaverhead-Grief Hill Sheep Driveway. In July 2014, Northern Arizona University researchers trapped a juvenile northern Mexican gartersnake approximately 300 feet upstream of Sheep's Crossing.

Proposed critical habitat on the Verde River was identified from the Verde River's confluence with Horseshoe Reservoir upstream to its confluence with Sullivan Lake. Proposed critical habitat includes the river and a "600-ft lateral extent to either side of bankfull stage." Sheep's Crossing is proposed critical habitat. On April 27, 2015, Forest Service personnel visited Sheep's Crossing to determine habitat suitability for the northern Mexican gartersnake. The Forest Service determined that several of the primary constituent elements of proposed northern Mexican gartersnake habitat were present:

- The Verde River at this site has a low gradient.
- While the crossing is at a long, shallow pool, there were backwaters, riffles, and runs observed in the vicinity.
- Flows in the vicinity of the crossing are unregulated; however, a ditch diversion occurs about 300 m (984 ft) upstream of the crossing.
- Shoreline habitat was complex with a diversity of aquatic emergent and floating vegetation (cattails, bulrush, sedges, and watercress) and riparian grass and forb species.
- Shoreline habitat structure was comprised of boulders, cobble bars, vegetation, and organic debris.
- There was a good representation of all age classes of deciduous riparian trees.
- There was adequate terrestrial space 600 ft from the river that would support life history functions such as foraging, shedding, and hibernation.

Dry Beaver Creek is not proposed critical habitat for the northern Mexican gartersnake, but there are perennial pools with nonnative fish present. During many bird surveys and herpetofauna surveys conducted by Forest Service biologists, no gartersnakes have been observed in Dry Beaver Creek.

Sheep do not cross any suitable habitat or proposed critical habitat for the northern Mexican gartersnake on the Kaibab and Prescott National Forests.

***B. Factors affecting the species and proposed critical habitat within the action area***

The immediate crossing is under the management the Coconino National Forest, with adjacent privately owned property. The surrounding area has a long history of agriculture and livestock grazing; all of which are ongoing activities. Recreational uses in the area include hunting, fishing, hiking, horseback riding, birding, wildlife observation, and ecotourism. Motorized vehicles are allowed on established paved and unpaved roads near the crossing.

**Proposed Critical Habitat Narrow-headed gartersnake**

***A. Status of the proposed critical habitat within the action area***

Narrow-headed gartersnakes have not been detected in this portion of the Verde River (locations are higher in the watershed, in Oak Creek Canyon). Proposed critical habitat for the narrow-headed gartersnake was identified on the Verde River, from its confluence with Red Creek southwest of Wet Bottom Mesa, upstream to its confluence with Sullivan Lake. Proposed critical habitat includes the river and a “600-ft lateral extent to either side of bankfull stage.” Sheep’s Crossing is proposed critical habitat. The Forest Service determined that several of the primary constituent elements of proposed narrow-headed gartersnake habitat were present:

- The Verde River at this site has a low gradient.
- While the crossing is at a long, shallow pool, there were backwaters, riffles, and runs observed in the vicinity.
- Flows in the vicinity of the crossing are unregulated; however, a ditch diversion occurs about 300 m (984 ft) upstream of the crossing.
- Shoreline habitat was complex with a diversity of aquatic emergent and floating vegetation (cattails, bulrush, sedges, and watercress) and riparian grass and forb species.
- Shoreline habitat structure was comprised of boulders, cobble bars, vegetation, and organic debris.
- There was a good representation of all age classes of deciduous riparian trees.
- There was adequate terrestrial space 600 ft from the river that would support life history functions such as foraging, shedding, and hibernation.

***B. Factors affecting the critical habitat within the action area***

The immediate crossing is under the management the Coconino National Forest, with adjacent privately owned property. The surrounding area has a long history of agriculture and livestock grazing; all of which are ongoing activities. Recreational uses in the area include hunting, fishing, hiking, horseback riding, birding, wildlife observation, and ecotourism. Motorized vehicles are allowed on established paved and unpaved roads near the crossing.

## **Yellow-billed cuckoo**

### ***A. Status of the species within the action area***

The Beaverhead-Grief Hill Sheep Driveway starts on the Prescott National Forest, crosses the Coconino National Forest, and ends in sheep allotments on the Kaibab National Forest. The only riparian habitat capable of supporting cuckoos occurs on the Coconino and Prescott National Forests. On the Coconino National Forest, occupied cuckoo habitat occurs within the sheep driveway along the Verde River and Dry Beaver Creek. Neither of these locations are proposed critical habitat for cuckoos.

On the Prescott National Forest, unsurveyed proposed critical habitat occurs within the Driveway along a short, ephemeral portion of Ash Creek. Although this portion of Ash Creek is ephemeral, there is overstory riparian canopy. Cuckoos are known to nest further downstream on the Aqua Fria National Monument where flows are perennial.

### ***B. Factors affecting the species within the action area***

The immediate crossing is under the management the Coconino National Forest, with adjacent privately owned property. The surrounding area has a long history of agriculture and livestock grazing; all of which are ongoing activities. Recreational uses in the area include hunting, fishing, hiking, horseback riding, birding, wildlife observation, and ecotourism. Motorized vehicles are allowed on established paved and unpaved roads near the crossing.

