



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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March 16, 2023

In reply refer to: 2022-0039679

Ms. Clover Clamons
Natural Resource Management Section Director
Texas Department of Transportation
Environmental Affairs Division
125 East 11th Street
Austin, Texas 78701-2483

Dear Ms. Clamons:

This letter constitutes a reinitiation of the June 22, 2012, Biological Opinion (Opinion) (21410-2010-F-0119) issued to Federal Highway Administration (FHWA) and the Texas Department of Transportation (TxDOT), for a 44.1-mile portion of the US 77 project in Kenedy County, Texas. In a letter dated June 11, 2022, to the U.S. Fish and Wildlife Service (Service), TxDOT requested reinitiation of the Opinion for the following reasons:

- Two ocelot (*Leopardus pardalis albescens*) vehicle mortalities occurred on US 77 in the past 5 years, one near the community of Rudolph, on February 20, 2020, and one 1.2 miles south of the Yturria Wildlife Crossing on June 27, 2022. A third ocelot mortality also near the community of Rudolph occurred on January 17, 2016;
- Proposed modifications to the original project design to add additional ocelot crossings throughout the Kenedy County portion of the project in response to recent ocelot mortalities;
- New sightings of the endangered Northern Aplomado Falcon (*Falco femoralis septentrionalis*) within and near the action area; and
- New species proposed for listing that occur within the action area: the Cactus Ferruginous Pygmy-owl (*Glaucidium brasilianum cactorum*) and the candidate monarch butterfly (*Danaus plexippus*).

TxDOT determined the proposed project may affect and is likely to adversely affect the ocelot (*Leopardus pardalis albescens*) and jaguarundi (*Puma yagouaroundi cacomitili*) (unchanged from the previous Opinion) and may affect but is not likely to adversely affect the northern aplomado falcon (*Falco femoralis septentrionalis*), the Cactus ferruginous pygmy owl (*Glaucidium brasilianum cactorum*), and the candidate monarch butterfly (*Danaus plexippus*). Due to monarch butterfly's candidate status, no consultation is required at this time. Of note,

TxDOT is a participant to the Nationwide Candidate Conservation Agreement with Assurances/Candidate Conservation Agreement for the Monarch Butterfly on Energy and Transportation Lands (CCAA). The CCAA applies to activities occurring within the Right-of-ways (ROW) (enrolled lands) and includes maintenance and modernization of associated infrastructure. This CCAA agreement authorizes incidental take for all activities that are included in this consultation should the monarch butterfly be federally listed as threatened or endangered.

Section 7 of the Endangered Species Act (Act) requires that all federal agencies consult with the Service to ensure that the actions authorized, funded, or carried out by such agencies do not jeopardize the continued existence of any threatened or endangered species or adversely modify or destroy designated critical habitat of such species.

Informal Consultation

Cactus Ferruginous Pygmy Owl

Listed in 1997 as endangered, the cactus ferruginous pygmy owl was subsequently removed from the endangered species list in 2006 due to several legal challenges and is currently proposed as a threatened species (Service, 2021). The cactus ferruginous pygmy-owl is a small cryptic owl, averaging 6.5 inches (16.5 cm) in length and weighing 2.5 ounces (70 g). The owl is gray-brown or rufous (reddish) brown in color. The head is small, compared to some other owls, it lacks ear tufts, the crown is finely streaked with flecks of buff, has yellow eyes, and has a relatively long tail compared to those of other owls. There are subtle differences in coloration and size between the sexes (females are larger than males), and juveniles have somewhat different plumage from adults (Cartron & Finch 2000). The species is primarily diurnal (active during daylight) with crepuscular (active at dawn and dusk) tendencies. Pygmy-owls are typically inactive during the middle of the day and the middle of the night, although on nights with a full or nearly full moon, they will remain active at night while the moon is visible (Service 2021). Pygmy owls are found in a mix of dense thicket or woodland vegetation types in Texas requiring trees large enough for nesting cavities. A variety of multilayered vegetation cover and canopy cover are important to provide habitat for the owl's prey. Critical habitat has been proposed for the cactus ferruginous pygmy owl however, those units are specific to counties in Arizona. There are no designated critical habitat units for this species in Texas.

Northern Aplomado falcon

Listed in 1986 (51 FR 6686), the northern aplomado falcon is one of three subspecies of the northern aplomado falcon and is the only subspecies recorded in the United States (U.S). It requires open grassy or vegetated salt flat landscapes with sporadic shrubs or trees to provide perches for hunting. Nesting for this species requires the presence of mesquite, Texas ebony (*Ebenopsis ebano*) or Spanish daggers (*Yucca gloriosa*) and that the nests be made by other raptors or corvids. The Service is not aware of any northern aplomado falcon nests or nesting territories within or adjacent to the action area, however it is conceivable the northern aplomado falcon will be found foraging here.

In conjunction with the Peregrine Fund, the Service began raising and releasing northern aplomado falcons on the King Ranch in 1985. After the initial release attempts were unsuccessful, they switched the release area to Laguna Atascosa National Wildlife Refuge in 1993. By 2007, the Peregrine Fund had released 1,142 aplomado falcons into Southern Texas, , and successfully fledged more than 244 young (Service 2014). From 1978-2004 and again in 2012-2013, 927 captive-bred fledglings were released from 23 sites across south Texas (Hunt et al. 2013, P. Juergens, *pers. comm.*, 2022). Established pairs first bred in the wild and produced young in 1995 (Jenny et al. 2004). Since 1995, the Texas pairs have successfully fledged at least 768 young (P. Juergens, *pers. comm.*, 2022). In recent years, there have been approximately 28 to 29 known pairs in south Texas (Hunt et al. 2013; Mutch 2013, 2014; Cited from Service 2014). Six additional falcons were released in 2021 at Padre Balli Park on North Padre Island. However, as of 2022, there are an estimated 23 self-sustaining breeding pairs each year in south Texas (Cited from Draft SSA Report, Oct. 2022). The slight decline in current breeding pairs is likely due to the loss of habitat/territories, mostly in the Lower Rio Grande Valley area. The Service has not designed critical habitat for this species.

