



# United States Department of the Interior

## Fish and Wildlife Service Arizona Ecological Services Office

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In reply refer to:

AESO/SE

22410-2006-F-0414R1

02-21-00-F-0029

August 20, 2018

### Memorandum

To: Field Manager, Tucson Field Office, Bureau of Land Management, Tucson, Arizona  
(Attention: Jayme Lopez)

From: Field Supervisor

Subject: Reinitiated Review and Conference on Eight Grazing Lease Renewals, Pinal County, Arizona

We are in receipt of your request for informal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544 *et seq.*), as amended (Act) on eight Bureau of Land Management (BLM) grazing lease renewals along the lower San Pedro River and the Gila River between Kelvin and Florence in Pinal County, Arizona (proposed action). Your June 2, 2016, request was received by us on June 10, 2016. You initially requested our concurrence with your determination that the proposed action may affect, but is not likely to adversely affect, the threatened yellow-billed cuckoo (*Coccyzus americanus*) (cuckoo) and its proposed critical habitat, the threatened northern Mexican gartersnake (*Thamnophis eques megalops*) (gartersnake) and its proposed critical habitat, and the endangered acuña cactus (*Echinomastus erectocentrus* var. *acunensis*) and its proposed critical habitat.

On August 2, 2017, your staff requested that the May 21, 2012, *Biological Opinion on the Gila District Livestock Grazing Program* (2012 BO) (File Number 22410-2006-F-0414) be revised to remove riparian habitat mapping and brown-headed cowbird (*Molothrus ater*) control from the proposed Conservation Measures because remote sensing technology has appreciably progressed and the BLM lacks staff resources to conduct cowbird trapping, respectively. The riparian mapping Conservation Measure (p. 15) in the May 21, 2012, BO included a proposal to assess riparian habitat as it relates to potential southwestern willow flycatcher occupancy, the habitat's progression towards supporting the taxon, and the survey status of the habitat. We are willing to meet with your staff to more formally discuss your staff's requests. We cannot, however, revisit this conservation measure within the scope of this consultation because the measure is pertinent to the effects analysis for adverse effects to (and thus, formal consultation on) the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and its critical habitat. Formal consultation on the flycatcher was not part of your most recent request for consultation on the middle Gila River allotments. Moreover, we would have to first work with your staff to ensure that remote sensing technologies can accommodate the occupancy, suitability, and survey aspects of the original Conservation Measure. The request with respect to cowbird control is

similarly related to the southwestern willow flycatcher and its critical habitat – which again is not part of the analyses in this consultation. Secondly, cowbird control also pertains to the BLM grazing program in the upper San Pedro River, which is outside of the allotments and action area considered in this consultation.

On August 2, 2017, you revised your effects determination with respect to the yellow-billed cuckoo, and requested formal consultation on the proposed action's effects to the species and, in conference, its proposed critical habitat. We concur with your determinations with respect to the gartersnake and, in conference, its proposed critical habitat, and the acuña cactus and its critical habitat (now final, see the August 18, 2016, event in the Consultation History, below). Our effects analyses for these taxa appear in Appendix A.

On November 22, 2017, we transmitted a concurrence for the effects of grazing permit renewals of the Indian Wash and Smith Camp allotments for the yellow-billed cuckoo and northern Mexican gartersnake and their respective proposed critical habitats (see the November 15, and 22, 2017, events in the Consultation History, below). This consultation therefore pertains only to the six remaining allotments.

This biological and conference opinion is based on our review of the following sources of biological information: (1) the *Biological Assessment, Eight Grazing Lease Renewals in the Tucson Field Office, Pinal County, Arizona* (BA) transmitted with your June 2, 2016, memorandum; (2) our September 26, 1997, *Programmatic Biological Opinion for the Safford and Tucson Field Offices' Livestock Grazing Program, Southeastern Arizona* (File Number 2-21-96-F-160) (1997 PBO), our October 23, 2003, *Biological Opinion: Livestock Grazing on 18 Allotments Along the Middle Gila River Ecosystem* (File Number 02-21-00-F-0029) (2003 BO); (3) the May 21, 2012, *Biological Opinion on the Gila District Livestock Grazing Program* (2012 BO) (File Number 22410-2006-F-0414); and (4) numerous discussions in person and via electronic mail between August 2016 and August 2017. The contents of the respective documents and exchanges are incorporated herein via reference, and are contained in a complete administrative record on file at this office.

## **Consultation History**

*June 10, 2016:* We received your June 2, 2016, request for informal consultation on eight grazing lease renewals in Pinal County, Arizona.

*August 2016:* We began exchanging electronic mail messages with your staff in which we discussed additional information regarding the allotments effects to riparian birds and upland cactus.

*August 18, 2016:* We published a final rule designating critical habitat for the acuña cactus (81 FR 55266-55313).

*June 1, 2017:* We met with your staff to discuss reinitiation of consultation on the BLM Gila District grazing program as well as the Middle Gila River allotments.

*July 31, 2017:* We discussed changing the effect determination for the yellow-billed cuckoo from “may affect, not likely to adversely affect” (i.e. informal consultation) to “may affect, likely to adversely affect” (i.e. formal consultation). Your staff also requested that we remove the

riparian mapping and brown-headed cowbird trapping measures from the existing grazing management consultations.

*August 2, 2017:* Your staff agreed that riparian grazing would be restricted from the April 1 to October 1 yellow-billed cuckoo breeding season.

*November 15, 2017:* You requested informal consultation on two of the eight allotments (Indian Wash and Smith Camp) and two of the threatened and endangered species and proposed critical habitats (yellow-billed cuckoo and northern Mexican gartersnake) to facilitate your National Environmental Policy Act (NEPA) review in the face of lengthy, workload-related delays on our part.

*November 22, 2017:* We transmitted our two-allotment concurrence pursuant to your November 15, 2017, request.

*July 17, 2018:* We transmitted a Draft BO on the remaining six allotments to you via electronic mail.

*August 10, 2018:* We received your comments on the July 17, 2018, six-allotment Draft BO. Your editorial and content-related comments were accompanied by an agreement to forego your August 2, 2017, request that we remove riparian habitat mapping and brown-headed cowbird control from the proposed Conservation Measures until the future reinitiation of the May 21, 2012, *Biological Opinion on the Gila District Livestock Grazing Program* (2012 BO) (File Number 22410-2006-F-0414).

## **BIOLOGICAL AND CONFERENCE OPINION**

### **Description of the Proposed Action**

The BLM initially proposed to continue livestock grazing of a subset of allotments on public lands within the Gila District; ongoing grazing was previously consulted on in our 2003 and 2012 Biological Opinions (BO). The proposed action evaluated in this consultation, however, does not include the Smith Wash and Indian Camp allotments that were subject to prior consultation. The remaining six allotments are the A Diamond, Battle Axe, LEN, Rafter 6, Teacup, and Whitlow. The BLM proposes to use the livestock management tools described in Federal regulations, Resource Management Plans (RMPs), grazing Environmental Impact Statements, and Arizona's Guidelines for Grazing Administration and other grazing policies, including those for drought, to enhance or maintain upland and riparian health (Proper Functioning Condition - PFC), and enhance or maintain desired conditions. A complete description of the proposed action, and the manner by which it will be implemented, appears in the BA (pp. 8-18), and is incorporated herein via reference. The narrative below summarizes elements of the current BA that are relevant to the subsequent species-specific analyses.