## **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.

### **Effects of the action on the Gila Chub**

On the Apache Maid Range Allotment, livestock are trailed through the Red Tank Draw pasture in one day; however, some cows with newborn calves may remain in the pasture for several days until the permittee rounds them up. During this trail-through, livestock cross a portion of Red Tank Draw. Trailing across Red Tank Draw alternates each year between the end of December and mid-April. During some years, this crossing is dry; however it is located immediately downstream from a large pool that is consistently occupied by Gila chub. This crossing is extremely hardened (boulder and cobbles) and the Forest Service, using Proper Functioning Condition Protocols on January 25, 2016, determined that there were no signs of sedimentation from the road into the drainage after the livestock were trailed across Red Tank Draw. On the same site visit in 2016, the Forest Service noted that the uplands adjacent to Red Tank Draw did

show a minor amount of livestock sign (confirming that a few head remained after the main herd crossed). However, due to the armored nature of the creek and stream banks, which protects much of the vegetation, there was good representation of all age classes of woody riparian vegetation, and some herbaceous component (which is limited due to the dominance of bedrock, boulder and cobble substrate). Most of Red Tank Draw (and where the majority of Gila chub occur, and upstream of the crossing location) is not grazed due to canyon confines, so the greatest potential effect to Gila chub results from the use of the crossing. In summary, although there is potential when water is present in the crossing for a juvenile fish to be trampled, it is highly unlikely that fish persist in the crossing area due to the lack of pool habitat and lack of water.

The Beaver Creek Range Allotment livestock have access to habitat along lower Walker Creek (below private) in the Old Bull South (2 acres) and Lawrence Crossing (2 acres) pastures and along lower Red Tank Draw in Miss Cindy (127 acres) and Valley North pastures (22 acres). In these lower reaches of Walker Creek and Red Tank Draw, Gila chub have not been detected during surveys. While there is the possibility that livestock entering the water could step on or otherwise disturb Gila chub in these sections of creek, the likelihood of Gila chub being present in these areas is extremely unlikely, and the potential for them to be trampled is even more unlikely. Livestock in the Old Bull Pasture have access to occupied habitat along Walker Creek (above private), but only in a 200-ft long water gap. This water gap is heavily armored with cobble and boulder so there is little potential for livestock use to increase sedimentation or affect spawning habitat. In addition, the riparian vegetation appears healthy and is providing cover to the stream. In summary, although direct effects to Gila chub may occur as a result of livestock entering the water at these locations on the Beaver Creek Range Allotment, the lack of fish known to occur in these areas and the small size of the water gap lessens this risk considerably.

### **Effects of the action on the Roundtail Chub**

On the Beaverhead-Grief Hill Sheep Driveway, Sheep's Crossing on the Verde River is used to move approximately 6,000 sheep over the river in fewer than three days, annually. The crossing is accessed from private land (Thousand Trails RV Park) via a wash, and then the sheep go down approximately 900 feet of riparian floodplain where they then cross the Verde River onto the Coconino National Forest. The crossing includes a maximum 300-ft long area of the Verde River, but as the permittee noted, the area used is about 60 feet wide. The Coconino-administered permittee crosses approximately 4,000 sheep in two bands, one band per day. The Kaibab-administered permittee uses the Beaverhead-Greif Hill Driveway crossing to move one band of approximately 2,000 sheep. The sheep are driven across the Verde River in a manner similar to the crossing procedure described for the Coconino-administered permittee. Sheep use of the crossing can result in disturbance to stream banks and substrates along the Verde River contributing to sedimentation. In addition, if chub are present it is possible that trampling of the fish could occur when sheep use the crossing.

The use of Sheep's Crossing annually in early to mid-May could result in direct effects to roundtail chub and may have short-term adverse effects to habitat at the crossing. However, the crossing is a relatively shallow, hardened area (hence its use as a crossing). It is possible that chub could be present within the crossing area, and could be stepped on by crossing sheep;

however, we would expect that if roundtail chub are present at the crossing, the density of chub is likely fairly low at this site due to the habitat (long, shallow, slow pool/run) and any fish that may be in the vicinity would disperse from the area. Young-of-year fish tend to use vegetated shorelines along glides and the adult fish are likely using deeper pools, with boulders for cover (Brouder et al. 2000). The effects to chub habitat are likely of short duration due to the limited time the sheep are within the habitat and the fact that sheep are crossing in a relatively narrow column (five to six sheep wide).

### **Effects of the action on the northern Mexican gartersnake**

The use of Sheep's Crossing annually in early to mid-May (see paragraph above regarding the crossing under roundtail chub), could result in direct effects to northern Mexican gartersnakes and may have short-term adverse effects to habitat at the crossing. There is a remote possibility that sheep could trample or harass snakes as they move down the riparian embankment to the Verde River and as the sheep cross the river. This time of year (early to mid-May), northern Mexican gartersnakes are likely surface-active. However, research conducted by Northern Arizona University found that at Dead Horse State Park and on SRP Property, aquatic habitat types were used less than expected by northern Mexican gartersnakes based on availability in reference plots, while aquatic edge habitat types were used more than expected based on availability (Emmons and Nowak 2016). This type of aquatic edge habitat is prevalent within this reach of the Verde River; meaning that northern Mexican gartersnakes are no more likely to be present at the crossing than at areas upstream and downstream of the crossing. In addition, during the active season, telemetered gartersnakes in this study that were tracked for eight or more months were basking or moving in the open during 18.5% of the time they were located, concealed under surface cover 71% of the time; concealed underwater 2.8% of the time; foraging 1.2% of the time, and unknown 6.5% of the time. Therefore, we would not expect these gartersnakes to be hiding in the water at the time the sheep cross (which could make them more vulnerable).

Research has also noted that the northern Mexican gartersnake is reliant on non-native prey species in non-native-dominated systems, such as the Verde River. Therefore, although information from the permittee indicated that the presence of nonnative fishes may preclude the gartersnake at this site, based on research studies, the presence of non-native aquatic species at the crossing does not preclude the gartersnake from being present (Emmons and Nowak 2016).

