Biological Assessment

Lower Verde Subbasin Grazing Allotments

United States Department of Agriculture Forest Service

Southwestern Region

Submitted September 2022

Updated through October 2024

Bull Springs

Cedar Bench

Deadman Mesa

Pole Hollow

Payson Ranger District, Tonto National Forest
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INTRODUCTION

We continue to authorize livestock grazing on Cedar Bench and Pole Hollow allotments; and re-authorize grazing on Bull Springs and Deadman Mesa allotments, hereafter referred to as Lower Verde Subbasin Allotments (LVSA) located on Payson Ranger District. Our action includes authorization, range improvements, conservation measures, adaptive management, and monitoring.

The purpose of this biological assessment (BA) is to determine to what extent the action may affect threatened, endangered, or proposed species and critical habitat present in LVSA. Consultation coverage for the action is for 15 years or until new species listings within the area require consultation. This BA is prepared in accordance with legal requirements set forth under Section 7 of the ESA (16 U.S.C. 1536) and follows standards established in Forest Service (FS) Manual Direction (USDA 2005 - FSM 2672.4-2672.43).

Threatened, Endangered, Proposed, and Candidate Species

Species occurrence records from TNF, Arizona Game and Fish Department (AGFD) databases and Environment Review Tool, and U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) decision support system (Project Code 2022-0002114) were used to identify federally listed species which may occur or have suitable habitat within the analysis area. Coordination with USFWS species and geographic leads also contributed to the likelihood species occur in the area. Table 1 includes species and designated critical habitat considered and analyzed in detail. Species with federal listing status but excluded from further evaluation are addressed in Table 2.

Table 1. Species and Designated Critical Habitat Included in Detailed Analysis

Common Name	Species	Status	Allotment	Determination[1]
Yellow-billed cuckoo (western distinct population segment)	*Coccyzus americanus*	LT, DCH	Bull Springs	MALAA
			Cedar Bench	MANLAA
			Deadman Mesa	NE
			Pole Hollow	MALAA
Mexican spotted owl and designated critical habitat	*Strix occidentalis lucida*	LT, DCH	Bull Springs	NE
			Cedar Bench	MANLAA
			Deadman Mesa	NE
			Pole Hollow	MANLAA
Gila topminnow	*Poeciliopsis occidentalis*	LE	Bull Springs	NE
			Cedar Bench	MANLAA
			Deadman Mesa	NE
			Pole Hollow	NE
Spikedace and designated critical	*Meda fulgida*	LE, DCH	Bull Springs	NE

[1] NE = No Effect; MANLAA = May Effect, Not Likely to Adversely Affect; MALAA = May Affect, Likely to Adversely Affect

habitat			Cedar Bench	MANLAA
			Deadman Mesa	NE
			Pole Hollow	NE
Loach minnow designated critical habitat	*Rhinichthys cobitis*	LE, DCH	Bull Spring	NE
			Cedar Bench	MANLAA
			Deadman Mesa	NE
			Pole Hollow	NE
Razorback sucker and designated critical habitat	*Xyrauchen texanus*	LE, DCH	Bull Spring	NE
			Cedar Bench	MANLAA
			Deadman Mesa	NE
			Pole Hollow	NE
Mexican Wolf	*Canis lupus baileyi*	LE, XN	Requesting Conference within LVSA	

Table 2. Species Excluded from Detailed Analysis

Common Name	Species	Status	Exclusion Justification
Southwestern willow flycatcher and designated critical habitat	*Empidonax traillii*	LE, DHC	Southwestern willow flycatcher is not known to occur in the analysis area and suitable habitat is lacking. In LVSA, riparian habitat with surface water or underlain by saturated soil includes East Verde River from the Verde River confluence to Gowan Mine and 0.8-mile of Fossil Creek above the Verde River confluence. Table 10 of the species' recovery plan identified stream reaches with substantial recovery values where recovery efforts should be focused because of current or potential suitable habitat; East Verde River and Fossil Creek were excluded from this table (USFWS 2002a). The higher stream gradient reaches of East Verde River and Fossil Creek in LVSA lack the wide floodplains and dense broad understory desirable to southwestern willow flycatchers. The 2020 habitat model used to predict breeding habitat across the entire range of the flycatcher in the U.S. supports this by identifying only small non-continuous patches less than 14 acres of "low suitable habitat" (Hatten and Paradzick, 2003, 2010). It is unlikely riparian habitat in LVSA could support flycatchers and for these reasons, the species is not reasonably certain to occur (G. Beatty, personal communication, 02/22/2022). Designated critical habitat is not in the analysis area and downstream consequences to physical and biological features are not expected for the following

			reasons: 1) River Pasture on Cedar Bench Allotment will not be grazed under the proposed action, 2) of the ~1,500 acres of Lower Plow Beam pasture on Cedar Bench Allotment shared with Green Gap – Verde River or Lower Fossil Creek hydrologic units, only 612 acres are considered suitable for grazing because of steep terrain, and 3) although 612 acres is accessible to livestock, this area receives low utilization. In the past, when cattle have used this area, it has typically been between 6-15 animals for no more than two months a year.
Loach minnow	*Tiaroga cobitis*	LE	Absent from the analysis. Stocking efforts from 2007 to 2013 to Fossil Creek by AGFD and USFWS have failed, and the creek is considered unoccupied.
Chiricahua leopard frog and Designated Critical Habitat	(*Lithobates [Rana] chiricahuensis*)	LT, DCH	Absent from analysis area. Occupied sites in Buckskin Hills Management Area (MA) are over 2.6 miles northeast of Deadman Mesa Allotment. Occupied sites in Upper Verde MA are over 13.8 miles from Cedar Bench Allotment. Designated critical habitat is 2.8 miles from LVSA.
Western Yellow-billed cuckoo designated critical habitat		LT DCH	Absent from analysis area. Nearest designated critical habitat is located two-tenths mile west of Cedar Bench Allotment along Verde River. Downstream consequences to physical and biological features are not expected because River Pasture will be excluded from grazing.
Northern Mexican gartersnake	*Thamnophis eques*	LT	AGFD, FS, and FWS biologists have conducted numerous herpetological surveys along Fossil Creek, from the springs downstream to Mazatzal Wilderness boundary over many years. Surveys, both formal and informal, have not detected any northern Mexican gartersnakes and we are not aware or any historical records. The nearest detections of northern Mexican gartersnakes are from along the Verde River and its tributaries, including its confluence with Oak Creek and Houston Creek, XXX miles from the project area.
Woundfin	*Plagopterus argentissimus*	LE, XN	Absent from analysis area. The single extant population of woundfin is in the Virgin River Watershed (Sky Hedden, personal communication 04/18/2023).
Colorado pikeminnow	*Ptychoeilus lucius*	LE	Absent from the analysis area. Surveys from stocking efforts to Verde River by AGFD and/or USFWS show pikeminnow do not persist more than a few months post stocking (USFWS 2020b). Future stocking is not planned.

Table 3. Species Occurrence and Acres of Designated Critical Habitat by Allotment

Allotment	Species Present or Reasonably Likely to Occur	Miles of Spikedace Critical Habitat	Miles of Loach Minnow Critical Habitat	Acres of Mexican Spotted Owl Critical Habitat	Acres of Mexican Spotted Owl Recovery Habitat	Notes
Bullsprings		0	0	0	48	
	Western yellow-billed cuckoo (confirmed probable breeding territory)					In 2021, we discovered yellow-billed cuckoos during the breeding season near Doll Baby Ranch along East Verde River on Bull Springs Allotment. Data from protocol surveys resulted in confirmation of a probable breeding territory. Preliminary data from surveys in 2022 show the site is occupied including the lower reach of Pine Creek above the East Verde River confluence. Mapped suitable habitat in the allotment can be found on Bullsprings, Brush Corral, West River, Oak Grove, and Bullfrog Pasture and Belluzzi and Pocket holding traps.
Cedar Bench		0.8	0.8	70	0	
	Western yellow-billed cuckoo (potential marginal habitat)					Mapped suitable habitat in the allotment can be found on River and Lower Plow Beam pastures. We proposed to exclude grazing River Pasture and livestock will only have access to Lower Plow Beam Pasture outside the cuckoo breeding season.
	Gila topminnow					Populations of Gila topminnow are not established in lower Fossil Creek along Cedar Bench Allotment. In the unlikely event Gila topminnow upstream of Fossil Creek fish barrier move downstream, it is possible for individual fish to be impacted by the proposed action because livestock will have access to 0.8-mile of Fossil Creek at its confluence with Verde River.

	Spikedace					Populations of spikedace are not established in lower Fossil Creek along Cedar Bench Allotment. In the unlikely event spikedace upstream of Fossil Creek fish barrier move downstream, it is possible for individuals to be impacted by the proposed action because livestock will have access to 0.8-mile of Fossil Creek at its confluence with Verde River.
	Razorback sucker					Verde River is outside LVSAs but downstream consequences from the action to the species and its designated critical habitat may occur. Razorback suckers historically occupied Verde River and recovery efforts by AGFD and USFWS starting in 1981 have included reintroductions; the most recent being 773 suckers to Beasley Flats in 2020. Despite reintroductions, partners in recovery have not been successful in establishing self-sustaining populations in Verde River (USFWS 2021) but because of recent stocking efforts and ability to persist for some time post stocking, we acknowledge that razorback suckers may occupy reaches of Verde River adjacent Cedar Bench Allotment in low numbers.
	Mexican spotted owl					Three acres of North Frost Deadman MSO PAC intersects the northeastern edge of Cedar Bench Allotment.
Deadman Mesa		0	0	0	0	
	Gila topminnow					Upper Fossil Creek, Lower Fossil Creek, and Lower Mesa pastures border Fossil Creek. Under the proposed action, Upper and Lower Fossil Creek pastures, which provide access to Fossil Creek, will not be grazed. Livestock permitted to graze Lower Mesa pasture cannot access Fossil Creek because of steep terrain and proposed construction of a drift fence on the southern edge of Deadman Mesa; these measures exclude grazing from 13 miles of Fossil Creek. Therefore, the proposed action will have no effect to established populations of Gila topminnow occupying Fossil Creek along Deadman Mesa Allotment.

	Spikedace					Upper Fossil Creek, Lower Fossil Creek, and Lower Mesa pastures border Fossil Creek. Under the proposed action, Upper and Lower Fossil Creek pastures, which provide access to Fossil Creek, will not be grazed. Livestock permitted to graze Lower Mesa pasture cannot access Fossil Creek because of steep terrain and proposed construction of a drift fence on the southern edge of Deadman Mesa; these measures exclude grazing from 13 miles of Fossil Creek Therefore, the proposed action will have no effect to established populations of spikedace occupying Fossil Creek along Deadman Mesa Allotment.
	Western yellow-billed cuckoo (incidental observations)					In 2019 and 2020, AGFD reported yellow-billed cuckoo in Fossil Creek along Deadman Mesa Allotment. Mapped suitable habitat can be found on Lower Mesa and Upper Fossil Creek pastures. Under the proposed action, Upper and Lower Fossil Creek pastures, which provide access to Fossil Creek, will not be grazed. Livestock permitted to graze Lower Mesa pasture cannot access Fossil Creek because of steep terrain will not be grazed; these measures exclude grazing from 13 miles of Fossil Creek. Therefore, the proposed action will have no effect yellow-billed cuckoo along Fossil Creek along Deadman Mesa Allotment.
Pole Hollow		0	0	6,880	244	
	Mexican spotted owl					Eighty-eight acres of North Frost Deadman MSO PAC intersects the southern edge of Pole Hollow Allotment.
	Western yellow-billed cuckoo (confirmed possible breeding territory)					In 2021, we discovered yellow-billed cuckoos during the breeding season near Doll Baby Ranch along the East Verde River on Pole Hollow Allotment. Data from protocol surveys resulted in confirmation of a possible breeding territory. Preliminary data from surveys in 2022 show the site is occupied. Mapped suitable habitat in the allotment can be found in Homeward, River, Maverick, Cypress Thicket, and

						Pine Creek pastures, and headquarters holding trap.

CONSULTATION HISTORY

Lower Verde Subbasin Allotments

In October 2020, we evaluated section 7 consultation status for several grazing allotments in the Lower Verde Subbasin. Our evaluation resulted in the need to update consultations with USFWS on Cedar Bench and Deadman Allotments through a new biological assessment and confirmation that Bull Springs Allotment required no further consultation with USFWS. In August 2021, our biologists reported new records of federally listed yellow-billed cuckoo on Bull Springs and Pole Hollow allotments. On September 24, 2021, we informed USWFS of plans to include Bull Springs and Pole Hollow allotments in the Lower Verde Subbasin biological assessment because of new species information.

On December 29, 2021 - January 4, 2022, we exchanged phone calls and email correspondence with USFWS geographic lead to discuss species reasonably certain to occur in the analysis area.

On January 04 - 11, 2022, we exchanged phone calls and email correspondence with USFWS Gila topminnow species lead to discuss 1) the proposed action specific to Cedar Bench Allotment, 2) conservation measures for Gila topminnow, and 3) status of Gila topminnow in Fossil Creek just upstream of its confluence with Verde River.

On February 22, 2022, we exchanged phone calls and email correspondence with USFWS southwestern willow flycatcher species lead to determine if potential breeding habitat for the species was present inside the analysis area.

On August 17, 2022, we held a Microsoft Teams call with USFWS yellow-billed cuckoo species lead to discuss 1) the proposed action specific to Bull Springs and Pole Hollow allotments, 2) the design and implementation of a monitoring plan evaluating impacts of grazing on cuckoos at Doll Baby Ranch, and 3) conservation measures to minimize impacts to cuckoo.

On August 22, 2022, we discussed status of razorback sucker in Verde River with USFWS geographic species lead.

On February 21, 2023, we requested to pause the consultation process to re-evaluate components of the biological assessment related to conservation measure YBC-4.

On April 20. 2023, we transmitted via email an updated copy of the biological assessment to reflect changes related conservation measure YBC-4.

On September 22, 2023, we participated in a Microsoft Teams call initiated by USFWS to discuss components of the proposed action.

In 2024, we have had several calls with USFWS discussing components of the proposed action including yellow-billed cuckoo, conservation measures, and monitoring. Throughout the consultation process, we have updated our BA to include clarifying language, minor edits, and most notably create and further refine spatial layers depicting yellow-billed cuckoo suitable habitat.

Bull Springs

On November 1, 2004, we drafted a Small Project Biological Evaluation (SPBE) reviewing impacts to federally listed species and critical habitat for grazing on the Bull Springs Allotment. A no effect determination was made given lack of occurrence records and habitat for federally listed species.

On May 24, 2021, we completed a biological evaluation assessing impacts of Bull Springs Management Plan on federally listed species and their habitats. We determined the action would have no effect to special status species given lack of occurrence records and critical habitat. It was determined habitat suitable for yellow-billed cuckoo and southwestern willow flycatcher was not likely present due to 1) stream gradient, 2) density, patch size, and width of riparian vegetation, and 3) floodplain characteristics (Greg Beatty, personal communication, May 21, 2021).

In August 2021, our biologists confirmed presence of yellow-billed cuckoo on East Verde River west of Doll Baby Ranch on Bull Springs Allotment. On September 24, 2021, we notified USFWS we would include Bull Springs Allotment in the Lower Verde Subbasin Biological Assessment.

Cedar Bench

On April 25, 1995, we requested formal consultation for Cedar Bench Allotment Management Plan. Effects of the action on razorback sucker were outlined in the Biological Assessment and Evaluation received the same day. A biological opinion was received September 8, 1995 (2-21-95-F-291).

On September 29, 2004, we drafted a SPBE reviewing impacts to federally listed species and critical habitat from the addition of 60 adult cattle grazing Buttes, Cane Spring, and Open pastures from November 15, 2004, to May 1, 2005. A no effect determination was made given grazing would not occur on pastures accessible to Fossil Creek or Verde River.

Deadman

In 1999, we requested formal consultation on 20 allotments. We sent letters in 1999 through 2001 changing effects determination for specific species, significantly adjusting the proposed action, and amending the BA. Given changes, the initiation date was adjusted to June 21, 2000. Deadman Mesa was included in the proposed action of the amended BA and a biological opinion was received February 28, 2002 (2-21-99-5-300).

Pole Hollow

Like Deadman Mesa Allotment, Pole Hollow Allotment was one of 20 allotments included in our formal consultation request evaluating effects to critical habitat for loach minnow and spikedace. However, the biological opinion received February 28, 2002, did not include Pole Hollow Allotment; our record search did not confirm why Pole Hollow Allotment was excluded. It is presumed by USFWS that we determined the action had no effect on critical habitat for loach minnow and spikedace based on lack of critical habitat on Pole Hollow Allotment and guidance criteria at the time of consultation (K. Robertson, personal communication, August 19, 2022).

In August 2021, our biologists confirmed presence of yellow-billed cuckoo on East Verde River at Doll Baby Ranch on Pole Hollow Allotment. On September 24, 2021, we notified USFWS we would include Pole Hollow Allotment in the Lower Verde Subbasin Biological Assessment.

PROJECT DESCRIPTION

Location

Bull Springs

Bull Springs allotment encompasses 32,100 acres and is located 12 miles west of Payson, AZ. The entire allotment is located within the Mazatzal Designated Wilderness. Elevation ranges between 2,800 ft at the East Verde River to approximately 6,200 ft at Knob Mountain. Bull Springs borders Cedar Bench and Hardscrabble allotments to the north, Pole Hollow Allotment to the east and south, and Red Creek Allotment to the west. Vegetation on the allotment consists primarily of pinyon-juniper and chaparral. Riparian communities are present along the East Verde River, Rock Creek, and Wet Bottom Creek.

Cedar Bench

Cedar Bench allotment encompasses 32,000 acres and is located two miles southwest of Strawberry, AZ. Just over 20,000 acres of the southern portion of the allotment is within Mazatzal Designated Wilderness. Vegetation varies from semi-desert grassland near Verde River to ponderosa pine near Strawberry Mountain. Riparian communities exist along Fossil Creek, Rock Creek, Hardscrabble Creek, and The Gorge. Elevation ranges from approximately 2,600 ft at the confluence of Verde River and Fossil Creek to 6,400 ft at Strawberry Mountain. The allotment borders Deadman Mesa Allotment to the north, Hardscrabble Allotment to the east, Bull Springs Allotment to the south, and Red Creek Allotment to the west.

Deadman Mesa

Deadman Mesa allotment encompasses 17,000 acres and is located eight miles west of Strawberry, AZ. Elevation ranges from 2,600 ft at Fossil Creek to 6,100 ft near Nash Point. Coconino National Forest borders the allotment to the north and west and Cedar Bench Allotment borders to the east and south. Vegetation consists primarily of pinyon-juniper woodland and chapparal. Riparian communities are present along Fossil Creek and Hardscrabble Creek.

Pole Hollow

Pole Hollow Allotment encompasses 36,300 acres and is located 11 miles west of Payson, AZ. The allotment is bordered by Hardscrabble and Pine allotments to the north, Bull Springs Allotment to the west, Sears Club-Chalk Mountain and Rye Creek Allotments to the south, and American Gulch Allotment to the east. Elevations range from approximately 3,400 ft at the East Verde River to 7,400 ft at the top of North Peak. Just over 15,000 acres of the allotment intersect Mazatzal Designated Wilderness. Most of the allotment is chaparral and pinyon-juniper, but ponderosa pine communities are present in higher elevations around North Peak. Riparian communities are present along major drainages and include East Verde River, Pine Creek, Rock Creek, and Wet Bottom Creek.

