APPENDIX B

Species of Concern Review

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TECHNICAL MEMORANDUM

To: Erik Huebner, Environmental Affairs, Lower Colorado River Authority (LCRA), on behalf of LCRA Transmission Services Corporation (LCRA TSC)

CC: Lyn Clancy, LCRA Managing Associate General Counsel, on behalf of LCRA TSC
Alan Glen, Nossaman LLP

From: Amanda Aurora, SWCA Environmental Consultants

Date: July 5, 2019

Re: LCRA TSC Transmission System Habitat Conservation Plan – Rationale for List of Covered Species

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LCRA Transmission Services Corporation (LCRA TSC) is preparing a Habitat Conservation Plan (HCP) that will support an application to the U.S. Fish and Wildlife Service (USFWS) for an Incidental Take Permit (ITP) under the Endangered Species Act (ESA). Capitalized terms and phrases used in this Technical Memorandum have the definitions stated in the Glossary to the HCP.

The HCP and ITP would cover the impacts of incidental take associated with certain construction, operation, upgrade, decommissioning, and maintenance activities associated with current and future LCRA TSC electrical transmission lines, substations, access roads, and related infrastructure and facilities that LCRA TSC elects to enroll in the HCP (collectively, the Covered Activities). The HCP Plan Area is the 221-county Electric Reliability Council of Texas (ERCOT) region in Texas, plus any Texas county bordering the ERCOT region, for a total of 241 of the 254 counties in the state of Texas. The proposed ITP Term is 30 years from the date of issuance. LCRA TSC proposes that the HCP address 23 Covered Species that may be incidentally taken by Covered Activities, of which only 1 is not currently listed as threatened or endangered under the ESA.

To derive the list of Covered Species, LCRA TSC considered the potential effects of its LCRA TSC Activities on a set of Species of Concern. As defined herein, Species of Concern are those species that, as of the date of this Technical Memorandum, are:

- listed as threatened or endangered, or that have been, or are likely to be, proposed for such listing;
- identified by the USFWS as candidates for future listing;
- included on an active petition for listing;
- included on the USFWS's 7-year Work Plan for addressing ESA listing and critical habitat decisions, dated September 2016; or
- listed as threatened or endangered by the State of Texas.

This Technical Memorandum summarizes basic ecological information about each Species of Concern, provides a preliminary assessment of the likelihood for LCRA TSC Activities to adversely affect each Species of Concern, and presents a brief rationale for whether or not a Species of Concern is addressed in the HCP as a Covered Species.

Methods and Approach

SWCA created a list of Species of Concern for the Plan Area from the following sources:

- Current list of federally threatened and endangered species (USFWS 2018)
- Current list of species proposed for federal listing (USFWS 2018)
- Current list of species with active petitions for listing consideration (USFWS 2018)
- Current list of federal candidate species (i.e., those with "warranted, but precluded" findings) (USFWS 2018)
- Species included on the USFWS's 7-year Work Plan for action on high priority listing and critical habitat decisions (USFWS 2016)
- Species currently listed as threatened or endangered by the State of Texas (31 Texas Administrative Code §65.175 and §65.176)

These sources returned a list of 245 Species of Concern with the potential to occur in the Plan Area. To this list, SWCA added two other species, *Cicurina loftini and Batrisodes cryptotexanus*, for consideration. The karst invertebrate, *Cicurina loftini*, may be taxonomically synonymized with another listed species and become, itself, a listed taxon. *Batrisodes cryptotexanus*, another karst invertebrate, may be split out as a new species from the currently endangered *Batrisodes texanus*. These additions give the list of Species of Concern a total of 247 species.

SWCA also investigated the feasibility of including species that appear on TPWD's county lists of rare, threatened, and endangered species (accessed via online map viewer requests to https://tpwd.texas.gov/gis/rtest/), as well as "*Texas Conservation Action Plan: Species of Greatest Conservation Need*" (TPWD 2011) or that were ranked by NatureServe as being "critically imperiled" or "imperiled" (NatureServe 2015). However, these additional sources would have returned several hundred more potential Species of Concern for evaluation. SWCA concluded that including species from these additional sources to the list of Species of Concern was impractical; therefore, SWCA limited Species of Concern to those species appearing on the sources identified in the list above.

For each of the 247 Species of Concern, SWCA summarized basic biological, habitat, distribution, abundance, and status information (see Table 1). SWCA obtained most information for this summary from the NatureServe Explorer database (NatureServe 2015) as a readily available source of basic information for the long list of Species of Concern. SWCA recognizes that NatureServe Explorer, while readily accessible for a wide array of species, is not always the most accurate or up-to-date source of information. Therefore, SWCA supplemented the basic information from NatureServe Explorer with information from other sources when senior biologists recognized that better data were readily available. The summarized data in Table 1 are meant to provide a basis for quickly screening the list of Species of Concern for those with a risk of take from the LCRA TSC Activities and are not intended to be a complete treatment of the current status of each Species of Concern.