### **Effects of the action on northern Mexican gartersnake proposed critical habitat**

In our analysis of the effects of the action on northern Mexican gartersnake proposed critical habitat, we consider whether or not a proposed action will result in the destruction or adverse modification of critical habitat. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of critical habitat for the recovery of a listed species. To determine this, we analyze whether the proposed action will adversely modify any of the proposed PCEs that were the basis for determining the habitat to be critical. To determine if an action results in adverse modification of critical habitat, we must also evaluate the current condition of the critical habitat unit, and the PCEs, to determine the overall ability of the proposed critical habitat to support recovery. Further, the functional role of each of the CHUs in

recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

The FWS proposed critical habitat for the northern Mexican gartersnake on July 10, 2013 (78 FR 41550). We discuss possible effects to the PCEs related to northern Mexican gartersnake proposed critical habitat (including immediately adjacent uplands) and the potential effects from use of Sheep's Crossing below. We determined that use of Sheep's Crossing may result in short-term adverse effects to the shoreline habitat PCE.

***Northern Mexican gartersnake proposed critical habitat PCEs:***

***PCE 1: Aquatic or riparian habitat that includes:***

***PCE 1a: Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess a natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads. The use of Sheep's Crossing by three bands of sheep each year for approximately three days in May will not affect the water quantity, gradient, or flow regime of the action area.***

***PCE 1b: Lentic wetlands such as livestock tanks, springs, and cienegas. Sheep's Crossing is located on the Verde River. Lentic wetlands will not be affected by the proposed action.***

***PCE 1c: Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter). Shoreline habitat will be temporarily affected as sheep are moved down the embankment, through the riparian area, and across the creek. During this movement some vegetation will likely be crushed, and rocks and organic debris such as small logs may be moved over the course of the approximately three days of use by the three bands of sheep. In addition, it is likely some grazing will occur. However, the proposed action includes moving the sheep through the crossing and not allowing them to loiter in the area on either side of the river; the effects to vegetation and organic debris will be temporary. Vegetation within active floodplains tends to be fairly resistant to short-term disturbances and we would expect that the site will recover from the use of crossing relatively quickly (within days to a few weeks).***

***PCE 1d: Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of any age class of the northern Mexican gartersnake or the maintenance of prey populations. The use of Sheep's Crossing will not result in changes to the water salinity or pH. The proposed action involves moving the sheep relatively quickly (a band per day) across the***

Verde River and then keeping them 0.25 mile from the water. We would not expect to see any changes in water quality to the site from this action.

*PCE 2: Adequate terrestrial space (600 ft. lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation (extended inactivity).* The terrestrial space adjacent to the Verde River where the sheep are crossed will maintain sufficient structural characteristics to support gartersnakes as a result of the proposed action. Sheep's Crossing is used only three days per year, sheep are kept from congregating within 0.25 mile of water, and they are moved through the crossing in an efficient manner. Habitat assessments of Sheep's Crossing do not indicate that there are long-term effects to the terrestrial habitat from over 100 years of using this site.

*PCE 3: A prey base consisting of viable populations of native amphibian and native fish species.* The use of Sheep's Crossing to move sheep across the Verde River will not affect the prey base of native amphibian or fish species.

*PCE 4: An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis*, *P. clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, nonnative fish populations (prey) is still occurring.* The use of Sheep's Crossing to move sheep across the Verde River will not affect the presence or absence of nonnative fish species at the site.

#### *Effects of the action on the role of proposed northern Mexican gartersnake critical habitat in recovery*

The current condition of the Upper Verde River subunit CHU is relatively good for northern Mexican gartersnakes. Surveys conducted by Northern Arizona University and the Arizona Game and Fish Department have located northern Mexican gartersnake populations at Dead Horse Ranch State Park, Tuzigoot National Monument (Tavasci Marsh), and the Salt River Project Camp Verde Riparian Preserve Property. In addition, gartersnakes have been located at other sites along the Verde River (including approximately 300 feet upstream of Sheep's Crossing). The presence and persistence of these snakes seems to indicate that the current condition of the proposed CHU and the PCEs, have the ability to support recovery of the northern Mexican gartersnake. This CHU, and its subunits (Upper Verde, Oak Creek, and Spring Creek), has an important functional role in recovery because it contains the northernmost locations of northern Mexican gartersnakes and supports some of the most robust populations in Arizona. The use of Sheep's Crossing will not affect the role of this proposed CHU due to the extremely small footprint of the action, both spatially (300 ft long area of the Verde River) and temporally (three days).

#### **Effects of the action on narrow-headed gartersnake proposed critical habitat**

In our analysis of the effects of the action on narrow-headed gartersnake proposed critical habitat, we consider whether or not a proposed action will result in the destruction or adverse

modification of critical habitat. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of critical habitat for the recovery of a listed species. To determine this, we analyze whether the proposed action will adversely modify any of the proposed PCEs that were the basis for determining the habitat to be critical. To determine if an action results in adverse modification of critical habitat, we must also evaluate the current condition of the critical habitat unit, and the PCEs, to determine the overall ability of the proposed critical habitat to support recovery. Further, the functional role of each of the CHUs in recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

The FWS proposed critical habitat for the narrow-headed gartersnake on July 10, 2013 (78 FR 41550). We discuss possible effects to the PCEs related to narrow-headed gartersnake proposed critical habitat (including immediately adjacent uplands) and the potential effects from use of Sheep's Crossing below. We determined that use of Sheep's Crossing may result in short-term adverse effects to the shoreline habitat PCE.