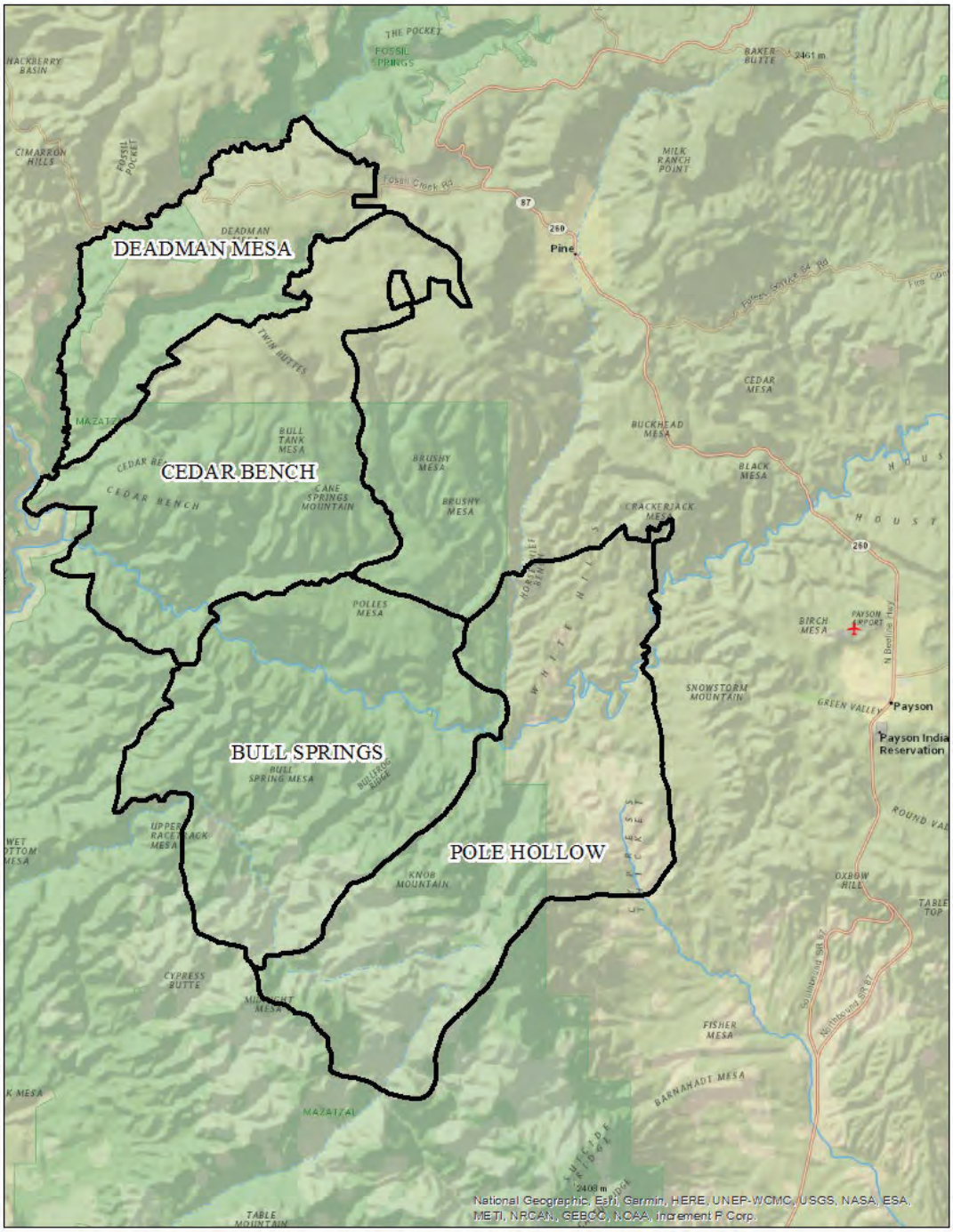

Figure 1. Lower Verde Subbasin Allotments West of Payson, Arizona.

Factors Affecting Species Environment

Current Grazing Management

Lower Verde Subbasin Allotments include both yearlong and seasonal grazing with various authorized use numbers (Table 4). Current grazing management common to all LVSA includes 1) conservative forage utilization with key forage species maintained between 30 and 40% or less of annual forage

production by weight for herbaceous perennials and 50% or less on woody browse species and 2) numbers of cattle varying each year depending on water and resource conditions but never exceeding the permitted number for each allotment.

Table 4. Summary of Current Allotment Management and Schedule

Allotment	Acres	Season of Use	Grazing System	Authorized Use	Status
Bull Springs	32,100	Yearlong	Deferred rotation	160	Vacant
Cedar Bench	32,000	Winter	Seasonal rotation	500	Active
Deadman Mesa	17,000	Winter	Seasonal rotation	175	Vacant
Pole Hollow	36,300	Yearlong	Deferred rotation	175	Active

Bull Springs

Since early 2000s through 2020, we authorized Bull Springs Allotment to a single permittee who grazed up to 160 cattle yearlong as a cow/calf operation. Bull Springs is divided into six summer pastures, three winter pastures, and two holding traps. The permitee used scheduled summer pasture(s) for up to five months every two out of three years. Three winter pastures were grazed on a deferred rotation, preventing any one pasture to be grazed during the same months for two consecutive years. Summer pastures included West River, Oak grove, Bullfrog, East Polles, Mid Polles, and West Polles. Winter pastures included Bull Springs, Brush Corral, and Cottonwood. Belluzzi and Pocket are holding traps used on an alternating basis for working cattle in spring and fall. Pasture or holding trap size varies from 10,300 acres in the Brush Corral to 650 acres in the Belluzzi holding trap.

From 2016 – 2020, we issued non-compliance and suspension notices after non-compliance issues were not remedied by the permit holder. Mediation resulted in the permittee selling base property and waiving the permit back to the United States in favor of the purchaser. Since March 2020, Bull Springs Allotment has been vacant with plans to reissue the permit once section 7 consultation and outstanding allotment maintenance items are complete.

Cedar Bench

Cedar Bench is a winter-season grazing allotment permitted for up to 500 cattle from November 1 to May 31 annually (7 months). There are 10 pastures on the allotment varying from 416 to 8,081 acres with six pastures scheduled for general use, three for holding traps and one used as a bull pasture. Cedar Bench is managed on a seasonal rotation with cattle at higher elevations on the northern part of the allotment in November. Cattle are worked south to lower elevations during winter months, then return to the northern part of the allotment in the spring. Cattle are then shipped off TNF to summer range at the end of May. River Pasture is excluded from rotations.

Deadman Mesa

The Deadman Mesa Allotment was authorized from early 1920s to early 2000s. The allotment has been vacant since 2001 due to unfavorable resource condition and lack of section 7 consultation. Deadman

Mesa was a winter season allotment permitting up to 175 adult cattle from 10/21 to 5/31. There are currently 11 pastures on the allotment.

Pole Hollow

Pole Hollow is a yearlong cow/calf operation managed on a rest-deferred rotation grazing plan preventing any one pasture to be grazed during the same months for two consecutive years. Currently the allotment is permitted up to 175 head of adult cattle and divided into eight pastures ,one holding trap, and one bull pasture. Wilderness pasture on the southwest part of the allotment has not been grazed since 2004 due to a lack boundary fence following the Willow Fire.

Monitoring

Monitoring focuses on grazing intensity and utilization estimated by evaluating the amount of a grazed plant remaining while considering plant vigor, current annual precipitation, and growth stage of key species. Utilization is limited to 30 to 40 percent for upland grasses, 50 percent for desirable browse species, 50 percent for woody riparian species, and 50 percent for herbaceous riparian species. Every year annual operating instructions (AOI) are developed in coordination with the permittee to determine time of use when pastures will be grazed and rested throughout the upcoming year.

Upland

We use Reading the Range monitoring protocol to gather data on herbaceous and half shrub vegetative cover, utilization monitoring, forage production, frequency, browse monitoring, onsite precipitation data, and characterization of soils. Data assists rangeland managers in making timely decisions relative to livestock management. Long term vegetative trend can be extrapolated from these data into the future. Protocols for Reading the Range were established collaboratively between the United States Department of Agriculture's (USDS) FS and Natural Resource Conservation Service, University of Arizona, University of Arizona's Gila County Cooperative Extension, and local livestock ranchers.

Since 2011, 16 key monitoring areas have been established across LVSA (Figure 2). Key areas are defined as a relatively small portion of a rangeland selected because of its location, use, or grazing value as a monitoring reference point for grazing use (Holechek et al. 2004). Key areas are intended to be a single ecological site or plant community, responsive to management actions, and indicative of the ecological site or plant community they are intended to represent (ITT 1996). Monitoring of these 16 sites show ground cover types vary based on conditions but have remained generally stable throughout with a slight decrease in bare ground and increase in basal vegetation. Areas that have been rested from grazing show signs of stable and improving trends in vegetation and soil condition. Forage production has fluctuated over the last 10 years, largely a function of precipitation.

Bull Springs

There are five key areas on Bull Springs Allotment, with three on Polles Mesa and two in the southern portion. In 2004, the Willow Fire burned much of the south end of the allotment and since then, this area has been largely ungrazed due to a lack of infrastructure and range improvements. Monitoring efforts have been concentrated on areas used by cattle on Polles Mesa (East and Mid Polles key areas). Water has always been a limiting factor on Polles Mesa, but in December of 2020, three stock tanks

were cleaned and we anticipate water will become more reliable and increase livestock distribution across the landscape. Vegetation and soil condition trends remain stable on Polles Mesa but in poor condition due to years of poor management. We anticipate under the proposed action, vegetation and soil condition will improve because our adaptive management strategy allows for greater flexibility to adjust livestock grazing practices in response to resource conditions. Vegetation and soil conditions are generally understood as improving in winter country. In 2014, new monitoring protocols were established at all key areas and once monitored again, trends will be better understood. Key areas will be revisited prior to issuance of a new term grazing permit for the allotment.

Cedar Bench

There are three key areas on Cedar Bench Allotment. Dominant vegetation is Pinyon-juniper woodland. Within Open and Upper Plow Beam pastures, litter and live basal vegetation have increased and soil condition is improving. Ranch Pasture has shown a decrease in bare soil and persistent litter (≥ ½") with an increase in litter (≤ ½") and live basal vegetation. This allotment will be monitored again in 2022.

Pole Hollow

There are five key areas on Pole Hollow Allotment. In 2004, the Willow Fire burned much of the south end of the allotment and since then, Wilderness pasture has been removed from the grazing schedule due to a lack of infrastructure and range improvements. Vegetation conditions have improved and remained stable in recent years. Bare soil has decreased, and this trend is stable.

Deadman Mesa

There are three key areas on Deadman Mesa Allotment. The allotment has been in vacant status and ungrazed for over 20 years. Recently, we completed fuels reduction projects and masticated approximately 700 acres of juniper. This has resulted in some of the highest producing rangeland on TNF. There are plans to treat an additional 3,178 acres within the next three years. Across the allotment, bare soil has decreased, and this metric remains stable along with vegetation condition. Litter has fluctuated over the last 18 years, but in general is stable. Fluctuations are likely tied to climatic conditions.

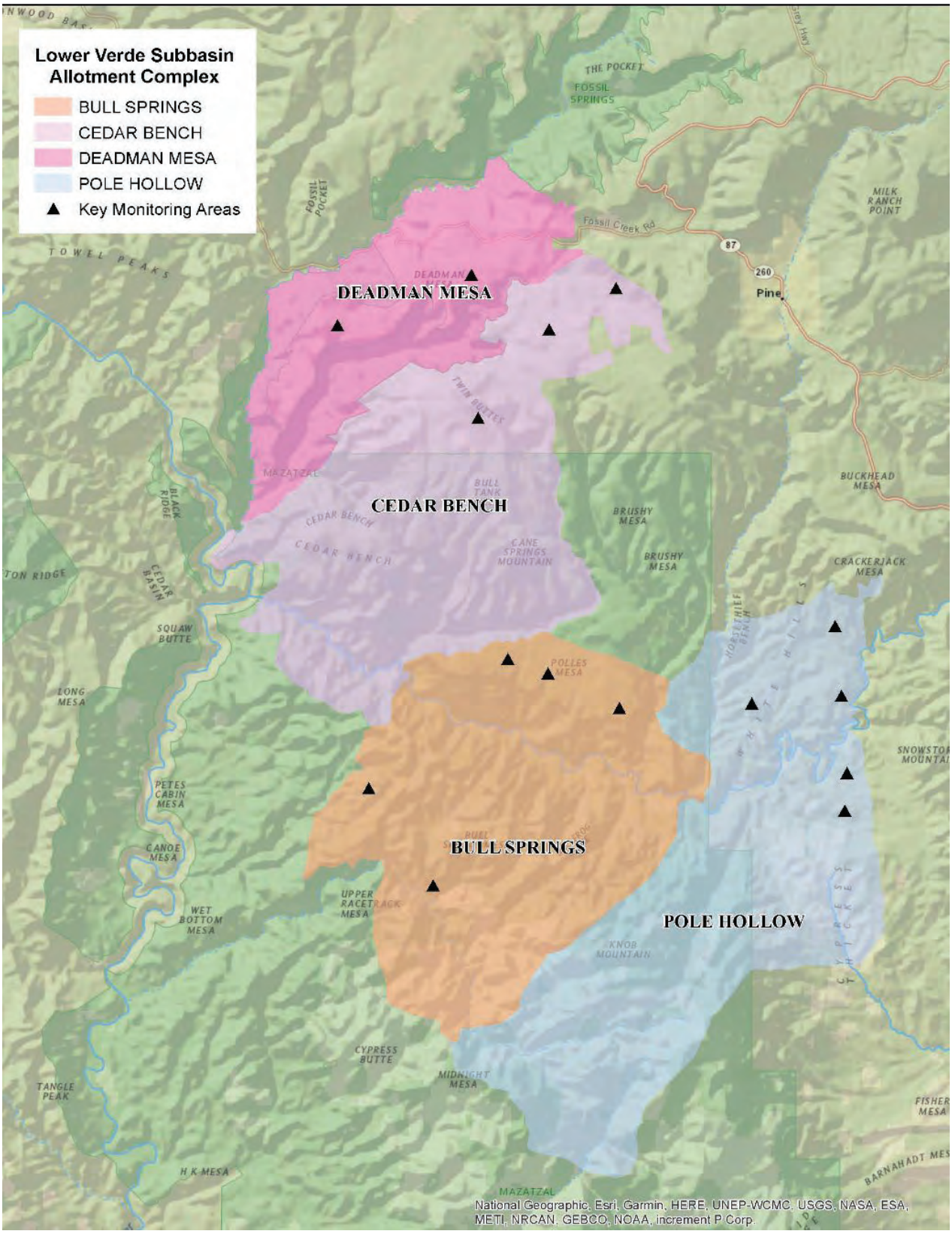

Figure 2. Map of Key Monitoring Areas on Lower Verde Subbasin Allotments

Table 5. Range Monitoring Data between 2004 and 2020

Key Area	Allotment	Pasture	Dominant Vegetation Type	Ground Cover Trends
KA1	Bull Springs	West Polles	Pinyon-Juniper Woodland	Stable trends for vegetation Soil conditions remain stable
KA2		East Polles	Pinyon-Juniper Woodland	Stable trends for vegetation although conditions remain poor. Soil conditions remain stable. Bare soil stable
KA3		Mid Polles	Pinyon-Juniper Woodland	Stable trends for vegetation although conditions remain poor. Soil conditions remain stable. Decrease in bare soil
KA4		Cottonwood	Pinyon-Juniper Woodland	Stable trends for vegetation and litter, decrease in bare soil
KA5		Bull Springs	Pinyon-Juniper Woodland	Stable trends for vegetation and litter, decrease in bare soil
KA1	Cedar Bench	Open	Pinyon-Juniper Woodland	Increased litter and live basal vegetation
KA2		Buttes	Pinyon-Juniper Woodland	Increased litter and live basal vegetation
KA3		Ranch	Pinyon-Juniper Woodland	Decrease in bare soil and persistent litter, increase in litter and live basal vegetation
KA1	Deadman Mesa	Upper Mesa	Pinyon-Juniper Woodland	Decrease in bare soil with increase of persistent litter and slight increase of live basal vegetation
KA2		Shake Pile	Pinyon-Juniper Woodland	Increase in persistent litter, decrease in litter, and slight increase in bare ground and live basal vegetation
KA3		Middle Mesa	Pinyon-Juniper Woodland	Decrease in bare soil, gravel, and litter with increases in live basal vegetation, persistent litter, and rock
KA1	Pole Hollow	Homeward	Chapparal	Decrease in bare soil and gravel, increase in litter and persistent litter
KA2		Contact	Chapparal	Stable trends for vegetation and litter, decrease in bare soil, increase in gravel
KA3		Maverick	Chapparal	Stable for bare soil, gravel, litter, vegetation, and rock
KA4		Cypress Thicket	Chapparal	Decrease in bare soil, increase in litter, vegetation stable
KA5		River	Chapparal	Decrease in bare soil, increase in litter, vegetation stable

Riparian Monitoring

We coordinate the riparian photo point program, implemented by Friends of the Tonto National Forest. There are 44 permanent riparian photo points in LVSA (Table 6). Most photo points have been repeated at least once and others several times. Photos are stored on the Friends of the Tonto website, http://www.friendsofthetonto.org/photo-point.html.

From 1990 to 2009, monitoring points were established across LVSAs to monitor conditions over time. Points provide a qualitative record and show how a system may be changing because of livestock management, flooding, fire, and drought. This information is used when informing decision makers about changes to management and restoration. Monitoring these sites show conditions have remained generally stable over the last 10 years, with some areas showing signs of improvement.

Table 6. Photo Points on Lower Verde Subbasin Allotments and History of Repeat Photography

Allotment	Pasture	Site Name	Number of Photo Points	Year Established	Last Read	Trend
Bull Springs	Belluzzi	East Verde	4	1992-1996	2020	Improving
		Pine Creek	3	1996-2009	2020	Stable
Cedar Bench	Lower Plow Beam	Fossil Creek	1	1995	1995	Limited data[2]
Deadman Mesa	Upper Fossil Creek	Fossil Creek	2	1993	2009	Stable
	Bull	East Verde	3	1990-1991	2020	Variable
	Cypress Thicket	City Creek	8	2005-2006	2020	Stable
		Dennis Spring	1	1994	1996	Limited data[3]
		Mineral Creek	7	1993-2005	2019-2020	Improving
		Mineral Spring	1	1993	2019	Stable
		Pole Hollow	13	2005	2006-2017	Improving

Verde River Unauthorized Livestock Gather

In 2020, we contracted the removal of unauthorized livestock from national forest system lands with a goal to remove all unauthorized livestock from the Verde River corridor by spring 2023. Gather efforts on Coconino, Prescott, and Tonto national forests in Verde River resulted in the removal of 363 feral cattle; removals are ongoing with an estimate of 200 head remaining (C. Mundy, personal communication, August 25, 2022; June, 06, 2024).

[2] Fossil Creek photo point on Lower Plow Beam pasture is difficult to access. Our Range Program will be adopting this site from Friends of the Tonto and access with pack resources.

[3] Dennis Spring photo point on Cypress Thicket pasture will be added as a high-priority site monitored by Friends of the Tonto.

Watershed

In 2010, a national effort was completed by the FS to assess condition of all 6th code watersheds on National Forest System land (Potyondy and Geier, 2011). Twelve indicators were assessed: water quality, water quantity, aquatic habitat, aquatic biota, riparian vegetation, road and trail network, soil, fire regime or wildfire effects, rangeland vegetation, terrestrial invasive species, forest cover, and forest health. Each indicator is identified as either functioning, functioning at risk, or impaired. Each 6th code watershed was given an overall rating of either functioning, functioning at risk, or impaired based on indicator scores. Fifteen 6th code watersheds lie at least partially in LVSA, and results of the assessment are listed in Table 7.

