



United States Department of the Interior

Fish and Wildlife Service Arizona Ecological Services Office

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In reply refer to:

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AESO/SE
02EAAZ00-2016-F-0450

April 5, 2018

Joshua Fife, Biology Team Lead
Arizona Department of Transportation
Environmental Planning
1611 W. Jackson St.
Phoenix, Arizona 85007

RE: SR 60 Pinto Creek Bridge
FHWA File # STP-EB-060-D(207)S
ADOT File # 060-GI-238-H8243-01C

Dear Mr. Fife:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). At issue are effects of a bridge replacement project proposed by the Federal Highway Administration (FHWA) and Arizona Department of Transportation (ADOT) on U.S. Highway 60 (US 60) at Pinto Creek, at milepost (MP) 238.25, approximately 12 miles (mi) east of the Town of Superior, Gila County, Arizona. We received your consultation request, dated October 24, 2017, via electronic mail (email) on October 27, 2017. We also received the biological evaluation (BE) for the proposed action, dated October 2, 2017, on October 27, 2017.

In your consultation request, you concluded that the proposed action “may affect, and is likely to adversely affect” the endangered Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) (hereafter hedgehog cactus). You also concluded that the proposed action “may affect, but is not likely to adversely affect” the endangered ocelot (*Leopardus pardalis*). Below we provide a biological opinion (BO) on effects of the proposed action on the hedgehog cactus. We concur with your determination for the ocelot and provide our rationale in Appendix A.

This BO is based on information provided in the BE, email correspondence, telephone conversations, and field investigations. Literature cited herein is not a complete bibliography of all literature available on the species of concern, bridge construction projects and their effects, or

on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office (file number 02EAAZ00-2016-F-0450).

Consultation History

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| March 25, 2015 | We completed an informal consultation (concurrence) on the geotechnical investigation for this project. |
| June 13, 2017 | FWS staff and representatives from ADOT, AZTEC Engineering, Desert Botanical Garden, and Tonto National Forest visited Pinto Creek Bridge to discuss conservation measures for the Arizona hedgehog cactus. |
| October 27, 2017 | We received your request for formal consultation on the proposed action along with the BE for the project. |
| January 3, 2018 | We sent a 30-day letter indicating that all information required to initiate consultation was either included with your consultation request, was in the BE, or was otherwise accessible for our consideration and reference. |
| April 3, 2018 | We sent you our draft BO for review and received your comments on the draft BO. |

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The following summary of the proposed action is taken from the BE. Maps, photographs, and diagrams related to the action are included in the BE and are incorporated herein by reference.

ADOT, in association with FHWA, is planning to replace the Pinto Creek Bridge (Structure #351) with a new bridge north of and parallel to its current location. The existing bridge, a 9-span steel arch structure, was built in 1949. The bridge has five concrete spans (west to east) totaling approximately 179-feet (ft) in length, a 370-ft-long main span supported by steel arch ribs, and three concrete spans totaling 87 ft in length. The abutments consist of concrete slabs supported on three sides by retaining walls. The western abutment is nearly 36 ft long. The eastern abutment is nearly 38 feet long. Overall, the existing bridge is about 710 ft long and 35 ft wide. The bridge exhibits extensive transverse cracking on the deck surface and cracking in the piers and abutments. If left unaddressed, damage to the bridge deck will continue to worsen until the bridge becomes impassible to traffic.

The proposed scope of work includes:

- Construction of a new four-span steel haunch girder bridge structure (new structure #20077) on an alignment parallel to US 60, north of the existing structure;
- Realignment of approximately 2,500 feet of the US 60 roadway to tie into the new bridge;

- Cutting back roadway slopes and contouring temporarily disturbed areas and waste sites (as needed) to be aesthetically pleasing;
- Staging, stockpiling, and placing waste material (Waste Site #1) south of US 60 near MP 238.35;
- Stockpiling and placing waste material (Waste Site #2) north of US 60 near MP 238.56, and potentially extending a pipe culvert to accommodate waste material;
- Installing a rockfall barrier at MP 238.16;
- Potentially staging north of US 60 near MP 238.10;
- Constructing an access road into and across Pinto Creek that includes temporary culvert placement within Pinto Creek;
- Obliterating the access road and restoring the area to blend in with surrounding habitat;
- Constructing two retaining walls north of US 60;
- Extending an existing corrugated steel pipe at MP 238.32;
- Relocating an overhead power pole;
- Installing new embankment curb and gutter, as needed;
- Removing and replacing guardrail and guardrail end treatments, as needed;
- Removing and replacing fencing, as needed;
- Removing the existing bridge structure, guardrail, and roadway leading to the existing bridge;
- Installing embedded temporary construction signs and permanent embedded signs once construction is complete;
- Installing changeable message signs at the interchanges of US 60 and State Route (SR) 177 and US 70, and near the cities of Miami, Globe, and Winkelman;
- Seeding disturbed areas with a native seed mix.

In the BE and in this BO, the term “construction footprint” is used to represent areas at and adjacent to the Pinto Creek Bridge where vegetation removal and other ground disturbances would occur as a result of the proposed action (Figure 1). The construction footprint includes approximately 14.93 acres (ac) that would be temporarily disturbed and restored after construction. Most temporary disturbance would result from construction of the proposed access road. The footprint also includes 0.99 ac that would be permanently disturbed due to installation of new concrete bridge piers and construction of new pavement on Highway 60. In total the construction footprint encompasses 15.92 ac.