***Narrow-headed gartersnake proposed critical habitat PCEs:***

***PCE 1: Stream habitat, which includes:***

***PCE 1a: Perennial or spatially intermittent streams with sand, cobble, and boulder substrate and low or moderate amounts of fine sediment and substrate embeddedness, and that possess appropriate amounts of pool, riffle, and run habitat to sustain native fish populations. The use of Sheep's Crossing by three bands of sheep each year for approximately three days in May will not affect the water quantity, the sediment or embeddedness, or stream geomorphology (e.g., pool, riffle, run habitat).***

***PCE 1b: A natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads. The use of Sheep's Crossing will not affect the natural flow regime of the Verde River, particularly since the sheep use only an area of the river approximately 300 feet long for no more than three days in May.***

***PCE 1c: Shoreline habitat with adequate organic and inorganic structural complexity (e.g., boulders, cobble bars, vegetation, and organic debris such as downed trees or logs, debris jams), with appropriate amounts of shrub-and sapling-sized plants to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities. Shoreline habitat will be temporarily affected as sheep are moved down the embankment, through the riparian area, and across the creek. During this movement some vegetation will likely be crushed, and rocks and organic debris such as small logs may be moved over the course of the approximately three days of use by the three bands of sheep. However, the proposed action includes moving the sheep through the crossing and not allowing them to loiter in the area on either side of the river; the effects to vegetation and organic debris will be temporary. Vegetation within active floodplains tends to be fairly resistant to short-term disturbances and we would expect that the site will recover from the use of crossing relatively quickly (within weeks).***

*PCE 1d: Aquatic habitat with no pollutants or, if pollutants are present, levels that do not affect survival of any age class of the narrow-headed gartersnake or the maintenance of prey populations. The use of Sheep's Crossing will not result in an increase or change in the levels of pollutants that may/may not be present in Verde River at this location.*

*PCE 2: Adequate terrestrial space (600 ft., 182.9 m) lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation. The terrestrial space adjacent to the Verde River where the sheep are crossed will maintain sufficient structural characteristics to support gartersnakes as a result of the proposed action. Sheep's Crossing is used only three days per year, sheep are kept from congregating within 0.25 mile of water, and are moved through the crossing in an efficient manner. Habitat assessments of Sheep's Crossing do not indicate that there are long-term effects to the terrestrial habitat from over 100 years of using this site.*

*PCE 3: A prey base consisting of viable populations of native fish species or soft-rayed nonnative fish species. The use of Sheep's Crossing to move sheep across the Verde River will not affect the prey base of native amphibian or fish species.*

*PCE 4: An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs (*Lithobates catesbeianus*), and/or crayfish (*O. virilis*, *Procambarus clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of narrow-headed gartersnakes and maintenance of viable native fish or soft-rayed nonnative fish populations (prey) is still occurring. The use of Sheep's Crossing to move sheep across the Verde River will not affect the presence or absence of nonnative fish species at the site.*

*Effects of the action on the role of proposed narrow-headed gartersnake critical habitat in recovery*

The current condition of the Verde River Subbasin CHU is relatively good for narrow-headed gartersnakes, especially relative to other CHUs in Arizona. There are three subunits within this CHU – Verde River, Oak Creek, and West Fork Oak Creek – and these are of critical functional importance to the recovery of the species. Oak Creek and West Fork Oak Creek currently support one the most viable narrow-headed gartersnake populations throughout its range. Fewer surveys for narrow-headed gartersnakes have been conducted within the Verde River subunit, which seems to support more northern Mexican gartersnakes. However, the presence and persistence of narrow-headed gartersnakes within the proposed Verde River Subbasin CHU seems to indicate that the current condition of the CHU, and the PCEs, have the ability to support recovery of the narrow-headed gartersnake. The use of Sheep's Crossing will not affect the role of this Subbasin or Subunit of proposed CHU due to the extremely small footprint of the action, both spatially (300 ft long area of the Verde River) and temporally (three days).

**Effect of the action on yellow-billed cuckoo**

The sheep are driven across the Verde River in early to mid-May as described above. Cuckoos in Arizona occasionally arrive as early as mid-May, but in northern Arizona arrival is likely in later May or early June. Sheep use of the driveway across the Verde River could result in aural and visual disturbance to cuckoos (if they are present) as well as direct effects to habitat through grazing and trampling.

Sheep cross Dry Beaver Creek upstream of the Stagestop Enclosure (which supports the best riparian habitat and excludes the portion of Dry Beaver Creek that has perennial water). However, surveys for cuckoos upstream of the Stagestop Enclosure have detected cuckoos in past years. Sheep use of the driveway across Dry Beaver Creek could result in short-term disturbance to cuckoos and possible effects to habitat through grazing and trampling. However, the sheep are present for only a limited amount of time and habitat effects are temporary.

On the Prescott National Forest, unsurveyed proposed critical habitat occurs within the sheep driveway along a short, ephemeral portion of Ash Creek. Although this portion of Ash Creek is ephemeral, there is overstory riparian canopy. Cuckoos are known to nest further downstream on the Aqua Fria National Monument where flows are perennial. Sheep use of the driveway across Ash Creek could result in noise disturbance to breeding cuckoos, should they occur, and direct effects to nesting habitat through grazing and trampling.

**CUMULATIVE EFFECTS**

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

**Gila Chub**

Future non-Federal actions within the project area at Red Tank Draw are unlikely as the area is managed exclusively by the Coconino National Forest. However, private land on the lower end of Walker Creek likely results in both the largest adverse effect and the greatest benefit to Gila chub in Walker Creek. The use of the legal water diversion results in the drying of Walker Creek below NFS lands, but also likely helps to keep nonnative fishes from invading the occupied habitat.

**Roundtail chub, northern Mexican gartersnake, narrow-headed gartersnakes, and yellow-billed cuckoo**

State Trust lands in the Verde Valley occur near and adjacent to the Verde River, Oak Creek, and Spring Creek. In terms of livestock grazing, livestock on the Windmill and Windmill West Range Allotments use State Trust lands. There may be some upland critical habitat on these State Trust lands, and activities may disturb gartersnakes and their habitat. Other State lands include the Bubbling Pond and Page Spring Fish Hatcheries, Slide Rock State Park, Red Rock

State Park, Dead Horse Ranch State Park, and Rockin' R property recently acquired by Arizona State Parks as part of the Verde River Greenway. Activities on these State lands could result in disturbance to gartersnakes and their habitat, but these lands are actively managed and there are some protections in place for these species at these sites. For example:

- The Oak Creek Watershed Council and Oak Creek Ambassadors are working to improve water quality on Oak Creek.
- The Friends of the Verde River Greenway are working to restore riparian habitat along the Verde River and to enhance and protect Verde River flows.
- The Verde Front is a collaborative partnership of public land managers and local communities working to protect the Verde River, while providing recreational access and tourism.
- The Nature Conservancy has acquired several large properties, which has resulted in habitat protection for native aquatic species.