The Service concurs with TxDOT's determination that the proposed action may affect and is not likely to adversely affect the northern aplomado falcon (*Falco femoralis septentrionalis*) or the proposed cactus ferruginous pygmy owl (*Glaucidium brasilianum cactorum*). Our concurrence is based on information from sources made available to us, project specific information in the July 2022, biological assessment (BA), TxDOT's commitment to execute Voluntary Conservation Measures specific to each species, and the unlikely presence of either species within the project area. While we recognize there are known sightings of the cactus ferruginous pygmy owl within the project area (the action area constitutes a 0.5-mile buffer from the 44.1-mile project area) (see **Figure 1.1** in the BA), there are no known nests for either the northern aplomado falcon or the cactus ferruginous pygmy owl located within the project or action areas. Further limiting disturbance to the either species, vegetation clearing will occur only during the nonbreeding season.

The Service anticipates any impacts, due to project construction, to the northern aplomado falcon and the cactus ferruginous pygmy owl will be insignificant and discountable. This is based on either species' ability to leave the project area and seek out suitable habitat elsewhere and the reduced likelihood that either species will nest or forage in the project area. This concludes the Service's informal consultation for the northern aplomado falcon and the cactus ferruginous pygmy owl.

This Opinion is based on information provided in the BA, the June 11, 2022, request to reinstitute consultation, email records, telephone conversations, site visits, previous consultations and amendment documents, and other sources of information the Service has access to. Literature cited in this Opinion is not a complete bibliography of all literature available on the species of concern, roadway construction and maintenance and its effects, or on other subjects considered in this Opinion. A complete administrative record of this consultation is on file at the Texas Coastal Ecological Services Field Office (Texas Coastal ESFO or TCEFO). We herein incorporate by reference the Service's 2012 Biological Opinion (21410-2010-F-0119) and the Service's Amendment letter dated November 18, 2016.

Consultation History

Date	Event
June 22, 2012	The Service issues consultation 21410-2010-F-0119 to the Federal Highway Administration for improvements to US 77.
November 18, 2016	The Service issues an amendment to the 2012 Opinion to TxDOT Corpus Christi District Office regarding changes to the project involving the South Texas ambrosia and slender rush-pea.
March 27, 2020	Email from Dr. John Young (TxDOT) to Charlotte Kucera (Service) proposing movement of fencing at the Yturria wildlife crossing, as well as indicating that TxDOT was looking into modifying existing reinforced box culverts (RCBs) in Kenedy County for additional crossing opportunities. TxDOT requested Service review and approval of the fencing modification. Dr. Young also indicated that they would share upcoming changes in Kenedy County with the Service.
March 30, 2020	Telephone conversation between Dr. Young and Ms. Kucera in which Ms. Kucera requested clarification of fencing and gabion basket placement. Dr. Young sent a follow-up email providing the plan design of the proposed wildlife crossings
March 31, 2020	Email from Ms. Kucera to Dr. Young approving the fencing change, given that the change was minor and would not affect the crossing. Ms. Kucera also acknowledged upcoming changes.
May 13, 2020	Email from Dr. Young to Ms. Kucera stating an amendment of the Opinion for US 77 is planned, which would include a monitoring component for the Yturria wildlife crossing, as well as proposing additional box culvert wildlife crossings between the Yturria and Rudolph crossings. Dr. Young requested to begin camera monitoring upon completion of the Yturria crossing.
May 13, 2020	Email from Ms. Kucera to Dr. Young requesting clarification of the crossing monitoring plan.
May 13, 2020	Email from Dr. Young to Ms. Kucera clarifying that the monitoring would only be for the Yturria crossing and identifying projects with similar monitoring plans.
May 14, 2020	Email from Ms. Kucera to Dr. Young approving the monitoring plan and requesting rapid notification of any ocelot detections.
May 14, 2020	Email from Dr. Young to Ms. Kucera confirming