The action area includes areas proposed for renewal of the eight stated grazing leases plus additional areas influenced by the proposed action. The major drainages that can carry these influences out of the project area are the Gila River drainage, including the lower San Pedro River, beginning at the area of Dudleyville and ending at the western boundary of the Gila District (generally downstream on the Gila River to the Ashurst-Hayden Diversion Dam).

The BLM manages livestock grazing to achieve and maintain public land health. To achieve desired conditions, the agency uses rangeland health standards and guidelines. Standards describe specific conditions needed for public land health, such as the presence of stream bank vegetation and adequate canopy and ground cover. Guidelines are the management techniques designed to achieve or maintain healthy public lands, as defined by the standards. This review will focus only on the standards that relate specifically to ecosystems occupied by threatened and endangered species. The relevant Rangeland Health Standards (now referred to as Land Health Standards (LHS)) are measurable and attainable goals for the desired condition of biological resources and physical components/characteristics of desert ecosystems found within the Gila District. The BLM typically evaluates indicators of land health by ascertaining the effects of livestock grazing on natural resources on landscape units called ecological sites. The Arizona Rangeland Health Standards are defined below:

- Standard 1 - Upland Sites: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).
- Standard 2 - Riparian-Wetland Sites: Riparian-wetland areas are in proper functioning condition.
- Standard 3 - Desired Resource Conditions: Productive and diverse upland and riparian/wetland communities of native species exist and are maintained.

Table 5 in the BA (see p. 48) describes the A Diamond, Battle Axe, Indian Camp, LEN, Rafter 6, Smith Wash, Teacup, and Whitlow allotments' progress towards meeting the Land Health Standards. In summary, all eight allotments are meeting or making significant progress towards Standards 1, 2, and 3 (Standard 2 is not applicable to the Indian Camp and Smith Wash allotments).

### **Status of the Species- Yellow-billed Cuckoo**

The yellow-billed cuckoo was listed as threatened under the ESA on October 3, 2014 (79 FR 59992) (FWS 2014a). The biology and status of the species are described in detail in our September 19, 2016, Reinitiation of Consultation for the Upper Gila River Vegetation Management Project (File Number 02EAAZZ00-2015-F-0151-R1). The contents of these documents are incorporated herein by reference.

Critical habitat for the yellow-billed cuckoo was proposed on August 15, 2014 (79 FR 48548) (FWS 2014b), and encompasses 546,335 acres across the western United States. A revised proposed rule that may include additional proposed critical habitat is under development. The proposed rule is incorporated by reference, but the primary constituent elements of the proposed critical habitat are described below.

#### *Proposed Critical Habitat – Yellow-billed Cuckoo*

The primary constituent elements of proposed critical habitat are based on riparian plant species, structure and quality of habitat, and an adequate prey base.

1. Primary Constituent Element 1— *Riparian woodlands*. Riparian woodlands with mixed willow-cottonwood vegetation, mesquite-thorn forest vegetation, or a combination of these that contain habitat for nesting and foraging in contiguous or nearly contiguous patches that are generally greater than 325 ft. in width and 200 ac or more in extent. These habitat patches contain one or more nesting groves, which are generally willow-dominated, have

above average canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats.

2. Primary Constituent Element 2—*Adequate prey base*. Presence of a prey base consisting of large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, dragonflies) and frogs for adults and young in breeding areas during the nesting season and in post-breeding dispersal areas.
3. Primary Constituent Element 3—*Dynamic riverine processes*. River systems that are dynamic and provide hydrologic processes that encourage sediment movement and deposits that allow seedling germination and promote plant growth, maintenance, health, and vigor (e.g. lower gradient streams and broad floodplains, elevated subsurface groundwater table, and perennial rivers and streams). This allows habitat to regenerate at regular intervals, leading to riparian vegetation with variously aged patches from young to old.

The physical and biological features of yellow-billed cuckoo proposed critical habitat are the principal elements essential to yellow-billed cuckoos conservation which may require special management considerations or protection (FWS 2014b). The proposed critical habitat rule identifies the following physical or biological features of yellow-billed cuckoo habitat to include (FWS 2014b):

1. Rivers and streams of lower gradient and more open valleys with a broad floodplain.
2. Presence of abundant, large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, and dragonflies) and frogs during nesting season.
3. Flowing rivers and streams, elevated subsurface groundwater tables, and high humidity.
4. Flowing perennial rivers and streams and deposited fine sediments.
5. Riparian trees including willow, cottonwood, alder (*Alnus* sp.), walnut (*Juglans* sp.), sycamore (*Platanus* sp.), boxelder (*Acer* sp.), ash (*Fraxinus* sp.), mesquite, and tamarisk that provide cover and shelter for foraging and dispersing yellow-billed cuckoos.
6. Blocks of riparian habitat greater than 200 ac in extent and greater than 325 ft. in width, with one or more densely foliated, willow-dominated nesting sites and cottonwood-dominated foraging sites.

### **Environmental Baseline –Yellow-billed Cuckoo**

The San Pedro River has the largest population of yellow-billed cuckoos in Arizona and one of the largest in the western Distinct Population Segment (the entity listed as threatened) (FWS 2014a). The Gila River also contains an important population of western yellow-billed cuckoos in both New Mexico and Arizona. Yellow-billed cuckoos occur along the reaches of the San Pedro and Gila rivers within the action area (Arizona Game and Fish Department 2011, p. 4; WestLand 2015a, pp. 28-29 and Figure 10; and Halterman *et al.* 2016, p. 8). These birds occupy mesquite bosque dominated by an overstory of velvet mesquite (*Prosopis velutina*) and stringers of Fremont cottonwood (*Populus fremontii*)/Goodding’s willow (*Salix gooddingii*) present along the rivers’ edges in areas.

The Arizona Breeding Bird Atlas indicates probable yellow-billed cuckoo breeding along the lower San Pedro River and possible breeding on the Gila River between Kearny and Kelvin (Corman and Wise-Gervais 2005). Please note that the terms “probable” and “possible,” along with “confirmed,” when used in reference to yellow-billed cuckoo breeding, are formally defined in the survey protocol (Halterman *et al.* 2015; Table 2). Data available on eBird (Cornell Laboratory of Ornithology 2015) provide numerous records of yellow-billed cuckoo

observations along the San Pedro River between the mouth of Aravaipa Creek and Dudleyville; many detections were during the breeding season.