Private land is abundant in the Verde Valley, and various activities may occur that could affect gartersnakes and their proposed critical habitat. Some upcoming housing developments we know of in or near riparian habitats and perennial waters include Tobias/Flynn on Oak Creek, Mystic Heights (Chavez Ranch Road) on Oak Creek, Soda Springs on Beaver Creek, the new Camp Verde hospital and archeology center near the Verde River, and possibly a subdivision on Spring Creek. Development can result in disturbance and loss of and/or fragmentation of habitat.

## **CONCLUSION**

This biological opinion relies on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02, as revised on February 11, 2016 (81 FR 7214), to complete the following analysis with respect to critical habitat.

### **Gila Chub**

After reviewing the current status of the Gila chub, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that ongoing use of the Apache Maid and Beaver Creek Range allotments will not jeopardize the continued existence of the Gila chub. We base our conclusion on the following:

- The project area includes occupied Gila chub habitat. However, the proposed action will occur within a very small area that includes no chub habitat and is typically dry. The use of Red Tank Draw on the Apache Maid Range Allotment will not result in population level impacts to Gila chub in Red Tank Draw.
- The ongoing action will not affect the long-term suitability of Gila chub habitat in Walker Creek or Red Tank Draw, or the chub's ability to use these drainages.

**Roundtail Chub**

After reviewing the current status of the roundtail chub, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that ongoing use of the Beaverhead-Grief Sheep Driveway will not jeopardize the continued existence of the roundtail chub. We base our conclusion on the following:

- The ongoing action will not affect the long-term suitability of roundtail chub habitat or the chub's ability to use this section of the Verde River.

**Northern Mexican gartersnake and proposed critical habitat**

After reviewing the current status of the northern Mexican gartersnake and its proposed critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that ongoing use of the Beaverhead-Grief Sheep Driveway will not jeopardize the continued existence of the northern Mexican gartersnake, and will not destroy or adversely modify its proposed critical habitat. We base our conclusion on the following:

- The project vicinity is likely occupied by northern Mexican gartersnakes. However, the proposed action will occur within a very small area that includes habitat and previously disturbed areas. Although a small number of individual gartersnakes could be affected by the ongoing use of Sheep's Crossing, this project will not result in population level impacts to northern Mexican gartersnakes within the Verde River Watershed.
- The ongoing action will not affect the long-term suitability of northern Mexican gartersnake habitat or the gartersnake's ability to use this section of the Verde River.
- Based on the discussion provided in the "Effects to Northern Mexican Gartersnake Critical Habitat" section above, the Verde River Subbasin critical habitat unit, which will be affected by ongoing use of Sheep's Crossing on the Beaverhead-Grief Hill Sheep Driveway, will continue to serve the function and conservation role of critical habitat for the northern Mexican gartersnake.

**Narrow-headed gartersnake proposed critical habitat**

After reviewing the current status of narrow-headed gartersnake proposed critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that ongoing use of the Beaverhead-Grief Sheep Driveway will not destroy or adversely modify its proposed critical habitat. We base our conclusion on the following:

- The proposed Verde River Subbasin critical habitat unit, which will be affected by ongoing use of Sheep's Crossing on the Beaverhead-Grief Hill Sheep Driveway, will continue to serve the function and conservation role of critical habitat for the narrow-headed gartersnake.

### **Yellow-billed cuckoo**

After reviewing the current status of the yellow-billed cuckoo, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that ongoing use of the Beaverhead-Grief Sheep Driveway will not jeopardize the continued existence of the yellow-billed cuckoo. We base our conclusion on the following:

- The effects to yellow-billed cuckoo habitat from the use of Sheep's Crossing on the Beaverhead-Grief Hill Driveway is not resulting in habitat loss or degradation of the riparian area, nor is it resulting in declines in the structural richness of the vegetative community, change to the understory vegetation community, a reduction in habitat connectivity, or a reduction in habitat patchiness. Therefore, the ongoing action will not affect the long-term suitability of yellow-billed cuckoo habitat.
- The ongoing action will result in disturbance for a very short amount of time and will not affect the yellow-billed cuckoo's ability to use the area for breeding.

The conclusions of this BO are based on full implementation of the project as summarized in the "Description of the Proposed Action" section of this document, including the standards and guidelines that apply to the action and serve as conservation measures that were incorporated into the project design.

### **INCIDENTAL TAKE STATEMENT**

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

### **Amount or Extent of Take Anticipated**

The FWS does not anticipate the proposed action will incidentally take any Gila chub, roundtail chub, northern Mexican gartersnake, or the yellow-billed cuckoo for the following reasons:

1. Gila chub are not likely to be present in Red Tank Draw where the livestock cross. The reach is typically dry and even when it has some water during the crossing, it does not

- contain the pool habitat preferred by chub. Livestock do have access to a water gap on Walker Creek where Gila chub are also present. However, the access is limited to a 200-ft area and it is extremely unlikely that livestock would wade deep enough in the water at this site to trample or disturb fish.
2. Roundtail chub could be present at Sheep's Crossing on the Verde River. However, the habitat at the crossing is not the deeper, pool habitat frequently selected by chub or the edge habitat used by juvenile or young-of-year fish. Therefore, we do not think that chub would be schooling in the crossing area which would make it very unlikely that a chub could be trampled by sheep as they cross the river.
  3. Northern Mexican gartersnakes are likely present in the vicinity of the crossing. However, we do not think that gartersnakes will be trampled by the sheep as they cross the river at this location because based upon recent research in the area (Emmons and Nowak 2016) surface active northern Mexican gartersnakes are very unlikely to be concealed underwater at the time of year when the sheep cross. In addition, the path the sheep use to approach the crossing includes mostly open, bare ground (no hiding cover for gartersnakes) and the sheep will move through the historic crossing and up the road on the opposite side within the riparian vegetation in relatively small groups. Potential habitat effects to the area (such as trampling of herbaceous material) will be short-term and habitat evaluations by the Forest Service indicate that the crossing area is in proper functioning condition.
  4. Yellow-billed cuckoo are not likely to be breeding in early- to mid-May in the Verde Valley when Sheep's and the Dry Beaver Creek crossings are used, so there is little potential for breeding birds to be disturbed. In addition, these crossings have been used for many years and breeding cuckoos continue to be detected at Stagestop Exclosure, and have been newly detected at Sheep's crossing, which indicates that this habitat has not been degraded by the use of the crossings.