The term “project area” is used to represent surrounding lands outside but adjacent to the construction footprint (Figure 1). The project area encompasses about 48.84 ac that include 1.1 mi of the US 60 roadway—from MP 237.54 to MP 238.63—and areas contained in ADOT’s existing right-of-way and easements granted by the Tonto National Forest, which administers all lands within the construction footprint and project area. Construction of the new bridge would require approximately 3.57 ac of new ADOT easement and 27.53 ac of temporary construction easement.

Construction Phases

Construction is anticipated to begin in the summer of 2018 and would take 34 months to complete. Construction would occur in five phases:

Phase 1 - Heavy Earthwork - Duration Approximately Six Months

Phase 1 would include the majority of heavy earthwork and temporary ground disturbances required for the project. Construction of the proposed temporary access road, installation of crane pads below the bridges, construction of a cutslope and rockfall ditch along the north side of the highway east of the bridge, and most vegetation clearing would occur during Phase 1.

The proposed temporary access road is necessary because construction of the new bridge and removal of the old bridge will require cranes and other equipment to operate below the bridges. Cranes must have adequate space to operate and achieve appropriate boom angles, which are only available from within the canyon of Pinto Creek.

An old, unimproved road north of US 60 would provide the necessary access into the canyon (Figure 1). The road originates east of the bridge, continues northwest along the north facing side of the ridgeline, curves to the west, then makes a 180-degree turn at the point of the ridge, and descends southeast into the canyon. At present, the existing road is overgrown with vegetation, has a substrate of unconsolidated soil, gravel, and decomposing granite, and is too narrow to accommodate heavy equipment.

The proposed access road would follow the same alignment as the existing road. The road would need to be cleared, graded, and widened by at least 20 ft to allow use by large cranes and other equipment. A bulldozer, motor grader, backhoe, and roller-compactor would be used to cut the upslope edge of the old road, flatten the road, and place the cut material on the downslope side of the road. The placed material would then be compacted and lined with gravel or decomposed granite. To stabilize the road cut and reduce downslope movement of materials from the road, heavy exclusion fencing or temporary concrete barriers would be installed along the downslope side of the 180-degree turn on the access road.

At the base of the canyon, the access road would cross Pinto Creek. Low-flow pipes would be placed within the creek to maintain flows through the bridge site for the duration of the project. The pipes would be covered with fill material to allow construction equipment to cross Pinto Creek. The low-flow pipes would be trucked into Pinto Creek and put in place with a crane. The proposed access road would be maintained and used throughout the life of the project.

The rock face at the new cut slope north of the highway would be scaled using a jack hammer or long arm backhoe. A limited amount of blasting may also be involved. The rock fall ditch below the cut slope would be shaped mechanically with a jack hammer. Material removed from the cut slope that is not placed below the reconstructed road would be stored within the project area at two designated stockpiling/waste sites (Figure 1). Waste Site 1 would be used as the primary stockpiling location and Waste Site 2 would be used if material at Site 1 exceeds Site 1's capacity.

Construction activities in Phase 1 are expected to result in 9.91 ac of temporary ground disturbance—8.74 ac for access road construction and site preparations below the bridges (e.g., crane pads), and 1.17 ac for the cut slope and rockfall ditch. Stockpiling and storing material at the waste sites would result in an additional 3.05 ac of temporary ground disturbance.

Phase 2 - New Bridge Construction - Duration Approximately One Year and Five Months

Phase 2 would be the main construction phase and would include construction of the new bridge over Pinto Creek and realignment of the US 60 roadway to meet the new bridge. The first step would involve drilling shafts for the new bridge piers and abutments. Each pier would have two drilled shafts, each approximately 9.5 ft in diameter. The abutments would require 4-ft-diameter shafts—eight for the western abutment and three for the eastern abutment. All shafts would be drilled by an auger, and then a rebar cage would be installed within the shafts. Concrete would then be poured to form the pier columns, abutments, and wingwalls.

During Phase 2, concrete cantilever retaining walls would also be constructed at two separate, steep portions of the new westbound alignment. The first wall would be approximately 330 ft in length with 8-inch micropiles spaced at 2-ft intervals across the entire length of the wall. The height would vary and would accommodate an existing 72-inch corrugated steel pipe within its structure. The second wall would be approximately 122 ft in length and would extend from the new wingwall at the western bridge abutment.

Once the retaining walls are in place, the new US 60 roadway would be constructed. The new road would be approximately 40-ft wide and would require some fill material, which would be graded, compacted, and prepared as subgrade for paving. The roadway would be paved with asphaltic concrete and guardrail would be installed as necessary along the new alignment. The corrugated steel pipe at MP 238.32 would be extended into the cut slope/rockfall ditch constructed during Phase 1. In addition to this extension, a new catch basin and dike would be installed at the inlet of the newly extended pipe to direct storm water away from US 60.