SWCA also reviewed each Species of Concern to quickly assess: 1) the current status or future likelihood of listing under the ESA; 2) the likelihood for exposure to LCRA TSC Activities; and 3) the likelihood for adverse effects arising from LCRA TSC Activities (see Table 2). To help guide the assessment, SWCA identified the following seven general categories of potential ways LCRA TSC Activities might affect a Species of Concern (Potential Effect Pathways):

- Vegetation clearing
- Vegetation maintenance
- Soil disturbance or surface grading
- Subsurface excavation
- Nuisance (i.e., noise, light, and human activity)
- Collision or Avoidance of Structures
- Fill in Aquatic Habitats

SWCA scored each Species of Concern using a scale of 0 to 3 for each Potential Effect Pathway and for an overall assessment of potential adverse effect for the species from LCRA TSC Activities. SWCA defined the scoring scale as follows:

0 = Adverse effects are not possible

1 = Adverse effects are possible, but not expected

2 = Adverse effects may occur or the likelihood for occurrence is uncertain

3 = Adverse effects are expected

In scoring each Species of Concern, SWCA considered the biology, habitat, distribution, and abundance of the species; the nature of the LCRA TSC Activities; the potential for conservation measures or best practices to avoid or minimize the likelihood of an adverse effect below the threshold where incidental take is reasonably certain to occur; and the potential distribution of LCRA TSC Activities (see Figure 1 and Chapter 4.3.2).

In addition to the approach described above, SWCA compiled and LCRA TSC considered more detailed information on the biology, habitat, and current status of 48 of the Species of Concern that were initially considered for possible inclusion as Covered Species early in the HCP process. LCRA TSC also discussed with the USFWS the need for incidental take authorization for certain Species of Concern during several work sessions held between March 2017 and July 2018.

General Rationale for List of Covered Species

The following discussion summarizes the rationale for including or not including Species of Concern on the list of Covered Species in the HCP. Tables 1 and 2 provide additional detail and notes for each of the 247 Species of Concern to clarify the rationale for these decisions. However, the ultimate list of species covered in the HCP may change based on the outcome of more detailed reviews of the best

available science, additions to or subtractions from the list of ESA-protected species, or further assessments by LCRA TSC of the likelihood of take from the LCRA TSC Activities.

Proposed for Coverage

LCRA TSC proposes to include 23 species that are currently listed as federally threatened or endangered or have some likelihood for listing in the foreseeable future as Covered Species in the HCP. These species could be exposed to LCRA TSC Activities in a manner in which incidental take might not be readily avoided.

- Birds
  - Golden-cheeked warbler (*Setophaga chrysoparia*) – endangered
  - Whooping crane (*Grus americana*) – endangered
  - Piping plover (*Charadrius melodus*) – threatened
  - Rufa red knot (*Calidris canutus rufa*) – threatened
  - Red-cockaded woodpecker (*Picoides borealis*) – endangered
- Mammals
  - Ocelot (*Leopardus pardalis*) – endangered
- Reptiles
  - Spot-tailed earless lizard (*Holbrookia lacerata*) – petitioned for listing
- Spring-associated Aquatic Salamanders
  - Barton Springs salamander (*Eurycea sosorum*) – endangered
  - Georgetown salamander (*Eurycea naufragia*) – threatened
  - Jollyville Plateau salamander (*Eurycea tonkawae*) – threatened
  - Salado Springs salamander (*Eurycea chisholmensis*) – threatened
  - San Marcos salamander (*Eurycea nana*) – threatened
- Other Amphibians
  - Houston toad (*Bufo houstonensis*) – endangered
- Spring-associated Aquatic Invertebrates
  - Comal Springs riffle beetle (*Heterelmis comalensis*) – endangered
  - Peck's Cave amphipod (*Stygobromus pecki*) – endangered
- Terrestrial Karst Invertebrates
  - Travis and Williamson Counties
    - Bee Creek Cave harvestman (*Texella reddelli*) – endangered
    - Tooth Cave spider (*Tayshaneta myopica*) – endangered
    - Tooth Cave ground beetle (*Rhadine persephone*) – endangered
  - Bexar County
    - Madla Cave meshweaver (*Cicurina madla*) – endangered
    - Government Canyon Bat Cave spider (*Tayshaneta microps*) – endangered
    - Helotes mold beetle (*Batrisodes venyivi*) – endangered
    - *Rhadine exilis* – endangered
    - *Rhadine infernalis* – endangered

Not Proposed for Coverage

Species not proposed for coverage are not likely to be taken by the LCRA TSC Activities because: 1) they occur in habitats or locations where LCRA TSC Activities are unlikely to occur; 2) take may be

avoided with the application of practicable, voluntary conservation measures; 3) federal listing as threatened or endangered is not anticipated in the immediate future; and/or 4) take may be addressed through participation in other HCPs. General rationale for not covering for certain categories of Species of Concern is provided below.

- Deep Aquifer Species – Several fully aquatic species (such as blind salamanders and blindcats, among others) utilize the deep passages of the Edwards Aquifer and are largely disconnected from activities that occur on the surface. The LCRA TSC Activities do not involve a substantial amount of deep subsurface excavation, extensive additions of impervious cover to the surface, or require withdrawal of groundwater. Therefore, the deep aquifer species are unlikely to be exposed to the effects of the LCRA TSC Activities to an extent that is reasonably certain to cause take. LCRA TSC may consider implementing voluntary conservation measures to *minimize water quality impacts during construction* to further reduce the risk of adverse effects.

- Marine Species –LCRA TSC is not expected to conduct LCRA TSC Activities in marine habitats. Therefore, marine species (including sea turtles and the West Indian manatee, among others) are not likely to be exposed to the LCRA TSC Activities.