Yellow-billed cuckoos were detected in 1998 and 1999 approximately 5 miles upstream of the Kelvin Bridge over the Gila River during surveys conducted by the Arizona Game and Fish Department (AGFD) (Corman and Magill 2000). No yellow-billed cuckoos were detected during the 2003, 2004, or 2013 SWFL surveys conducted by SWCA (SWCA 2013). WestLand conducted yellow-billed cuckoo protocol surveys in 2012–2014 at the Kelvin Bridge; no individuals were detected. Survey data indicated detections of yellow-billed cuckoos upstream and downstream of Kelvin Bridge; however, no nests were detected. Detections upstream from the Kelvin Bridge project area ranged from 0.5 to 2.8 miles away, and detections downstream ranged from 1.7 to 2.5 miles away.

The occurrence of yellow-billed cuckoos on the middle Gila River has been further documented since 2012 by WestLand Inc. The December 2, 2015, *Ripsey Wash Tailings Storage Facility Biological Assessment* [Westland Resources Inc. (WestLand) 2015a] contains a detailed history of the taxon's occurrence through the 2015 survey season, and the data were updated for incorporation into the final BO for the proposed Ripsey Wash Tailings Storage Facility in Pinal County, Arizona (File number 02EAAZ00-2016-F-0740; in prep); the content of these documents is incorporated herein via reference. WestLand (2017) is the most current survey report for the Kelvin Bridge area of the middle Gila River. Four cuckoos were detected in 2017, representing at least two individuals if paired birds were detected. Yellow-billed cuckoos are also present on the lower San Pedro River within the vicinity of the proposed action. The Arizona Game and Fish Department (AGFD) conducted yellow-billed cuckoo surveys on the Lower San Pedro River Wildlife Area near the Aravaipa Creek Confluence from 2012 through 2015, and detected from one individual (in 2012) to as many as 17 individuals (in 2013) (Hofer 2015).

The Halterman *et al.* (2015) survey protocol also indicates that most cuckoos detected during July are likely to be breeders. The fact that more than 70 percent of Westland's detections occurred in July suggests that some of the 33 cuckoos detected during all three years of surveys were breeding birds. Although we have little direct evidence of cuckoos breeding throughout the lower San Pedro and middle Gila rivers, we consider it probable that cuckoos breed within the action area.

The grazing action area includes areas within the yellow-billed cuckoo's proposed Lower San Pedro and Gila River Critical Habitat Unit in Cochise, Pinal, and Pima Counties, Arizona (79 FR 48548). On the San Pedro River, the unit extends from above the Town of Mammoth downstream to the San Pedro/Gila River confluence. On the Gila River, the unit begins at the confluence and continues downstream nearly to the town of Florence. The unit encompasses 23,399 acres and 59 miles of the river.

The riparian woodlands in and around the action area contain varying areal extents of the physical and biological features of PCE 1 (riparian vegetation). Riparian woodlands extend continuously upstream and downstream of the Kelvin Bridge along the middle Gila River for many miles and have the spatial extent, canopy closure (80%), and structural development of cuckoo breeding and foraging habitat, and while Fremont cottonwood and Goodding's willow are present, the reach is dominated by tamarisk. Inland areas have varying coverage of velvet mesquite. The middle and lower reaches of the San Pedro River exhibit similar, tamarisk-

dominated habitat, though there is a somewhat larger proportion of cottonwood/willow forest and mesquite bosque, likely owing to the San Pedro's relatively more intact flood-flow hydrology (i.e. no influence from Coolidge Dam). Cuckoos occasionally nest in tamarisk, but nests are usually in willows within mixed willow/cottonwood stands (Laymon 1980, Hughes 1999, Corman and Magill 2000).

Cuckoos have not been found breeding in monotypic tamarisk habitat in Arizona. Johnson *et al.* (2017) found that, along the lower Colorado River, "The odds of yellow-billed cuckoo occurrence decreased rapidly as the amount of tamarisk cover increased or when cottonwood-willow vegetation was limited." Cuckoo surveys in Arizona from 1998 and 1999 (Corman and Magill 2000 as cited in Holmes *et al.* 2008) found that the percentage of survey sites where cuckoos were detected were highest in cottonwood (*Populus* spp.) -willow (*Salix* spp.) -ash (*Fraxinus* spp.) -mesquite (*Prosopis* spp.) habitat with less than 75 percent tamarisk. Yellow-billed cuckoo use of tamarisk for nesting appears to vary longitudinally across the species range. Bateman and Paxton (2010 in Shafroth *et al.* 2010) suggested that the suitability of [tamarisk] as breeding habitat for cuckoos, as with other bird species, varies across the landscape, with local environmental factors determining its relative habitat value." In Arizona and New Mexico, cuckoos breed in mixed native/tamarisk habitat, and tamarisk may contribute toward cover, temperature amelioration, increased humidity, and insect production where native habitat has been compromised by altered hydrology. For example, on the Rio Grande in New Mexico, a dense understory comprised of tamarisk, Russian olive (*Elaeagnus angustifolia*), or native vegetation (e.g. willow) appears to be an important component for territory establishment (Sechrist *et al.* 2009). Recent FWS guidance on consultations involving cuckoos cautions that habitats containing tamarisk with other overstory trees should not be overlooked as potential cuckoo breeding habitat (FWS 2016).

Within the action area, cuckoos have been found breeding in tamarisk-dominated habitat, typically adjacent to occurrences of cottonwood/willow and/or mesquite bosque (WestLand 2012, 2013, 2014, 2015b, 2016, and 2017). The draft FWS consultation guidance (FWS 2016) also points out that cuckoo foraging may extend into the uplands adjacent to currently suitable breeding habitat and may vary in species composition and density. The amount of non-riparian foraging habitat cuckoos use in fact may exceed the amount of riparian habitat they use; this is a function of home ranges including larger acreages of upland habitat relative to the riparian habitat present only near waterways and other sites with shallow groundwater. Foraging habitat types include mesquite bosques, Madrean evergreen woodlands, shrubby habitat that may or may not include mesquite, and semi-desert grassland. Cuckoos may also use monotypic tamarisk habitat for foraging if it is adjacent to or near breeding sites within mixed native/tamarisk habitat.

The cuckoo survey protocol (Halterman *et al.* 2015), results of Westland's aforementioned cuckoo surveys at the Kelvin Bridge (Westland 2012, 2013, 2014, 2015b, 2016 and 2017), and recent draft FWS guidance on consultations involving cuckoos (FWS 2016a) suggest that some of the 33 cuckoos WestLand detected during protocol surveys were migrants, and that riparian vegetation at and near the Kelvin Bridge is suitable as resting and foraging habitat for migrants. The survey protocol (Page 16, Figure 2) indicates that cuckoos detected during any of the 3 survey periods could be breeders, but birds detected during the first period only (June 15-July 1) are likely to be migrants. In 2014, all three detections were in June. Habitat needs during migration are not well understood; however, they appear to include a relatively wide variety of conditions. Migrating cuckoos have been found in coastal scrub, second-growth forests and woodlands, hedgerows, forest edges, and smaller riparian patches than those used for breeding.