Approximately 0.85 acre of permanent ground disturbance is expected from installing the bridge piers, abutments, retaining walls, corrugated steel pipe extension, and new roadway. Approximately 0.39 acre of temporary ground disturbance would be generated from maneuvering equipment along US 60, and from cut/fill activities required to install the new roadway and retaining walls. Vegetation removal during Phase 2 is expected to be minor, since the new alignment primarily occurs in disturbed areas that are sparsely vegetated or devoid of vegetation.

Phase 3 - Highway Transitions - Duration Approximately Two Weeks

Phase 3 would focus on traffic management required to move traffic from the old US 60 roadway and old bridge to the new US 60 alignment and new bridge. Short term one-way traffic would be required on the existing alignment of US 60. While traffic is limited to one-way movement, the roadway between the two alignments would be saw-cut and physically removed. Once the pavement is removed, an embankment would be installed, and the ground surface would be compacted/graded. The subgrade would be covered with an aggregate base, and finally, the transition between the old and new US 60 roadway would be paved with asphaltic concrete. The transition would be constructed on previously paved surface, so no new permanent ground disturbance is anticipated. Approximately 0.32 acre of temporary ground disturbance would occur from maneuvering equipment along US 60. Vegetation removal is not anticipated during Phase 3.

Phase 4 - Demolition of the Old Bridge - Duration Approximately 4.5 Months

The sequence and methods for removing the existing Pinto Creek Bridge would be determined by the contractor with approval of the ADOT District Engineer after the new bridge is in place. The old bridge would be removed using cranes located below the bridge and on top of the canyon along the old US 60 alignment. Remaining portions of the old alignment, bridge approach slabs, and pavement would then be saw-cut and removed. All materials from the dismantled bridge and old roadway would be removed from the construction footprint. During Phase 4, a new rockfall barrier wall would be installed near MP 238.16, south of US 60 (along the eastbound lane) to protect traffic from rockfall off an existing road-cut.

Removal of the remaining parts of the old US 60 alignment would result in 1.06 ac of temporary ground disturbance, and approximately 0.14 acre of permanent ground disturbance would occur from installing the new rockfall barrier wall. However, all Phase 4 activities would occur on paved surfaces or in areas that are already disturbed. No vegetation removal is anticipated during Phase 4.

Phase 5 – Roadway Striping and Signing, Access Road Removal, and Site Restoration – Duration Approximately Eight Months

Phase 5 would include paving of the finished alignment with asphaltic concrete friction course, installation of rumble strips, roadway striping, and signing as necessary, and removal of the temporary access road. The access road would be obliterated and re-contoured to a natural appearance. Disturbed areas would be seeded with a native seed mix.

Action Area

FWS defines the action area as all areas to be affected directly or indirectly by the proposed action, and not merely the immediate area involved in the action (50 FR § 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment, focusing on, but not exclusive to, the Pinto Creek bridge. We further define the action area as the 15.92-ac construction footprint plus the 48.84-ac project area—in total an area of 64.76 ac.

Conservation Measures

Conservation measures presented below include general measures and measures to reduce effects of herbicide use. Species-specific measures are included that outline a conservation program emphasizing avoidance, protection in place, or salvaging of cacti to reduce project effects. Conservation measures are also designed to preserve genetic material of cacti that may be affected by the project.

General Measures

- A plan for construction of the access road and minimization of environmental effects of the project would be developed by the contractor and approved by ADOT 60 days before construction begins.

- All disturbed soils not paved that will not be landscaped or otherwise permanently stabilized by construction shall be seeded using species native to the construction footprint.

Herbicide Use and Invasive Species Control

- The contractor shall develop a Noxious and Invasive Plant Species Treatment and Control Plan prior to construction. The plan would specify how and when treatments would occur. Treatments may be done manually with hand tools or using herbicides.
- Spot spraying of herbicides shall be the only method used for invasive species control. Broadcast spraying would not be permitted.
- Because of its particularly harsh effects on cacti, the herbicide dicamba would not be used.
- To prevent the introduction of invasive species seeds into the action area, the contractor shall inspect all earthmoving and hauling equipment before leaving the equipment storage facility. All vehicles and equipment shall be washed and be free of attached plant/vegetation and soil/mud debris prior to leaving the facility.
- To prevent invasive species seeds from leaving the action area, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris before leaving the project area.

Species-Specific Measures

- ADOT shall arrange for preconstruction environmental awareness training for all personnel working at the bridges including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors, including personnel involved in herbicide treatments. Training would include information on the Arizona hedgehog cactus, its biology and distribution, legal status, threats to the species, measures to avoid impacts, and procedures to be implemented in case of encounters during the project.
- Before construction begins, ADOT shall arrange for seeds to be collected from fruiting hedgehog cacti from within the construction footprint. Collected seeds shall be cultivated at the Desert Botanical Garden.
- Before construction begins, the contractor shall establish Arizona hedgehog cactus avoidance areas based on preconstruction cactus surveys completed in 2017.
- The contractor shall install heavy, sturdy fencing or concrete barriers to prevent access to avoidance areas. Alternately, T-posts and string or orange snow fencing would be used as flagging around cacti that need to be avoided. Flagging would extend out to a 20-ft radius from each marked cactus.
- The contractor shall not go beyond installed exclusion fencing and or other barriers and shall avoid all flagged areas.
- The contractor would contact ADOT if areas outside the currently designated construction footprint need to be accessed after construction begins.
- Prior to any ground disturbing activities, the contractor shall coordinate with ADOT and the Desert Botanical Garden to arrange for removal and salvaging of all Arizona hedgehog cacti that are inside the construction footprint. Healthy cacti would immediately be replanted outside the construction footprint. Cacti that are not in good

condition or that need to be re-rooted after salvaging would be transported to the Desert Botanical Garden for care (see discussion below).