- Freshwater Surface Species – LCRA TSC can, in most cases, plan LCRA TSC Activities to avoid direct modification of freshwater surface habitats, such as rivers, streams, lakes, ponds, and wetlands. Fully aquatic species (such as fish, mollusks, and aquatic insects) and marshland species are unlikely to be directly affected by the LCRA TSC Activities. However, in some cases, voluntary conservation measures may be warranted to *avoid or minimize impacts to wetland or adjacent riparian habitat* that contributes to the character or quality of the freshwater surface aquatic habitat.

- Snails – Several species of springsnail, cavesnail, and mountainsnail are included in the list of Species of Concern. In each case, the known range and distribution of these species are very small and/or the species is associated with surface or aquifer aquatic habitats. The fringed mountainsnail is only known from Texas in the fossil record. These species are unlikely to be exposed to the LCRA TSC Activities. However, voluntary conservation measures may be warranted to *avoid or minimize impacts to occupied spring runs and adjacent riparian habitat*.

- Certain Terrestrial Karst Invertebrates – Terrestrial karst invertebrates that have ranges fully covered by the enrollment area of other HCPs (i.e., the Williamson County Regional HCP, the Balcones Canyonlands Conservation Plan, or the Southern Edwards Plateau HCP) are not included as Covered Species since LCRA TSC anticipates participating in these other HCPs to achieve ESA compliance.

- Remote and/or Extremely Range-restricted Species – Some species (such as Mexican spotted owl, Palo Duro mouse, western yellow-billed cuckoo, Louisana pinesnake, Attwater's greater prairie-chicken, among others) have ranges or distributions that are very small, located in remote or extremely rugged parts of Texas, and/or limited to protected lands like national wildlife refuges or state parks. In such cases, the species are unlikely to be exposed to the LCRA TSC Activities.

- Extinct or Extirpated from Texas – Species that are thought to be extinct or extirpated from Texas (such as the Eskimo curlew, red wolf, gray wolf, Louisiana black bear, and jaguar, among others) are not likely to be exposed to the LCRA TSC Activities.

- Federal Listing Not Anticipated – Most Species of Concern are not federally listed and are not likely to become considered for federal listing in the immediate future (i.e., the next 5 to 10 years). Given the uncertainty regarding future listing status and the often scant body of available science with which to evaluate impacts, estimate take, and propose conservation measures, LCRA TSC has decided to not include most unlisted Species of Concern on the list of Covered Species for the HCP. Instead, the HCP includes a Changed Circumstance that addresses new listings (see Chapter 9.1.2).

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Table 1. LCRA TSC Transmission System Habitat Conservation Plan: Species of Concern Background Table

July 5, 2019

Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
1.	*Eurycea waterlooensis*	Austin blind salamander	Amphibians	Deep Aquifer Aquatic	No	E	Designated-Travis and Williamson Counties, Texas	-	G1	S1	Nature Serve (2015)[1]: Found in subterranean cavities of the Edwards Aquifer, as well as spring outlets.	Nature Serve (2015): Unknown subterranean range, but observed at three of the four spring outlets of Barton Springs in Travis County, Texas.	Nature Serve (2015): Unknown, though observed 17 times during surveys from 1998–2000.
2.	*Eurycea sosorum*	Barton Springs salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	E	No	E	G1	S1	TPWD (2017): Found in subterranean water-filled caverns of Barton Springs and in aquatic plants and algae along the edge of the flowing spring.	Chippindale et al. (2014)[2]: A small number of springs in Travis and Hays Counties.	Hammerson & Chippindale (2004)[3]: Population size unknown, but stable trend.
3.	*Notophthalmus meridionalis*	Black-spotted newt	Amphibians	Freshwater Surface Aquatic	No	Petitioned for Listing: Findings Not Yet Made	No	T	G1	S2	Nature Serve (2015): Found in permanent and temporary ponds, roadside ditches, and stream pools.	Nature Serve (2015): Gulf Coastal Plain, from south of the San Antonio River in Texas south to Mexico.	Flores-Villela et al. (2008)[4]: Not abundant at any locality, maximum of 25 individuals at one site.
4.	*Eurycea robusta*	Blanco blind salamander	Amphibians	Deep Aquifer Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1Q	S1	Nature Serve (2015): Occurs in benthic, water-filled, subterranean caverns.	Nature Serve (2015): San Marcos pool of the Balcones Aquifer in south-central Texas.	Hammerson & Chippindale (2004)[5]: Unknown but inaccessible to survey.
5.	*Eurycea latitans*	Cascade Caverns salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	T	G3	S1	Hammerson & Chippindale (2004)[6]: Found in caves and springs with water in limestone.	Nature Serve (2015): Comal, Kerr, Kendall, and Hays Counties in various springs.	Hammerson & Chippindale (2004): Unknown but appears to vary among localities.
6.	*Eurycea tridentifera*	Comal blind salamander	Amphibians	Deep Aquifer Aquatic	No	Petitioned for Listing: Findings Not Yet Made	No	T	G1	S1	Nature Serve (2015): Occurs in benthic, water-filled, subterranean caverns.	Nature Serve (2015): Southeastern margin of Edwards Plateau of central Texas.	Hammerson & Chippindale (2004)[7]: Unknown, but scarce during visits to the type locality.
7.	*Eurycea sp. 8*	Comal Springs salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1Q	S1	Nature Serve (2015): Occurs in benthic habitat, in springs.	Nature Serve (2015): Only in Texas in Comal Springs in Landa Park and Landa Lake, Comal County.	Nature Serve (2015): Population size unknown, only one occurrence.
8.	*Eurycea naufragia*	Georgetown salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	T with Special 4(d) Rule	Proposed	-	G1	S1	Nature Serve (2015): Found in springs and caves.	Nature Serve (2015): Drainages of the south, middle, and north forks of the San Gabriel River in Williamson County, Texas. Also possible populations in the Cowan Creek drainage and from Bat Well in the Berry Creek drainage. Cowan Creek drains into the San Gabriel River.	Pierce et al. (2010)[8]: Known from 14 locations in Williamson County, Texas.
9.	*Anaxyrus (syn. Bufo) houstonensis*	Houston toad	Amphibians	Aquatic / Terrestrial	No	E	Designated-Bastrop and Burleson Counties, Texas	E	G1	S1	Nature Serve (2015): Adults found in soft sandy soils in pine forests, mixed deciduous forests and coastal prairie. Eggs/larvae develop in shallow water that persists for minimum of 60 days	Nature Serve (2015): Only in Texas; largest populations found in Bastrop County, Texas; also found in the following Texas Counties: Austin, Burleson, Colorado, Lavaca, Lee, Leon, Milam, Robertson.	Nature Serve (2015): Approximately 1,000 to 2,500 individuals.
10.	*Eurycea tonkawae*	Jollyville Plateau salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	T	Designated-Travis and Williamson Counties, Texas	T	G1	S2S3	Nature Serve (2015): Occurs in springs and waters of caves.	Nature Serve (2015): Springs northwest of Austin in Travis and Williamson Counties, Texas.	USFWS (2007)[9]: One cave in the Cypress creek drainage and 12 caves in the Buttercup creek cave system in the Brushy creek drainage.
11.	*Rhinophrynus dorsalis*	Mexican burrowing toad	Amphibians	Aquatic / Terrestrial[10]	No	-	No	T	G5	S2	Nature Serve (2015): Found in the lowlands of tropical moist and dry forests. TPWD (2017): Found wherever loose friable soils are present, such as temporary ponds, arroyos, or roadside ditches.	Nature Serve (2015): Pacific drainage of Costa Rica and Mexico, Atlantic Drainage of Honduras, and coastal lowlands of southern Texas.	Nature Serve (2015): Approximately 10,000 - 1,000,000 individuals.