	the notification process.
June 4, 2020	Email from Dr. Young to Ms. Kucera indicating a utility conflict with fence construction and requesting moving a second fence.
June 4, 2020	Email from Ms. Kucera to Dr. Young with questions about the proposed change regarding revegetation, fence maintenance, and the fence location relative to the clear zone; as well as requesting plan sheets of the proposed changes.
June 18, 2020	Email from Dr. Young to Ms. Kucera answering her questions and providing the requested plan sheet. The fence movement would not interfere with revegetation, would not create maintenance issues, and would not be in the clear zone.
July 1, 2020	Email from Dr. Young to Ms. Kucera providing revegetation plans.
July 6, 2020	Email from Ms. Kucera to Dr. Young confirming that the provided plans sufficiently addressed USFWS concerns.
March 21, 2021	Email from Dr. Young to Ms. Kucera and Donna Anderson transmitting proposed locations for new ocelot crossings and requesting USFWS review. Dr. Young also explained other requested amendment items to the 2012 Opinion, including the new habitat model used for the proposed revision and a proposed monitoring component.
April 6, 2021	Email from Ms. Kucera to Dr. Young transmitting questions and comments on the proposed additional crossings.
October 25, 2021	Email from Dr. Young to Ms. Kucera and other Service staff providing responses to the Service's questions and comments.
November 29, 2021	Virtual meeting between Service staff and TxDOT to discuss the proposed new crossing locations. TxDOT provided more details about how the crossing locations were selected and how they will be designed, constructed, and monitored.
June 11, 2022	TxDOT sends letter to the Service asking to reinstate the 2012 consultation due to incidental take exceedance.
October 10, 2022	The Service begins consultation
December 6, 2022	The Service attends a site visit with TxDOT staff to look at areas identified as new wildlife crossing structures for the Hwy 77 project.
January 31, 2023	Ms. Anderson of the Service and Dr. Young of TxDOT have a TEAMS meeting to discuss the sizes of the wildlife crossing structures (specifically including wider structures) and

	incorporating vegetation monitoring to the proposed monitoring plan.
February 27, 2023	The Service sends the draft Opinion to TxDOT for review
March 14, 2023	The Service receives comments back from TxDOT
March 15, 2023	The Service issues the new Opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Regulations implementing the Act (50 CFR 402.02) define “action” as “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by federal agencies of the United States or upon the high seas.”

The following is a summary of the proposed action; however, a detailed description can be found in the Biological Assessment for Formal Consultation, US 77 from the Willacy/Kenedy County line to the Kenedy/Kleberg County Line, Kenedy County, Texas dated October 2022 (TxDOT 2022).

Project Background

TxDOT proposes amendments to the original Opinion (2012) for a 44.1 miles portion of the original project in Kenedy County. The original US 77 project was divided into 27 sections between the project’s limits of US 83 to Interstate Highway 37 (I-37) (see **Figure 1.1** of the BA). Six of these sections (Sections A, D, G, R, T, and AA) were determined to already be at interstate standards and no improvements were proposed. As of March 2023, construction has been completed on 13 sections (J. Young per comm, 2023). The original US 77 project was divided into 27 sections between US 83 and Interstate Highway 37. Six sections (A, D, G, R, T and AA) were determined to already be at interstate standards and no improvements were proposed. These combined sections, a total of 17, all meet highway standards and include the following limits: from US 83 to 1.34 miles north of Willacy/Kenedy County Line (Cameron, Willacy, and Kenedy Counties: section A through H and a portion of Section I); from 0.87 miles south of La Parra Avenue to 0.71 miles north of La Parra Avenue (Kenedy County, Section M); from Farm to Market (FM) 1356 to FM 3345 in Kleberg and Nueces Counties (Section R through V); and from south of County Road (CR) 28 to IH-37 in Nueces County (Section Y, Z, and AA). Three sections are currently under construction and cover the following limits: from CR 2130 to FM 1356 (Kleberg County, Section Q), and from CR 16 to south of CR 28 (Nueces County, Sections W and X) (please see **Figure 1.1** in the BA for a further description of the project limits). Additionally, **Table 1** of the BA summarizes the changes to the original US 77 project sections that make up the current project.

Project elements remain the same except for the addition of seven wildlife crossings structures and their associated fencing. Two crossings associated with the 2012 Opinion will be constructed as part of the current proposed project and will consist of bridge structures carrying

the roadway over the crossing (see **Photo 1 in Appendix E** of the BA). Both structures will provide at least eight feet of clearance about the crossing and a minimum of 20-foot-wide earthen floor that will be at grade to prevent water from collecting. Dense brush will be allowed to establish and remain in the median between the bridges and the ROW edges. Additionally, chain-link fence will be erected in the median and to the ROW edged in addition to the 200 linear feet from each end of the bridges. The remaining structures will be enlarged and reinforced culvert crossings to encourage use by ocelots and other wildlife. See **Appendix D** of the BA for design specifics on each bridge and culvert structure.

Voluntary Conservation Measures

TxDOT will implement the following conservation measures for ocelot, jaguarundi, Northern Aplomado falcon, and the Cactus Ferruginous Pygmy Owl with the intent to avoid and minimize adverse effects resulting from the proposed action.

Measures to be implemented prior to construction

- TxDOT will notify the contractor of the possibility of listed species and habitat in the project area and the specific requirements to avoid impacts or the need to consult with Service.
- TxDOT will provide the contractor information prior to beginning construction to educate personnel about ocelot, jaguarundi, Northern Aplomado Falcon, and Cactus Ferruginous Pygmy-owl within and adjacent to the project area and how to identify each species. TxDOT Pharr District has created an informational/educational brochure entitled “What to Do if You See an Ocelot” that will be handed out at the pre-construction meeting. Should any of these species be sighted within the construction area, all activity will stop until they leave the area of their own accord.
- The contractor’s placement of project staging locations, such as staging areas, equipment storage areas, temporary access roads, etc., will be based on restrictions and commitments identified in the Environmental Permits, Issues, & Commitments (EPIC) sheets, Stormwater Pollution Prevention Plan (SWP3) sheets, general notes, and TxDOT standards. Any recommendations about areas to avoid or other environmental requirements will be included in the general notes.