The Halterman *et al.* (2015) survey protocol also indicates that most cuckoos detected during July are likely to be breeders. The fact that more than 70 percent of Westland's detections occurred in July suggests that some of the 33 cuckoos detected during all three years of surveys were breeding birds. Although we have no direct, survey-based evidence of cuckoos breeding in or near the project limits, we consider it probable that cuckoos do breed within the action area.

### **Factors Affecting Species Environment and Critical Habitat within the Action Area— Western Yellow-billed Cuckoo**

The cuckoo is a riparian obligate breeder but much of its historical riparian habitat has been lost, altered, or degraded (Governor's Riparian Habitat Task Force 1990, Ohmart 1994). Most riparian habitats in the Southwest have been fundamentally altered by a century or more of urban and agricultural development, water diversions, dam building, ground water pumping, livestock grazing, and other human disturbances.

In the past, riparian habitats occupied by cuckoos by their nature were dynamic and were governed primarily by floods and flow patterns. Historically, cuckoos depended on natural flood cycles to generate the riparian woodlands and galleries it used for nesting, and to recycle old habitats as they grew out of suitability. Periodic flooding allowed the deposition of moist sediments and regeneration of native riparian species, i.e., willows and cottonwoods.

The stretch of the Gila River downstream from Coolidge Dam does not receive the magnitude and variability of annual peak flows from flood events that occurred prior to construction of the dam, and today very few patches of native riparian habitat exist below the dam. Currently, water releases from Coolidge Dam may occur year-round with the highest releases generally occurring during summer months, and the lowest during spring. However, in some years, the reservoir does not have sufficient volume to maintain continual releases, and as a result, the Gila River can have intermittent flows. A natural inflow from the San Pedro River, which joins the middle Gila River within the action area, contributes some beneficial variability to the Gila River's hydrograph.

Thus, past and current conditions within the middle reaches of the Gila River—the loss of natural, periodic flooding, diminished and in some years non-existent spring peak flows, combined with relatively higher late-spring and summer flows in the Gila River, along with intermittent contributions from the San Pedro River—tend to disfavor the establishment and/or maintenance of native cottonwood/willow forests while creating the conditions under which nonnative tamarisk thrives. Current conditions within the middle Gila River tend to promote flycatcher nesting habitat at the expense of cuckoo nesting habitat. These factors, coupled with the inability of native vegetation to regenerate under altered hydrological conditions, are a significant threat to the cuckoo throughout its range.

The lower San Pedro River within the action area, by contrast, is free of major dams and thus exhibits a relatively intact flood-flow hydrograph, a condition under which native riparian trees can become established. San Pedro River base flows, which maintain native riparian vegetation post-recruitment, are negatively affected by a variety of factors, including groundwater pumping for municipal and industrial (primarily mining) use and surface diversions for agricultural use [Arizona Department of Water Resources (ADWR) 2010]. Recent studies indicate that San Pedro groundwater is being pumped in excess of recharge (National Riparian Service Team 2012).

We have completed two recent formal consultations in the action area. On June 28, 2016, we transmitted a final biological opinion to the Bureau of Land Management (BLM) regarding the implementation of the Kelvin Bridge Replacement Project (File Number 02EAAZ00-2016-F-0222). In this biological opinion, we anticipated incidental take of yellow-billed cuckoos. The incidental take of cuckoos at the Kelvin Bridge was anticipated to be in the form of loss of habitat and harassment, causing displacement, reduced productivity, and reduced survivorship as a result of noise and increased activity from construction activities occurring adjacent to one cuckoo nesting territory; thus, we estimated that two individual cuckoos would be taken during each year of the Kelvin Bridge replacement project. We completed a consultation on ASARCO's construction of the Ray Mine Tailings Storage Facility and associated infrastructure on May 11, 2018 (File Number 02EAAZ00-2016-F-0740). We anticipated take in the form of loss of habitat and harassment, causing displacement, reduced productivity, and reduced survivorship as a result of noise and increased activity from construction activities occurring adjacent to one cuckoo nesting territory (two individual birds) during each year of construction of the project.

### **Effects of the Proposed Action – Yellow-billed Cuckoo**

As discussed in the prior consultations, above, riparian ecosystems in arid environments can be affected by poorly managed livestock grazing. The proposed action incorporates several general conservation measures pertaining to riparian ecosystems (1, 4, 10, 12, 13-17, and 19; see p. 13-15 in the 2012 BO) as well as conservation measures that are intended to minimize the effects of livestock grazing to the endangered southwestern willow flycatcher (see the southwestern willow flycatcher conservation measures in the BE, pp. 17-18 and 1 through 7 on pp. 15-17 in the 2012 BO). The flycatcher-specific conservation measures implement the general guidelines for livestock grazing in southwestern willow flycatcher habitat that in Table 2 in the Southwestern Willow Flycatcher Recovery Plan (FWS 2002; Appendix G, pp. 26-27). These recommendations are suitable surrogates for yellow-billed cuckoo grazing standards until species-specific recommendations can be completed. We note that you have agreed to implement a yellow-billed cuckoo-specific grazing season of April 1 to October 1 (D. Tersey pers. comm. 2017).

Collectively, implementation of these conservation measures include the protection of riparian habitat in allotment management planning through fencing, rotation, cold season (yellow-billed cuckoo non-breeding season) use of riparian pastures; monitoring; and development of water sources outside of riparian areas.

Moreover, the A Diamond, Battle Axe, LEN, Rafter 6, Teacup, and Whitlow allotments are meeting or making significant progress towards Standards 1, 2, and 3 (see Table 5 in the BA, p. 48). These management practices reduce the likelihood of measureable effects on yellow-billed cuckoos, their habitat, and their prey base. We do, however, anticipate there will be modest, residual (i.e. not fully minimized) effects to riparian habitat for locations where the applicable standards have not yet been fully achieved, either through impacts to young cottonwood/willow vegetation during winter grazing and/or understory herbivory within mesquite bosques. The BA states that these effects will occur in only 1,240 ac (502 ha) of otherwise continuous riparian habitat. The overall occupancy of the area by yellow-billed cuckoos, and the ability for the area to support the species' prey base should experience no detectable changes over the short term, as existing riparian vegetation persists. We are concerned, however, with one to two-year changes in riparian recruitment as young vegetation is subject to herbivory which could lead to

diminished, longer-term (i.e. decadal) recruitment of riparian vegetation to replace habitat that has senesced.

Reproduction and survival of Fremont cottonwood and Goodding's willow are influenced and/or determined by hydrological events; each year, reproductive cottonwoods and willows release tiny seeds that are carried by wind or water to potential germination sites (Stromberg, 1997). Germination and seedling establishment occurs only if the seeds settle on damp, exposed soil during their month-long viability period, which typically coincides with the descending limb of a peak-flow hydrograph in the late winter through the spring (Stromberg, 1997). Moody *et al.* (2003) found that riparian vegetation generally recruits and occurs on point bars and other depositional features below bankfull stage.