### **Disposition of Dead or Injured Listed Species**

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 4901 Paseo del Norte NE, Suite D, Albuquerque, NM 87113; 505-248-7889) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve the biological material in the best possible state.

### **CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to

minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that the Forest Service continue to work with the FWS and the Arizona Game and Fish Department to better understand northern Mexican gartersnake, narrow-headed gartersnake, and yellow-billed cuckoo habitat use and behavior on the Verde River and its tributaries.

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

### REINITIATION NOTICE

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

We appreciate the Forest Service's efforts to identify and minimize effects to listed species from this project. We also encourage you to coordinate the review of this project with the Arizona Game and Fish Department. For further information please contact Shaula Hedwall (928-556-2118) or Brenda Smith (928-556-2157). Please refer to the consultation number, 02EAAZ00-2016-F-0341, in future correspondence concerning this project.

Sincerely,



Steven L. Spangle  
Field Supervisor

cc (electronic):

Chief, Terrestrial Branch, Arizona Game and Fish Department, Phoenix, AZ  
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ  
Forest Supervisor, Prescott National Forest, Prescott, AZ  
Forest Supervisor, Kaibab National Forest, Williams, AZ

District Ranger, Flagstaff Ranger District, Coconino National Forest, Flagstaff, AZ  
District Ranger, Red Rock Ranger District, Coconino National Forest, Flagstaff, AZ  
District Ranger, Williams Ranger District, Williams, AZ  
Forest Biologist, Coconino National Forest, Flagstaff, AZ  
District Biologist, Flagstaff Ranger District, Coconino National Forest, Flagstaff, AZ  
District Biologist, Red Rock Ranger District, Coconino National Forest, Sedona, AZ  
District Biologist, Williams Ranger District, Kaibab National Forest, Williams, AZ  
Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ  
(Attn: Jeff Servoss, Susan Sferra)  
Field Supervisor, Fish and Wildlife Service, Phoenix, AZ (Attn: Ryan Gordon)

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## APPENDIX A – CONCURRENCES

This appendix contains our concurrences with your “may affect, not likely to adversely affect” determinations for the threatened northern Mexican gartersnake (*Thamnophis eques megalops*) and its proposed critical habitat, the threatened narrow-headed gartersnake (*Thamnophis rufipunctatus*) and its proposed critical habitat, the threatened yellow-billed cuckoo (*Coccyzus americanus*) and its proposed critical habitat, the endangered Gila chub (*Gila intermedia*) and its designated habitat, the proposed threatened roundtail chub (*Gila robusta*) and the proposed threatened headwater chub (*Gila nigra*). The concurrences are arranged by grazing allotment.

### 13 Mile Rock Range Allotment

#### Northern Mexican gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened northern Mexican gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where suitable and critical habitats are present, are determined to be insignificant or discountable. There is no authorized access to the Verde River (the area is fenced). Livestock do have access to potential shedding and hibernating habitat in the Wingfield East and West Pastures. However, the livestock management on the 13 Mile Rock Range Allotment is designed to protect both riparian and upland habitats that the northern Mexican gartersnake is dependent upon.
- Proposed livestock management activities, within the action area, will not increase the likelihood that bullfrogs, non-native fish, or crayfish will colonize, be introduced, or improve their status as a result of activities occurring in such aquatic sites within northern Mexican gartersnake habitat or proposed critical habitat.

#### Narrow-headed gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened narrow-headed gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where suitable and critical habitats are present, are determined to be insignificant or discountable. There is no authorized access to the Verde River (the area is fenced). Livestock do have access to potential shedding and hibernating habitat in the Wingfield East and West Pastures. However, the livestock management on the 13 Mile Rock Range Allotment is designed to protect both riparian and upland habitats that the narrow-headed gartersnake is dependent upon.

### Yellow-billed cuckoo and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened yellow-billed cuckoo and its proposed critical habitat. We base this concurrence on the following:

- Ongoing livestock management on the 13 Mile Rock Range Allotment will not measurably or detectably reduce the suitability or regeneration of western yellow-billed cuckoo habitat in the Wingfield West and Heifer Pastures as livestock do not have access to riparian habitat in these areas.
- Ongoing livestock grazing on the 13 Mile Rock Range Allotment is consistent with or is more conservative than the descriptions provided in Table 2, Appendix G of the 2002 USFWS Southwestern Willow Flycatcher Final Recovery Plan. The guidelines for the southwestern willow flycatcher are used as a surrogate for the western yellow-billed cuckoo until such guidelines are developed for this species.

### Roundtail chub

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the proposed threatened roundtail chub. We base this concurrence on the following:

- Best management practices will be implemented to minimize potential sedimentation from project activities to aquatic habitats. Therefore, the potential increase in sedimentation as a result of implementing ongoing livestock grazing and management activities on West Clear Creek and the Verde River are likely to be minor, and therefore, insignificant and discountable to the roundtail chub and its habitat.
- There is no authorized access to the Verde River by livestock on the 13 Mile Rock Range Allotment, so there should be no direct effects to roundtail chub.
- There are two water gaps that allow livestock access to drink water from West Clear Creek, one is located in the Heifer Pasture and one is located in the Winter Pasture. Livestock will only have access to these two water gaps for a limited time each year; therefore, direct effects to roundtail chub from the ongoing action will be insignificant and discountable.