Table 7. Sixth Code Watersheds

Name	Allotment	Acres within Analysis Area	Percent of Total Area	Condition
Canyon Creek-Verde River	Bull Springs/Cedar Bench	3,249	2.7	Functioning at Risk
Deadman Creek	Pole Hollow	3,319	2.8	Functioning at Risk
Gap Creek-Verde River	Cedar Bench	1,787	1.5	Functioning at Risk
Hardscrabble Creek	Cedar Bench/Deadman Mesa	16,884	14.3	Functioning at Risk
Lower East Verde River	Bull Springs/Cedar Bench/Pole Hollow	21,673	18.3	Functioning at Risk
Lower Fossil Creek	Cedar Bench/Deadman Mesa	9,600	8.1	Functioning at Risk
Middle East Verde River	Bull Springs/Pole Hollow	15,736	13.3	Functioning at Risk
Pine Creek	Bull Springs/Pole Hollow	4,329	3.7	Functioning at Risk
Rock Creek	Bull Springs/Cedar Bench/Pole Hollow	1,727	1.5	Functioning at Risk
Saint John's Creek	Pole Hollow	376	0.3	Functioning at Risk
Sycamore Creek	Bull Springs/Pole Hollow	1,528	1.3	Functioning Properly
The Gorge	Bull Springs/Cedar Bench	14,236	12.0	Functioning at Risk
Upper East Verde River	Pole Hollow	919	0.8	Functioning at Risk
Upper Rye Creek	Pole Hollow	3,618	3.1	Impaired Function
Wet Bottom Creek	Bull Springs/Pole Hollow	19,211	16.3	Functioning Properly

Vegetation

Plant communities across LVSA are predominately pinyon-juniper woodland in higher elevations and chapparal in lower elevations (Figure 3). Both alligator juniper (*Juniperus deppeana)* and one-seed juniper (*J. monosperma*) are present in the pinyon-jumpier woodland. Other woody species occurring across both ecotypes include pointleaf manzanita (*Arctostaphylos pungens*), Emory oak (*Quercus emoryi),* mesquite (*Prosopis spp*.), mountain mahogany (*Cercocarpus montanus*) among others. Herbaceous species consist primarily of sideoats grama (*Bouteloua curtipendula*), blue grama (*B. gracilis*), hairy grama (*B. hirsute*), a variety of muhly grasses (muhlenbergia and curly mesquite (*Hilaria belangeri*). Small belts of riparian communities made up of sycamore (*Platanus occidentalis*), cottonwood (*Populous spp*.) and willow (Salix spp.) are present along major drainages and near springs. A small stand of Ponderosa pine (*Pinus ponderosa*) on the southeastern side of Pole Hollow allotment on North Peak of the Mazatzal Mountains includes Arizona white oak (*Quercus arizonica*), Emory oak (*Q. emoryi*), and Gamble oak (*Q. gambelii*).

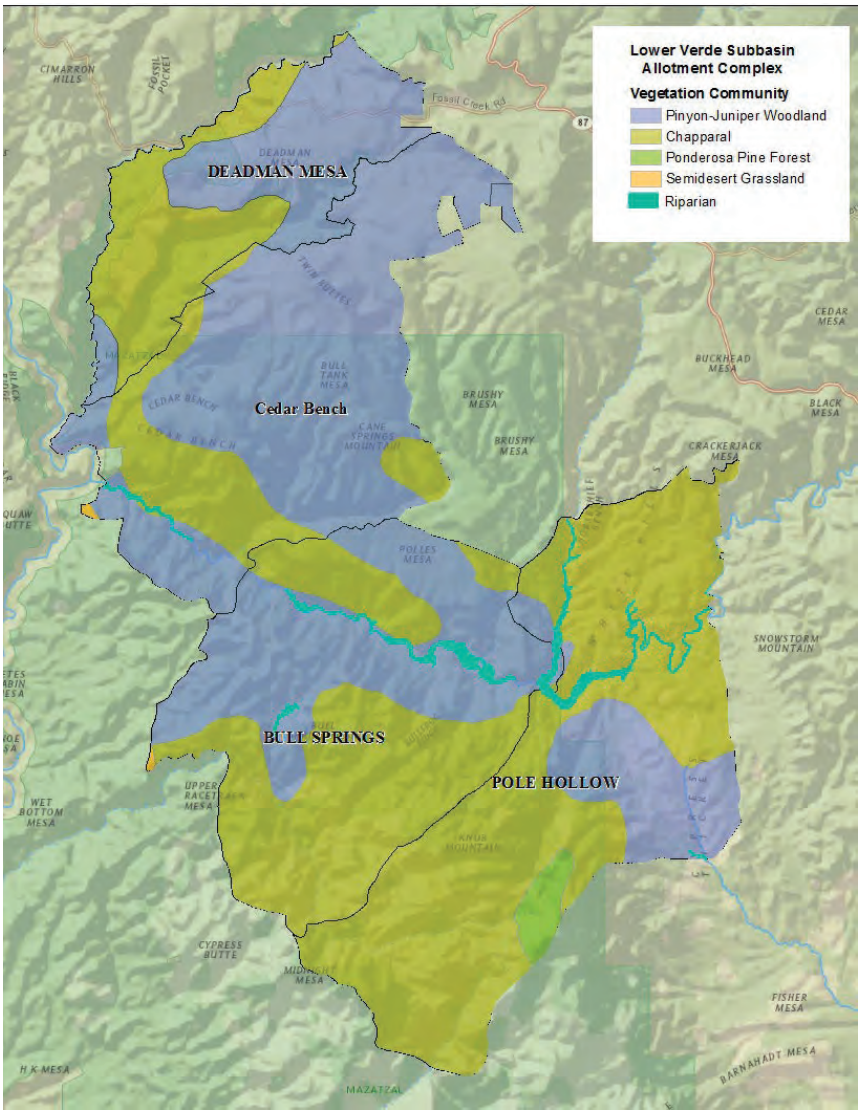

Figure 3. Vegetation Communities across Lower Verde Subbasin Allotments

Landscape Restoration

Payson Ranger District implemented landscape restoration and fuels reduction treatments inside LVSA over the last five years under the Pine and Strawberry Wildland Urban Interface (WUI) Project. We implemented 1,391 acres of mastication treatments on Cedar Bench Allotment from 2018 to 2021 and 707 acres of mastication on Deadman Mesa Allotment in 2018. We have plans to masticate an additional 3,178 acres on Deadman Mesa Allotment in in 2023-2024. The goal of fuels reduction treatments has been to reduce the likelihood of stand replacing fire while maintaining habitat for wildlife, protecting powerline infrastructure, and creating a more resilient landscape in WUI. These treatments have also improved the Lower Verde Subbasin watershed by protecting water supply, reducing sediment, and increasing herbaceous cover and forbs. Fuels reduction treatments have not occurred on Bull Springs or Pole Hollow allotments.

Wildfire History

Four wildfires have burned across LVSA (Figure 4). Fire severity in vegetation across all fires was mostly low to moderate, except for the Willow Fire. Large areas of the Willow Fire burned with uncharacteristically high severity in ponderosa pine. It is unknown how much of the pine that burned with high severity recovered as ponderosa pine but, for at least 1-2 decades post fire, those areas will be dominated by shrubby vegetation.

Table 8. Fire History in Lower Verde Subbasin Allotments

Fire Name	Allotment	Year	Burn Severity	Acres in LVSA
Willow	Bull Springs/Pole Hollow	2004	Mostly high with patches of timber stringers remaining	42,422
Polles	Bull Springs	2020	Low and very low with a small amount of moderate	588
Bull	Bull Springs	2020	Low and very low with a small amount of moderate	542
Backbone	Deadman Mesa	2021	Mostly low and very low with patches of moderate and high	6,625

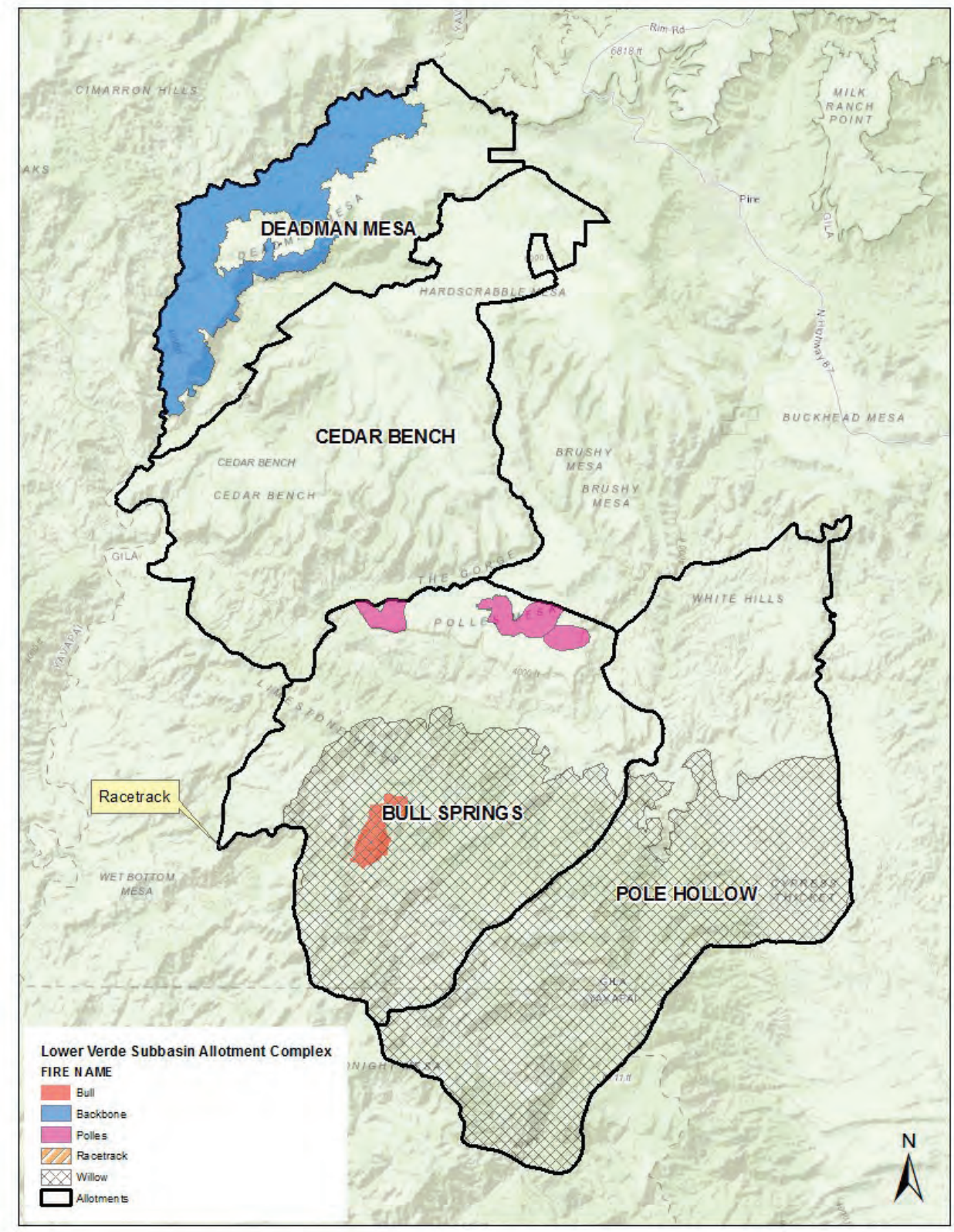

Figure 4. Wildfire History in Lower Verde Subbasin Allotments.

Doll Baby Ranch Administrative Site

Administrative Use

In 2019, we acquired Doll Baby Ranch, in partnership with Western Rivers Conservancy, with funding from Land and Water Conservation Fund. This administrative property includes a 150-acre historic cattle ranch with horse pastures and agricultural fields, a barn, corral, and several wells. A portion of East Verde River extends east to west along the northern portion of the property and City Creek extends north to south through the center. Several unpaved roads traverse the property, one of which is maintained by FS. According to the draft operating plan, existing infrastructure is used to shelter FS stock animals and store supplies. Fields and pastures are used to pasture stock animals and will be maintained for forage production. Fields are made up mostly native shrubs and grasses and maintenance includes limiting woody encroachment and treatment of weedy species. Three water rights associated with the property equaling 309 acre-feet is used for irrigation channeled through a series of ditches and terraces to flood irrigate pastures and fields several times annually.

PROPOSED ACTION

We propose continued authorization on Cedar Bench and Pole Hollow allotments and re-authorization on Bull Springs and Deadman Mesa allotments with an adaptive management strategy. The proposed action consists of five components: authorization, construction and maintenance of improvements, conservation measures to minimize impacts to special status species, adaptive management, and monitoring. Management follows current guidance from FS Handbook 2209.13, Chapter 90 (Grazing Permit Administration; Rangeland Management Decision making).

Table 9. Comparison of Current and Proposed Action on Lower Verde Subbasin Allotments.

Allotment	Action Component[4]	Current Management	Proposed Action
Bull Springs	Grazing Authorization	Vacant allotment (permitted up to 160 cattle yearlong when active). Permit contingent upon reconstruction of range improvements and ESA consultation.	160 Adult Cattle 3/1-2/28 Rotational grazing schedule with an adaptive management strategy.
	Range Improvement	Vacant allotment; not applicable	Coverage for future improvements provided actions follow conservation measures under the proposed action.

[4] Action components similar to all LVSA allotments include management practices and monitoring.

	Conservation Measures	Vacant allotment; not applicable	Implement conservation measures to minimize impacts of the action to riparian habitat, yellow-billed cuckoo, and designated critical habitat for Mexican spotted owl.
Cedar Bench	Grazing Authorization	500 Adult cattle 11/1-5/31	500 adult cattle 11/1-5/31 rotational grazing schedule with an adaptive management strategy.
	Range Improvement	Included site specific improvements with little coverage for future improvements or routine maintenance.	Includes site specific improvements and coverage for future improvements provided actions follow conservation measures built into the proposed action.
	Conservation Measures	Use of River Pasture restricted.	Implement conservation measures to minimize impacts of the action to riparian habitat, yellow-billed cuckoo, Gila topminnow, spikedace, and razorback sucker and its critical habitat. River Pasture remains excluded.
Deadman Mesa	Grazing Authorization	Vacant Allotment (permitted 175 adult cattle from 10/21 to 5/31 when active).	175 adult cattle 10/21-5/31 Rotational grazing schedule with an adaptive management strategy.
	Range Improvement	Vacant allotment; not applicable.	Construction of drift fence to ensure Fossil Creek exclusion. Maintenance of existing improvements.
	Conservation Measures	Not applicable	Implement conservation measures to minimize impacts of the action to riparian habitat, yellow-billed cuckoo, Gila topminnow, and spikedace.
Pole Hollow	Grazing Authorization	175 adult cattle 3/1-2/28	175 adult cattle 3/1-2/28 Rotational grazing schedule with an adaptive management

			strategy.
	Range Improvement	Included site specific improvements with little coverage for future improvements or routine maintenance.	Includes site specific improvements and coverage for future improvements provided actions follow conservation measures built into the proposed action.
	Conservation Measures	Not applicable	Implement conservation measures to minimize impacts of the action to riparian habitat, yellow-billed cuckoo, and designated critical habitat for Mexican spotted owl.

Authorization

We propose continued authorization up to full permitted numbers on Cedar Bench and Pole Hollow and re-authorization up to 160 and 175 adult cattle on Bull Springs and Deadman Mesa allotments. Actual authorized numbers will vary annually based on current resource conditions. Adult cattle include cows with calves, non-lactating cows, or bulls. Factors affecting annual authorized livestock numbers include precipitation, pasture rotation, forage production, current range conditions (i.e., forage and growing conditions), water availability, resource monitoring and permittee needs.

Table 10. Proposed Permitted Numbers and Season of Use on Lower Verde Subbasin Allotments.

Allotment	Class	Number	Season of Use
Bull Springs	Adult Cattle	160	3/1-2/28
Cedar Bench		500	11/1-5/31
Deadman Mesa		175	10/21-5/31
Pole Hollow		175	3/1-2/28

Rotational Grazing

Bull Springs and Pole Hollow allotments would be on a yearlong rotation grazing schedule while Cedar Bench and Deadman Mesa would be restricted to seven months, beginning at the end of October or first of November, and grazed through end of May. Grazing on all allotments would occur through a rotational system, which would allow plants the opportunity for growth or regrowth. Animals would be moved to a new pasture once utilization levels in an area are met or before as specified in annual operating instructions. Pasture use may also be deferred to allow for recovery, prevent patterns of repeated use, and accomplish resource goals related to fire, fuels, and habitat protection. While portions of yearlong grazing allotments are more suitable for winter use and others for summer (Table 11), all pastures would be available for grazing within limits of forage availability and based on current

resource conditions and growth patterns. This is especially true for Pole Hollow Allotment because of its water distribution, uniform topography, mild winters; Bull Springs Allotment has similar topography and winter climate, but water distribution is limited in the southern end. The goal would be to allow for at least one growing season of pasture rest once utilization limits are met, typically for up to a year, before its grazed again. Annual operating instructions would specify pasture rotation schedules each year and include timing, livestock numbers, and duration; all of which will be influenced by conservation measures under the proposed action and monitoring results.

Table 11. Typical Summer and Winter Pastures for Yearlong Grazed Allotments[5]

Allotment	Season	Pasture
Bull Springs	Summer	West Polles
		Middle Polles
		East Polles
		West River
		Oak Grove
		Bullfrog
	Winter	Brush Corral
		Cottonwood
		Bull Springs
Pole Hollow	Summer	Contact
		Horse Thief
		Maverick
		Homeward
	Winter	River
		Cypress Thicket
		Wilderness
	Late Spring/ Fall Alternate	Pine Creek

Excluded Pastures

Cedar Bench

In 2021, we revised the Cedar Bench Allotment boundary to exclude Verde River. This revision also reduced the size of Lower Plow Beam pasture which provides livestock limited access to Fossil Creek. Livestock will have access to the first 0.8-mile of Fossil Creek starting at its confluence with Verde River when Lower Plow Beam pasture is in use. Under the proposed action, River Pasture to the south will continue to be excluded from livestock grazing.

[5] While pastures in Table 11 display typically used winter and summer range, our adaptive management strategy will allow for flexibility to adjust livestock grazing practices in response to weather, livestock behavior, and wildfire. Resource condition and monitoring results will also influence changes in season of use, timing of entry and departure into a pasture, and duration of use that differ from typical summer and winter pastures.

Deadman Mesa

Upper Fossil Creek, Lower Fossil Creek, and Lower Mesa pastures border Fossil Creek. Under the proposed action, Upper and Lower Fossil Creek pastures, which provide access to Fossil Creek, will not be grazed. Livestock permitted to graze Lower Mesa pasture cannot access Fossil Creek because of steep terrain and proposed construction of a 0.125-mile drift fence on the southern edge of Deadman Mesa.

Vegetation Utilization

Grazing would be managed to achieve long-term goals in pasture key areas and ensure allowable vegetation use thresholds are not exceeded.

Table 12. Allowable Vegetation Use Thresholds

Vegetation	Use Threshold
Upland herbaceous	30-40 percent of current year's growth
Upland browse	50 percent of current year's growth
Riparian herbaceous	Limited to 40 percent of plant species biomass and maintain 6 to 8 inches of stubble height of species on emergent such as sedges.
Riparian woody	Limited to 50 percent of leaders browsed on upper one third of plants up to 6 feet tall

Use of Doll Baby Administrative Site

An existing cattle corral at the south end of the administrative site backing FR 406 would be used annually by Bull Springs and Pole Hollow Allotment permitees for branding operations in April and/or May and shipping and handling cattle in October of each year. Permittees may also use the horse corrals next to the barn on occasion for overnighting animals during these timeframes. Corrals could be used at other times throughout the year for incidental activities such as temporary holding, nursing, doctoring, branding, castrating, sorting; these activities generally do not exceed 48 hours at a time.

Improvements

Site Specific Improvements

Structural improvements constructed to facilitate livestock distribution across LVSA will help achieve management objectives. Site specific range improvements under the proposed action are identified below with an installation goal within the first three years following consultation (Figure 5).