The bankfull elevation, or stage, was described by Dunne and Leopold (1978; pp. 608-609), as that which "...corresponds to the discharge at which channel maintenance is the most effective, that is, the discharge at which moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in the average morphologic characteristics of channels."

It is therefore hypothetically possible to examine flood frequency statistics to determine how frequently (i.e. the return interval) a discharge favorable to the establishment of cottonwoods and/or willows occurs. Moody *et al.* (2003) provides regional curves that identify a given site's bankfull cross-sectional area (and, with less confidence, its bankfull discharge) its contributing watershed area. Moody *et al.* (2003) also found that the recurrence intervals for bankfull discharge in central and southern Arizona sites were all between 1.8 and 1.0 years (a 55 to 100 percent chance of occurrence in any given year, respectively).

We queried the annual peak flow records for the San Pedro River near Redington (USGS 2017a) and subjected them to a simple, empirical calculation to determine recurrence intervals (FWS 2018). We also employed the United States Geological Survey (USGS) StreamStats v4.16 web site (<https://streamstats.usgs.gov/ss/>) (USGS 2017c) and USGS PeakFq Annual Peak Flow Frequency Analysis tool (<https://water.usgs.gov/software/PeakFQ/>) (USGS 2017d) to determine flood recurrence intervals at the same location. Unfortunately, the discharges associated with recurrence intervals closest to the Moody *et al.* (2003) 1.8- to 1.0-year values were too wide ranging to determine riparian recruitment frequencies. This was not unexpected, as Moody *et al.* (2003) also found inconsistent watershed area/bankfull parameter results from large, complex watersheds, such as the San Pedro River.

We were also unable to definitively determine the recurrence intervals for bankfull discharge (and thus, the frequency or riparian recruitment events) on the Gila River because the hydrograph for the reach within the action area is influenced by the operation of Coolidge Dam, situated upstream (discharges do not occur at intervals directly related to precipitation and snowmelt runoff) (USGS 2017b). This altered hydrology is the most likely reason that nonnative tamarisk (*Tamarix* spp.) dominates the affected river reach, with appreciably lessened recruitment of native species.

In summary, we were therefore unable to definitively determine the frequency (i.e return interval) for floods that result in recruitment events for Fremont cottonwood and Goodding's willow on the San Pedro River and middle Gila River.

Given our present inability to determine the flood flow-based timing of riparian recruitment, we have instead relied on an analysis of the influence of riparian phenology (the study of periodic plant and animal life cycle events), and the influence that antecedent weather has on it. Brock (1994) investigated the timing of riparian tree life cycles on streams in eastern Arizona and western New Mexico. Brock's (1994) Figure 5 (p. 26) shows the phenology of Fremont cottonwood and Goodding's willow. Brock (1994) cautions that the dates appearing in the charts are averages of high and low elevation sites; events may occur earlier in lower elevation and, we presume, warmer and/or lower latitude sites.

Our primary concerns are with grazing during the native riparian growing season, encompassed by Brock's (1994) bud break, leaf expansion, mature leaves, flowering, fruit development, and seed dispersal stages. Fremont cottonwood bud break begins in late February and concludes in early March. Seed dispersal from these existing cottonwood trees occurs in approximately mid to late May. The time during and following seed dispersal is a useful approximation for recruitment of new cottonwood trees, given suitable hydrologic conditions. Both existing and newly established trees then proceed through leaf expansion and maturation until approximately mid to late November, when they enter leaf senescence. Goodrich *et al.* (2000) (Figure 2, p. 285) found that the first instance of a freezing overnight temperature in October 1996 abruptly halted evapotranspiration at a site on the upper San Pedro River. The Goodrich *et al.* (2000) study site on the upper San Pedro River is well upstream of the action area and October 1996 represents a single sampling year. We therefore consulted National Weather Service (NWS) (2017) data to determine the average date of the first freeze within the action area. The NWS San Manuel site is the closest station and at this site, the average date of the first freeze is November 24. This corresponds well with the Brock (1994) phenology. We thus consider late November as the date at which riparian vegetation senesces and therefore becomes relatively less susceptible to herbivory.

It is therefore likely that winter-season grazing (October 1 to March 30) occurs during times when riparian trees are still actively growing in the late autumn to early winter, prior to freeze-driven cessation of evapotranspiration and subsequent leaf drop, and in early spring, during recruitment and bud-break. These potential effects are not quantifiable, so we relied upon your agency's assessment of riparian condition trends (see above) as well as the proposed conservation measures pertaining to riparian ecosystems (1, 4, 10, 12, 13-17, and 19; see p. 13-15 in the 2012 BO) as well as conservation measures that are intended to minimize the effects of livestock grazing to the endangered southwestern willow flycatcher (see the southwestern willow flycatcher conservation measures in the BE, pp. 17-18 and 1 through 7 on pp. 15-17 in the 2012 BO). The flycatcher-specific conservation measures implement the general guidelines for livestock grazing in southwestern willow flycatcher habitat that in Table 2 in the Southwestern Willow Flycatcher Recovery Plan (FWS 2002; Appendix G, pp. 26-27). These recommendations can serve as yellow-billed cuckoo grazing standards until species-specific recommendations are developed. We note that you have agreed to implement a yellow-billed cuckoo-specific non-grazing season of April 1 to October 1 (D. Tersey pers. comm. 2017).

#### Yellow-billed Cuckoo Proposed Critical Habitat – Unit AZ-20

The action area is in proposed critical habitat unit AZ-20. This proposed unit is 23,399 ac (9,469 ha) in extent and is a 59-mi (95-km)-long segment of the Lower San Pedro River from above the Town of Mammoth in Pima County downstream to join the Gila River, where it continues downstream to below the Town of Kearny in Pinal County, Arizona. Approximately

17,431 ac (7,054 ha), or 75 percent, of proposed unit AZ–20 are privately owned; 729 ac (295 ha), or 3 percent, are Tribal lands located on the San Carlos Indian Reservation; 2,282 ac (923 ha), or 10 percent, are in State ownership and managed by the Arizona State Lands Department; and 2,957 ac (1,197 ha), or 13 percent, are in Federal ownership managed by BLM. This is an important breeding area for yellow-billed cuckoos and is consistently occupied by a number of pairs during the breeding season. The river reaches also provide a movement corridor and migratory stopover location for yellow-billed cuckoos moving farther north. Tamarisk (*Tamarix* spp.), a nonnative species that reduces the habitat's value, is a minor (San Pedro River) to major (middle Gila River) component of habitat in this unit. The PCEs of the proposed critical habitat for the yellow-billed cuckoo were described in the Status of the Species section above, and include PCE 1 (riparian woodlands), PCE 2 (adequate prey base) and PCE 3 (dynamic riverine processes).