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[10] AmphibiaWeb. Mexican burrowing toad. 2017. Available at http://amphibiaweb.org/species/4319. University of California, Berkeley, CA, USA. Accessed 17 Jan 2017.

Red text denotes inclusion as a Covered Species.

Table 1. LCRA TSC Transmission System Habitat Conservation Plan: Species of Concern Background Table

Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
12.	*Smilisca baudinii*	Mexican treefrog	Amphibians	Aquatic / Terrestrial	No	-	No	T	G5	S3	Nature Serve (2015): Found in gardens with pools, foothills, lowlands, xerophytic vegetation, savannas in semiarid regions, and humid evergreen forest in Caribbean lowlands.	Nature Serve (2015): Central Costa Rica up through southern Sonora, the Yucatan Peninsula, and the Rio Grande embayment in extreme southern Texas.	Nature Serve (2015): Abundant and widespread through Middle America.
13.	*Eurycea chisholmensis*	Salado Springs salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	T	Proposed	-	G1	S1	Nature Serve (2015): Found in gravel substrates, under rocks, and in the vicinity of spring outflows.	Nature Serve (2015): Range includes Big Boiling (= Main, Salado, or Siren) Springs and Robertson springs at Salado in Bell County, Texas. May also be found in Buttermilk Creek springs.	Nature Serve (2015): Unknown population estimate.
14.	*Eurycea nana*	San Marcos salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	T	Designated- Hays County, Texas	T	G1	S1	Nature Serve (2015): Found in alkaline, shallow springs with gravel and sand substrates carved from limestone. TPWD (2017): Water characterized by algal mats and aquatic moss at temperatures of 21°C–22°C.	Nature Serve (2015): Only in the San Marcos Springs and Spring Lake in Texas, plus a short distance downstream.	Hammerson & Chippindale (2004)[11]: Estimated at 53,000 in 1996, abundant in its small range.
15.	*Hypopachus variolosus*	Sheep frog	Amphibians	Aquatic / Terrestrial[12]	No	-	No	T	G5	S2	Tipton et al. (2012): Found near water in thorn scrub, open woodland, savanna, and pasture.	Nature Serve (2015): Through the Atlantic and Pacific slopes of Mexico to Costa Rica and northward through southern Texas.	Nature Serve (2015): Common and widespread throughout the Yucatan Peninsula, fairly common in Texas.
16.	*Siren sp 1*	South Texas siren (large form)	Amphibians	Freshwater Aquatic	No	-	No	T	GNRQ	S2	Nature Serve (2015): Inhabit any body of water with or without submergent vegetation, prefer quiet and permanent water features with a soft, mucky bottom.	Nature Serve (2015): In a narrow portion of Gulf Coastal Plain south of Corpus Christi, otherwise limited to lower Rio Grande drainage of Texas and Mexico.	Nature Serve (2015): Difficult to sample but may be abundant.
17.	*Typhlomolge (syn. Eurycea) rathbuni*	Texas blind salamander	Amphibians	Deep Aquifer Aquatic	No	E	No	E	G1	S1	Nature Serve (2015): Found in water-filled subterranean caverns. In some sites, known only from individuals washed out of artesian wells	Nature Serve (2015): San Marcos Pool of the Edwards Aquifer, Hays County, south-central Texas.	Hammerson & Chippindale (2004)[14]: Population size unknown but appear common and stable in outflows.
18.	*Eurycea neotenes*	Texas salamander	Amphibians	Shallow Aquifer / Spring Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S2	Nature Serve (2015): Occurs in spring systems.	Nature Serve (2015): In Texas in Helotes Creek Spring and, Leon Springs in Bexar County, and Mueller's Spring in Bexar County.	Hammerson & Chippindale (2004)[15]: Uncertain, but may be common at spring outflows, varies among localities.
19.	*Leptodactylus fragilis*[16]	White-lipped frog	Amphibians	Aquatic / Terrestrial	No	-	No	T	G5	S1	Tipton et al. (2012)[17]: Found in various mesic habitats such as fields, ditches, oxbow lakes, resacas, and grasslands.	Nature Serve (2015): Northern Venezuela and Colombia up through Central America, Mexico, and extreme southern Texas.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
20.	*Texella reddelli*	Bee Creek Cave harvestman	Arachnids	Terrestrial Karst	No	E	No	-	G2G3	S2	Ubick and Briggs (2004)[18]: Found in caves and in talus at base of roadcuts.	Ubick and Briggs (2004): Travis and Burnet Counties.	Nature Serve (2015): Unknown population estimate.
21.	*Texella reyesi*	Bone Cave harvestman	Arachnids	Terrestrial Karst	No	E; petitioned for delisting	No	-	G2G3	S2	Nature Serve (2015): Often found under large rocks in small isolated caves of the Edwards Limestone Formation. Sensitive to humidity below saturation, found in coolest parts of caves.	Nature Serve (2015): Caves throughout Travis and Williamson Counties, Texas.	USFWS (2009)[19]: Known from 168 caves.