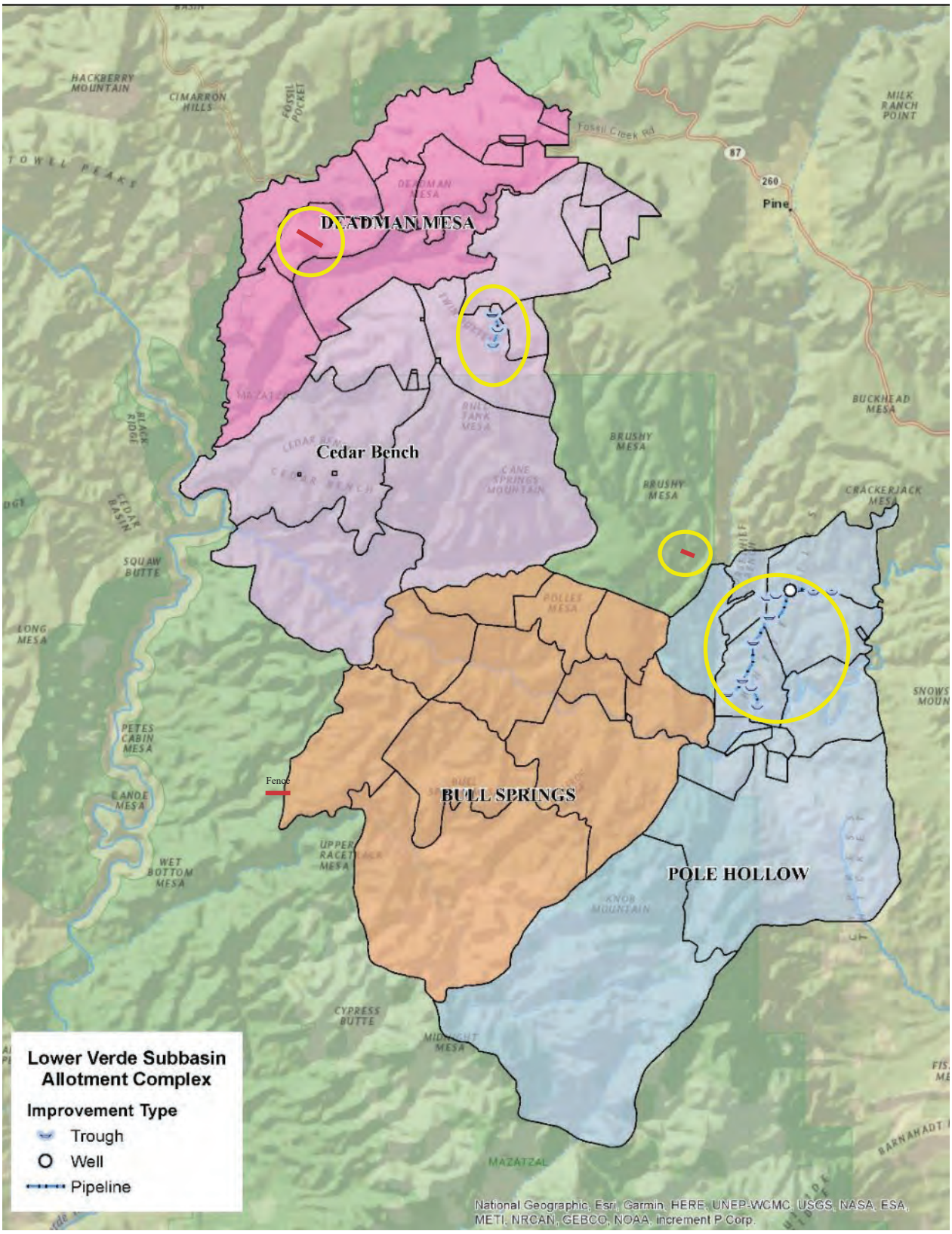

Figure 5. Site specific range improvements under the proposed action.

Livestock Fence

Deadman Mesa Drift Fence

Although it is extremely unlikely for livestock using Lower Mesa Pasture on Deadman Allotment to gain access to Fossil Creek because of inaccessible terrain, we propose construction of a drift fence at the southern end of Deadman Mesa prior to livestock entering the pasture. Fence will follow guidelines in RI-7 to ensure a wildlife friendly design including three upper strands of barbed wire and a top wire not to exceed 42 inches. The lowest strand will be smooth wire set at 16-18 inches to allow wildlife to safely pass under.

Wells

We propose construction of one well on Pole Hollow Allotment. Construction will follow all conservation measures under the proposed action to minimize impacts to wildlife and sensitive areas. Work would be done using drilling equipment, typically a large truck with a drill mount. The site would be accessed using existing FS roads. Vegetation within ten feet of the well site would be disturbed by the drilling rig. One to two cubic yards of material would be placed adjacent to the well from drilling and is expected to run off following precipitation. Adjacent to the well would be a 4" metal pipe or the like mounted with a solar panel.

Troughs

We propose construction of three troughs fed by a well on private property on Cedar Bench Allotment and ten troughs fed by a proposed well on Pole Hollow Allotment. Troughs will be fitted with wildlife escape ramps (RI-4) and a float valve to prevent overflow.

Pipeline

We propose placing 4.4 miles of pipeline on Pole Hollow Allotment to connect a proposed well and troughs. Additionally, 0.75 mile of pipeline would be placed on Cedar Bench Allotment to connect an existing well on private property to proposed troughs. Pipelines would be placed above ground and connected to troughs and storage tanks along fence lines or roads where possible. Pipelines would be pulled in place by horse or by UTV.

Non-Site-Specific Improvements

In addition to site-specific range improvements listed above, additional infrastructure may be constructed if needed across LVSA. Under the proposed action, additional improvements to facilitate livestock distribution may include, but are not limited to:

- Pasture division fencing
- Holding trap or corral development
- Stock drive development
- Livestock handling facilities development
- Exclosures
- Development of earthen stock tanks
- Development of additional pipelines and troughs with storage tanks

- Development of additional trick tanks and catchments
- Installation of cattle guards
- Water developments
- Maintenance of range infrastructure (repairing fences and corrals, cleaning tanks, etc.)

All existing and or new non-site-specific improvements would follow FS direction. Motor vehicle and or ATV/UTV access to range improvement sites would be on existing roads where practicable. Off-road vehicle use by pickup, trailer, ATV, UTV, or motorcycle needed to transport materials or machinery to maintain or inspect structural range improvements (fences, corrals, pipelines, wells, windmills, storage tanks, water delivery systems, troughs, earthen tanks) assigned in Part 3 of the term grazing permit as the permit holder's responsibility for maintenance is authorized. Existing routes or the shortest, most direct route to improvements will be used and new route construction (i.e., blading a path) is not allowed without additional authorization. Cross-country motorized travel is not allowed when conditions are such that cross-country travel would cause unacceptable natural resource damage.

To minimize impacts to threatened and endangered species and FS sensitive species or species of conservation concern, conservation measures described below would be followed when conducting routine maintenance of existing range improvements or constructing new range improvements.

Conservation Measures under the Proposed Action

General

G-1

It will be the permittee's priority to ensure any of their livestock observed in unscheduled areas are removed; if unscheduled livestock belong to an adjacent allotment, removal responsibility would fall to the owner of those livestock. If fence repairs are needed, permittee will complete repairs. Permittees will make all reasonable efforts to remove livestock from unscheduled areas occupied by federally listed species within 72 hours of notification. We do understand it may take permittees 3-10 days to organize resources and move livestock and/or repair fence given the remoteness of much of the project area. TNF will coordinate any delay in action with USFWS.

Riparian

RP-1

Equipment or staging areas needed to conduct range management activities (heavy equipment, vehicles, temporary holding pens, etc.) would be outside riparian areas or river and stream corridors and when appropriate, use spill containment systems to minimize impacts.

RP-2

Motorized vehicles or heavy equipment used to complete range management activities will not be permitted to cross a perennial stream unless an established road already exists or is approved by the district wildlife biologist.

RP-3

Trailing livestock along stream banks and riparian areas is prohibited except to cross a drainage to access another pasture or where no other trailing route exists. We will administer this conservation measure through the AOI with each allotment permittee.

Range Improvements

RI-1

New watering developments (earthen stock tanks, above ground drinkers, troughs, etc.) would not be developed within 400 ft. of perennial streams.

RI-2

New water developments would not disturb or negatively impact primary constituent elements (PCEs) or physical and biological features (PBFs) of any species' proposed or designated critical habitat. This also includes selecting areas requiring the least amount of vegetation removal, felling of trees, or removing downed logs.

RI-3

Non-Site-Specific Improvements would not be constructed at any special status (federally listed and FS sensitive species or species of conservation concern) occupied site or protected habitat unless approved by a district wildlife biologist in coordination with USFWS. Improvements would not be constructed during sensitive breeding seasons where the action can disrupt breeding behavior or recruitment.

RI-4

All new or existing above ground water developments will have wildlife ramps to allow for ingress and egress.

RI-5

New spring developments would not dewater springs and must maintain a residual flow for riparian obligate vegetation and wildlife species. When possible, construction will follow gravity flow development designs outlined in *Rangeland water developments at springs: best practices for design, rehabilitation, and restoration* authored by Joseph T. Gurrieri.

RI-6

Horizontal wells must contain a shut off valve and reducer to avoid failure or waste of water.

RI-7

New fencing would be constructed using a wildlife friendly design which includes three upper strands of barbed wire and a top wire not to exceed 42 inches. The lowest strand will be smooth wire set at 16-18 inches to allow wildlife to safely pass under.

RI-8

New authorizations for wells and pipelines on National Forest System lands shall only be considered where the water removed and/or transported by these facilities would not adversely impact springs,

wetlands, riparian areas, surface flows, and other groundwater dependent ecosystems on National Forest System lands.

Western Yellow-billed Cuckoo[6]

YBC-1

Improvements or maintenance to existing features or construction of new range infrastructure will not occur during the cuckoo breeding season (May 25 – September 30) in occupied or mapped suitable breeding habitat (see spatial layer) unless the district wildlife biologist in coordination with USFWS determines 1) the site is unoccupied 2) mapped breeding habitat is verified as dispersal habitat, or 3), the action will not disrupt breeding birds.

YBC-2

Pole Hollow Allotment permittee will not use Headquarters Holding Trap and Doll Baby Administrative Site during the breeding season from May 25 through September 30 each year to ensure short-term grazing operations do not disturb breeding cuckoo. Any critical activity that must occur during the breeding season will be coordinated with the district wildlife biologist to ensure activities do not impact cuckoos or their habitat. Critical activities could include temporary holding, nursing, doctoring, branding, or castrating; these activities generally do not exceed 48 hours at a time.

YBC-3

Bull Springs permittee will not use Belluzzi or Pocket holding traps or Doll Baby Administrative Site during the breeding season from May 25 through September 30 each year to ensure short-term grazing operations do not disturb breeding cuckoo. Any critical activity that must occur during the breeding season will be coordinated with the district wildlife biologist to ensure activities do not impact cuckoos or their habitat. Critical activities could include temporary holding, nursing, doctoring, branding, or castrating; these activities generally do not exceed 48 hours at a time.

YBC-4

Photo Point Monitoring in Occupied Cuckoo Habitat: TNF will increase photopoint monitoring in occupied cuckoo habitat. A project specific monitoring plan evaluating livestock impacts to yellow-billed cuckoo at Doll Baby Ranch is not included in the proposed action. We believe there will be no statistically significant difference between nearby reference reaches and areas accessible to livestock occupied by cuckoos at Doll Baby Ranch because livestock will only have access to holding traps in occupied cuckoo sites outside the breeding season when cuckoos are not likely present and that use will be infrequent (1 to 2 times), in low herd numbers (up to 20 head) for short durations (2-10 days). In leu of a quantitative monitoring plan and to confirm our assumptions that livestock in holding traps will have minimal impacts to cuckoos at Doll Baby Ranch, we commit to qualitatively assessing East Verde River at Doll Baby Ranch by increasing frequency of riparian photo-point monitoring along the occupied

[6] Conservation measures apply to all existing cuckoo occupied sites and any area where cuckoos are discovered during the length of the project.

cuckoo reach. Currently, 2 of the 3 photo points in Pine Canyon and seven established riparian photo points on East Verde River overlap with occupied cuckoo habitat.

We commit to evaluating locations of established points along this reach of East Verde River with the likelihood of adding at least two more photo points for adequate coverage of occupied habitat. We commit to visiting each point in occupied habitat immediately prior to livestock use (typically May and / or October) in holding traps and then one month after each livestock use to monitor system recovery. We will also install game cameras at three photo-point sites varying in bank stability and vegetation composition to better understand use (wildlife, livestock, recreation, etc.) and changes in the system. If long-term system recovery shows a decline for two consecutive years and can be attributed to livestock, we will explore management actions, in coordination with FWS, to reduce pressure on riparian areas such as 1) installing off-stream water or placing mineral and salt blocks to influence livestock distribution, 2) installing partial fencing if feasible and effective, or 3) adjusting use of holding traps.

YBC-5

Photo Point Monitoring in Suitable Unsurveyed Cuckoo Habitat: There are no established riparian photopoints at on East Verde River adjacent to LF Ranch where the most suitable unsurveyed mapped cuckoo habitat exists. We will establish one photopoint in Belluzzi Holding Trap, Pocket Holding Trap, and Bullfrog, Pine Creek, and Homeward pastures and collect photos using two game cameras per point depicting up and downstream habitat. If long-term system recovery shows a decline (i.e. lack of seedling and sampling recruitment or survivorship) for two consecutive years and can be attributed to livestock, we will explore management actions, in coordination with FWS, to reduce pressure on riparian areas such as 1) installing off-stream water or placing mineral and salt blocks to influence livestock distribution, 2) installing partial fencing if feasible and effective, or 3) adjusting use of holding traps or Bullfrog Pasture. Should access to these areas become more feasible, use of game cameras to acquire photos will not be needed and standard photos and assessments will be taken.

YBC-6

We will continue to complete protocol surveys to determine when cuckoos arrive at and migrate from occupied habitat at Doll Baby Ranch and use bioacoustics or protocol surveys to understand cuckoo distribution in unsurveyed but suitable habitat when resources allow including difficult to access areas east and west of East Verde River near LF Ranch.

Aquatics and Designated Critical Habitat

AQ-1

Livestock will not graze Lower and Upper Fossil Creek pastures providing access to Fossil Creek on Deadman Mesa Allotment. Forest Service will ensure southern boundary fence line of the appropriate excluded pasture(s) is inspected prior to moving livestock to any of the following adjoining pastures: Middle Mesa, Shake Pile, Upper Mesa, and Nash Point. Livestock will have access to Lower Mesa pasture only after a drift fence is constructed on the southern edge of Deadman Mesa; this fence construction,

combined with extremely steep terrain and bluffs will prohibit livestock from accessing lower reaches of Fossil Creek bordering Deadman Mesa Allotment.

AQ-2

Forest Service will ensure the Lower Plow Beam Pasture fence is inspected prior to use to ensure livestock cannot access Verde River or move upstream in Fossil Creek to Deadman Mesa Allotment when cattle are scheduled in the pasture. At least once annually, Forest Service will monitor the 0.8-mile reach of Fossil Creek and report number of livestock using the area; the Forest Service may work with the grazing permittee to assist with carrying out these inspections.

Mexican Spotted Owl and Designated Critical Habitat[7]

MSO-1

Creation of new earthen tanks located within Mexican spotted owl critical habitat will be placed in areas where there will be no negative impacts to PCEs. For example, trees or snags greater than 18 inches dbh would not be felled and large downed logs would not be removed.

MSO-2

Livestock grazing or livestock management activities will occur within PACs in LVSA, but the following actions will not be permitted inside MSO PACs during the breeding season (March 1 – August 31):

1. use of mechanized equipment such as chainsaws or electric/gas powered post pounders
2. operating ATV/UTVs other than on existing roads
3. use of corrals
4. maintenance of corrals, buildings, or earthen stock tanks

Actions may occur during the breeding season if non-breeding or absence is inferred by a district wildlife biologist. On a case-by-case basis, exceptions may occur where above actions take place during the breeding season when nesting is unknown or nesting is confirmed, and a nest site located. Actions could occur inside a PAC if the action takes place at least 0.25 mile away from the known nest site and time / hour of day, length of disturbance, noise level, location within PAC, and noise reducing measures have been evaluated. Depending on topography and vegetation, the quarter mile buffer may be reduced or expanded. Any action completed during the breeding season will be coordinated with USFWS.

Adaptive Management

Under adaptive management, actual numbers of livestock would vary based on class of livestock, duration of use, and climatic or resource condition. Grazing systems would also be modified as needed to stay within utilization guidelines (USDA 2002). Adaptive management provides the flexibility to continually modify grazing strategies based on monitoring to achieve specific and/ or multiple objectives. The monitoring and analysis included in adaptive management would help identify when changes in management actions are needed in response to current resource conditions. We may adjust

[7] Conservation measures apply to all existing PACs and any PAC established during the length of the project.

management in response to monitoring data, in combination with weather patterns, likelihood of plant regrowth, and previous years' utilization levels. Authorized number of livestock may be adjusted but would not exceed the number authorized in the grazing decision.

Management Practices

Livestock management practices such as herding, and salting are critical to achieve proper livestock distribution in each unit/pasture. Permitees would be required to furnish sufficient riders or herders for proper distribution, protection, and management of cattle on LVSA. Tonto National Forest Grazing Practices are as follows:

- Forest Plan Standards and Guidelines applicable to livestock grazing would be followed (Forest Plan, p. 24).
- Salt and/or supplements would be placed where forage is abundant and current grazing use levels are low. Salt and/or supplements would not be placed any closer than one quarter mile from available natural or manmade water, recreation sites, or designated trails except where prior written approval had been obtained from District Ranger.
- No salting would occur within or adjacent to identified heritage sites. Salt would be removed from pastures when cattle have left an area, and not placed within a pasture until cattle arrive. Salting locations would be coordinated with Wildlife and Range staff and permittee.
- When entering the next scheduled pasture, all livestock would be removed from the previous pasture within two weeks (dependent on terrain).
- Permittee would ensure enough time is allotted to remove livestock to meet the pasture move date(s) and avoid over-utilization.

Permittee would ensure all necessary infrastructure for managing livestock are functioning prior to entering the next scheduled pasture.

Drought Preparation

The Standardized Precipitation Index (SPI) is a widely used index to characterize meteorological drought on a range of timescales. On short timescales, SPI is closely related to soil moisture, while at longer timescales, SPI can be related to groundwater and reservoir storage. It quantifies observed precipitation as a standardized departure from a selected probability distribution function that models raw precipitation data (Keyantash et al. 2018). Regional FS policy (USFS 2006) sets a threshold of – 1.00 SPI for a 12-month period, which triggers an evaluation of drought conditions. Once triggered, an interdisciplinary allotment evaluation is conducted to identify drought effects on an individual plant and landscape basis. Factors to consider in the evaluation include:

- Local precipitation data: rain gauge data, departures from normal.
- Current range management status: monitoring for desired conditions.
- Stocking levels: current authorized livestock numbers, grazing strategy.
- Available water sources: status of hauling water, stock tank levels, condition of improvements, well or spring production, presence of valuable riparian vegetation at the water source.

When an allotment's 12-month SPI becomes positive, vegetation resources would be evaluated for indicators of drought recovery. The following are evaluated:

- Recovery of vegetation: improved plant vigor, restoring litter production, restoring forage production.
- Implementation of grazing: focus on recovery through incremental restocking and pasture rest.

We will work with the permittee to develop drought preparedness guidelines to be included in the AMP. These guidelines would help frame initial communications related to the first signs of management impacts due to drought. Guidelines should address potential drought impacts to livestock and vegetation, identify known issues, and strategically plan for different scenarios while actively monitoring.

Monitoring

Effectiveness Monitoring

Effectiveness monitoring includes measurements to track long-term condition and trend of upland and riparian vegetation, soil, and watersheds. Examples of effectiveness monitoring indicators include, but are not limited to pace transects, pace quadrat frequency, dry weight rank, ground cover, Parker 3-step, repeat photography, and Common Non-forested Vegetation Sampling Procedures which measure frequency, fetch, dry-weight rank, production, and utilization. We will monitor at established permanent monitoring points (key areas)_using qualitative and quantitative methods in accordance with *Interagency Technical References (ITR)* (ITR 1996, revised 1999), *Region 3 Rangeland Analysis and Management Training Guide* (USFS 1997), and *Region 3 Allotment Analysis Guide*. We will interpret data to determine if management is achieving desired resource conditions, if changes in resource condition are related to management, and to determine if modifications in management are necessary.

Implementation Monitoring

Implementation monitoring will occur yearly and include inspection reports, forage utilization measurements in key areas, livestock counts, and facilities inspections. Utilization measurements are made following procedures found in ITR (ITR 1996, revised 1999), or the most current acceptable method, and with consideration of *Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands*. The purpose of implementation monitoring is to determine if grazing meets conservative use guidelines in upland and riparian areas.

We will monitor utilization on key forage species, which are native perennial grasses or browse species palatable to livestock. At a minimum monitoring will include use in key areas but may include monitoring outside of key areas. Our Range Program, permit holder, and cooperators will be responsible for monitoring livestock grazing utilization. Over time, changes in resource conditions or management may result in changes in livestock use patterns. As livestock use patterns change, new key areas may be established, and existing key areas may be modified or abandoned in cooperation with the permittee and cooperators.

Information would be collected through routine pasture inspections and end of season utilization monitoring. Specific schedules for monitoring will be flexible from year to year based on resource needs, which could change with climatic variations and management. Monitoring for plant cover, vigor, recruitment, and diversity, using techniques described in above publications, would ensure that wildlife needs, and riparian and watershed conditions were moving toward desired conditions.