Measures to be Implemented during Project Construction

- The contractor will adhere to TxDOT’s standard plans and specifications.
- The contractor will be obligated to comply with the requirements of the SWP3 under the Texas Commission of Environmental Quality’s Construction General Permit.
- The contractor will avoid or minimize clearing vegetation within the project area between February 15 and October 1 to avoid potential impacts to migratory bird nests.
- The contractor will place best management practices (BMPs) in accordance with the SWP3. BMPs may include temporary vegetation, silt fencing, blanket/matting, mulch,

sodding, interceptor swales, diversion dikes, mulch filter berms, biodegradable erosion control logs, silt fencing, rock berms, bio-degradable erosion control logs, and triangular filter dikes. BMPs shall be in place before construction activities are initiated and shall be monitored and maintained in accordance with the SWP3.

- When selecting BMPs from the Erosion Control Approved Products List, the contractor will use biodegradable/wildlife friendly materials (e.g., cotton jute), when feasible.
- During construction activities, if TxDOT or contractor locates a dead, injured, or sick jaguarundi or ocelot, initial notification must be made to the Service's Law Enforcement Office in McAllen, Texas at 956-686-8591 or to the Ecological Service's Office Alamo Sub-Office at 956-784-7560 or our Dispatch at 956-784-7520 and TxDOT Pharr District Environmental Coordinator at 956-702-6182 within 72 hours of the incident. To the extent practicable, the finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed. When calling to report the incident, the Service will provide guidance if and on how the specimen should be handled.
- Nine ocelot crossings (two bridges and seven box culverts) will be installed across the five segments of the proposed project following the construction schedule outlined in **Section 2.1.2.1** of the BA. Crossing structures and related fencing in each segment are described below.
 - Bridge crossings will provide at least 8 feet of clearance and a minimum 20-foot-wide earthen floor that will be at grade to prevent water from collecting. Dense brush will be established and allowed to remain in the median and between the structures and the ROW edges. The contractor will use articulated concrete block mats at bridge crossings for bank stabilization instead of the gabion structures mentioned in the Service's 2012 Final Opinion. Chain-link fencing will be erected in the median and to the ROW edges, as well as along the ROW for 200 linear feet from each end of the two bridges.
 - At culvert crossings, fencing will generally be erected along the edge of the ROW to the nearest design constraint (i.e., a road or culvert), the end of potential habitat, or the maximum of 1,000 feet from the culvert unless otherwise described in a segment below. The median will also be fenced at the crossings to help funnel individuals under both roadways.
 - Fencing will be comprised of 6-foot chain link fence 2 to 3 feet inside of the existing ROW on both sides of the culvert/bridge; openings in the median will be fenced. The fencing will be tension wired at the top and bottom and will extend to the concrete wings as well as the top of the culverts to prevent passage. Fencing at each of the structures may include a 12-inch by 12-inch concrete foundation or be buried up to 18 inches below grade to prevent passage or digging underneath. The length and placement of fencing at each crossing will be determined based on the conditions at each location. Fencing will be installed simultaneously with the construction of each crossing.

- Proposed crossings in each segment of the current project are described below:
 - Segment 1 – The first segment of the current project includes one bridge crossing (Ocelot Crossing 1) and three new 4-foot by 4-foot concrete box culverts (Ocelot Crossings 2, 3, and 4). **Figures 4.1 and 4.2** of the BA show the proposed crossing locations in relation to the proposed project area. On the northbound side at Ocelot Crossing 2, fencing will be installed to the end of the dense brush approximately 750 feet north, and on the south side of the crossing the fencing will extend to the next culvert, approximately 800 feet to the south. Fencing will be continuous (1,746 feet) between Ocelot Crossings 3 and 4 to help promote use and will extend 300 feet south of Ocelot Crossing 3 and 300 feet north of Ocelot Crossing 4. Ocelot Crossing 3 includes a catwalk in the culvert to facilitate use during wet conditions when the culvert may contain water.
 - Segment 2 – The second segment of the current project includes a second bridge crossing approximately 16.1 miles north of the Willacy/Kenedy County line (Ocelot Crossing 5) and one new 4-foot by 4-foot concrete box culvert (Ocelot Crossing 6). **Figures 4.3 and 4.4** of the BA show the proposed crossing locations in relation to the proposed project area.
 - Segment 3 – The third segment is unchanged from the original BO, and there are no ocelot crossings proposed in this segment.
 - Segment 4 – The fourth segment of the current project includes two new ocelot crossings: a 4-foot by 4-foot concrete box culvert with catwalk (Ocelot Crossing 7) and a 3-foot by 3-foot concrete box culvert (Ocelot Crossing 8). The location of Ocelot Crossing 8 corresponds to the location of a 1991 ocelot mortality. **Figure 4.5** of the BA shows the proposed crossing locations in relation to the proposed project area.
 - Segment 5 – The fifth segment of the current project includes one new ocelot crossing, a 3-foot by 3-foot concrete box culvert (Ocelot Crossing 9). **Figure 4.6** of the BA shows the proposed crossing location in relation to the proposed project area.

Measures to be Implemented Following Project Construction

- All disturbed areas will be re-vegetated according to the SWP3 and TxDOT's standard practices in compliance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping.
- Mowing will be limited to 30 feet along the median and the edge of the ROW. Mowing will not occur within the median of the wildlife crossings although periodic removal of vegetation may be needed for safety reasons.

- If two ocelot or a single jaguarundi are killed within any 12-month period, TxDOT will meet with the Service to discuss further options.

Action area

The action area is defined at (50 CFR 402.02) as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.” The Service has determined that the action area for this project is the approximately 1,759-acre project area plus an appropriate buffer. The buffer varies by resource and is intended to capture disturbance from construction activities with the potential to extend beyond the project footprint.