- Before work on the proposed access road begins, the contractor shall install steel cages over hedgehog cacti growing downslope of the access road that are at risk from rockfall and shifting of material from above.
- The contractor shall work with the Desert Botanical Garden to determine which Arizona hedgehog cacti shall receive protection via steel cages or flagging, and the Desert Botanical Garden shall oversee all steel cage, fencing, and flagging installation and removal.
- Conservation measures described above shall apply to any hedgehog cacti discovered after construction begins. If a previously undocumented cactus is encountered during construction, it shall be avoided, protected in place, or salvaged if possible.
- After construction, Arizona hedgehog cacti that were salvaged before the project began, and held at the Desert Botanical Garden, shall be replanted within the construction footprint. Hedgehog cacti pups grown from seeds at the Desert Botanical Garden shall also be transplanted to the construction footprint.
- Replanted cacti shall be monitored twice a year for a period of two years after site restoration (see discussion below).

Arizona Hedgehog Cactus Salvage Protocol

Prior to relocation and salvage efforts, the contractor would work with the Desert Botanical Garden, FWS, and Tonto National Forest to develop an Arizona Hedgehog Cactus Relocation and Salvage Plan. The plan would provide criteria for determining which cacti are suitable for immediate relocation and which would require care at the Desert Botanical Garden. Relocation areas would be approved by the Tonto National Forest and FWS.

Monitoring

In addition to overseeing many aspects of the conservation program, the Desert Botanical Garden would be responsible for monitoring all cacti that were moved before and after construction, including individuals that were removed from the construction footprint and immediately replanted, those that were held at the Desert Botanical Garden during construction and returned to the construction footprint, and the transplanted pups grown from seed. ADOT will provide a monitoring report to the FWS summarizing the survivorship and conditions of all hedgehogs included in conservation measures within six months of the date monitoring ended.

STATUS OF THE SPECIES

The Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) was listed as endangered without critical habitat on October 25, 1979 (44 FR 61556). A final recovery plan for the taxon has not been developed. In 1984, Region 3 of the U.S. Forest Service drafted a technical review of the Arizona hedgehog cactus but the document was never finalized. The purpose of the technical review was to propose reasonable actions that the U.S. Forest Service deemed necessary for the recovery of the taxon. The status of these proposed implementation steps for recovery is unknown. The cactus is also protected by the Arizona Native Plant Law (A.R.S. Chapter 7, Article 1) (Arizona Department of Agriculture 2009) as a Highly Safeguarded

Native Plant and is protected from international trade by the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Since the species' listing, cytological and morphological investigations within *E. triglochidiatus* has resulted in revisions within the genus. The Arizona hedgehog cactus has been placed within *E. arizonicus* as a subspecies (Zimmerman and Parfitt 2003). We recognize that revising the taxonomy of the cactus should be addressed. Until that time we continue to refer to the cactus as *Echinocereus triglochidiatus* var. *arizonicus*.

The Arizona hedgehog occupies a narrow geographic range between the towns of Superior and Globe in Pinal and Gila counties in central Arizona. Its known range extends from the Superstition Wilderness Area south to Devils Canyon, and east along US 60 to Top of the World, and south to the Mescal and Pinal Mountains (Arizona Rare Plant Committee [ARPC] 2001, Baker 2013). The range includes two small subpopulations: the Apache Peak subpopulation north of the city of Globe; and the El Capitan subpopulation south of Globe. Other varieties of red claretcup cacti occur along the periphery or are intermingled with populations of the Arizona hedgehog cactus at the edge of the species' distribution and appear similar morphologically. However, plants within the type locality for the Arizona hedgehog cactus are "classical var. *arizonicus*" and are the only populations subject to the protection and restrictions of the Act.

The Arizona hedgehog is a succulent perennial with dark green cylindroid stems that grow in loose clumps of four to 20 stems (ARPC 2001). Occasionally a plant will have over 50 stems. Large, robust stems arise from the base of the plant, growing up to 16 inches in length and up to 4 inches in width (ARPC 2001). Each stem has eight to 13 strong tuberculate ribs, with nine being most common. Spines are smooth and short, consisting of five to 11 radial spines per areole (ARPC 2001) but fewer than nine is commonly observed (Baker 2006). There are one to four gray or pinkish central spines that are less than 1.9 inches long and terete (smooth, cylindrical and tapering) (Zimmerman and Parfitt 2003), with the largest deflexed or bending downwards (Arizona Game and Fish Department [AGFD] 2003). Flowers erupt along the sides of the stem near the upper third of stem ribs, and are a brilliant scarlet to deep red color. The flower is stout, erect, about 2 inches in diameter and 3 inches in length (AGFD 2003) appearing in late April to mid-May. The fruit is large (0.79 to 1.18 inches long), green with brownish tinge in color. Fruiting occurs from May to June with germination occurring in midsummer (ARPC 2001). Mature cacti can produce many fruits per year with each fruit producing up to 100 seeds (AGFD 2003).