While monitoring techniques as described above will be conducted in key areas, these would not be sole locations for gathering information from LVSA to make decisions about the timing, intensity, duration, or frequency of livestock grazing in each grazing season. The overall condition of the allotment, distribution patterns, or rangeland improvement conditions could be assessed at any given time to help make those decisions.

Riparian Utilization Monitoring

Riparian photo point monitoring outlined in Current Grazing Management will continue as part of the proposed action. We will coordinate the riparian photo point program, implemented by Friends of the Tonto National Forest. There are 44 permanent riparian photo points in LVSA (Table 6). Most photo points have been repeated at least once and others several times. Our goal would be to visit each photo point in the project area every 5 years with most remote locations visited every 10 years. Photos are stored on the Friends of the Tonto website, http://www.friendsofthetonto.org/photo-point.html.

Riparian areas will also be monitored using riparian utilization measurements (implementation monitoring) following methods in *Sampling Vegetation Attributes and Utilization Studies and Residual Measurements* (ITR, 1996, revised 1999) or the most current acceptable method. This riparian monitoring will center around reaches where riparian photopoint monitoring occurs.

In order to achieve Forest Plan Standards and Guidelines the following use guidelines for riparian components are as follows: *obligate riparian tree species* – limit use to less than 50 percent of terminal leaders (top one third of plant) on palatable riparian tree species accessible to livestock (usually less than 6 feet tall); *deergrass* – limit use to less than 40 percent of plant species biomass; *emergent species* (rushes, sedges, cattails, and horsetails) – maintain six to eight inches of stubble height during the grazing period.

Utilization limits for herbaceous riparian vegetation are intended to 1) protect plant vigor and 2) provide physical protection of streambanks or the sediment on the greenline that could develop into a bank feature. Deergrass was selected as the key species to monitor because it is the most common obligate, riparian, native, perennial grass on TNF. Additionally, deergrass exhibits several traits that make it an ideal stream-stabilizing plant. The above ground attributes of deergrass aid in preventing soil loss through decreasing flow velocity, they also trap sediment which aids in rebuilding of stream banks. Furthermore, deergrass is a bunchgrass with an extensive root system which acts to stabilize streambanks (Cornwall, 1998; Clary and Kruse, 2003).

Monitoring short-term indicators, such as stubble height and woody utilization, during the grazing season, can help determine if grazing use criteria is moving riparian conditions toward management

objectives over time (Burton, *et al*. 2011). The document, *Principles of Obtaining and Interpreting Utilization Data on Southwest Rangelands* (Smith *et al.*, 2005), would provide guidance for utilization data collection and interpretation.

If utilization reaches limits of recommended allowable use, livestock would be moved from critical areas or pastures considering time of year and extent of area involved. Actual use records in combination with utilization measurements would inform if it may become necessary to minimize or remove access to riparian habitat if grazing pressure becomes a limiting factor in use of pastures.

Forest Plan Aquatic and Riparian Monitoring

Our current forest plan, signed in 1985, provides comprehensive management direction for resources on the National Forest System Lands. We began revising our Forest Plan in 2014 using the 2012 Planning Rule for the National Forest System; the plan was signed December 1, 2023. Although our new plan has been signed, this BA was initiated in 2022 and grazing on these allotments will follow direction in existing Allotment Management Plans (AMPs) approved under our 1985 Forest Plan until new NEPA is completed. Even so, our new plan direction calls for development of a monitoring program which has influenced some of our proposed action. Under the 2012 Planning Rule ((36 CFR 219.12(a)(5), we must develop a monitoring program containing one or more monitoring questions and associated indicators addressing each of the following requirements:

1. The status of select watershed conditions;
2. The status of select ecological conditions, including key characteristics of terrestrial and aquatic ecosystems;
3. The status of focal species to assess ecological conditions required under 36 CFR 219.9;
4. The status of a select set of ecological conditions required under 36 CFR 219.9 to contribute to recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern;
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives;
6. Measurable changes within the plan area related to climate change and other stressors that may be affecting the plan area;
7. Progress toward meeting desired conditions and objectives in the forest plan, including providing multiple use opportunities; and
8. The effects of each management system, to determine they do not substantially and permanently impair the productivity of the land

We will develop the monitoring plan collaboratively with other agencies, organizations, and individuals, in consultation with Tribes, while coordinating with Forest Service Research and State and Private Forestry. The monitoring plan will provide a framework for subsequent monitoring and evaluation designed to inform adaptive management. We intend to establish a riparian and aquatic monitoring component based on stream geomorphology, stream permanence, and climactic zones that pair reference reaches with reaches actively used for grazing, recreation, or mining across the forest. These monitoring areas will be established over the first five years after the establishment of our new Forest Plan as part of the required monitoring within the plan. At a minimum, we will 1) establish quantitative

vegetation monitoring transects using the USFS National Riparian Protocol or other best available science, 2) evaluate macroinvertebrates using the Ephemeroptera, Plecoptera, and Trichoptera Index (EPT) or index of biological integrity (IBI) and 3) measure water quality parameters such as pH, temperature, total dissolved solids, and fine. Results from this monitoring will be used to adaptively manage ongoing actions across the forest.

SPECIES BASELINE AND EFFECTS OF THE ACTION

Each aquatic species' status in the analysis area will have its own heading but effects of the action on all fish and their critical habitats will be combined below.

Gila Topminnow (Poeciliopsis occidentalis)[8]

ESA Status:	Endangered, March 11, 1967
Recovery Plan:	1984, Revision 1999
Critical Habitat:	No designated critical habitat
Effects Finding (species)	May Affect, not Likely to Adversely Affect

Status in the Analysis Area

The upper reach of Fossil Creek is one of few Arizona streams providing habitat to only native fish. Starting in 2004, efforts to restore habitat for special status species included decommissioning two hydroplants, nonnative fish removal, and construction of a fish barrier.

Recovery efforts by AGFD, FS, and USFWS to reestablish Gila topminnow in the upper reach of Fossil Creek bordering Deadman Mesa Allotment have been successful. Self-sustaining populations were reintroduced from 2007 through 2010, and AGFD estimates the population in Fossil Creek to be between 5000 and 9,999 individuals (Robinson and Mosher 2018). Surveys have shown Gila topminnow between the fish barrier upstream to Irving Falls but abundance and distribution varies based on flow events (USFWS 2020). During high flow events, it may be possible for individuals to move below the fish barrier into lower reaches of Fossil Creek bordering Cedar Bench Allotment. Under the proposed action, the first 0.8-mile of Fossil Creek from its confluence of Verde River will be accessible to livestock. Gila topminnow are not found on Bull Springs and Pole Hollow allotments.

Spikedace (Meda fulgida)[9]

ESA Status:	Threatened, March 16, 1993
Recovery Plan:	2012, First Revision
Critical Habitat:	August 31, 2004, Designated
Effects Finding (species)	May Affect, not Likely to Adversely Affect

[8] For life history information on Gila topminnow, please visit Species Profile for Gila topminnow (incl. Yaqui)(Poeciliopsis occidentalis) (fws.gov)

[9] For life history information on spikedace, please visit Species Profile for Spikedace(Meda fulgida) (fws.gov)

Status in Analysis Area

Like Gila topminnow reestablishment efforts, partners introduced spikedace to Fossil Creek following habitat restoration. Spikedace stockings in Fossil Creek ended in 2016, but AGFD has continuously detected spikedace during snorkel surveys since 2013 (USFWS 2020). Survey data suggests the population is small and occurs mostly below Sally May Wash confluence with Fossil Creek (Rinker and Rogers 2018). The number of spikedace detected varies year-to-year, but the population is self-sustaining.

Designated Critical Habitat

The USFWS designated spikedace critical habitat in Fossil Creek for approximately 13.8 miles from its confluence with Verde River upstream to the old Fossil Creek diversion dam (Figure 6). The PCEs describing physical and biological features of spikedace critical habitat consist of: 1) habitat to support all egg, larval, juvenile, and adult spikedace; 2. an abundant aquatic insect food base consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies; 3. streams with no or no more than low levels of pollutants; 4. perennial flows, or interrupted stream courses that are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted; 5. no nonnative aquatic species or levels of nonnative aquatic species that are sufficiently low as to allow persistence of spikedace; and 6. streams with 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 transporting sediments (USFWS 2012b).

Most of Fossil Creek borders Deadman Mesa Allotment where livestock will not have access to critical habitat. Livestock will have access to 0.8-mile of Fossil Creek starting at its confluence with Verde River through Lower Plow Beam Pasture on Cedar Bench Allotment. Designated critical habitat directly adjacent to the project area includes Verde River and its tributaries from its confluence with Fossil Creek upstream beyond Beasley Flat.

Razorback Sucker (Xyrauchen texanus)[10]

ESA Status:	Endangered, October 23, 1991
Recovery Plan:	1998
Critical Habitat:	March 21, 1994 - Designated
Effects Finding (species)	May Affect, not Likely to Adversely Affect

Status in Analysis Area

Razorback sucker historically occupied streams in the Gila River Basin, including Salt, Verde, and Gila Rivers (W. L. Minckley and Deacon 1968, as cited in USFWS 2018), but recognized extant populations of razorback sucker do not exist in Verde River (USFWS 2020b). The project area is adjacent to middle Verde River where razorback sucker is at risk due to nonnative predatory fish, reduced connectivity from water diversions, and modifications of Verde River by construction of Horseshoe and Bartlett dams

[10] For life history information on razorback sucker, please visit Razorback Sucker (Xyrauchen texanus) | U.S. Fish & Wildlife Service (fws.gov)

(USFWS 2002). Starting in 1981, AGFD stocked razorback sucker in Gila River Basin, including sites just 20 miles upstream of LVSA near Beasley Flats, but survival of the hatchery produced fish was extremely low and evidence of reproduction and recruitment was never documented (USFWS 2018). Post-stocking monitoring has been limited, however, recaptures of razorback suckers fluctuated yearly with a high of 104 fish in 1994 and a low of two fish in 2001 (Hyatt 2004, as cited in USFWS 2021). In 2005 and 2006, surveys detected razorback suckers over 30 miles downstream of the project area in Horseshoe Reservoir (Robinson 2010, as cited in USFWS 2021). Two razorback suckers were captured during surveys in 2012 near Beasley Flat (G. Cummins, personal communication as cited in USFWS 2020c). Stocking of razorback suckers continued in Verde River, with the most recent release of 733 suckers at Beasley Flats in 2020. Despite efforts, partners in recovery have not been successful in establishing self-sustaining populations (USFWS 2021a) and USFWS reports stockings in Verde River will be discontinued moving forward (USFWS 2020b). Although there is no recognized population of razorback sucker in Verde River near the project area, there has been recent stocking efforts and suckers can persist for some time post stocking. Therefore, we acknowledge that individuals may occupy reaches of middle Verde River in extremely low numbers adjacent to Cedar Bench Allotment where livestock have access to graze 0.8-mile of Fossil Creek starting at its confluence with Verde River where downstream consequences may occur. Fossil Creek, a tributary to Verde River has also been stocked with razorback suckers, starting in 1988, and again in 2008 to 2014, but they never established and have not been detected since 2009. (USFWS 2018).

Designated Critical Habitat

USFWS designated critical habitat in 15 river reaches on March 21, 1994. Critical habitat included portions of the Colorado, Duchesne, Green, Gunnison, San Juan, White, and Yampa rivers in the Upper Colorado River Basin, and the Colorado, Gila, Salt, and Verde rivers in the Lower Colorado River Basin (USFWS 1994). Critical habitat for Verde River includes 114 miles, extending west of Perkinsville downstream to Horseshoe Dam and includes Horseshoe Lake. Critical habitat for razorback sucker is not inside LVSA but adjacent to the project area where at least six river miles of Verde River are within one mile from Deadman Mesa or Cedar Bench allotments (Figure 6). The PCEs of critical habitat for survival and recovery of razorback sucker are water, physical habitat, and biological environment (USFWS 1994). The water PCE includes a sufficient quantity and quality of water delivered to a specific location in accordance with a hydrologic regime identified for the particular life stage (i.e., temperature, dissolved oxygen, contaminants, nutrients, turbidity, etc.). The physical habitat PCE includes habitat razorback suckers use for spawning, nursery, feeding, rearing, or corridors. In addition to river channels, these areas also include bottomlands, side channels, secondary channels, oxbows, backwaters, and other areas in the 100-year floodplain, which, when inundated, provide spawning, nursery, feeding, and rearing habitats. Food supply, predation, and competition are the components of the biological environment PCE .

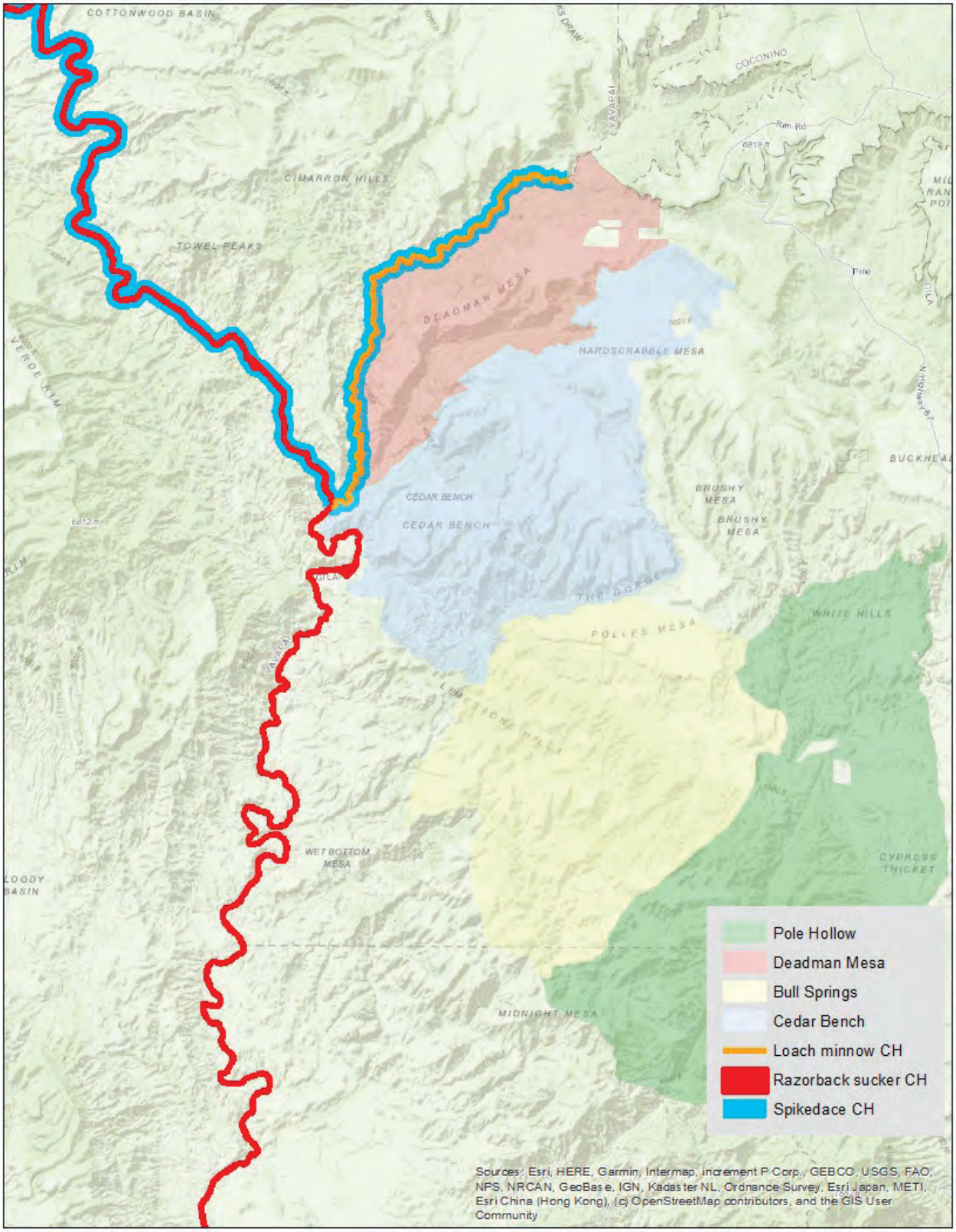

Figure 6. Designated Critical Habitat for Fish Adjacent to Lower Verde Subbasin Allotments.

Loach minnow – Designated Critical Habitat (Rhinichthys cobitis)[11]

ESA Status:	Endangered, February 23, 2012
Recovery Plan:	1991, Revision in progress
Critical Habitat:	February 23, 2012 Designated
Effects Finding (species)	May Affect, not Likely to Adversely Affect

Status in Analysis Area

The USFWS designated loach minnow critical habitat in Fossil Creek for approximately 13.8 miles from its confluence with Verde River upstream to the old Fossil Creek diversion dam (Figure 6). The PCEs for the loach minnow are the same as those described above for spikedace.

Most of Fossil Creek borders Deadman Mesa Allotment where livestock will not have access to the critical habitat. Livestock will have access to 0.8-mile of Fossil Creek starting at its confluence with Verde River through the Lower Plow Beam pasture on Cedar Bench Allotment.

Effects of the Action on Fish and Critical Habitats

There will be no effect to established populations of Gila topminnow or spikedace above the fish barrier because we propose to prohibit grazing on 13 miles of Fossil Creek. Under the proposed action, Deadman Mesa Allotment pastures providing access to Fossil Creek will not be grazed (Upper and Lower Fossil Creek). Livestock permitted to graze Lower Mesa Pasture cannot access Fossil Creek due to steep terrain and proposed construction of a drift fence on the southern edge of Deadman Mesa (AQ-1).

We acknowledge the action may impact individual Gila topminnow or spikedace flushed below the fish barrier. Biologists have extensively monitored aquatic species in Fossil Creek post non-native fish removal. Snorkel surveys focus on habitat above the fish barrier to Irving Falls but at least 100 meters below the barrier is included in annual fall surveys. Gila topminnow and spikedace have never been detected in the survey reach below the fish barrier during these surveys (M. Rinker, AGFD, personal communication, September 6, 2022). Even so, during high flow events, it's possible for Gila topminnow or spikedace to move below the barrier into lower reaches of Fossil Creek on Cedar Bench Allotment. Under the proposed action, the first 0.8-mile of Fossil Creek from its confluence with Verde River will be accessible to livestock and if either species is present, impacts may occur. Livestock will access Fossil Creek from Lower Plow Beam Pasture on Cedar Bench Allotment anytime between November 1 through May 31 until utilization levels are met and livestock are moved to another pasture. Lower Plow Beam is generally on a rotation grazing schedule where it is grazed most every year for typically 60 days or less, however, season of use could vary year to year. Conservation measures are in place to ensure livestock with access to Fossil Creek stay in scheduled areas. Prior to use, Cedar Bench permittee will inspect Lower Plow Beam Pasture fence to ensure livestock cannot access Verde River or move onto Coconino National Forest (AQ-2). Livestock cannot move beyond 0.8-mile in Fossil Creek to Deadman Mesa Allotment because of steep topography and large boulders preventing cattle from drifting upstream (A. Jacobson, personal communication, September 7, 2022). At least once annually, Cedar Bench permittee

[11] For information on loach minnow critical habitat, please visit Species Profile for Loach minnow(Tiaroga cobitis) (fws.gov)

will monitor the 0.8-mile reach of Fossil Creek and report number of livestock using the area. The permittee may be accompanied by FS Range staff to monitor current condition and utilization for these inspections (AQ-2).

To lessen impacts to riparian areas, grazing strategies that disperse rather than concentrate livestock are in place to attract cattle away from riparian habitat. These strategies include placing supplements, herding, creation of upland water developments, and location of pasture fences. While livestock graze the 6,985-acre Lower Plow Beam Pasture, they have access to six earthen stock tanks on Cedar Bench. Tanks reliably hold water in winter while cattle are scheduled which increases their motivation to stay on Cedar Bench where topography is less rugged and forage production is greater (A. Jacobson, personal communication, September 7, 2022). Scheduled use in Lower Plow Beam Pasture is typically 60 days or less and only a small percentage of the herd is likely to move down to Fossil Creek. We expect only 6-15 cattle to contour northwest terrain off Cedar Bench and gain access to Fossil Creek (J. Sturla and C. Randall, personal communication, August 16, 2022). While not documented, consequences of livestock grazing to Gila topminnow and spikedace include trampling young-of-year, juveniles, or adults. We anticipate the action will not result in measurable effects to fish because the presence of non-native predatory fish prevents Gila topminnow and spikedace from persisting long enough below the fish barrier to reproduce. (S. Hedwall, personal communication, September 1, 2022; B. Hickerson, personal communication, September 7, 2022); if present, they are in extremely low numbers.