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[17] Tipton, B.L., T.L. Hibbits, T.D. Hibbits, T.J. Hibbits, and T.J. LaDuc. 2012. Texas amphibians: A field guide. Texas A&M University Press. Print.
[18] Ubick, D., and T.S. Briggs. 2004. The harvestman family Phalangodidae. 5. New records and species of Texella Goodnight and Goodnight (Opiliones: Laniatores). Texas Memorial Museum, Speleological Monographs 6:101–141.
[19] USFWS. 2009. 5-Year Review: Bone Cave Harvestman (*Texella reyesi*). USFWS Austin Ecological USFWS Field Office, Austin, TX. 22 pp.

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Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
22.	*Cicurina venii*	Braken Bat Cave meshweaver	Arachnids	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Species is a subterranean obligate.	Nature Serve (2015): Only one specimen found in Braken Bat Cave in Bexar County, Texas. Hedin et al. (2018)[20]: May be synonymous with *Cicurina madla*.	Nature Serve (2015): Unknown population estimate.
23.	*Texella cokendolpheri*	Cokendolpher Cave harvestman	Arachnids	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Species is a subterranean obligate.	Nature Serve (2015): Known only from the Robber Baron Cave of Bexar County, Texas.	Nature Serve (2015): Unknown population estimate.
24.	*Cicurina vespera*	Government Canyon Bat Cave meshweaver	Arachnids	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Species is a subterranean obligate.	Nature Serve (2015): Only known from Government Canyon Vat Cave, located in Bexar County, Texas. Hedin et al. (2018): May be synonymous with *Cicurina loftini*.	Nature Serve (2015): Unknown population estimate.
25.	*Tayshaneta microps*	Government Canyon Bat Cave spider	Arachnids	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Species is a subterranean obligate.	Nature Serve (2015): Known from Government Canyon Bat Cave and Surprise Sink Cave in Bexar County, Texas.	Nature Serve (2015): Unknown population estimate.
26.	*Cicurina madla*	Madla Cave meshweaver	Arachnids	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Spins webs underneath rocks and in crevices. Found among mud balls and loose rocks.	USFWS (2011)[21]: Collected from at least 22 caves in the four Bexar County Karst Fauna Regions (KFRs) associated with the Edwards Limestone formation (e.g., Government Canyon KFR, Stone Oak KFR, Helotes KFR, and the UTSA KFR)	Nature Serve (2015): Unknown population estimate.
27.	*Cicurina baronia*	Robber Baron Cave meshweaver	Arachnids	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Species is a subterranean obligate.	USFWS (2011): Two caves, both located in the Alamo Heights KFR Paquin and Ledford (2012): May be synonymous with *Cicurina loftini* and *Cicurina vespera* Taxonomic revisions could expand the range of this species into the Culebra Anticline KFR.	Nature Serve (2015): Unknown population estimate.
28.	*Cicurina loftini*	no common name	Arachnids	Terrestrial Karst	No	-	No	-	-	-	Nature Serve (2015): Species is a subterranean obligate.	Paquin and Dupérré (2009)[22]: Caracol Creek Coon Cave and SBC Cave García de León and Krejca (2009)[23]: Clandestine Cupola Cave Hedin et al. (2018): May not be a valid taxon, but synonymous with *Cicurina vespera*.	Paquin and Dupérré (2009) and García de León and Krejca (2009): Three caves from the Culebra Anticline KFR in Bexar County, Texas.
29.	*Tartarocreagris texana*	Tooth Cave pseudoscorpion	Arachnids	Terrestrial Karst	No	E	No	-	G1G2	S1	Nature Serve (2015): Often found under rocks in small, dry, isolated caves within the Edwards Limestone formation.	Nature Serve (2015): Tooth and Amber Caves in Travis County, Texas.	Nature Serve (2015): Only known from those two caves.
30.	*Tayshaneta myopica*	Tooth Cave spider	Arachnids	Terrestrial Karst	No	E	No	-	G1G2	S1	Nature Serve (2015): Found in small, dry isolated cave in the Edwards Limestone Formation.	Nature Serve (2015): Tooth Cave in Edwards Plateau of Travis County, Texas.	Nature Serve (2015): Approximately 1 to 1,000 individuals.