Our hydrologic analysis anticipates that the proposed action will have a small - but measureable – effect to future yellow-billed cuckoo reproduction via impeded recruitment of new Fremont cottonwood/Goodding's willow habitats and reduced vigor of existing occurrences of this habitat type. We are aware that this native riparian habitat type is less prevalent in the action area when compared to nonnative tamarisk and native, more-landward occurrences of velvet mesquite. The effects, therefore, are relatively small in areal extent.

Livestock grazing has been undergoing similar riparian pasture management throughout the period covered by our 1997 PBO, 2003 BO, and 2012 BO, all of which predate the 2014 Final Rule listing the yellow-billed cuckoo (FWS 2014a); the adverse effects are therefore not novel and cuckoo occupancy within the action area is likely to have been ongoing throughout. We lack the data to determine what the potential condition of the riparian habitat within the action area would be absent livestock grazing or under different management because the recruitment, maintenance, and loss of such habitat is due to many factors other than herbivory (flood- and baseflow hydrology, natural successional processes, inter-annual weather variation, etc.). As such, we cannot anticipate the numbers of yellow-billed cuckoos harmed via reduced future reproduction.

The proposed action's effects to yellow-billed cuckoo proposed critical habitat occur via the same mechanism, and principally affects PCE 1. Again, we cannot determine the future state of riparian habitat absent livestock grazing, making it difficult to quantify the magnitude of effects to PCE 1 and therefore, the ability for proposed critical habitat to contribute to the recovery of the yellow-billed cuckoo. We note that these represent only a small portion of the habitat available in the action area, proposed critical habitat unit, and throughout the proposed critical habitat designation.

In summary, we anticipate that native riparian vegetation (i.e. Fremont cottonwood and/or Goodding willow) – and therefore, yellow-billed cuckoo habitat and proposed critical habitat - will continue to be adversely affected by ongoing livestock grazing. We do not anticipate, however, that the proposed action will affect the existing riparian habitat to an extent that would measurably affect the current abundance of yellow-billed cuckoos and/or the recovery potential of the proposed critical habitat.

### **Incidental Take Statement**

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

#### Amount or Extent of the Take

As stated above, we cannot be reasonably certain that the proposed action will harm or harass yellow-billed cuckoos occupying the action area and thus, we do not anticipate that individuals of the species will be incidentally taken.

### **CONSERVATION RECOMMENDATIONS**

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

- We recommend that the BLM work with us and the Arizona Game and Fish Department (AGFD) to participate in recovery planning and implementation of conservation actions for the yellow-billed cuckoo and improve the abundance and quality of riparian and other woodland habitats.
- We recommend that the BLM work with us and the Arizona Game and Fish Department (AGFD) to participate in recovery planning and implementation of conservation actions for the northern Mexican gartersnake and improve the abundance and quality of aquatic habitats, including efforts to reduce the abundance of competitive and/or predatory nonnative taxa.
- We recommend that the BLM work with us and the Arizona Department of Agriculture to participate in recovery planning and implementation of conservation actions for the acuña cactus.

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

### **REINITIATION NOTICE**

This concludes formal consultation for the yellow-billed cuckoo and informal consultation for

the northern Mexican gartersnake and acuña cactus, the latter with critical habitat. No further section 7 consultation is required for this project and these species at this time.

This also concludes the conference opinion and report, respectively, for the proposed critical habitats for the yellow-billed cuckoo and northern Mexican gartersnake. You may ask us to confirm the conference opinion for the yellow-billed cuckoo proposed critical habitat as a biological opinion issued through formal consultation if the proposed critical habitat is designated. The request must be in writing. If we review the proposed action and find there have been no significant changes in the action as planned or in the information used during the conference, we will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary. There is no need to make a written request to confirm the conference report for the northern Mexican gartersnake propose critical habitat. Please note that we anticipate revising the proposed critical habitat rules for both the yellow-billed cuckoo and northern Mexican gartersnake, and recommend that you consider any revisions on your future conference adoption request(s).

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

Certain project activities may also affect species protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. § 703-712) and/or the bald and golden eagles protected under the Bald and Golden Eagle Protection Act (Eagle Act). To comply with the Migratory Bird Treaty Act's prohibition of purposeful take of listed avian species, we recommend conducting pre-construction surveys for nesting birds and nests if trees or brush are cleared with mechanical devices during the nesting season (March 15 through September 15). If an active nest is found, voluntary best practices include providing a buffer of vegetation ( $\geq 50$  ft) around the nest until young have fledged or the nest is abandoned. Alternatively, with a permit, fledglings or eggs may be taken to a wildlife rehabilitator prior to clearing. If these voluntary pre-construction actions are not followed and an active nest is incidentally disturbed during clearing, under the "Good Samaritan Clause," you may collect the chicks or eggs and immediately transport them to a wildlife rehabilitator. If you are interested in voluntarily implementing Best Management Practices, please visit <http://www.fws.gov/migratorybirds> or <https://www.fws.gov/southwest/migratorybirds/index.html>.

The Eagle Act prohibits anyone, without a U.S. Fish and Wildlife Service (FWS) permit, from taking (including disturbing) eagles, and including their parts, nests, or eggs. If you think migratory birds and/or eagles will be affected by this project, we recommend seeking our Technical Assistance to identify available conservation measures that you may be able to incorporate into your project. For information on protections for bald eagles, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) published in the Federal Register on June 5, 2007 (<http://www.fws.gov/southwest/es/arizona/BaldEagle.htm>), as well at the Conservation

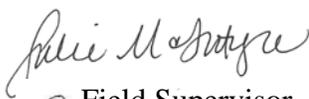
Assessment and Strategy for the Bald Eagle in Arizona (SWBEMC.org).

For information on protections for bald eagles, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) published in the Federal Register on June 5, 2007

(<http://www.fws.gov/southwest/es/arizona/BaldEagle.htm>), as well at the Conservation Assessment and Strategy for the Bald Eagle in Arizona (SWBEMC.org).

The FWS appreciates efforts by the BLM to identify and minimize effects to listed species from this project. We encourage you to coordinate the review of this project with AGFD. We also appreciate your ongoing coordination during implementation of this program. In keeping with our trust responsibilities to American Indian Tribes, we are providing copies of this final biological and conference opinion to the Bureau of Indian Affairs and are notifying affected Tribes.

In all future correspondence on this project, please refer to consultation number 22410-2006-F-0414R1. Should you require further assistance or if you have any questions, please contact Jason Douglas at (520) 670-6150 (x226) or Julie McIntyre at (x223).

  
for Field Supervisor

cc (electronic copy):

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## Appendix A: Concurrences

### Northern Mexican Gartersnake

The Federal Register notice listing the northern Mexican gartersnake as threatened under the Act was published on July 8, 2014 (79 FR 38678) (FWS 2014c, entire). Please refer to this rule for more in-depth information on the ecology and threats to the species, including references. Critical habitat was proposed on July 10, 2013 (78 FR 41500) (FWS 2013a, entire) and has not yet been designated. We expect to publish a modified re-proposal for critical habitat and an accompanying Notice of Availability announcing the draft Environmental Assessment and draft Economic Analysis in the future. Details on critical habitat are provided below. The contents of the final listing and current proposed critical habitat rules are incorporated herein by reference.