Arizona hedgehogs are found at elevations ranging from 3,300 to 5,700 feet within the ecotone between the Madrean Evergreen Woodland Biotic Community (Brown 1994) and Interior Chaparral (Pase and Brown 1994). Preferred habitat for this hedgehog is exposed and stable bedrock and boulders exhibiting sufficient fracturing or rock interstices for establishment. Parent rock materials are Schultze granite and Apache Leap tuff (dacite), both igneous in origin (AGFD 2003, U.S. Forest Service [USFS] 1996). Pinal schist and the Pioneer formation in proximity to the dacite and Schultze granite also provide habitat for the cactus, but only where these formations express themselves as exposed bedrock (USFS 1996).

The majority of Arizona hedgehogs are found scattered on open, rocky slopes of 20 to 90 degrees, and steep, fissured cliffs (Philips et al. 1979, USFS 1996). Its roots invade cracks,

fissures, or interstices within exposed rock or narrow pockets between boulders where the microclimate provides the necessary periodic moisture, moist soils, and shelter from high temperatures (USFS 1996). The cactus may be found on flatter ground and more open slopes as well as in the understory of shrubs, but moderate to high shrub densities and associated deeper soils tend to preclude the cactus (USFS 1996). Ninety percent of occupied Arizona hedgehog cactus is on the Globe Ranger District of the Tonto National Forest. Remaining occupied habitat is privately owned or occurs on land managed by the U.S. Bureau of Land Management or Arizona State Land Department.

Information about Arizona hedgehog abundance is limited. Direct access to a large portion of the species' range is difficult due to the rugged topography and remoteness of its habitat. Most counts of the species have been reported by Federal agencies for projects in Arizona that required section 7 consultations. As of 2016, sixteen formal section 7 consultations had been conducted for the species. Previous projects have resulted in the direct impact or loss of an estimated 3,347 individuals and impacts to approximately 950 ac of occupied and/or suitable habitat.

According to the AGFD Arizona Heritage Management Database (HDMS), approximately 1,302 cacti were observed between 1922 and 2009 on the Tonto National Forest (S. Schwartz, AGFD, personal communication, 2009). Some of those records are anecdotal. For older records the genetics of the individuals observed are uncertain and probably cannot be determined. From 2010 to 2012, WestLand Resources, Inc. (2013) conducted surveys of the Arizona hedgehog in conjunction with the prefeasibility study for the proposed Resolution Copper mine. Surveys took place in and around the type locality of the Arizona hedgehog, between Globe and Superior, and in adjacent mountain ranges and canyons. This effort documented 4,035 individuals. However, WestLand Resources, Inc. acknowledged that genetic analysis had not been performed and taxonomic status of the individuals plants counted was not certain. Later work by Baker (2013) identified some Arizona hedgehogs observed by WestLand, Inc., and some plants included in HDMS, were *Echinocereus santaritensis*. In 2013, using grant funding, additional areas within suitable Arizona hedgehog cactus habitat were surveyed. The results of this effort were compiled with all survey data collected up until 2013. In total, approximately 6,010 plants were documented; however, several plants have since been removed in subsequent federal projects and relocated to a botanical institution. Baker (2013) believed that more suitable habitat exists that supports additional plants, and argued that additional surveys within the species' range are needed. Trend information characterizing the rangewide population is not available.

Threats to the Arizona hedgehog include habitat destruction due to mining and mineral exploration, road construction, power-line construction and maintenance of utility corridors, off-highway vehicle use and other recreational activities, rangeland improvements, including water developments, and trampling by livestock. Additional threats to the cactus include illegal collecting, wildfire, herbicide and pesticide applications, and insect infestation (Philips et al. 1979; USFS 1996, AGFD 2003).

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action

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

Description of the Action Area

Pinto Creek is an intermittent stream within the Salt River Basin. From its headwaters in the Pinal Mountains it flows north through the action area and empties into Roosevelt Lake east of Phoenix. Multiple ephemeral washes occur within the project area, all of which are tributaries of Pinto Creek. The existing Pinto Creek Bridge spans a steep-sided canyon comprised of unconsolidated cobbly and fine-textured soils, gravel, and decomposing granite, with many exposed boulders and rock outcrops. Slopes in Pinto Creek Canyon tend to be unstable and prone to rockfall, rockslides, and downward shifting of soils.

The action area is located within highly disturbed and undisturbed portions of an ecotone between the Madran Evergreen Woodland Biotic Community (Brown 1994) and Interior Chaparral (Pase and Brown 1994). Elevation ranges from 4,000 to 4,275 ft. Disturbed areas include exposed, compacted gravel and dirt along the existing shoulders and pullouts of US 60. Vegetation on the mostly undisturbed slopes above Pinto Creek is comprised of evergreen scrub oak (*Quercus* spp), manzanita (*Arctostaphylos* spp.), catclaw acacia (*Senegalia greggii*), sugar sumac (*Rhus ovata*) and juniper trees (*Juniperus* spp.), with an occasional yucca (*Yucca* spp.), common sotol (*Dasyllirion wheeleri*), and beargrass (*Nolina microcarpa*). Two species of hedgehog cactus occur within the action area: the strawberry hedgehog cactus (*Echinocereus engelmannii*) on undulating, gravelly areas at the eastern end of the action area, and Arizona hedgehog cactus on the steep, rocky slopes in the central and western portions of the action area. Scattered mature Fremont cottonwood (*Populus fremontii*) and Arizona sycamore (*Platanus wrightii*) trees occur at the bottom of the canyon along Pinto Creek; however, riparian vegetation there is sparse and does not form a continuous canopy.