[20] Hedin, M., S. Derkarabetian, J. Blair, and P. Paquin. 2018. Sequence capture phylogenomics of eyeless Cicurina spiders from Texas caves, with emphasis on US federally-endangered species from Bexar County (Araneae, Hahniidae). *ZooKeys* 769:49-76.
[21] United States Fish and Wildlife Service (USFWS). 2011. Bexar County Karst Invertebrates Recovery Plan. U.S. Fish and Wildlife Service, Albuquerque, NM.
[22] Paquin, P. and N. Dupérré. 2009. A first step towards the revision of Cicurina: redescription of type specimens of 60 troglobitic species of the subgenus Cicurella (Araneae: Dictynidae), and a first visual assessment of their distribution. Zootaxa, 2002: 1-67
[23] García de León, F.J. and J. Krejca. 2009. Zara Environmental Karst Invertebrate Technical Report for SH 151 from Wiseman Road to Loop 1604, Bexar County, Texas.

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31.	*Falco peregrinus anatum*	American peregrine falcon	Birds	Terrestrial	Yes	Delisted	No	T	G4T4	S2B	USFWS (2017)[24]: Breeding falcons often use cliffs and almost always near water and or open habitat for foraging.	Nature Serve (2015): Breeds across Alaska and Canada south to Baja California and Mexico. TPWD (2017): Trans-Pecos region of Texas including the Davis, Chisos and Guadalupe Mountains.	USFWS (2003)[25]: 3,005 nesting pairs in 2003
32.	*Tympanuchus cupido attwateri*	Attwater's greater prairie-chicken	Birds	Terrestrial	No	E	No	E	G4T1	S1B	Nature Serve (2015): Found in Gulf Coast prairies, fallow rice fields, pastures, croplands.	Nature Serve (2015): Gulf coast prairies of Texas; probably extirpated from Louisiana. USFWS (2010)[26]: Currently three known populations in Texas at Attwater Prairie Chicken National Wildlife Refuge (Colorado County), Texas City Prairie Preserve (Galveston County), and a private ranch in Goliad County	USFWS (2010): 90 individuals in the wild as of March 2009
33.	*Peucaea (syn. Aimophila) aestivalis*	Bachman's sparrow	Birds	Terrestrial	Partially	-	No	T	G3	S3B	Nature Serve (2015): Found in mature to old growth pine woodland; requires limited shrub and hardwood midstory with well-developed herb and grass layer, breed where fires create suitable conditions.	Nature Serve (2015): Southeastern U.S.; from eastern Texas and Oklahoma to Tennessee and North Carolina south to Gulf Coast.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
34.	*Haliaeetus leucocephalus*	Bald eagle	Birds	Terrestrial	Yes	Delisted	No	T	G5	S3B, S4N	TPWD (2017): Breeding territory is primarily on the edge of rivers, lakes, or reservoirs with large, tall (40–120-foot) trees. Open water or wetlands a mile within the nests is needed for feeding. Over- wintering bald eagles also found near open water and areas with high concentrations of prey. In Texas, wintering eagles also found on rangelands.	TPWD (2017): U.S., Canada, and northern Mexico. In Texas there are both breeding and nonbreeding or wintering bald eagles. Breeding eagles occur mostly in the eastern half of the state and along the coast from Rockport to Houston. Wintering bald eagles are found in the Panhandle, Central, and East Texas.	USFWS (2006)[27]: 9,789 breeding pairs in the lower 48 states of the U.S. in 2007; 156 breeding pairs in Texas in 2007.
35.	*Laterallus jamaicensis*	Black rail	Birds	Wetlands	Yes	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G3G4	S2B	Nature Serve (2015): Occurs in herbaceous wetlands (salt, brackish and freshwater marshes).	All About Birds (2017)[28]: Atlantic and Gulf coasts of U.S., scattered locations elsewhere in U.S., as well as in the Caribbean, Mexico, and Central and South America.	Nature Serve (2015): Approximately 100,000 to 1,000,000 individuals.
36.	*Vireo atricapilla*	Black-capped vireo	Birds	Terrestrial	Yes	Delisted	No	E	G3	S2B	TPWD (2017): Found in oak-juniper woodlands with patchy, two-layered shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover.	Nature Serve (2015): Oklahoma, Texas, Mexico.	Nature Serve (2015): Estimated 6,200 individuals.
37.	*Glaucidium brasilianum cactorum*	Cactus ferruginous pygmy-owl	Birds	Terrestrial	No[29]	Delisted	No	T	G5T3	S3B	Nature Serve (2015): Largest population in Texas found in live oak (*Quercus fusiformis*) and mesquite (*Prosopis glandulosa*) forested coastal sand plains. Formerly in coastal plain oak associations and Tamaulipan thornscrub in the lower Rio Grande valley.	Nature Serve (2015): Sub-species range from northwestern Mexico to Michoacan, up through northwestern Mexico and southern Texas and south-central Arizona.	Nature Serve (2015): Range-wide population unknown, but 1,308 individuals estimated for Kenedy Brooks, Kenedy, and Willacy County, Texas, and 745 to 1,823 individuals were estimated in 29,000 hectares of live oak-mesquite habitat in Kenedy County.
38.	*Buteogallus anthracinus*	Common black-hawk	Birds	Terrestrial	Yes[30]	-	No	T	G4G5	S2B	Nature Serve (2015): Found foraging on tidal flats or open woodlands, generally near water in both moist and arid habitat of lowland forest, mangroves, and swamps. Lockwood and Freeman (2014): Found in riparian corridors in mountainous or semi-arid regions	Nature Serve (2015): Resident from Venezuela and Trinidad up through Colombia, Central America, and Mexico, also in western Texas, New Mexico, Utah, and Arizona. North populations migrate south in nonbreeding season.	Nature Serve (2015): Considered stable but precarious. Audubon (2017): Possibly 250 breeding pairs in the U.S.