### **Apache Maid Range Allotment**

#### Northern Mexican gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened northern Mexican gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where suitable and critical habitats are present, are determined to be insignificant or discountable. There is no authorized access to Oak Creek (the area is fenced) and livestock grazing does not occur in riparian habitat on the Apache Maid Allotment. Livestock do have access to potential shedding and hibernating habitat in the Middle Verde Pasture. However, the livestock management on the Apache Maid Range Allotment is designed to protect both riparian and upland habitats that the northern Mexican gartersnake is dependent upon.
- Proposed livestock management activities, within the action area, will not increase the likelihood that bullfrogs, non-native fish, or crayfish will colonize, be introduced, or improve their status as a result of activities occurring in such aquatic sites within northern Mexican gartersnake habitat or proposed critical habitat.

#### Narrow-headed gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened narrow-headed gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where suitable and critical habitats are present, are determined to be insignificant or discountable. There is no authorized access to Oak Creek (the area is fenced) and livestock grazing does not occur in riparian habitat on the Apache Maid Allotment. Livestock do have access to potential shedding and hibernating habitat in the Middle Verde Pasture. However, the livestock management on the Apache Maid Range Allotment is designed to protect both riparian and upland habitats that the narrow-headed gartersnake is dependent upon.

#### Yellow-billed cuckoo and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened yellow-billed cuckoo and its proposed critical habitat. We base this concurrence on the following:

- Ongoing livestock management on the Apache Maid Range Allotment will not measurably or detectably reduce the suitability or regeneration of western yellow-billed cuckoo habitat in Red Tank Draw or in the Winter North and Winter South Pastures. Livestock are present for only a few days as they are trailed through Red Tank Draw; known occupied cuckoo habitat in the Winter North Pasture is excluded (Stagestop Exclosure) from livestock use; and, the Winter South Pasture is only used in the winter and spring (outside the breeding season).
- Ongoing livestock grazing on the Apache Maid Allotment is consistent with or is more conservative than the descriptions provided in Table 2, Appendix G of the 2002 USFWS Southwestern Willow Flycatcher Final Recovery Plan. The guidelines for the southwestern willow flycatcher are used as a surrogate for the western yellow-billed cuckoo until such guidelines are developed for this species.

### Gila chub critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect Gila chub critical habitat. We base this concurrence on the following:

- The crossing area in Red Tank Draw where the livestock are trailed through Gila Chub critical habitat is extremely rocky (small to large boulder-sized material) and often dry. Training livestock at this site will result in insignificant and discountable effects to the primary constituent elements of Gila chub critical habitat. The crossing will not result in measurable effects to pool habitat, water temperature, water quality, food base, cover, the presence of non-native aquatic species, or the natural hydrograph because the act of livestock crossing at the typically dry, rocky site will not modify these primary constituent elements of Gila chub habitat because the elements are either not present (e.g., pool habitat, water temperature, water quality, cover) at the crossing site or would not be affected (e.g., food base, presence of non-native aquatic species, natural hydrograph) by livestock crossing at this location.

### **Beaver Creek Range Allotment**

#### Yellow-billed cuckoo and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened yellow-billed cuckoo and its proposed critical habitat. We base this concurrence on the following:

- Ongoing livestock management on the Beaver Creek Range Allotment will not measurably or detectably reduce the suitability or regeneration of western yellow-billed cuckoo habitat on Walker Creek, Red Tank Draw, or Wet Beaver Creek.
- Ongoing livestock grazing on the Beaver Creek Range Allotment is consistent with or is more conservative than the descriptions provided in Table 2, Appendix G of the 2002 USFWS Southwestern Willow Flycatcher Final Recovery Plan. The guidelines for the southwestern willow flycatcher are used as a surrogate for the western yellow-billed cuckoo until such guidelines are developed for this species.

#### Roundtail chub

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the proposed threatened roundtail chub. We base this concurrence on the following:

- Best management practices will be implemented to minimize potential sedimentation from project activities to aquatic habitats. Therefore, the potential increase in sedimentation as a result of implementing ongoing livestock grazing and management activities near Wet Beaver Creek are likely to be minor, and therefore, insignificant and discountable to the roundtail chub and its habitat.

Gila chub designated critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect Gila chub critical habitat. We base this concurrence on the following:

- The effects of ongoing livestock grazing will result in insignificant and discountable effects to the PCEs of Gila chub critical habitat. There is no livestock access to critical habitat within the Valley South pasture. Best management practices will be implemented to ensure that livestock grazing will not result in measurable effects to the PCEs of Gila chub critical habitat (pool habitat, water temperature, water quality, food base, cover, the presence of non-native aquatic species, or the natural hydrograph) throughout the rest of the allotment.

**Fossil Creek Range Allotment**

Northern Mexican gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but will not likely adversely affect, the northern Mexican gartersnake in Fossil Creek. We base this concurrence on the following:

- Indirect effects occurring within the action area, where potential habitat or critical habitat is present, are determined to be insignificant or discountable. Livestock grazing does not occur in riparian habitat on the Fossil Creek Allotment, but does occur in upland habitat where the species could occur and within proposed critical habitat. However, the livestock management on the Fossil Creek Range Allotment is designed to protect both riparian and upland habitats that the northern Mexican gartersnake is dependent upon. Efforts to reduce soil erosion and minimize impacts to gartersnake habitat in and adjacent to Fossil Creek will result in insignificant and discountable effects to the gartersnake and its habitat.
- Proposed livestock management activities, within the action area, will not increase the likelihood that bullfrogs, non-native fish, or crayfish will colonize, be introduced, or improve their status as a result of activities occurring in such aquatic sites within northern Mexican gartersnake habitat or proposed critical habitat.