Status of the Species in the Action Area

One Arizona hedgehog cactus was positively identified during a survey conducted on January 9, 2015 prior to the geotechnical investigation for this project (FWS Consultation Number 02EAAZ00-2015-I-0355). Additional surveys for the proposed action were conducted from April 11 to April 13, 2017 by biologists from AZTEC Engineering Group. This survey encompassed most of the construction footprint and project area and occurred within the cactus' flowering period. Transect surveys were conducted on foot when possible. Some areas were inaccessible because of dense vegetation and steep and unstable slopes. These areas were scanned with binoculars from several vantage points along the proposed access road, from pullouts along US 60, and from the ridgelines along either side of the canyon surrounding Pinto Creek. Some areas were entirely inaccessible and were not visible from any vantage point and were not surveyed.

A total of 174 Arizona hedgehog cacti were documented during preconstruction surveys in 2017, including the one cactus observed during the geotechnical investigation. Of the 174 cacti found, 128 were flowering at the time surveys occurred. Flowering plants displayed vibrant, red flowers

on the upper third of the stems, which is typical of the species. The remaining 46 individuals were not flowering but had similar morphological features and grew in close proximity to cacti that were flowering; thus, all individuals recorded were presumed to be Arizona hedgehog cacti. Because some areas within the project area were inaccessible, it is likely that other hedgehog cacti were present but were not documented during preconstruction surveys.

Preconstruction surveys indicate that ten cacti are inside the construction footprint. They include seven individuals found within the proposed access road corridor and three that are 150 to 300 feet west of Pinto Creek Bridge within the proposed US 60 realignment.

Approximately 100 of the 174 cacti documented occur on the steep slopes above Pinto Creek 0.15 to 0.30 mi northwest of the existing bridge. Approximately 40 individuals occur on northeast-facing slopes below US 60, and 50 to 60 individuals are on the opposite southwest-facing slopes below the proposed access road. All of these cacti are outside of the construction footprint but inside ADOT's proposed construction easement.

Hedgehog cacti also occur in two widely separated groups that overlook Pinto Creek Canyon from locations south of US 60. One group of 17 individuals occurs 0.2 mi west of the bridge, and a second group, with 37 individuals, occurs 0.7 mi west of the bridge. Both groups are outside the construction footprint and outside the proposed temporary construction easement. These groups are designated in the BE as Avoidance Areas 1 and 2. A third avoidance area, north of the highway on a slope above the proposed access road, with three cacti, has been designated as Avoidance Area 3.

Factors Affecting the Species in the Action Area

Other than traffic along US 60, there is little human activity in the action area. The area is rugged and largely undisturbed and there are no trails that lead into the canyon or down to Pinto Creek. The existing, unimproved road that will provide access into the canyon is overgrown with vegetation and is currently unused. Other than maintenance activities that occur along US 60, the action area is largely unaffected by the highway. ADOT easements and covenants on either side of the road, the generally rocky landscape, and steep terrain have helped to maintain its natural setting. However, public use of the roadway may increase the risk of wildfire in the action area by increasing potential ignition sources and by facilitating invasion of noxious weeds that can carry fire.

EFFECTS OF THE ACTION

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

Most direct effects to the Arizona hedgehog cactus would result from construction of the proposed access road into Pinto Creek and construction of the new US 60 alignment to tie the highway into the new bridge. We expect both actions to result in the loss of hedgehog cactus individuals and both would involve effects to hedgehog cactus habitat.

Development of the proposed access road will temporarily disturb about nine ac of hedgehog cactus habitat. An existing road would be cleared of vegetation and widened by cutting the upslope edge of the old road and placing the cut material on the downslope side using heavy construction equipment such as backhoes, bulldozers, and graders. At least seven hedgehog cacti that would be crushed during construction of the access road would be removed and salvaged prior to construction. These cacti would immediately be replanted outside the construction footprint or would be taken to the Desert Botanical Garden and held until they are returned to the project area during site restoration efforts. Cacti held at the Desert Botanical Garden would include those that are in poor condition when they are salvaged or that suffer ill effects during salvaging (see *Conservation Measures* above).

Creating a new roadcut for the proposed access road would result in loose material excavated from the old road being added to adjacent slopes that are already unstable and prone to shifting. As a result, Arizona hedgehog cacti downhill of the access road are likely to be affected by rockfall and downslope movements of soil and debris during construction. After construction, regular use of the access road by construction equipment may contribute to downslope effects for the life of the project (34 months).