Mismanaged (or unmanaged) livestock grazing can have disproportionate effects to riparian and aquatic ecosystems in arid ecosystems due to the attraction of livestock to water, forage, and shade. The proposed action includes the protection of riparian and aquatic habitat in allotment management planning through fencing, rotation, cold season use of riparian pastures, monitoring, and development water sources removed from riparian areas. These management practices, given the status of the northern Mexican gartersnake in the action area, reduce the likelihood of significant adverse impacts on the gartersnake's, their habitat, and their prey base; detailed analyses follow.

The only suitable perennial aquatic habitat for the northern Mexican gartersnake in the action area is along the lower San Pedro River, but the species' status in the river is uncertain (FWS 2014c, p. 38678 and FWS 2013a, p. 41566). The San Pedro River supports bullfrogs (*Lithobates catesbeianus*), green sunfish (*Lepomis cyanellus*), channel catfish (*Ictalurus punctatus*), largemouth bass (*Micropterus salmoides*), and northern crayfish (*Orconectes virilis*) which prey on small gartersnakes and, in the case of the fishes, represent formidable prey for adult gartersnakes (FWS 2014c, p. 38685). U.S. Fish and Wildlife Service staff members have observed suitable prey such as lowland leopard frogs (*L. yavapaiensis*) in the lower San Pedro River. As a result, the northern Mexican gartersnake may survive here only at very low population levels (FWS 2014c, pp. 38682 and 38701).

Direct effects of livestock grazing to northern Mexican gartersnakes can include displacement and interruption of feeding when large numbers of livestock move together through suitable habitat or habitat with year-round (e.g. ranid frogs; *Lithobates* spp.) and/or seasonal prey (e.g., toads; *Bufo* spp., *Scaphiopus* spp., and *Spea* spp.) such as rivers, streams, stock tanks or temporary waters created by warm season rain events.

Because livestock are slow moving and conspicuous, northern Mexican gartersnakes are unlikely to be trampled by livestock watering in suitable habitat or stock ponds with amphibian prey items. However, gartersnakes may, on occasion, be trampled by livestock. Direct fatalities of a black-necked gartersnake (*T. cyrtopsis cyrtopsis*) from being trampled by livestock have been documented (FWS 2014c p. 38715). Related taxa, including western (terrestrial) gartersnake (*T. elegans vagrans*) populations were significantly higher (versus controls) in terms of abundance and biomass in areas that were excluded from grazing, where the streamside vegetation remained lush, than where uncontrolled access to grazing was permitted (FWS 2014c, p. 38715).

The movement of livestock to, from, and around aquatic sites can also result in indirect effects to northern Mexican gartersnakes should the species' prey base be affected. Ranid frogs, toads, and salamanders are suspected to be particularly important to northern Mexican gartersnakes, seconded by native (and non-spiny-rayed, nonnative) fish. If livestock can directly access amphibian breeding habitat and crush egg masses, losses can be significant and amphibian prey populations can be appreciably affected. Lastly, native fish populations in both lotic and lentic habitats are vulnerable to watershed-level effects of grazing through effects of unnatural levels of sedimentation on aquatic habitat.

Six of the eight grazing allotments have Gila River riparian pastures that are used from October through March: LEN, A-Diamond, Teacup, Battle Axe, Whitlow and Rafter 6. Three seasonal stock tanks (which may support toads seasonally) occur on the BLM portions of the LEN, Teacup and Battle Axe allotments. These seasonal waters are located from 1.6 to 4.2 miles from the Gila River. The Indian Camp Allotment is situated near the Gila River but does not contain a riparian pasture. The Smith Wash Allotment borders the San Pedro River, but does not include a riparian pasture.

Northern Mexican gartersnakes are unlikely to be harmed or harassed by grazing activities on the eight allotments contained in this analysis. The species is not known to occur on the Gila River, so the October through March (autumn through spring) grazing in the riparian pastures on the LEN, A-Diamond, Teacup, Battle Axe, Whitlow and Rafter 6 allotments is unlikely to adversely affect the species. Northern Mexican gartersnakes have been detected relatively large distances from perennial aquatic habitat. Livestock activities could result in injury of northern Mexican gartersnakes and indirect effects to the species prey base at the seasonal waters in the LEN, Teacup and Battle Axe allotments, but we anticipate that the northern Mexican gartersnake exists locally in densities which render such interactions improbable. Any northern Mexican gartersnakes that are present should be able to evade effects (during warmer periods) or will be in brumation (during cooler periods).

The Smith Wash Allotment borders the lower San Pedro River, in which northern Mexican gartersnakes may occur at low densities. The streamside zone and riparian area of the San Pedro River are not included in a pasture, and are not grazed. We reiterate that northern Mexican gartersnakes can occur relatively great distances from perennial waters but again, we anticipate that the species exists in densities which render such interactions improbable.

In summary, the low likelihood that adverse effects to northern Mexican gartersnakes that exist in exceedingly low densities in the action area occur renders the effects of the action insignificant and discountable. We therefore concur that the proposed action is not likely to adversely affect northern Mexican gartersnakes.

#### Northern Mexican Gartersnake Proposed Critical Habitat – San Pedro River Subunit

Critical habitat for the northern Mexican gartersnake has been proposed in 14 units in portions of Arizona and New Mexico totaling 421,423 acres (ac) (170,544 hectares (ha)). We have proposed the designation of 22,669 ac (9,174 ha) of critical habitat along 158.4 stream miles (mi) (254.9 kilometers (km)) of the San Pedro River from its confluence with the Gila River at Winkelman, upstream to the International Border, in Cochise, Pima, and Pinal Counties, Arizona (FWS 2013, p. 41559).

Within these areas of proposed critical habitat, the primary constituent elements (PCEs) of the physical and biological features essential to northern Mexican gartersnake conservation are:

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

The San Pedro River Subunit of proposed critical habitat adjoins the Smith Wash allotment, but this allotment lacks a riparian pasture; there are therefore no direct effects to northern Mexican gartersnake proposed critical habitat or PCEs 1 and 2.

Indirect effects to aquatic and riparian areas within proposed critical habitat for the northern Mexican gartersnake (relevant only to PCE 2 in the absence of riparian grazing on the San Pedro River) are minimized as described in the section pertaining to the effects to individuals of the species, above. The managed grazing is unlikely to have population-level effects to native fishes (which are relatively rare in the San Pedro River) or amphibians (bullfrogs, which are both a prey species and predator of gartersnakes; and lowland leopard frogs). Primary Constituent Elements 3 and 4 are thus unlikely to be affected.

In summary, we concur, in conference, with your determination that the proposed action may affect, but is not likely to adversely affect proposed critical habitat for the northern Mexican gartersnake.