The proposed changes to the project and action areas lie within the existing ROW within the project limits and within Kenedy and Kleberg Counties, Texas. To account for potential effects to the ocelot, jaguarundi, northern aplomado falcon, and cactus ferruginous pygmy owl, an action area buffer of 0.5-miles was applied to the entire project area equating to a total of 31,189 acres. The action area spans almost entirely through Kenedy County; however, a small portion of the action area does lie within Kleberg County. TxDOT describes the action area as nearly level to rolling plain that is slightly to moderately dissected with watercourses (TxDOT 2022) with land use, surface water and groundwater, geology, soils, or vegetation remaining the same as was described in the 2012 Opinion.

STATUS OF THE SPECIES and CRITICAL HABITAT**Species***Ocelot and Jaguarundi*

In Texas, ocelot populations are split between the most southernmost population, the Refuge Population, at the Laguna Atascosa National Wildlife Refuge and its associated conservation easements in Cameron County, and the Ranch Population in northeastern Willacy and southeastern Kenedy counties on private lands, some with USFWS conservation easements (Service, 2016). The Service’s 5-Year Review (2018) sites fewer than 80 ocelots remain between these two populations. The two Texas populations are separated by only 18.64 miles (30 kilometers) however connectivity between them is limited likely due to poor landscape connectivity in the region (Lehnen et al. 2021). Additionally, ocelots in Texas are separated by canals, highways, urban development, extensive agricultural lands, and sections of border fencing between Mexico and Texas, and approximately 200 km from the population located in northeastern Mexico (Lombardi et al. 2021b, Sternberg et al. *in review*).

Ocelots have specific habitat requirements and in south Texas, they show a strong preference to dense Tamaulipan thornscrub (Service 2016 and 2018, Tewes 2019, Lombardi et al. 2020, Lehnen et al. 2021). Habitat loss continues to be a primary threat to the ocelot and jaguarundi as does mortality resulting from vehicle collisions (Haines et al. 2005, and Blackburn et al. 2021). Additional stressors for the ocelot include noise from oil and gas pipelines and associated facility construction, as does wind turbine construction and operation (E. Reyes, *personal comm.*, December 5, 2022).

Habitat conversion, fragmentation, and loss, continue to comprise the primary threats to the ocelot. Lehnert et al. (2021) found limited connectivity and the lack of a clear corridor between the two populations which demonstrates the impact of barriers to successful ocelot dispersal. Restoration of thornscrub habitat can take years to complete, however continued targeted restoration and management aimed at corridor creation is reliant upon private landowner engagement and support. The Service supports continued habitat restoration combined with effective roadway underpasses to encourage dispersal and connectivity between the two populations.

Collision with vehicles represent the largest known cause of ocelot mortality in south Texas (Haines et al. 2005). Most notable since the 2012 Opinion and the Services' 2016 amendment letter are three ocelot mortalities occurring on US 77. Two ocelot vehicle mortalities occurred on US 77 near the project area in the community of Rudolph on January 17, 2016, and again on February 20, 2020. A third ocelot vehicle mortality occurred on US 77 south of the current project area in Section H (see **Figure 1-1** in the BA) on June 27, 2022.

TxDOT included the jaguarundi in this consultation due to its inclusion in the 2012 Opinion even though it is no longer listed as occurring in Kenedy County. The status of the stressors for the jaguarundi have not changed since the 2012 Opinion, however the species may be negatively impacted by new construction of oil and gas pipeline, its associated facilities, and wind turbines (E. Reyes personal comm., 2022). The jaguarundi historically occurred within four counties (including Cameron) however there are no known occurrences of jaguarundi in Texas since one was killed east of Brownsville on State Highway (SH) 4 in 1986. Most recently, Lombardi et al. (2022) suggests the jaguarundi is extirpated from Texas. The Service is not aware of any jaguarundi sightings within or near the project and actions areas.

Status of Critical Habitat

Ocelot and Jaguarundi

The service has not designated critical habitat for these species.

Previous Consultations

Two consultations, 02ETCC00-2015-F-0022 and the 2012 Opinion cited in this document, have been completed for the ocelot and the jaguarundi resulting in the take of 4 individual ocelots. There is no documented "take" of jaguarundi resulting from the previous consultations.

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency

activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

Status of the Species and Critical Habitat within the Action Area

The environmental baseline remains the same for all species covered under the previous consultations.

Effects of the Action

In accordance with 50 CFR 402.02, effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of all other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see §402.17).

Roadways continue to bisect areas of woody cover (preferred by ocelots), creating habitat patches where ocelots are more likely to be struck by vehicles while crossing between those habitat patches (Blackburn et al. 2020, Schmidt et al. 2021), and ultimately negatively effecting the population in south Texas. The most common mitigation tool used to reduce wildlife road mortalities and maintain population connectivity across roadways are wildlife crossing structures (Service 2016, Blackburn et al. 2021) combined with roadside fencing (Schmidt et al. 2020). In response to three recent ocelot vehicle collision mortalities on US 77 (two in 2016 and one in 2022), TxDOT proposes to construct nine wildlife crossing structures with associated 6-foot-high chain link fencing along select sections of US 77. TxDOT coordinated with a local university to model landscape structure of woody communities for ocelots across the eight southernmost counties in Texas. The model (Lombardi et al. 2021a) identified areas of optimal woody structure, then cross-referenced those sites with in-field reviews to identify potential crossing locations within the project area (TxDOT 2022). While the Service generally approves of the crossing locations selected by the model and approved by TxDOT, we continue to recommend the utilization of the largest possible structures that can be safely used, and the consideration of over the road wildlife crossing structures for this and future projects. We recognize accommodation of taller or over road structures may not be obtainable for all proposed crossings. In cases where only 3- or 4-foot-high structures can be included in the design, we recommend using wider structures (5- or 6-foot wide for most smaller structures) or relocating the structure such that habitat and size of the structure are optimized.