Narrow-headed gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened narrow-headed gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where potential habitat or critical habitat is present, are determined to be insignificant or discountable. Livestock grazing does not occur in riparian habitat on the Fossil Creek Allotment, but does occur in upland habitat where the species could occur and within proposed critical habitat. However, the

livestock management on the Fossil Creek Range Allotment is designed to protect both riparian and upland habitats that narrow-headed gartersnake is dependent upon. Efforts to reduce soil erosion and minimize impacts to gartersnake habitat in and adjacent to Fossil Creek will result in insignificant and discountable effects to the gartersnake and its habitat.

#### Roundtail and headwater chubs

We concur with your determination that the proposed action may affect, but will not likely adversely affect, the proposed threatened roundtail or headwater chub in Fossil Creek. We base this concurrence on the following:

- Livestock will have only one access point to Fossil Creek (Boulder Water Gap) for a limited time each year; therefore, direct effects to roundtail and headwater chub from the proposed action will be insignificant and discountable.
- Conservation measures and best management practices will be implemented to minimize potential sedimentation from project activities to aquatic habitats. Therefore, the increase in sedimentation as a result of implementing ongoing livestock grazing and management activities to Fossil Creek is likely to be minor, and therefore, insignificant and discountable to these species' habitats.

#### **Hackberry Range Allotment**

##### Northern Mexican gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened northern Mexican gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where critical habitat is present, are determined to be insignificant or discountable. Livestock grazing does not occur in riparian habitat on the Hackberry Allotment, but does occur in upland habitat where the species could occur and within proposed critical habitat. However, the livestock management on the Hackberry Range Allotment is designed to protect both riparian and upland habitats that the northern Mexican gartersnake is dependent upon. Efforts to reduce soil erosion and minimize impacts to gartersnake habitat in and adjacent to the Verde River will result in insignificant and discountable effects to the gartersnake and its habitat.
- Proposed livestock management activities, within the action area, will not increase the likelihood that bullfrogs, non-native fish, or crayfish will colonize, be introduced, or improve their status as a result of activities occurring in such aquatic sites within northern Mexican gartersnake habitat or proposed critical habitat.

Narrow-headed gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened narrow-headed gartersnake and its proposed critical habitat. We base this concurrence on the following:

- Indirect effects occurring within the action area, where critical habitat is present, are determined to be insignificant or discountable. Livestock grazing does not occur in riparian habitat on the Hackberry Allotment, but does occur in upland habitat where the species could occur and within proposed critical habitat. However, the livestock management on the Hackberry Range Allotment is designed to protect both riparian and upland habitats that the narrow-headed gartersnake is dependent upon. Efforts to reduce soil erosion and minimize impacts to gartersnake habitat in and adjacent to the Verde River will result in insignificant and discountable effects to the gartersnake and its habitat.

**Windmill Range Allotment**

Northern Mexican gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened northern Mexican gartersnake and its proposed critical habitat. We base this concurrence on the following:

- There will be no livestock use or livestock management activities where the species is reasonably certain to occur or where there is occupied habitat. On the Windmill Range Allotment, two exclosures contain 70 acres of proposed critical habitat along Spring Creek. There is no livestock grazing within these two exclosures, which include upland shedding and brumation habitat. In addition, livestock have no authorized access to Oak Creek, Spring Creek, or the Verde River in House, State, and Sheepshead pastures. The White Flat pasture is the only pasture on the allotment with access to Oak and Spring Creek, however, this pasture has been and is in non-use and will not be authorized as part of this consultation (waiting on future NEPA).
- Indirect effects occurring within the action area, where the northern Mexican gartersnake is reasonably certain to occur and which may result from upland livestock grazing are determined to be insignificant or discountable. That is, there is no measurable adverse effect to the species or its habitat or effects are extremely unlikely to occur.
- Proposed livestock management activities, within the action area, will not increase the likelihood that bullfrogs, non-native, spiny-rayed fish, brown trout, or crayfish will colonize, be introduced, or improve their status as a result of activities occurring in such aquatic sites.

Narrow-headed gartersnake and its proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened narrow-headed gartersnake and its proposed critical habitat. We base this concurrence on the following:

- There will be no livestock use or livestock management activities where the species is reasonably certain to occur or where there is occupied habitat.
- Indirect effects occurring within the action area, where the narrow-headed gartersnake is reasonably certain to occur and which may result from upland livestock grazing are determined to be insignificant or discountable. That is, there is no measurable adverse effect to the species or its habitat or effects are extremely unlikely to occur.
- Proposed livestock management activities, within the action area, will not increase the likelihood that bullfrogs, non-native, spiny-rayed fish, brown trout, or crayfish will colonize, be introduced, or improve their status as a result of activities occurring in such aquatic sites.

**Beaverhead-Grief Hill Sheep Driveway**

Yellow-billed cuckoo proposed critical habitat

We concur with your determination that the proposed action may affect, but is not likely to adversely affect the threatened yellow-billed cuckoo and its proposed critical habitat. We base this concurrence on the following:

- Grazing activities in the action area do not measurably or detectably reduce quality or quantity of any primary constituent element of western yellow-billed cuckoo proposed or designated critical habitat.
- Indirect effects resulting from livestock grazing on the allotment are determined to be insignificant or discountable to the primary constituent elements of western yellow-billed cuckoo proposed or designated critical habitat. The Forest Service has determined that the Verde River at Sheep's Crossing is in proper functioning condition.
- Livestock grazing is consistent with or more conservative than the descriptions provided in Table 2, Appendix G of the 2002 USFWS Southwestern Willow Flycatcher Final Recovery Plan (Appendix A). The guidelines for the southwestern willow flycatcher are used as a surrogate for the western yellow-billed cuckoo until such guidelines are developed for this species.