[24] USFWS. 2017. American Peregrine Falcon. ECOS page. Available at https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B01H. Accessed January 31, 2017.
[25] USFWS. 2003. Monitoring results for breeding American peregrine falcons (Falco peregrinus anatum), 2003. Biological Technical Publication. 36 pp.
[26] USFWS. 2010. Attwater's prairie-chicken (Tympanuchus cupido attwateri) recovery plan, second revision. April 26, 2010. Federal Register 75(79):21649-21650.
[27] USFWS. 2006. Estimated number of bald eagle breeding pairs (by state). Available at https://www.fws.gov/midwest/eagle/population/pdf/be_prsmap_wo2006.pdf. Accessed January 31, 2017.
[28] All About Birds. 2017. Black Rail. Available at https://www.allaboutbirds.org/guide/Black_Rail/id. Accessed February 28, 2017.
[29] USFWS. 2011. 12-month finding on a petition to list the cactus ferruginous pygmy-owl as threatened or endangered with critical habitat; proposed rule.
[30] Audubon. 2017. Common Black Hawk. Available at http://www.audubon.org/field-guide/bird/common-black-hawk. Accessed February 1, 2017.

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39.	*Numenius borealis*	Eskimo curlew	Birds	Terrestrial	Yes	E	No	E	GH	SH	Nature Serve (2015): Found along beaches but rarely near water.	Nature Serve (2015): Migratory: Along the Mississippi including eastern half of Texas and the Gulf of Mexico. Nonbreeding: South America; Breeding: Canada and possibly Alaska.	Nature Serve (2015): Believed to be extinct.
40.	*Setophaga chrysoparia*	Golden-cheeked warbler	Birds	Terrestrial	Yes	E	No	E	G2	S2B	Nature Serve (2015): Breeds in mature growth Ashe juniper (*Juniperus ashei*)-oak woodlands. Winters in pine-oak woodlands.	Nature Serve (2015): Breeds in North-Central to Central Texas along the eastern and south-central portions of the Edwards Plateau. Winters in Mexico, Guatemala, Honduras and Nicaragua.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
41.	*Vermivora chrysoptera*	Golden-winged warbler	Birds	Terrestrial	Nature Serve (2015): Yes	Petitioned for Listing: 90 Day Substantial	No	Vulnerable	G4	S3	Nature Serve (2015): Breeds in deciduous woodland, overgrown pastures; powerline rights-of-ways; in migration and winter in various open woodland habitats, pine-oak, and scrub.	Nature Serve (2015): Breeding range extends from small portion of southern Canada southeast into the U.S.; migratory states include most of central and south U.S., including east Texas and its Gulf Coast. Nonbreeding resident in Central and South America. Does not nest or overwinter in Texas.	Nature Serve (2015): Approximately 100,000 to 1,000,000 individuals.
42.	*Buteo plagiatus (syn. Asturina nitida)*	Gray hawk	Birds	Terrestrial	Yes[31]	-	No	T	GNR	S2B	Nature Serve (2015): Found in river-edge forest, gallery forest, tropical deciduous forest, and tropical lowland evergreen forest edges. TPWD (2017): Occurs in semiarid mesquite and scrub grasslands and nearby mature riparian woodlands.	Nature Serve (2015): Northwestern Costa Rica through Middle American and into southern Texas, rarely in west Texas and New Mexico, resident of southern Arizona.	All About Birds (2017): Breeding population of 2 million, very restricted in U.S. range but fairly numerous throughout southern range into Argentina.
43.	*Sterna antillarum athalassos*	Interior least tern[32]	Birds	Riparian	Yes	E	No	E	G4T2Q	S1B	TPWD (2017): Found in sand, gravel and shell beaches, sandbars, salt flats; avoid thick vegetation and prefer open habitat.	USFWS (2013)[33]: Large river habitats in Mississippi, Louisiana, Texas, New Mexico, Oklahoma, Arkansas, Kansas, Nebraska, Colorado, Iowa, and the Dakotas. TPWD (2017): In Texas, at reservoirs along the Rio Grande, Canadian, and Red Rivers.	USFWS (2013): Estimated 1,400 to 1,800 adults at time of listing, additional 2,000 added since than; recommended delist.
44.	*Tympanuchus pallidicinctus*	Lesser prairie-chicken	Birds	Terrestrial	No	Petitioned for Listing as E with Critical Habitat: 90 Day Substantial	Petitioned	-	G3	S2B	Nature Serve (2015): Occurs in grasslands.	Nature Serve (2015): Colorado, Kansas Oklahoma, New Mexico, and western Texas.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals (in Texas 6,077 to 24,132).
45.	*Strix occidentalis lucida*	Mexican spotted owl	Birds	Terrestrial	No	T	Designated- not in TX	T	G3G4T3T4	S1B	Nature Serve (2015): Found in rocky-canyon and forested habitats.	Nature Serve (2015): Central Mexico north to western Texas (Guadalupe mountains), New Mexico, Arizona, Colorado, and Utah.	Nature Serve (2015): Approximately 1,000 to 10,000 individuals.
46.	*Falco femoralis septentrionalis*	Northern aplomado falcon	Birds	Terrestrial	No	E, Petitioned for Critical Habitat: Findings Not Yet Made	Petitioned	E	G4T2	S1	USFWS (2014)[34]: Found in variable habitat, but must have open terrain with scattered trees, low ground cover, and nesting trees.	Nature Serve (2015): Southern Texas, Arizona, New Mexico, and south through Mexico and Guatemala.	USFWS (2014): 28-36 breeding pairs in Texas.
47.	*Camptostoma imberbe*	Northern beardless-tyrannulet	Birds	Terrestrial	No[35]	-	No	T	G5	S3B	Nature Serve (2015): Found in open riparian woodlands, thickets, arid scrubs, forest edges, and mesquite.	Nature Serve (2015): Breeding range includes northern Costa Rica up through Middle America and Mexico, into southern Texas, New Mexico, and southeastern Arizona. Nonbreeding range extends from northern Mexico throughout the southern breeding range.	Audubon (2017)[36]: Population has declined in the southwest but still locally common.