The entire reach of Fossil Creek, including the area accessible from Lower Plow Beam Pasture, is designated critical habitat for spikedace and loach minnow. Watershed condition data collected by TNF classified Lower Fossil Creek watershed as functioning at risk. Perennial waters with a functioning at risk classification are considered in fair condition with moderate geomorphic, hydrologic, and biotic integrity relative to natural potential condition. The aquatic habitat condition indicator for streams with this classification reveal that the watershed supports medium to small blocks of contagious habitat; some high-quality aquatic habitat is available, but stream channel condition may show signs of being degraded (Potyondy 2011; Potyondy and Geier 2011). Grazing in or near riparian areas can alter hydrologic function, contribute to stream pollutants, increase sedimentation and erosion, and reduce channel stability (Belsky et al. 1999). These alterations could impact spawning habitat, water quality, and prey base, thus, affecting PCEs 1, 2, and 3 for both species. Our action will have no effect on PCE 4, 5, and 6 because livestock will not alter perennial flows, contribute to the level of nonnative species present, or alter the natural flow of Fossil Creek.

PCE 1 Habitat to support all life stages

Our action will not alter perennial flows, stream velocity or depth, stream microhabitat like riffles, runs or glides, stream temperature, or stream gradient. Livestock grazing may alter substrates near backwater pools, but this impact will be temporary because scheduled use in Lower Plow Beam Pasture is typically 60 days or less and only a small percentage of the herd is likely to move down to Fossil Creek. The impact is also limited to only a 0.8-mile reach of critical habitat. Conservative utilization guidelines will be followed, and cattle would be moved when riparian utilization levels are met, therefore,

minimizing consequences of grazing and providing time for riparian area and stream channel condition to improve.

PCE 2 An abundant aquatic insect food base

There is large variability and uncertainty in available data describing the effects of sedimentation on aquatic invertebrates. Exposed respiratory organs of benthic invertebrates can be damaged as sediments move through the water channel and some aquatic invertebrates may become more susceptible to predation through dislodgement. Sediment can also increase invertebrate drift, clog feeding structures, and reduce feeding efficiency of aquatic invertebrates (Bilotta and Brazier 2008). Livestock with access to the 0.8-mile reach of critical habitat could temporarily increase sedimentation in areas not protected by bedrock, boulders, and cobble. Sediment transport is a natural function of Fossil Creek but it's reasonable to believe livestock could increase sedimentation beyond what is natural in the system for short periods of time. It is difficult to predict whether sedimentation caused by livestock will decrease invertebrate communities because multiple factors influence the effect sedimentation has on aquatic biota. These factors include the concentration of suspended solids, the duration of exposure to suspended solid concentrations, chemical composition, and the particle size distribution of suspended solids. Under the proposed action, measures and strategies are in place to minimize sedimentation wherever possible. Impacts will be temporary because scheduled use in Lower Plow Beam Pasture is typically 60 days or less and only a small percentage of the herd is likely to move down to Fossil Creek.

PCE 3 Steams with no or more than low levels of pollutants

Livestock in riparian areas can alter water quality through excessive excrement, resulting in elevated levels of nitrogenous compounds (ammonia). In addition, fecal contamination may cause eutrophication of water and an increase in planorbid snail numbers, number of nematode parasites, and the rate of some parasites. (Johnson *et al*. 1999). We do not anticipate livestock presence to significantly impact pollutant levels in Fossil Creek because scheduled use in Lower Plow Beam Pasture is typically 60 days or less and only a small percentage of the herd is likely to move down to Fossil Creek. Critical habitat for spikedace and loach minnow within the action area makes up only one lotic system, thus, any pollutants by cattle will not be concentrated and only temporary because the system has perennial flow at fluctuating rates depending on the season. Further, grazing strategies that disperse rather than concentrate livestock on Cedar Bench are in place to attract cattle away from streamside areas. These strategies include placing supplements, herding, creation of upland development, and location of pasture fences. For these reasons, we do not anticipate any pollutants by livestock to negatively impact this PCE.

Livestock will not have access to graze razorback sucker occupied or designated critical habitat, but downstream consequences, although insignificant, may occur given River and Lower Plow Beam Pasture on Cedar Bench Allotment share two hydrologic units with Verde River. River Pasture will not be grazed under the proposed action. Of the ~1,500 acres of Lower Plow Beam Pasture shared with Green Gap – Verde River or Lower Fossil Creek hydrologic units, only 612 acres are considered suitable for grazing because of steep terrain (J. Sturla, personal communication, August 31, 2022). Although 612 acres,

including the 0.8-mile reach of Fossil Creek, is accessible to livestock, this area receives low utilization and only a small percentage of the heard is likely to access the creek for 60 days or less. The action will not noticeably increase Verde River or Fossil Creek sedimentation above baseline conditions. For these reasons, we expect impacts to suckers or PCEs to be discountable and insignificant.

Part of the proposed action includes addition of range improvements like the construction or maintenance of water developments or fencing. All new waters will follow conservation measures under the proposed action, specifically those under General and Range Improvements section. Improvements like construction or maintenance of water developments will not impact aquatic species or their habitats in Fossil Creek or Verde River because developments will be greater than 400 feet away from any perineal reach (RI-1). Any new water developments adjacent to Fossil Creek or Verde River will exceed this conservation measure because topography will force those developments to be at least 0.5 mile away (A. Jacobson, personal communication, September 7, 2022).

Determination of Effects

It is my determination the proposed action ***may affect but is not likely to adversely affect*** Gila topminnow, spikedace and its critical habitat, razorback sucker and its designated critical habitat, and designated critical habitat for loach minnow:

- Livestock will not have access to graze 13 miles Fossil Creek where established populations of Gila topminnow and spikedace exist.
- Livestock will not graze River Pasture, adjacent to Verde River, on Cedar Bench Allotment.
- Livestock will only have access to graze the first 0.8-mile reach of Fossil Creek starting at its confluence with Verde River but consequences to Gila topminnow or spikedace that move below the fish barrier may occur because livestock may trample and ingest fish, impair water quality, and deteriorate habitat. This impact is insignificant because of the low likelihood of Gila topminnow or spikedace being present.
- Impacts to PCEs 1, 2, and 3 of critical habitat for spikedace and loach minnow may occur because livestock have access to graze the first 0.8-mile of Fossil Creek starting at its confluence with Verde River.
- Downstream consequences to razorback sucker and its critical habitat are insignificant because livestock will graze only 612 acres of watersheds shared with Verde River.
- Any impacts to aquatic species habitats will be unmeasurable and insignificant; actions are short term and limited in location, frequency, and duration because of conservative utilization levels and grazing schedules. A small percentage of the heard is expected to access the 0.8-mile reach of designated critical habitat in Fossil Creek on Lower Plow Beam Pasture for ~60 days or less between November 1 to May 31 .
- Conservation measures and monitoring is in place to ensure livestock stay in scheduled areas.
- Range improvements are not proposed in occupied or designated critical habitat for any aquatic species.

Mexican Spotted Owl (Strix occidentalis lucida)[12]

ESA Status:	Threatened, March 16, 1993
Recovery Plan:	2012, First Revision
Critical Habitat:	August 31, 2004, Designated
Effects Finding (species)	May Affect, not Likely to Adversely Affect

Status in Analysis Area

Protected Activity Centers

The LVSA splits Range and Basin West and Upper Gila Mountain recovery units but owl habitat is limited. Seventy acres of North Frost Deadman PAC intersects the project area on the southern end of Pole Hollow Allotment. Cove PAC is mostly adjacent to the northeast boundary of Cedar Bench Allotment, but three acres enter the project area. There are no established PACs inside or adjacent to Deadman or Bull Springs allotments on TNF. Protected habitat in LVSA makes up less than 1% total area (Figure 7). Tables below contain monitoring data since establishment.

Cove MSO PAC- 031204XX

Cove PAC was established in 1990 after an MSO pair was found non-nesting. The PAC is made up of 75% mixed conifer and 25% ponderosa pine/oak habitat; Three acres of the PAC enters LVSA at the northern corner of Cedar Bench Allotment.

Table 13. Summary of Cove PAC Survey Data

Survey Year / Results	Survey Year / Results
1990 – Occupied – Non-Nesting	1998 – No Response
1991 – Occupied – Nest unknown	2003 – Occupancy Unknown – Single Vocal
1992 – No Response	2009 – No Response
1993 – No Response	2014 – No Response
1994 - No Response	2018 – Nesting Unknown
1995 – No Response	2019 – Male Inferred
1996 – No Response	2022 -Male Inferred
1997 – No Response	

[12] For life history information on the Mexican spotted owl, please visit https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/MSO/2012MSO_Recovery_Plan_First_Revision_Final.pdf

North Frost Deadman MSO PAC- 031204XX

Gentry PAC was established in 1994 after a pair was confirmed after a night calling survey. The PAC is made up of 10% ponderosa pine/oak, 10% riparian, 40% pinyon/juniper and 40% interior chapparal; 70 acres of North Frost Deadman PAC intersects LVSA on the southern end of Pole Hollow Allotment with the entire nest core outside the project boundary.

Table 14. Summary of North Frost Deadman PAC Survey Data

Survey Year / Results	Survey Year / Results
1994 – Pair Confirmed	2018 – No Response
2007 – No Response	2019 – No Response

Critical Habitat

The USWF designated critical habitat for MSO in 2004 on approximately 8.6 million acres of Federal lands in Arizona, Colorado, New Mexico, and Utah (69 FR 53182). Critical habitat includes only those areas in designated critical habitat units (CHUs) that meet the definition of protected (PAC and steep slopes, as defined) and restricted (now called "recovery") habitat (unoccupied owl foraging, dispersal, and future nest/roost habitat) as defined in the 1995 Recovery Plan (USFWS 1995, 2004).

The PCEs identified for the owl within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the owl's habitat needs for nesting, roosting, foraging, and dispersing are 1) a range of tree species, including mixed-conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 to 45% of which are large trees with diameter at breast height (dbh) (4.5 feet above ground) of 12 inches or more, 2) shade canopy created by the tree branches covering 40% or more of the ground; Large, dead trees (snags) with a dbh of at least 12 inches, 3) high volumes of fallen trees and other woody debris, 4) wide range of tree and plant species, including hardwoods and 5) adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

Critical habitat in LVSA is split between Basin and Range West (BR-W-4) and Upper Gila Mountain (UGM-10) CHUs. Seventy acres of critical habitat in UGM-10 intersects the extreme northeast portion of Cedar Bench Allotment and 6,880 acres overlaps with the southwestern part of Pole Hollow Allotment in BR-W-4 CHU (Figure 6).

Recovery Habitat[13]

Recovery habitat contains areas outside PACs important to MSO for life history needs and includes ponderosa pine-Gambel oak, mixed conifer, and riparian forest communities (USFWS 2012). We have not identified MSO recovery habitat forest-wide and rely on other datasets to guide recovery habitat estimations for project planning. Recovery habitat in LVSA was estimated using three datasets described below in combination with local knowledge of the area. Limitations for all datasets include over or under prediction of recovery habitat and each have not been used as a stand-alone tool. Estimated recovery habitat acres will guide field validation over the length of the project.

Rim Country EIS MSO Recovery Habitat Dataset

Rim Country EIS MSO Recovery Habitat (Rim Country RH) dataset was created by Rim Country Four Forest Restoration Initiative (4FRI) team members in close coordination with USFWS and FS biologists. This layer includes designations of recovery nest/roost and foraging habitat as described in the recovery plan. The team was aware PACs and recovery habitats on TNF could not all be characterized as pine-oak or mixed conifer, thus, requiring queries using additional criteria. A geophysical model was used to identify recovery habitats based on slope and aspect. The results of queries were reviewed in meetings with biologists with on-the-ground familiarity for the forest.

MSO Forest Habitat Product[14]

The MSO Habitat Trend Monitoring Group (MSO Monitoring Group) developed the MSO Forest Habitat Product (Habitat Product) using over 2,900 MSO nest and roost locations, Landsat multi-spectral (i.e., vegetation) data, topography, and climate data. This product will change overtime with incorporation of new MSO nest or roost data.

R3 MSO Recovery Habitat Base Layer

Southwestern Region 3 created the R3 MSO Recovery Habitat Base Layer (RH Base Layer) using specific Ecological Response Units (ERUs) and existing vegetation mapping (INREV mapping) in combination with MSO habitat criteria outlined in the recovery plan. Spatial resolution was based on 300-acre hex cells, each with percent-area category. The dataset is best used for generating map figures at landscape scales. It can also be used to report habitat areas at a scale like HUC12 subwatersheds.

Recovery Habitat in LVSA

Only 3,400 acres of LVSA overlaps with Rim Country EIS Analysis Area and after referencing the model, 131 acres of foraging nonbreeding habitat was identified on Pole Hollow Allotment. The Habitat Product identified isolated patches of predicted MSO habitat totaling 293 acres on Bull Springs and Pole Hollow

[13] Recovery Habitat is intended to: 1) provide protection for areas that may be used by owls; 2) foster creation of roost/nest habitat; 3) simultaneously provide managers with greater management flexibility than is allowed in PACs; and 4) facilitate development and testing of management strategies that could be applied in PACs (USFWS 2012).

[14] For more information on the MSO Forest Habitat Product visit Region 3 - Wildlife (usda.gov)

Allotments although patch size did not exceed 14 acres. The RH Base Layer identified an additional 12 acres of recovery mixed conifer forested habitat on Pole Hollow Allotment and 134 acres recovery riparian forested habitat along Fossil Creek bordering Deadman Mesa Allotment and 8 acres along Cedar Bench Allotment. Based on these datasets, we estimate 578 acres of recovery habitat containing key habitat components important to MSO may be present on LVSA (Figure 6). These acres will be field validated as actions occur in the analysis area to determine if identified recovery habitat contains forest structure components found in mature to old-growth forests or habitat elements like high canopy cover, large trees, high tree BA, multi-storied canopy, prominent hardwood component, presence of riparian species, and geophysical characteristics that enhance habitat and protect owls.

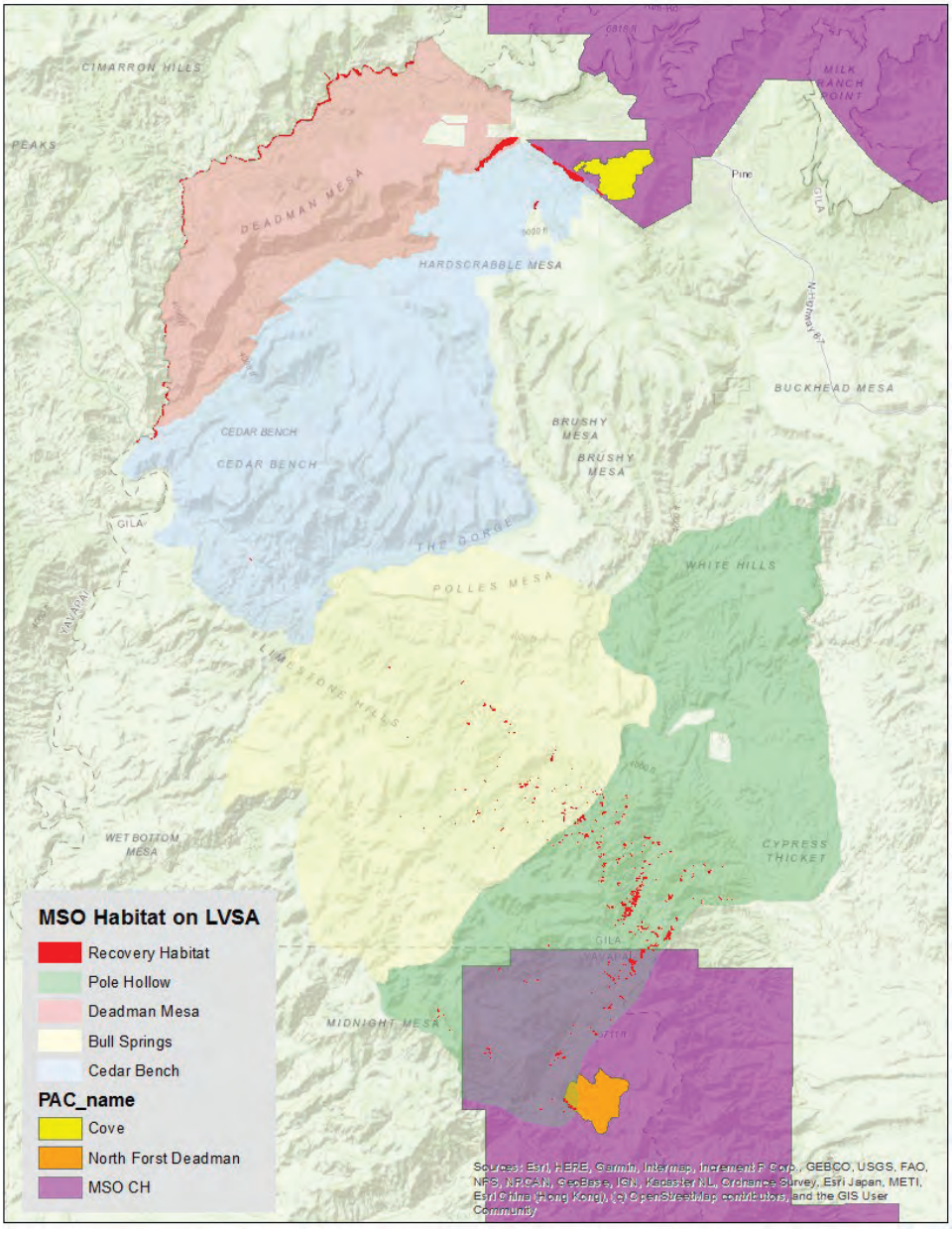

Figure 7. Owl Habitat Across Lower Verde Subbasin Allotments

Effects of the Action

Under the proposed action, livestock grazing will occur in 70 acres (outside core) of North Frost Deadman PAC in Wilderness Pasture of Pole Hollow Allotment, including during the MSO breeding season. Grazing in spotted owl habitat can impact habitat structure and composition, as well as availability and diversity of food for the owl. The MSO Recovery Plan summarizes effects of livestock grazing on owls in four categories: (1) altered prey availability, (2) altered susceptibility to fire, (3) degeneration of riparian plant communities, and (4) impaired ability of plant communities to develop into spotted owl habitat (USFWS, 2012).

Grazing Effects to MSO Prey Availability

Concentrations of livestock in owl habitat causing trampling of vegetation and compaction of soil could result in lower quality forage areas with reduced hiding cover and food resources for prey. We would manage these impacts to herbaceous cover through length of grazing period, frequency of grazing, grazing intensity, and forage utilization guidelines. Timing of grazing and grazing schedule will also minimize effects to herbaceous height and cover and maintain or enhance prey availability. Pole Hollow Allotment will be managed under a rotation system across nine pastures, allowing plants the opportunity for growth or regrowth. Pasture use may also be deferred to allow for recovery, prevent patterns of repeated use, and accomplish resource goals related to fire, fuels, and habitat protection. Wilderness Pasture has not been grazed since 2004 due to a lack boundary fence following the Willow Fire but when infrastructure is repaired, it will once again be included in the grazing rotation. Once added to the rotation, Wilderness Pasture will most likely be used in the winter, although it's possible for livestock to graze during summer months depending on resource conditions and growth patterns.

Additionally, grazing intensity on summer or winter range browse species would be managed up to moderate levels. Management at these levels would provide sufficient hiding cover for prey and maintain soil conditions and water quality. There will be no consequences from livestock grazing to suitable foraging habitat in reaches of Fossil Creek because the proposed action prohibits livestock from grazing Upper and Lower Fossil Creek pastures and livestock permitted to graze Lower Mesa Pasture cannot access Fossil Creek because of steep terrain and proposed construction of a drift fence on the southern edge of Deadman Mesa (AQ-1). We do not expect livestock to impact numbers of large, downed logs, wood debris, or snags.