The avoidance and low use of wildlife crossing structure has been attributed to the unnatural characteristics of most wildlife underpasses, human disturbance, surrounding vegetation, and habitat quality (Grilo et al. 2008). Thirty-three crossing structures have been built in south Texas primarily for ocelot use, with an additional nine committed under this and the previous consultation, and another 14 are in the design phase (Blackburn et al. 2022). Many studies have looked at the effectiveness of openness ratios in wildlife crossing structures. It is this ratio that influences the amount of light that penetrates the interior and the view to the other side of the underpass (Brudin 2003). Openness ratios, used for many different species, are calculated by

multiplying the structure's height and width and then dividing by length. Longer length culverts combined with smaller widths and heights can lead to a tunnel effect (Brudin 2003). The proposed culvert crossing structures have minimal openness ratios of 0.16 (4-foot by 4-foot culvert) for crossings 2, 4, 6 and 7 while crossings 3, 8, and 9 will have an openness ratio of 0.09 (3-foot by 3-foot culverts) (TxDOT 2022) under each main lane and may not support use by ocelots. We recognize that a culvert's suitability for wildlife should not be solely based on the openness ratio as pointed out in the BA (TxDOT 2022) and in Brudin (2003), however for new construction, it is a major consideration as many constructed crossings in south Texas do not provide sufficient structural sizes or surroundings (fencing, vegetation) to facilitate ocelot movement. The Service supports the use of wider structures to provide visual cues of the exit that may be more enticing and suitable for ocelots. The Service recommends all culvert structures be constructed at grade to reduce water inundation in hopes of promoting use and ensuring structure effectiveness by wild felids. We do not recommend TxDOT design wildlife crossing structures with a dual purpose of seasonal drainage and where construction is below grade. Our experience with wildlife crossing structures on FM 106 and SH 100 include periodic to seasonally or even permanently inundated crossings that do not support ocelot crossings but rather support aquatic fauna. Similarly, it is the Service's opinion that the wildlife crossing on SH 48 seemed to limit wildlife use due to its below grade positioning and subsequent mesic conditions. Culverts placed below grade acting as a drainage feature and remain under water for extended periods of time may negatively affect the probability of use (Schmidt et al. 2020) and likely will not benefit the ocelot. Some wildlife crossing structures may be equipped with an elevated concrete "cat walk" (usually 18 inches high along the walls inside of the underpass to allow passage when water is present), however, use may still be precluded by some species given the presence of water (Schmidt et al. 2021).

The BA names each crossing as an "Ocelot Crossing" and as such, the Service requests TxDOT design crossings aimed at benefiting this endangered species and not for general wildlife crossings. The Service is aware that the first ocelot to use a structure occurred in 2020 and there is limited data specific to ocelot usage of wildlife crossing structures since then. The Service does not assume this species will make sufficient use of smaller culverts to significantly reduce risk of vehicle-related mortality on public roads. The BA points to specific crossings on SH 100 and FM 106 (page 18) with openness ratios ranging from 0.21 to 0.86; all much greater than the openness ratios proposed for the current project (e.g., 0.09 and 0.16). We continue to recommend the design and installation of thoughtfully sized wildlife crossing structures, combined with sufficient fencing lengths, dense vegetation, and construction at the appropriate location based on the specific ecological requirements for the ocelot where connectivity can be achieved.

A key component to the success of the wildlife crossing structures is fencing. TxDOT proposes to install 6-foot-tall chain-link fencing along the ROW for 200 linear feet from each end of the two bridges and to the nearest design constraint (i.e., a road or culvert), the end of potential habitat, or a maximum of 1,000 feet from the culvert or as described in the Voluntary Conservation Measures section of this document. The Service strongly suggests that all proposed fencing be extended beyond the potential habitat to the maximum extent practicable. This will increase the chances of funneling the ocelots to the wildlife crossing structures as they

are known to use a variety of habitats for travel. While there are reports of bobcats climbing and going over the fencing (J. Young *personal comm.*, December 5, 2022), we are not aware of an ocelot doing the same and thus support the 6-foot-tall fencing. Along with construction of the fencing, TxDOT should incorporate wildlife exits into the design. We are aware that TxDOT has tried several exit structures designs over the years (J. Young *personal comm.*, December 5, 2022) and all met with limited success. We recommend the incorporation of an exit structure for each fencing segment and encourage TxDOT to continue with the design and testing of these structures. Overall, if our recommendations (extended lengths and wildlife exits) are incorporated into the fencing design, the proposed fencing seems suitable; however, the Service may have additional recommendations to be addressed during the annual meetings between TxDOT and Service.