A large group of hedgehog cacti occurs below the access road at a 180-degree bend where the road would turn sharply and descend into the canyon at a steep angle. Cacti below the bend (50-60 individuals) occur from creek level upslope to within 50 ft of the access road. Those closest to the road would be most at risk of downslope effects. Measures to reduce those effects would include installation of heavy duty fencing or concrete barriers along the downslope edge of the road to stabilize the roadcut. Barrier placements would have the added benefit of restricting construction traffic to the road. Additional protection for cacti below the access road would be provided in the form of steel cages that would be placed over individual plants under the direction of personnel from the Desert Botanical Garden. A minimum of 12 cacti, those closest to the road, would be covered by steel cages, but more individuals may require protection.

Activities associated with the new US 60 alignment—construction of the new roadway, shoulders, and two retaining walls—would result in about 0.75 ac of permanent ground disturbance. However, affected areas on the alignment are already disturbed and are mostly devoid of vegetation. The retaining walls would be constructed at two separate, steep portions of the new westbound alignment to minimize downslope effects after the alignment is in place. The western wall would be 330 ft in length and would overlook a steep, unstable slope supporting at least seven hedgehog cacti. Rockfall and downslope movement of soil and debris during construction of the wall would be unavoidable. Given their location and inaccessibility, these cacti cannot be avoided or protected in place, and safety considerations would preclude any salvage attempts; thus, all seven cacti will likely be lost.

Three cacti east of the existing bridge are also within the new US 60 alignment and are within the construction footprint. These cacti would be salvaged along with those from the proposed

access road corridor. They would be replanted outside of the construction footprint or held at the Desert Botanical Garden per conservation measures already described.

Further losses of hedgehog cacti are not expected to occur because most construction activities not yet discussed—e.g., construction of cutslopes and barrier walls and establishment of waste sites along US 60—would occur on the east side of the project area where there is no suitable hedgehog cactus habitat. In addition, establishment of three avoidance areas north and west of the existing bridge would place a total of 57 hedgehog cacti and their habitats beyond any direct threat.

Additional effects to hedgehog cactus habitat would include temporary and permanent disturbances associated with construction of the new bridge and demolition of the old bridge. Bridge work would require approximately one ac of temporary disturbance to hedgehog cactus habitat to establish crane pads and work areas below the bridge. About 0.05 ac would be permanently lost to concrete piers and abutments for the new bridge.

Possible indirect effects of the project would include long-term fragmentation of hedgehog cactus habitat as a result of road construction. Nine to ten ac of hedgehog cactus habitat would be temporarily disturbed during the project and less than one acre would be permanently altered. Reseeding areas that are not permanently affected with a native seed mix, returning displaced hedgehog cacti to these areas after construction, and transplanting hedgehog pups raised from seed to the same areas, would mitigate most long term habitat effects.

Indirect effects would also include the possibility of invasive plant species and noxious weeds moving into the project area as a result of ground disturbances and movement of equipment and materials during construction. Nonnative species are potential competitors of the hedgehog cactus and their presence may lower habitat values for the species. However, development and implementation of a control plan for noxious and invasive species prior to ground-disturbing actions, careful inspection and cleaning of equipment during construction, and restoring disturbed areas after construction should minimize the potential spread of invasive species and noxious weeds into Arizona hedgehog cactus habitat at Pinto Creek.

CUMULATIVE EFFECTS

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

Most of the activities associated with transportation projects, such as future road construction, road maintenance, and improvement of access roads on the Tonto National Forest will likely be federally funded. Because the action area is largely located within the boundary of the Forest, it is anticipated that future activities within the action area impacting the cactus would likely be subject to section 7 of the Act. Future non-Federal activities that are reasonably certain to occur on Federal land include future invasive or noxious weed control along the paved edge of US 60.

CONCLUSIONS

After reviewing the current status of the Arizona hedgehog cactus, the environmental baseline for the action area, the effects of the proposed Pinto Creek Bridge replacement project, and the cumulative effects, it is the FWS's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Arizona hedgehog cactus. No critical habitat has been designated for this species therefore, none will be affected.

We present this conclusion on the Arizona hedgehog cactus for the following reasons:

- Conservation measures as proposed are expected to minimize adverse effects to the hedgehog cactus that would result from the project.
- A minimum of 17 hedgehog cacti would be lost during the project. The most recent and reliable estimate of hedgehog cactus abundance places the total population at 6,010 individuals. Thus, the overall magnitude of the project's effects would involve a small number of Arizona hedgehog cacti compared to the known range-wide population.
- The project will result in the temporary loss of a small amount of occupied habitat compared to the species known distribution.
- Collection of hedgehog cactus seeds from the construction footprint and project area, and cultivation of those seeds, will aid restoration efforts in affected areas and may contribute to existing seed banks for the species.

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

INCIDENTAL TAKE STATEMENT

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

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such

species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

CONSERVATION RECOMMENDATIONS

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

1. Since a hedgehog cactus salvage and relocation protocol will be developed for this project, we recommend that ADOT work with us and botanical institutions to standardize the protocol for future use across a spectrum of Arizona transportation projects.

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

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in your consultation request. As provided in 50 FR 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.

The FWS appreciates efforts by the FHWA and ADOT 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 biological and conference opinion to the Bureau of Indian Affairs and are notifying affected Tribes.

For further information please contact Robert Lehman at (602) 889-5950. In all future correspondence on this project, please refer to consultation number 02EAAZ00-2016-F-0450.