## Acuña Cactus

### Status of the Species and Environmental Baseline

The acuña cactus was listed as endangered in 2013 (78 FR 60608- 60652; FWS 2013b); critical habitat was designated on August 18, 2016 (81 FR 55266-55313; FWS 2016b). The biology, ecology, and rangewide status of the acuña cactus are described in detail in the final rule listing the taxon (FWS 2013b; pp. 60613- 60627) while current population distribution information, including within the action area, appears in the final critical habitat designation. This information is incorporated herein via reference.

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of acuña cactus in areas occupied at the time of listing, focusing on the features' primary constituent elements. We consider primary constituent elements to be the elements of physical or biological features that provide for a species' life history processes and are essential to the conservation of the species. Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the primary constituent elements specific to the acuña cactus are:

- (i) Native vegetation within the Paloverde-Cacti-Mixed Scrub Series of the Arizona Upland Subdivision of the Sonoran Desert-scrub (Brown 1994, p. 200) at elevations between 365 to 1,150 m (1,198 to 3,773 ft). This vegetation must contain predominantly native plant species that:
  - a. Provide protection to the acuña cactus. Examples of such plants are creosote bush, ironwood, and palo verde.
  - b. Provide for pollinator habitat with a radius of 900 m (2,953 ft) around each individual, reproducing acuña cactus.
  - c. Allow for seed dispersal through the presence of bare soils immediately adjacent to and within 10 m (33 ft) of individual acuña cactus.
- (ii) Soils overlying rhyolite, andesite, tuff, granite, granodiorite, diorite, or Cornelia quartz monzonite bedrock that are in valley bottoms, on small knolls, or on ridgetops, and are generally on slopes of less than 30 percent.

The action area includes a portion of acuña cactus critical habitat Unit 6. Unit 6 of acuña cactus critical habitat is located near Box O Wash in north-central Pinal County and totals 1,981 ha (4,895 ac) in areal extent. Unit 6 contains 4 ha (9 ac) of federally-owned land, 1,506 ha (3,722 ac) of State-owned land, and 471 ha (1,164 ac) of privately-owned land. The Federal land is administered by the BLM. This entire unit helps to maintain the geographical range of the species and provide opportunity for population growth. This unit also provides a core population of the species. Unit 6 is subdivided into of two subunits (Box O Wash 6a and Box O Wash 6b).

Box O Wash Subunit 6a is 1,721 ha (4,253 ac) and consists of 4 ha (9 ac) of BLM land, 369 ha (913 ac) of private land, and 1,348 ha (3,332 ac) of State land east of Florence, Arizona. This subunit comprises two separate populations of the acuña cactus on private and State-owned lands, which are close enough in proximity to be combined within the 900-meter (m) (2,953-foot

(ft)) radius defined for pollinators (FWS 2016; pp. 55273 and 55275-55276). Lands within this subunit were occupied at the time of listing; the combined number of plants occurring within this subunit is 11. This subunit contains all of the primary constituent elements of the physical or biological features essential to the conservation of the acuña cactus.

Box O Wash Subunit 6b is 260 ha (642 ac) and consists of 158 ha (391 ac) of State-owned land and 102 ha (251 ac) of private land east of Florence, Arizona. This subunit comprises one population of the acuña cactus on State-owned land; the 900-m (2,953-ft) radius defined for pollinators (FWS 2016; pp. 55273 and 55275-55276) overlaps private land. This area was surveyed twice in 2008, with 32 living acuña cacti found in one survey and 45 cacti in a second survey. A 2011 survey resulted in no living plants located; however, this was not a complete survey of the area. Since the 2011 survey was not a comprehensive survey, and a relatively large number of plants were found here in 2008, we assume the plants still occur in this subunit. Therefore, we consider lands within this subunit occupied by an unknown number of plants at the time of listing. This subunit contains all of the primary constituent elements of the physical or biological features essential to the conservation of the acuña cactus.

Livestock grazing and ORV activity occur within both subunits 6a and 6b, and mining occurs nearby. Nonnative, invasive species issues may occur in or nearby this unit. Special management considerations or protection may be required within the subunits to minimize habitat fragmentation; to minimize disturbance to acuña cactus individuals, soil, and associated native vegetation; and to prevent or remove nonnative, invasive species within acuña cactus habitat.

#### Effects to Acuña Cactus

Livestock can step on or knock over individual acuña cactus plants. Although other species of cacti (i.e. Engelmann's prickly pear; *Opuntia engelmannii*) may be good survival forage for livestock, ungulate herbivory of the acuña cactus has not been reported. Livestock grazing levels and habitat condition vary greatly between populations due to varied land ownership and management.

With respect to the proposed action, BLM-administered grazing activities on the 1,659 acres of BLM lands on the Whitlow Allotment will have no effect on the 11 individual known acuña cacti in the Box O Wash area. The 11 cacti are on State and private land, are not subject to the proposed action, and are thus not within the action area. Subunit 6b, and the unknown number of acuña cactus individuals that occur there, are similarly outside of the action area and will not be affected.

#### Effects to Acuña Cactus Critical Habitat

The proposed action may affect the PCEs within 4 ha (9-ac) of the 1,721-ha (4,253-ac) acuña cactus critical habitat within Box-O Wash Subunit 6a. Again, the 260-ha (642-ac) of Subunit 6b is not within the action area.

The primary constituent elements of critical habitat will only be affected to a small degree from livestock grazing; the proposed action affects approximately 0.2 percent (4 out of 1,721 ha, 9 out of 4,253 ac) of the total land acreage within Subunit 6b. Furthermore, conservation measures incorporated from previous consultations (see Conservation Measures 1, 2, 3, 4, 5, 6, 8, 10, and

11 in the BA) and special measures anticipated to be devised to minimize impacts at each site are likely to prevent nearly all potential degradation of the critical habitat.

Authorization of livestock grazing is unlikely to adversely affect the Primary Constituent Elements of the Proposed Critical Habitat. Livestock grazing associated with the proposed action is not likely to adversely affect PCE i; the plant community is highly unlikely to be so altered by livestock grazing that it is no longer within the Paloverde-Cacti-Mixed Scrub Series of the Arizona Upland Subdivision of the Sonoran Desert-scrub (Brown 1994, p. 200). Livestock grazing under the proposed action is also not likely to so alter the vegetation that: (1) creosote bush, ironwood, and palo verde are no longer present to protect acuña cactus (PCE i(b)); (2) pollinator habitat radius of 900 m (2,953 ft) around each individual, reproducing acuña cactus is removed (PCE i(c)); and (3) prevent seed dispersal over bare soils immediately adjacent to and within 10 m (33 ft) of individual acuña cacti (PCE i(c)). Livestock grazing is incapable of altering the underlying rhyolite, andesite, tuff, granite, granodiorite, diorite, or Cornelia quartz monzonite nor altering slopes (PCE i(i)).

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