The Service acknowledges the use of bobcats as a surrogate species for ocelots when evaluating species movement (Schmidt et al. 2020). And while several studies evaluate the use of wildlife crossing structures by bobcats, we are cautious in assuming the use of smaller wildlife crossing structures such as those proposed as part of the project, will be sufficient for ocelot. Bobcats are considered more of a generalist species (Janečka et al. 2016) tending to use a wider variety of habitats and thereby leading to increased use of wildlife crossing structures than the ocelot. We recognize more research is needed to look at ocelot preference of varied size culverts. The use of taller bridge structures as wildlife crossings, the presence of adequate fencing, and dense vegetation cover at both ends of the structure (and in the median for longer structures) may better support ocelot use and safe crossing. We recognize the limitations of incorporating taller crossing structures due to road safety concerns. For those sites, we recommend a review of the selected location along with an evaluation of incorporating the tallest and widest possible structures.

Once construction of the structure is complete, grading of the site is equally important. Effective wildlife crossing structures must be placed on the landscape appropriately in support of adjacent habitat, have suitable substrate, relatively dry soil conditions, appropriate vegetative and canopy planting densities, and enough fencing to funnel felids to the structure. Schmidt et al. (2021) suggest a higher probability of use was associated with increased canopy cover surrounding a crossing structure. A planting success rate of 80% is recommended at each of the crossing structures. Additionally, we recommend maintaining the correct soil profile by minimizing disturbance to the soil as much as possible during construction and grading. Moreover, soils from external sources outside of the immediate project area should not be used. We recommend TxDOT coordinate with the Service to develop a suitable plant list targeting grass, shrub, and canopy species commonly found in ocelot specific habitats. While it is not likely that optimal thornscrub habitat will be achieved at the ends of the wildlife crossing structures, the Service recommends a planting design aimed at creating the most dense and tallest cover possible. Optimal canopy heights should range from 8 feet to no taller than 15 feet. Ground cover, not as necessary as is canopy cover, should use native plants and follow a dense planting theme. We recognize that ocelots move through a variety of habitats, however mimicking dense canopy cover may provide the greatest incentive to use of the structures. The Service relies on data obtained from dense thornscrub sites to guide their larger landscape restoration efforts. Typical densities of undisturbed thornscrub areas range from 3,000 to 8,000 trees or shrubs per acre. We

believe these densities can help inform the desired end point for ocelot habitat near crossings, recognizing that attaining these densities may take many years of natural succession after a planting action.

Vehicle traffic and linear transportation features remain a direct source of mortality, continue to fragment habitat, and alter species movement (Coffin 2007). As a result of the continued existence and operation of US 77, the Service cannot rule out the possibility of ocelot and jaguarundi road mortality. Effects of the proposed action on the covered species from the construction and the continued operation of US 77, remain the same as those discussed in the Service's 2012 BO. We expect US 77 roadway mortality of ocelots will be reduced due to the installation of the nine strategically placed wildlife crossing structures and their associated fencing.

Cumulative Effects

Cumulative effects are those "effects of future State or private activities, not involving federal activities, that are reasonably certain to occur within the action area" considered in this Opinion (50 CFR 402.02).

The Service is not aware of any additional cumulative effects within the project and action areas other than those discussed in the 2012 Opinion.

CONCLUSION

After reviewing the current status of ocelot and the jaguarundi, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the ocelot or jaguarundi.

We base this conclusion on the following:

1. TxDOT proposes to increase the amount of wildlife crossing structures available to ocelots and jaguarundi (and other wildlife species) from three to nine through the construction of a combination of structures located across 44.1 miles of US 77. These wildlife crossing structures will provide habitat connectivity for dispersing individuals and are expected to reduce road mortality.
2. The proposed locations for the wildlife crossing structures were coordinated with and reviewed by the Service. We believe these locations will provide the greatest benefit for the species while alleviating road mortality due to their proximity to preferred ocelot thornscrub and migration habitat combined with the installation of suitable fencing.
3. The conservation measures TxDOT will undertake as part of the Action, including a robust research and monitoring program that include GPS collaring of ocelot and bobcat (*Lynx rufus*) to estimate behavior and movement patterns around road crossings, will provide additional insight into ocelot movement in the area, and will likely inform future consultations or any need for reinitiation over the duration of the Action.

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 TxDOT has indicated will be 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.

The measures described below are non-discretionary and must be undertaken by TxDOT as appropriate, for the exemption in section 7(o)(2) to apply. TxDOT has a continuing duty to regulate the activity covered by this incidental take statement. If TxDOT (1) fails to assume and implement the terms and conditions or (2) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, TxDOT must report the progress of the action and its impact on the species as specified in the incidental take statement [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

The Service anticipates the incidental take of an ocelot or jaguarundi in the form of harm and harassment will be difficult to detect because 1) the species is wide-ranging, 2) elusive, 3) nocturnal and 4) finding a dead or impaired specimen that has resulted from impaired essential behavior patterns like breeding, feeding, or sheltering, is unlikely. The take of an ocelot or jaguarundi, however, can be reasonably anticipated due to increased risk by road mortality and by prevented dispersal of cats into otherwise suitable habitat.

Therefore, the Service anticipates small numbers of endangered cats will be taken by the Action over its duration. We anticipate a maximum of 2 endangered cats, (in aggregate, ocelots and/or jaguarundi) will be taken within any 5-year period for the life of the project, beginning at the issuance of this Opinion. Such incidental take will occur in the form of harm, due to the improvements, construction, operation, and maintenance of US 77 and/or injury or mortality due to a vehicular or maintenance equipment collision within the project area. Life of the project is

defined as the completion of the proposed upgrade improvements from or until such time as TxDOT determines that no further upgrades, as described in the project description, will be undertaken on US 77 because of changes in policy or regulation.