Sincerely,

Brenda Smith
Acting Field Supervisor

cc: (electronic)

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APPENDIX A: CONCURRENCE

This appendix contains our concurrence with your “may affect, not likely to adversely affect” determination for the endangered ocelot

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is described above in the Biological Opinion and is incorporated herein by reference. The proposed action is to replace the existing bridge on US 60 over Pinto Creek in Gila County with a new bridge.

Ocelot

No surveys for the endangered ocelot (*Leopardus pardalis*) were done for the purposes of this project. Prior to 2009, there were eight records of the species in Arizona (seven historical records and one fossil record) (AGFD, unpublished data, 2016). Since 2009, at least five ocelots have been detected in Arizona, including four detected by trail cameras and hunting dogs, and one dead ocelot that had been struck by a vehicle. Details of these detections follow:

- In November 2009, a live ocelot (sex unknown) was documented in the Whetstone Mountains in Cochise County, Arizona, with the use of camera-traps (Avila-Villegas and Lamberton-Moreno 2013).
- In April 2010, a second ocelot was found dead (struck by a vehicle) along US 60 between the Towns of Globe and Superior in Gila County.
- In February 2011, a third male ocelot was treed by a hunting dog and photographed in the Huachuca Mountains, Cochise County. He was subsequently detected multiple times by trail cameras, including one in the Patagonia Mountains, in Santa Cruz County, in May 2012 (Culver et al. 2016). After being detected in the Patagonia Mountains, he was treed again by hunting dogs in the Huachuca Mountains (Culver et al. 2016). He was most recently detected in May 2013.
- In May 2012, a fourth male ocelot was detected in the Huachuca Mountains via trail camera. He has been detected by trail cameras many times since then, most recently in January 2018, and was treed by hunting dogs once.
- An fifth ocelot was detected by a trail camera in the Santa Rita Mountains, Pima County, in December 2013.
- In April 2014, a male ocelot was detected in the Santa Rita Mountains via a trail camera. He was photographed several times over a two-month period but has not been detected since. In April 2014, a male ocelot was detected in the Santa Rita Mountains via trail camera. This may have been the same ocelot detected in December 2013.

There are no documented occurrences of ocelots within the project area; however, the cat found dead on US 60 in 2010 was less than 10 miles from the Pinto Creek Bridge. This ocelot represents the northernmost confirmed record for the species in Arizona in over 100 years.

DETERMINATION

We concur with your determination that the proposed action “may affect, but is not likely to adversely affect” the ocelot for the following reason:

- There is only one confirmed record of an ocelot this far north in Arizona during the last 100 years; thus, the likelihood of an ocelot occurring within the project area during construction of Pinto Creek Bridge is discountable.

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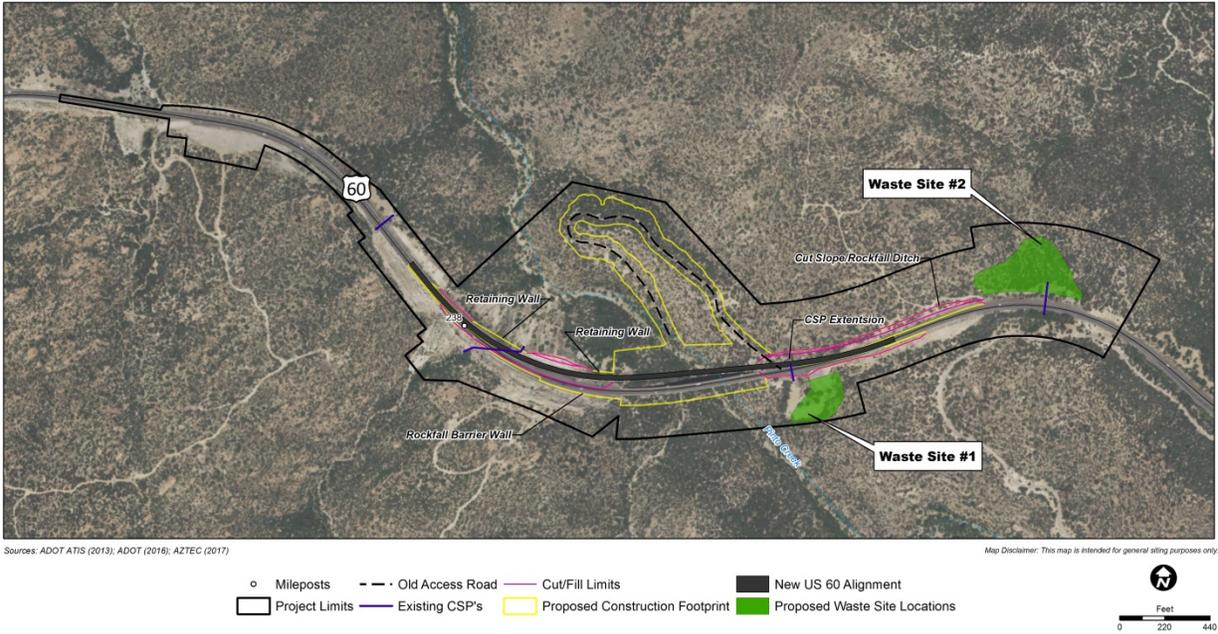


Figure 1. Vicinity map showing the proposed project area, construction footprint, proposed access road, and other construction features.