Grazing Effects to Riparian Communities

Excessive grazing in riparian areas can reduce or eliminate important shrub, tree, forb, and grass cover, all of which in some capacity support the owl or its prey. Excessive grazing can also physically damage stream channels and banks. Riparian utilization guidance will be followed by limiting riparian utilization of woody species to <50% of terminal leaders on top 1/3 of plants accessible to livestock (<6.0 ft. tall). Herbaceous species will be limited to less than 40% of plant species biomass for deergrass and maintain 6-8 inches of stubble height during the grazing season for emergent species such as rushes, sedges, cattails, and horsetails. Due to topography, some areas may be inaccessible to livestock, especially some riparian segments of East Verde River, Rock Creek, The Gorge, Wet Bottom Creek, and Hardscrabble Creek. Livestock would be moved when riparian utilization levels are met, therefore, minimizing

negative effects of grazing and providing time for riparian area and stream channel condition to improve. There will be no effect to riparian habitats along Fossil Creek because the proposed action prohibits livestock from the drainage.

Grazing Effects to Managing Future MSO Habitat

The proposed action will not significantly alter key habitat elements related to canopy cover, high tree basal area, multi-storied canopy, down woody debris, snags, and prominent hardwood components that enhance habitat and protect owls. The proposed rotational grazing system would allow grasses the opportunity for growth or regrowth and utilization levels ensure allowable use of plant species to maintain plant diversity, density, vigor, and regeneration overtime.

Effects of Range Activities and Improvements on MSO and Habitat

The presence of humans and noise associated with livestock management activities during the breeding season could result in temporary or permanent nest abandonment. Given this potential negative effect, the following activities will not be permitted inside PACs during the breeding season unless USFWS protocol surveys have confirmed non-nesting or infer absence for that breeding season by a district wildlife biologist:

1. use of mechanized equipment such as chainsaws, electric post-pounders, etc.
2. operating ATV/UTVs other than on existing roads
3. use of permanent or temporary corrals or holding traps
4. maintenance of corrals, holding traps, earthen livestock tanks, or buildings

On a case-by-case basis, exceptions may occur where above actions may take place during the breeding season when nesting is unknown, or nesting is confirmed, and a nest site located. Actions could occur inside a PAC if the action takes place at least one quarter mile away from the known nest site and time and hour of day, length of disturbance, noise level, location within PAC, and noise reducing measures have been evaluated. Depending on topography and vegetation, the quarter mile buffer may be reduced or expanded. Any action completed during the breeding season inside a PAC will be coordinated with USFWS.

There are no corrals, holding traps, or structures in the 70 acres of North Frost Deadman PAC on Pole Hollow Allotment, nor the three acres in Cove PAC. Under the proposed action, any new corral or structure constructed over the next 10 years will not be located inside a PAC (RI-3). Unless surveys confirm non-nesting or infer absence, or the district wildlife biologist and USFWS determine nesting birds will not be disturbed, grazing-related activities in PACs during the breeding season (March 1 – August 31) would be limited to routine herding in an effective manner that reduces time in PAC.

Less than one mile of an allotment boundary fence intersects the west side of North Frost Deadman PAC. We anticipate minimal disturbance because routine maintenance of fences will not be permitted during the breeding season unless non-nesting is confirmed, or the action will not disturb nesting owls (MSO-2). Routine maintenance of existing fence completed outside the breeding season could have a small effect on vegetative cover and soil conditions in suitable spotted owl foraging habitat when ATV/UTVs are used off-road along fences, when fencing material may be stock piled, or when fences are

brushed to remove fallen debris or vegetation growing through fence lines. This disturbance will be extremely localized and short in duration; therefore, we do not anticipate prey populations near pasture fences to be affected.

There are no Site-Specific Improvements planned within one quarter mile of Cove or North Frost Deadman PACs in the next three years. During the life of the project, additional range improvements described in Non-Site Specific Improvements may be constructed but will follow conservation measures MSO-1, MSO-2, RP-1, RP-2, RI-1, RI-2, RI-3, RI-5, and RI-7 that eliminate or reduce impacts to nesting MSO and owl habitat. For example, when possible, new waters would be farther than one quarter mile from any known PAC. They would not negatively impact nest/roost recovery habitat features or PCEs of designated critical habitat. Heavy equipment would be restricted to existing roads and most often, locations of new waters beyond those under Site Specific Improvements would be adjacent to roads in areas where removal of large snags, downed logs, and large mature trees would not be necessary.

Determination of Effects

It is my determination the proposed action ***may affect but is not likely to adversely affect*** Mexican spotted owl and critical habitat.

- Livestock grazing or livestock management activities will occur in small portions of Cove and North Frost Deadman PACs, but no human disturbance or construction actions associated with livestock grazing will occur in PACs during the breeding season. Exceptions may occur where 1) recent surveys indicate non-breeding or infer absence or 2) nesting birds are located and the district wildlife biologist in coordination with USFWS determine the action will not disturb nesting birds.
- Livestock grazing and livestock management activities in Cove and North Deadman Mesa PAC will be managed for levels that maintain or enhance prey availability and promote natural and healthy riparian, meadow, and upland plant communities. This will be accomplished through conservative forage utilization guidelines, grazing schedule, intensity, frequency, and timing.
- All future range improvements will follow Conservation Measures under the Proposed Action. Measures minimize or eliminate disturbance to breeding owls and ensure that PCEs of critical habitat are not disturbed or negatively impacted.
- Livestock grazing will have little to no effect on PCEs of forested habitat pertaining to tree diameter, canopy closure, uneven-aged character, multi-layered canopy of overstory trees, snag basal area, and woody debris, or canyon ledges and crevices. Effects to riparian woody species, plant cover and woody debris will be mitigated by our upland and riparian utilization guidelines, grazing schedule, intensity, frequency, timing.

Western Yellow-billed Cuckoo (Coccyzus americanus)[15]

ESA Status:	Threatened, October 3, 2014
Recovery Plan:	N/A
Critical Habitat:	April 21, 2021 Designated
Effects Finding (species)	May Affect, Likely to Adversely Affect

Status in Analysis Area

In the project area, western yellow-billed cuckoos have been documented in Fossil Creek bordering Deadman Mesa Allotment, along East Verde River on Pole Hollow Allotment, and East Verde River and Pine Creek on Bull Springs Allotment (Figure 7). Cuckoos were first reported in Fossil Creek by a FS biologist at an unknown location in 1999. Northern Arizona University surveyed Fossil Creek from just below Irving Power Plant upstream of Fossil Springs by from 2005-2009 but cuckoos were not detected. In 2019 and 2020, AGFD reported aural detections of cuckoos in Fossil Creek near Homestead and upstream of Sally May (USFWS 2020a).

In 2021, we documented cuckoos during the breeding season at Doll Baby Ranch on East Verde River. Those surveys resulted in confirmation of a *possible* breeding territory on Pole Hollow Allotment and a *probable* breeding territory on Bull Springs Allotment. Preliminary data from protocol surveys in 2022 show the Doll Baby reach of East Verde River bisecting Pole Hollow and Bull Springs allotment is occupied but breeding has not been confirmed. In 2022, Southern Sierra Research Station (SSRS) documented cuckoos in Pine Creek, a tributary of East Verde River on Bull Springs Allotment, during initial protocol surveys for a range-wide survey effort. Cuckoos were not detected after the first survey and visits to Pine Creek following the second survey were not possible because of inaccessibility during monsoon (N. Beauregard, personal communication, July 1, 2022).

Cuckoos have also been documented adjacent to LVSA in Verde River. In 2018, acoustic monitors deployed at Beasley Flats, Childs, and Sheep Bridge recorded vocal cuckoo activity during breeding season (Bateman et al. 2018). In LVSA, unsurveyed suitable and marginal habitat include isolated segments of East Verde River. Suitable habitat adjacent to the project area includes Verde River and we expect cuckoo to be present but the area below East Verde River confluence to Sheep Bridge has been largely unsurveyed.

Suitable habitat for breeding cuckoo is described by multi-storied vegetation dominated by cottonwood, sycamore, or willow adjacent to upland woodland habitat. Suitable habitat may also include ephemeral or intermittent drainages where trees may occur in narrow linear reaches, in small and patchy groves, or scattered along the drainage or floodplain (Halterman et al. 2015). Important riparian parameters for suitable breeding habitat include dominant riparian tree species, size and shape of habitat patches, tree canopy structure, tree age, vegetation height, and vegetation density. General range-wide breeding habitat characteristics include riparian areas often greater than 100m wide, but in the southwest,

[15] For life history information on western yellow-billed cuckoo visit Species Profile for Yellow-billed Cuckoo(Coccyzus americanus) (fws.gov)

suitable breeding habitat may be narrower and is often, but not always, 200 acres in size (USFWS 2020d). Given the lack of published habitat suitability models identifying potential breeding habitat and cuckoo habitat variability in the southwest, we mapped suitable breeding habitat in the LSVA based on presence of riparian vegetation, floodplain width, and riparian patch size. We started with Tonto's Riparian Existing Vegetation (REV)[16] file as a base layer and completed a spatial analysis[17] to further refine and select areas likely used by breeding cuckoos. Originally, we selected floodplain habitats greater than 75m wide and 150 acres or more in extent. We verified our mapped suitable habitat layer by overlaying 384 cuckoo detections reported on Tonto National Forest since 2003; we referenced AGFD's Heritage Data Management System and internal species occurrence data. Ninety-one percent (91% or 349 of 384) of known cuckoo detections on the Tonto National Forest fell inside our mapped suitable habitat layer. All 126 cuckoo detections in the project area fell within mapped suitable habitat. After recommendations from FWS, we maintained the 75m wide parameter but reduced patch size to 50 acres to accommodate potential variability in breeding habitat in the southwest. This new spatial analysis selecting for smaller patch sizes incorporated three more known cuckoo detections making 92% of Tonto NF cuckoo detections falling within the habitat layer.

Mapped suitable breeding habitat across LVSA totals 1,116 acres with 757 acres of mapped suitable habitat grazed outside the breeding season, 295 acres grazed during the cuckoo breeding season, and 64 acres grazed because livestock are not scheduled for those areas or they are inaccessible. Our suitable habitat layer mapped 628 acres of potential breeding habitat on Bull Springs Allotment, 39 acres on Cedar Bench Allotment, 52 acres on Deadman Mesa Allotment, and 397 acres on Pole Hollow Allotment. The 1,316 acres of mapped suitable habitat across LVSA vary in quality with the most optimal on Bullfrog Pasture of Bull Springs Allotment. (Table 15). We recognize our mapped suitable habitat layer may not identify all areas of potential breeding habitat but used to identify areas with highest potential to support breeding cuckoos; we also recognize acres in the mapped layer could incorporate more marginal habitat. We expect cuckoos to use areas outside our mapped suitable habitat layer for foraging, migration, and/or dispersal.

Table 15. Summary of Mapped Suitable Habitat by Allotment and Pasture.

Allotment	Pasture / Holding Trap * Cuckoos Occupy Pastures or Traps in Bold Text.	Typical Season of Use	Acres of Mapped Suitable Habitat	Description
Bull Spring	Bull Frog Pasture	Summer	136	No protocol cuckoo surveys exist for this pasture. Livestock use will occur during cuckoo breeding season.

[16] REV data characterizing riparian lifeform, leaf retention, canopy cover, and canopy height for the Tonto National Forest was developed using geospatial data including imagery, topographic and LiDAR data, photo-interpreted reference data, and modeling algorithm (Clark et al, 2020).

[17] To summarize our analysis using ArcGIS Pro 3.2.2., we started with REV data and dissolved all features into one multipart polygon. Using this layer, we ran the *Identify Narrow Polygons* tool to select floodplains with widths greater than or equal to 75m widths. From this output, we selected only polygons of 150 acres or greater and exported these to a new layer. The results of this analysis were used to inform potential breeding habitat in the project area.

Bull Spring	***Belluzzi Holding Trap**	Spring and / or Fall	204	Protocol surveys exist for portions of this trap. Cuckoos detected. Livestock use will be restricted during cuckoo breeding season with exception of short term critical needs (YBC-3)
Bull Spring	Pocket Holding Trap	Spring and / or Fall	126	No protocol cuckoo surveys exist for this pasture. Livestock use will be restricted during cuckoo breeding season with exception of short term critical needs (YBC-3)
Bull Spring	West River	Summer	61	No protocol cuckoo surveys exist for this pasture. Livestock use will occur during cuckoo breeding season.
Bull Spring	Oak Grove	Summer	46	No protocol cuckoo surveys exist for this pasture. Livestock use will occur during cuckoo breeding season.
Bull Spring	Bull Springs	Winter	55	No protocol cuckoo surveys exist for this pasture. Livestock use will occur outside cuckoo breeding season.
Bull Springs	Brush Corral	Winter	0.2	No protocol cuckoo surveys exist for this pasture. Livestock use will occur outside cuckoo breeding season.
Cedar Bench	River	Not Scheduled	20	Pasture is excluded from grazing.
Cedar Bench	Lower Plow Beam	Winter	19	No protocol cuckoo surveys exist for this pasture. Livestock use will occur outside breeding season.
Deadman Mesa	Lower Mesa	Winter	8	Livestock permitted to graze Lower Mesa pasture cannot access Fossil Creek because of steep terrain and proposed construction of a 0.125-mile drift fence on the southern edge of Deadman Mesa.
Deadman Mesa	Upper Fossil Creek	Not Scheduled	44	Pasture is excluded from grazing.
Pole Hollow	River Pasture	Winter	98	No protocol cuckoo surveys exist for this pasture. Livestock use will occur outside breeding season.
Pole Hollow	Homeward Pasture	Summer	24	In 2024, a portion of East Verde River on Homeward Pasture received protocol surveys resulting in no detections. Livestock use will occur during cuckoo breeding season.
Pole Hollow	Pine Creek	Spring and Fall	120	No protocol cuckoo surveys exist for

	Pasture	3/15-5/31 or 9/1-11/15		this pasture. Livestock use will be outside cuckoo breeding season.
Pole Hollow	Cypress Thicket	Winter	9	No protocol cuckoo surveys exist for this pasture. Livestock use will occur outside cuckoo breeding season.
Pole Hollow	***Headquarters Holding Trap**	Spring and/or Fall	118	Protocol surveys exist for portions of this trap. Cuckoos detected. Livestock use will be restricted during cuckoo breeding season with exception of short term critical needs (YBC-2).
Pole Hollow	Maverick	Summer	28	No protocol cuckoo surveys exist for this pasture. Livestock use will occur during cuckoo breeding season.

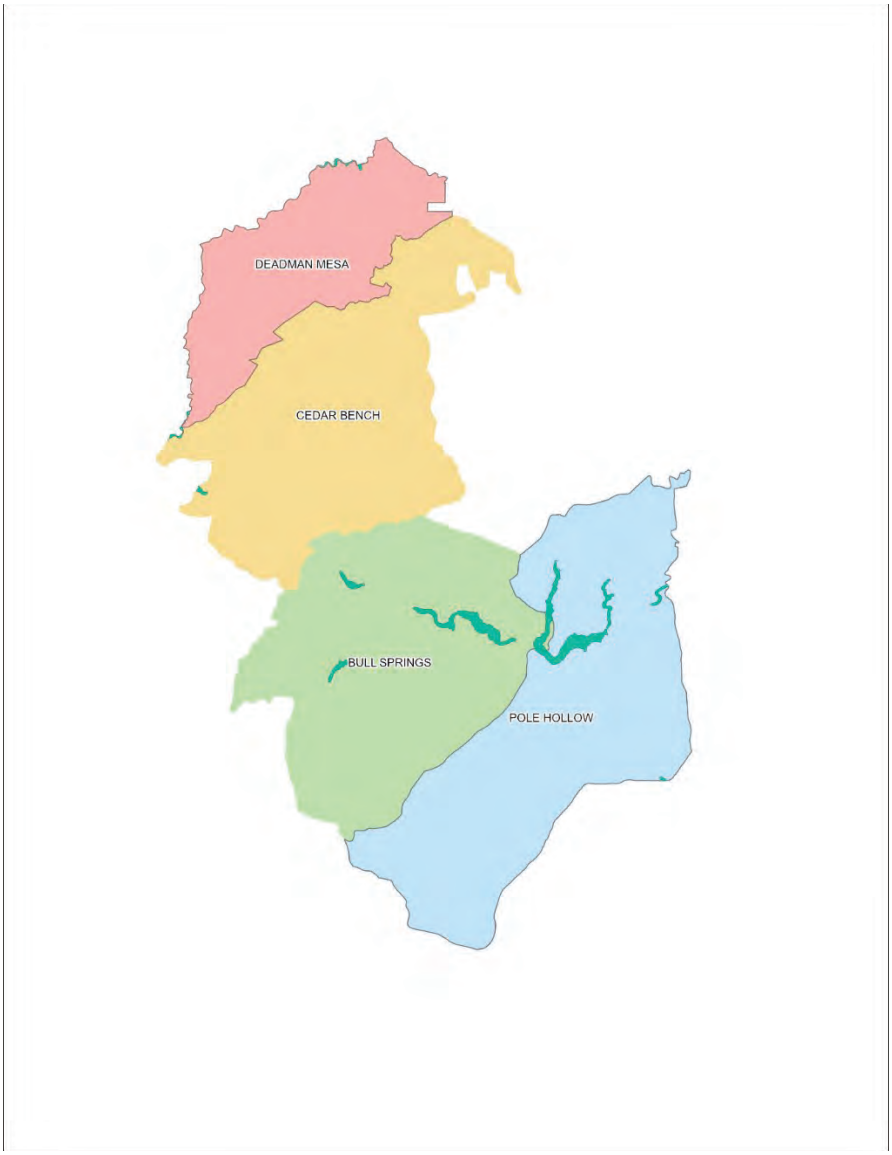

Figure 8. Mapped Yellowed-billed Cuckoo Suitable Breeding Habitat by Allotment.

Designated critical habitat for yellow-billed cuckoo is not in LVSA. The nearest designated critical habitat is located two-tenths mile west of Cedar Bench Allotment along Verde River. Downstream consequences to physical and biological features are not expected because River Pasture will be excluded from grazing.

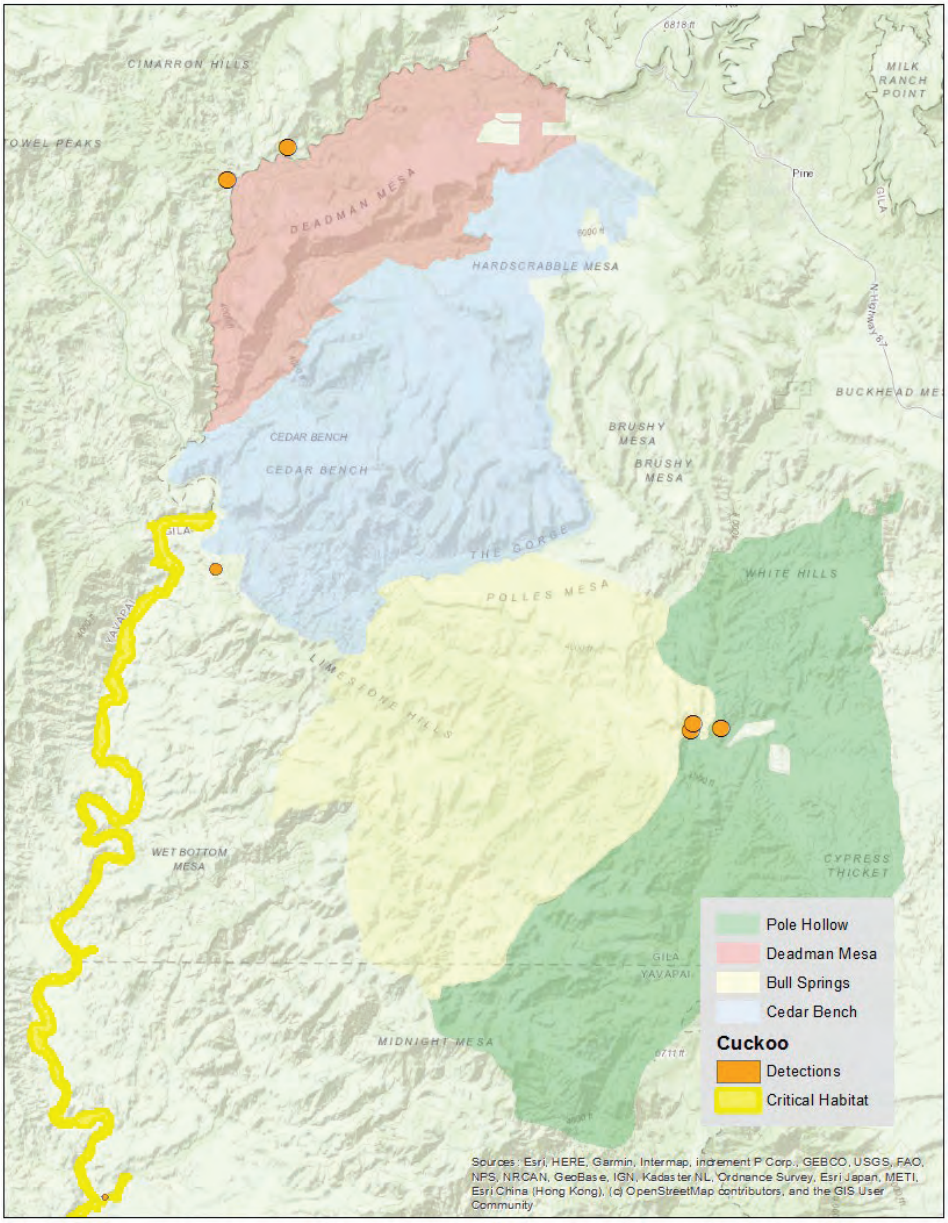

Figure 9. Western Yellow-billed Cuckoo Detections and Critical Habitat in Lower Verde Subbasin Allotments.