EFFECT OF THE TAKE

In the accompanying biological opinion, we have determined that the level of anticipated take is not likely to result in jeopardy to the *ocelot* or *jaguarundi*. Although we anticipate some incidental take to occur over the duration of the Action, we anticipate the Action, particularly with implementation of the conservation measures as proposed by TxDOT will reduce the likelihood of take.

REASONABLE AND PRUDENT MEASURES

As part of the Reasonable and Prudent Measures and Terms and Conditions described below, we anticipate monitoring and reporting will be needed to confirm our assumptions in our Opinion, as well as the assumptions outlined in the TxDOT's BA. We anticipate that data collection will continue to occur over the duration of the action and that we will gain information on an annual basis. For the initial annual reporting, the Service expects that the first report will be transmitted no later than January 30, 2024, and then annually on this date, as described below, for the perpetuity of this Opinion.

The following reasonable and prudent measure is necessary and appropriate to minimize impacts of incidental take to the species covered in this Opinion.

1. TxDOT will use its authorities to minimize impacts to listed species from the Action.

TERMS and CONDITIONS

To be exempt from the prohibitions of section 9 and section 4(d) of the Act, TxDOT must comply with the following terms and conditions, which implement the reasonable and prudent measure described above.

1. TxDOT will monitor and report to the Service the amount of incidental take that occurs in association with this project.
 - a. Monitoring will be accomplished through sufficient on-site inspections to determine if construction-related impacts have occurred or are likely to occur because of the Action, as described in the BA and this Opinion.
 - b. The monitoring reports will include, at minimum, a summary of construction actions implemented during the previous six-month period, any unanticipated actions or delays in project completion, and any known incidental take that has

occurred and the reasons for that take. Additionally, any anecdotal information or observations related to incidental take will be included in the report, including, as appropriate and determinable: sex, life stage (e.g., juvenile, adult), condition, or other information about any individuals taken. Where condition of a specimen does not allow for such information to be recorded, this should be noted in the report.

- c. Monitoring reports must be submitted by January 30th of each year during construction, ii) once at the completion of construction, and iii) a final report one year after construction has been completed.
 - d. Once construction has been completed, TxDOT will continue to meet with the Service e.g., during regularly scheduled coordination meetings to discuss any issues that have been raised during operation and maintenance, such as issues with fencing or other circumstances that may be relevant to the species discussed in this Opinion.
2. TxDOT will schedule a yearly meeting with the Service, to present and discuss any findings from the report(s) or other relevant information, such incidental take, research progress, monitoring results, and any new research opportunities.
 3. To ensure wildlife crossing structures are adequately designed and implemented, TxDOT will implement the following:
 - a. Within one year of the issuance of this Opinion, and in coordination with the Service, TxDOT will develop a plant list for wildlife crossing structures covered in this consultation to facilitate and improve canopy cover, elicit higher usage, and improve crossing rates for ocelots.
 - b. Within six months of the installation of the wildlife crossing structure, TxDOT, will ensure the stabilization and grading of soils along with seedling plantings will have been satisfactorily completed. Additionally, TxDOT will work with the Service within six months of the issuance of this Opinion, to define success criteria for each planted site, and design a suitable vegetation monitoring component that, when implemented, would be included in the monitoring plan.
 - c. TxDOT will continue to consider design and inclusion of wildlife exits in fencing design, and, in coordination with the Service, work to develop suitable exit features that can be implemented in the fencing design and construction or modifications, as appropriate.

4. TxDOT and the Service will meet, within 30 days, (as described in the BA and in the Description of the Action section of this Opinion) to discuss further options should two felids (ocelot or jaguarundi or a combination of both) mortalities occur during a 12-month period.

Disposition of Dead or Injured Listed Species

During construction activities, if TxDOT personnel, or their contractors or other personnel locates a dead, injured, or sick jaguarundi or ocelot, initial (i.e., same day) notification must be made to the Service's Law Enforcement Office in McAllen, Texas at 956-686-8591 or to the Ecological Service's Office Alamo Sub-Office at 956-784-7500. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

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

1. We recommend the largest possible bridge/culvert structures be used for all wildlife crossings. This includes evaluating wider structures if taller dimensions cannot be accommodated due to roadway safety concerns.
2. Future wildlife crossing structures should be coordinated with the Service early in the design phase to allow for adequate input on the structures.
3. The ocelot 5-Year review (Service 2018) identified the restoration of thornscrub habitat and land acquisition as high priority conservation actions benefiting the species. We recommend TxDOT develop result-focused partnerships that foster these priority actions.
4. Develop an inventory and management plan for vegetation at each of the previously constructed wildlife crossing structures in coordination with the Service. This would include an evaluation on whether plant diversity is optimal and dense enough to encourage and support ocelot movement at the structures.
5. Fund further restoration research or restoration of felid habitat as addressed through numerous recovery actions in the Service's ocelot recovery plan (2016).

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

REINITIATION NOTICE

Ms. Clamons

March 16, 2023

This concludes formal consultation on the proposed US 77 from the Willacy/Kendy County Line to the Kenedy/Kleberg County Line, Kenedy County, Texas roadway improvements project. As provided in 50 CFR §402.16, reinitiation of 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 biological opinion or written concurrence; 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.

Please refer to consultation number, 2022-F-0546 in future correspondence concerning this project. Should you require further assistance or if you have any questions, please contact Donna Anderson at 713-542-1861.

Sincerely,

Charles Ardizzone
Field Supervisor

Cc: John Young, TxDOT ENV, Austin, TX
Sergio Vasquez, Laguna Atascosa NWR

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