Effects of the Action

Livestock will have access to occupied yellow-billed cuckoo habitat at Doll Baby Ranch along East Verde River on Pole Hollow Allotment when Headquarters Holding Trap is in use; use will be restricted during the cuckoo breeding season (May 25 – September 30). Holding traps are typically used 1 to 2 times a

year in spring and/or fall to aid with pasture rotations or when working livestock. Groups of livestock are generally limited up to 20 head at a time as ranchers gather animals from a pasture and move them to the next. Generally, permittees are given 10 days to complete pasture rotations. When Headquarters Holding trap is not in use, it will be inaccessible to livestock. Any unexpected but critical range activity that must occur in the holding trap during the cuckoo breeding season (May 25 – September 30) will be coordinated with the district wildlife biologist to ensure activities do not impact cuckoos or their habitat (YBC-3). Critical activities include temporary holding, nursing, doctoring, branding, or castrating; these activities generally do not exceed 48 hours at a time. Headquarters Holding Trap has been used four times with each use in October and never for two consecutive years and we expect the same pattern of use moving forward (C. O'Connor, personal communication September 23, 2022). Although habitat becomes marginal east of Doll Baby Ranch, our mapped suitable habitat layer identified habitat on Homeward, River, Pine Creek, Cypress Thicket, and Maverick pastures; Homeward and Maverick have proposed use when cuckoos may be present. We do not expect cuckoos to occupy other areas of Pole Hollow Allotment because remaining riparian habitat does not contain key habitat characteristics important to cuckoos. These areas are characterized by narrow floodplains, reduced riparian corridors and steep uplands with small or isolated patches (<50 acres) of riparian vegetation unlikely to provide shade, trap moisture, and provide cooler and more humid conditions preferred by cuckoos.

Livestock will have access to occupied cuckoo habitat at Pine Creek and East Verde River west of Doll Baby Ranch on Bull Springs Allotment when the Belluzzi Holding Trap is in use. Use will be restricted during the cuckoo breeding season (May 25 – September 30). Like Headquarters Holding Trap, proposed use of Belluzzi Hold Trap will be 1 to 2 times a year in between April and May or October to aid with pasture rotations or when working livestock. Groups of livestock are generally limited up to 20 head at a time as permittees move livestock from one pasture to another, often within a 10-day window. When Belluzzi Holding trap is not in use, it will be inaccessible to livestock. Any unexpected but critical range activity that must occur in the holding trap during the cuckoo breeding season (May 25 – September 30) will be coordinated with the district wildlife biologist to ensure activities do not impact cuckoos or their habitat (YBC-3). Segments of unsurveyed but mapped suitable habitat occur along East Verde River in Bullfrog, West River, Oak Grove, Bull Springs, and Brush Corral pasture and Pocket Holding Trap. Bullfrog, West River, and Oak Grove pastures are typically grazed in summer when cuckoos could be moving through or breeding. Pocket Holding Trap will be under the same level of use and timing restrictions described above for Belluzzi Holding Trap.

Livestock grazing in occupied or suitable habitat can alter understory vegetation and reduce new growth, thus, limiting recruitment of riparian species that cuckoo rely on various life history needs (Wiggins 2005). We expect habitat impacts at occupied sites to be temporary because of the limited amount of time livestock occupy holding traps. Livestock access to occupied habitat occurs when holding traps are in use which is 1 to 2 times per year, often only 10 days at a time. In unsurveyed suitable habitat, our forage utilization is generally managed at light to moderate intensity (30-45% of current year's growth). Additionally, the types of grazing rotation systems used on LVSA incorporate complete or partial growing season rest for any pasture used during the growing season.

Changes in vegetation from grazing can also alter abundance and diversity of the cuckoo's invertebrate prey base, with some prey relying on grasses and forbs (grasshoppers, beetles, etc.) and others relying on trees (cicadas, caterpillars, katydids, etc.). We expect more of an impact to specific invertebrates that rely on grasses and forbs and less for species that rely of trees. Even so, changes in the cuckoo's prey base could affect their dispersal and hunting success. Information is lacking on livestock's (cattle) impact on invertebrates in the southwest and it's unclear how that affects cuckoo. A meta-analysis on 109 studies evaluating impacts of livestock (cattle and sheep) on plants and animals found a significant increase in invertebrates with livestock exclusion (Filazzola et al. 2020). A single study in Canada evaluating grazing intensity on grasshoppers showed depending on grasshopper food preference and level of grazing intensity, numbers of some grasshopper species decreased while other species increased (Holmes et al. 1979). With ongoing grazing operations on Pole Hollow Allotment; Headquarters Holding Trap and Bull Springs Allotment's Belluzzi Holding Trap, observers completing protocol cuckoo surveys in 2021 - 2023 reported abundant invertebrates from late June through September at the occupied Doll Baby Ranch site along East Verde River including species in Hemiptera, Lepidoptera, Orthoptera, and Hymenoptera (M. Purtill, S. Duskey, T. Washburn, personal communication, September 5, 2022). Observers also reported other cuckoo prey items including large clutches of recently metamorphosed amphibians along the river corridor and floodplain. Areas encompassing and surrounding occupied habitat are used as holding traps with limited use, sometimes only in October, and not often two consecutive years in a row. Our proposed utilization standards, pattern of holding trap use, conservation measures, or complete and partial growing season rest will help minimize impacts to cuckoo's prey base reliant on grasses and forbs.

The action will not affect cuckoos or habitat that may be present in a five-mile segment of East Verde River in Cedar Bench Allotment's River Pasture because it's excluded from grazing. Livestock will not have access to occupied habitat during the breeding season at Doll Baby Ranch Administrative Site and Headquarters, Belluzzi, and Pocket holding traps unless an unexpected critical range activity is approved by a district wildlife biologist in coordination with USWFS. Although impacts to cuckoos and habitat are not insignificant, Coronado National Forest has documented breeding cuckoos with ongoing grazing. From 2012 to 2017, biologists completed cuckoo surveys at 98 locations with each area receiving 1 to 3 years of surveys. Forty of 98 survey locations were actively grazed during the survey period (June through August). Biologists documented cuckoos at 28 locations and breeding at 18. Cuckoos were detected in both yearlong and seasonally grazed allotments (USFS 2019).

A consequence from livestock grazing to cuckoos can result from construction or maintenance of range improvements and impacts to vegetation that provide cover, breeding, and foraging habitat. Conservation measures are in place to minimize or eliminate aural or visual disturbance to breeding birds during range improvement work (YBC-1, RI-1, RI-2, RI-3). Noise and human presence from construction and maintenance of improvements will result in insignificant effects because work will not occur during the breeding season unless approved by the district wildlife biologist in coordination with USFWS.

Water developments, especially wells, can reduce baseflows in stream channels and springs depending on the location and amount or intensity of water withdraws. The proposed new well in Contact Pasture on Pole Hollow Allotment is located on a ridge, approximately 1.5 miles from the closest perennial water, East Verde River. Contact Pasture is a summer pasture with expected livestock use for roughly eight weeks each time its scheduled. We do not anticipate impacts to cuckoo habitat or measurable changes in ground or surface water in East Verde River from the proposed well in Contact Pasture because the well is 1) low capacity and will not pump large amounts of water at one time, 2) is located on a ridge over one mile from the East Verde River, and 3) the East Verde River has supplemental flows from CC Cragin during the summer months when the well will be operating. The existing private well located on top a mesa over two miles from perennial water (East Verde River) proposed to fill three proposed troughs on Cedar Bench Allotment will marginally increase capacity of the private well. Troughs coming off the private well are located in Buttes Pasture which is generally authorized in conjunction with other pastures for roughly 6 weeks out of the winter season of use. Existing tanks within the Buttes and adjacent pastures are generally reliable which will reduce pressure off the well fed troughs. When livestock are not in the pasture, these troughs may be used by wildlife. The proposed troughs on Contact Pasture are not likely to impact cuckoo habitat or ground and surface water on East Verde River because 1) the private well feeding the troughs is located at least two miles from East Verde River, 2) will only marginally increase the existing well capacity, 3) livestock pressure will be in short durations during non-summer months, and 4) the East Verde River has supplemental flows from CC Cragin.

Determination of Effects

It is my determination the proposed action ***may affect and is likely to adversely affect*** western yellow-billed cuckoo.

- Livestock will have access to occupied yellow-billed cuckoo habitat at Doll Baby Ranch along East Verde River on Pole Hollow Allotment when Headquarters Holding Trap is in use and Pine Creek and East Verde River on Bull Springs Allotment when the Belluzzi Holding Trap is in use. Holding traps have limited use and will not be used during the breeding season (YBC-2 and YBC-3).
- Livestock will have access to mapped suitable habitat during the cuckoo breeding season: Bull Springs Allotment (Bullfrog, West River, and Oak Grove pasture) and Pole Hollow Allotment (Homeward and Maverick pastures) (Table 15).
- The effects of construction or repair of any range improvements within cuckoo breeding habitat would be insignificant and discountable if the cuckoo breeding season (May 25 – September 30) is avoided (YBC-1).
- Water developments will follow conservation measures to protect riparian habitat and minimize impacts to ground water and surface water (RP-1, RP-2, RI-2, RI-3, RI-4, RI-5, RI-6, RI-8)
- Our rotation grazing systems, utilization standards, and conservation measures help to minimize negative impacts to riparian vegetation on the Forest.
- Cuckoo eat invertebrates that may rely on grasses and forbs as well as those that rely on resources provided by trees that livestock can impact.

- Livestock management activities in LVSA do not significantly affect dynamic riverine processes because our utilization standards help protect riparian vegetation associated with river systems, and rest-rotation grazing activities minimize negative impacts to the riparian vegetation.

Mexican Wolf (Canis lupus baileyi)[18]

ESA Status:	Endangered, Non-essential 1998; January 2015 Revised 10(j) Rule
Recovery Plan:	2017, First Revision
Critical Habitat:	Not applicable
Effects Finding (species)	Not likely to jeopardize non-essential population

Status in Analysis Area

On January 12, 1998, USFWS published an ESA section 10(j) rule on the Mexican wolf that provided for the designation of specific populations of listed species in the United States as "as experimental populations" (USFWS 1998). Under 10(j), a population of a listed species re-established outside its current range but within its probable historic range may be designated as an experimental population. Under section 7 of the ESA, Federal agencies are under obligation to confer with USFWS, as opposed to consult, on their proposed actions that are likely to jeopardize the continued existence of the species.

The LVSA is in the Mexican Wolf Experimental Population Area (MWEPA) defined as a geographic area encompassing Arizona and New Mexico from Interstate 40 south to the international border Mexico. Mexican wolves living in MWEPA are designated as a nonessential experimental population allowing for greater management flexibility to address wolf conflict situations like livestock depredations and nuisance behavior, so long as those management actions are still in accordance with recovery of the species. In 2015, USFWS announced the final Revision to the Regulations for the Nonessential Experimental Population of the Mexican Wolf under section 10(j) of the ESA. One revision established three management zones, Zones 1, 2, and 3 as different management areas within the MWEPA:

- Zone 1 is where Mexican wolves may naturally disperse into and occupy, and where Mexican wolves may be initially released or translocated. It includes all Apache, Gila, and Sitgreaves National Forests; the Payson, Pleasant Valley, and Tonto Basin Ranger Districts of the TNF; and the Magdalena Ranger District of the Cibola National Forest.
- Zone 2 is an area within the MWEPA into which Mexican wolves will be allowed to naturally disperse and occupy, and where Mexican wolves may be translocated. Translocations in Zone 2 will be focused on suitable Mexican wolf habitat that is contiguous to occupied Mexican wolf range.
- Zone 3 is where neither initial releases nor translocations will occur, but Mexican wolves will be allowed to disperse into and occupy. Zone 3 is an area of less suitable Mexican wolf habitat

[18] For life history information on the Mexican wolf, please visit Species Profile for Mexican wolf(Canis lupus baileyi) (fws.gov)

where Mexican wolves will be more actively managed under authorities of this rule to reduce human conflict.

The LVSA falls within Zone 1 of MWEPA. Currently, there are no established Mexican wolf packs, or denning and rendezvous sites on TNF. Observations of wolves represent a few transient animals over 60 miles from the project area. Most recent observations are collared individuals from 2016 and 2018 near Canyon Creek Hatchery and a 2020 record of a collared animal near Haystack Butte on Tonto Basin Ranger District. All dispersing animals were reported to have moved off TNF shortly after they were reported (S. Eno, personal communication 2020).

Effects of the Action

Reintroduced Mexican wolf populations have been designated as a non-essential experimental population pursuant to section 10(j) of the ESA. By definition, a non-essential experimental population is not essential to the continued existence of the species. Therefore, no proposed action impacting a 10(j) population so designated could lead to a jeopardy determination for the entire species.

As defined in the ESA §10 (j) rule for Mexican wolf, "disturbance causing land use activity" means any land use activity that USFWS determines could adversely affect reproductive success, natural behavior, or survival of Mexican wolves. The following activities are specifically excluded from this definition under the ESA §10 (j) rule for the Mexican wolf:

1. Legally permitted livestock grazing and use of water sources by livestock.
2. Livestock trailing or drives (only if no reasonable alternative route exists).
3. Vehicle access over established roads to private property and to areas on public land where legally permitted (only if no reasonable alternative route exists).
4. Use of lands within the national park or national wildlife refuge systems as safety buffer zones for military activities.
5. Prescribed fire and associated management actions (except in the vicinity of wolf release pens).
6. Any authorized, specific land use that was active and ongoing at the time wolves chose to locate a den or rendezvous site nearby.

The proposed action incorporates management flexibility by providing a range of authorized livestock numbers that reflect variations in resource conditions and are necessary for the achievement of management objectives and desired conditions. Within this range, annually authorized livestock numbers will be specified in the AOIs. Changes in stocking would occur with changes in resource conditions, drought, climate change and infrastructure conditions in consideration of management objectives. Herd movements would be based on water availability, forage conditions, grazing intensity and forage utilization levels and will be specified in AOIs. A new AMP will be developed and include measures and best management practices to avoid or minimize effects to wildlife, soil, and water quality. Monitoring of forage availability, utilization, range readiness and resource conditions will be used to determine whether management is being properly implemented and whether actions are effective at achieving or moving toward desired conditions.

Proposed range improvements will minimize wolf / livestock conflicts. Proposed water developments, fences, etc., will provide a level of management flexibility responsive to wolf / livestock interactions in a timely manner through an AOI amendment. Having more water dispersal will allow greater control of grazing activities within a specific pasture. These proposed improvements are not only beneficial during Mexican wolf denning periods but also throughout the year in response to potential wolf and livestock interactions.

Conflicts can occur between timing and location of livestock calving and calf depredations (depredation that is other than incidental) by Mexican wolves already residing in a specific reintroduction area. If this situation occurs or is anticipated, we will work with affected livestock permit holders and IFT to arrive at a solution. Examples of management actions or solutions that may be considered include but are not limited to:

- Flight, GPS, and ground tracking wolf location updates to aid in preventing wolf/livestock conflicts.
- Providing affected permittees with a telemetry tracking device to determine when collared wolves are in proximity to an actively grazed area. Telemetry equipment would be provided to permittees at the discretion of USFWS.
- Placing temporary restrictions around a wolf den site to reduce disturbance potential.
- Wolf range-rider program implementation to provide additional human presence where wolf livestock interactions have a high potential of occurrence.
- Coordination with IFT who may haze wolves away from sensitive livestock areas, such as calving pastures, holding pastures, or other areas.
- Modify AOIs to change pasture or allotment rotations to reduce conflicts.

We anticipate the proposed action, with its incorporated conservation measures and management actions, is **not likely to jeopardize** the non-essential experimental population of the Mexican wolf and requests conference.

CUMULATIVE EFFECTS

Cumulative effects include consequences of future state, tribal, local, or private actions reasonably certain to occur in the project area. There is no tribal land in LVSA, and private land includes 544 acres or less than 1% of the project area. Five private property parcels ranging from 13 to 270 acres intersect all LVSA except Deadman Mesa Allotment. Parcels are near MSO and its critical habitat adjacent to the Town of Strawberry and occupied or suitable yellow-billed cuckoo habitat along East Verde River.

We do not expect impacts of private actions to effect aquatic species and their designated critical habitat because parcels are greater than four miles away from Fossil Creek and Verde River. Activities occurring on private lands near occupied or suitable MSO and cuckoo habitat could include residential development, farming/ranching, road construction and maintenance, and mineral exploration. One 270-acre parcel southwest of Cove MSO PAC has already been developed and no new major developments

are expected to occur, therefore, we do not anticipate future activities on this parcel to significantly contribute to impacts to MSO or its habitat.

One 159-acre parcel southwest of Town of Payson on Doll Baby Road is scheduled for resort development. The future resort community known as Canyon River Ranch, adjacent to East Verde River near its confluence with City Creek, is intended to have restaurants, retail stores, a small social event pavilion, walking paths and sports fields. Canyon River Ranch development will not remove suitable cuckoo habitat, but we assume increased disturbance from human activities in occupied cuckoo habitat just over one-half mile away along East Verde River at Doll Baby Ranch. Recreational use of roads, trails, and dispersed camping will continue near Doll Baby Ranch and likely increase with Canyon River Ranch development. Consequences to cuckoos may occur when recreational use results in auditory or visual disturbance from people, pets, vehicles, equipment, and music, etc. At Doll Baby Ranch area, this use is isolated near existing roads, Doll Baby Trailhead, and one dispersed camping area. Consequences are expected to be lessened in occupied riparian corridors outside these areas and populations of cuckoos along East Verde River in Mazatzal Designated Wilderness. Where recreational use occurs, auditory and visual disturbance can reduce reproductive success, disrupt movements, and cause nest or roost abandonment (Knight and Cole 1991, Leung and Marion 2000). When developed, any increased human activity influenced by Canyon River Ranch will not occur on the one-mile reach of East Verde River and floodplain associated with Doll Baby Ranch Administrative Site which is not open for public use.

Two of the five parcels are base properties associated with Bull Springs and Cedar Bench grazing permits. There is no habitat for special status species adjacent to Cedar Bench base property. Suitable habitat for cuckoo may be present along East Verde River adjacent to base property associated with Bull Springs Allotment but the area has not been surveyed. Activities associated with these properties include but are not limited to, occasional livestock presence, livestock herding, branding, sorting/shipping, feeding, watering, roping, providing care, raising and/or birthing at different times of the year. These activities will likely be isolated and short in duration.

CONTRIBUTORS

Contact Person	Contact Organization	Contact Contribution
Curt Gill	AGFD	Aquatic species occurrence
Doug Duncan	USFWS	Gila top minnow species occurrence
Greg Beatty	USFWS	SWFL occurrence / conservation measures
Laura Stewart	USFWS	Proposed action, conservation measures
Meaghan Conway	USFWS	YBCU species occurrence / conservation measures
Shaula Hedwall	USFWS	Aquatic species occurrence
Austin Jacobson	TNF	Range, proposed action
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