[31] All About Birds. 2017. Gray Hawk. Available at https://www.allaboutbirds.org/guide/Gray_Hawk/id. Accessed February 1, 2017.
[32] U.S. Department of Agriculture (USDA). 2015. Least tern *Sternula antillarum* fact sheet. Natural Resources Conservation Service.
[33] USFWS. 2013. 5 Year Review of Interior Least Tern. Jackson, Mississippi. 75 pp.
[34] USFWS. 2014. Northern Aplomado Falcon 5 Year Review. Albuquerque, New Mexico. 46 pp.
[35] Cornell Lab. 2017. *Camptostoma imberbe*. Available at http://neotropical.birds.cornell.edu/portal/species/overview?p_p_spp=420361. Accessed January 31, 2017.
[36] Audubon. 2017. Northern Beardless Tyrannulet. Available at http://www.audubon.org/field-guide/bird/northern-beardless-tyrannulet. Accessed January 31, 2017.

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48.	*Charadrius melodus*	Piping plover	Birds	Marine or Freshwater Aquatic	Yes	T	Designated- Cameron, Willacy, Kenedy, Kleberg, Nueces, Aransas, Calhoun, Matagorda, Galveston, San Patricio, and Brazoria Counties, Texas	T	G3	S2	Nature Serve (2015): Breeding habitat includes sparsely vegetated shores and islands of shallow ponds, lakes, impoundments, and rivers, as well as sandy upper beaches specifically with scattered grass. Nonbreeding habitat includes sand or algal flats in protected bays or ocean beaches.	Nature Serve (2015): Breeding range from Oklahoma through Nebraska, Minnesota, Iowa, Colorado, Dakotas, Montana, and into the northern Great Plains region of Canada. Nonbreeding range includes the Atlantic coast of the southern U.S. and coasts of the Gulf of Mexico and Caribbean.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
49.	*Calidris canutus rufa*	Red knot	Birds	Terrestrial	Yes	T	No	-	G4T2	SNRN	USFWS (2014)[37]: Often found along cobble, gravel, or sandy beaches, salt marshes, tidal mudflats, peat banks, shallow coastal impoundments and lagoons.	Nature Serve (2015): Nests in the Arctic Circle and migrates to South America for wintering. USFWS (2014): Can be found in Texas in both spring, fall, and winter. Birds wintering in Texas use a central, overland flyway across midcontinental U.S.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
50.	*Picoides borealis*	Red-cockaded woodpecker	Birds	Terrestrial	No	E	No	E	G3	S2B	Nature Serve (2015): Occurs in open, mature pine woodlands, rarely deciduous woodlands.	Nature Serve (2015): Coastal Plain from Maryland to Texas, and inland from Oklahoma to Virginia.	USFWS (2003)[38]: 14,068 individuals estimated.
51.	*Amazona viridigenalis*	Red-crowned parrot	Birds	Terrestrial	No	Candidate	No	-	G2	S2	Nature Serve (2015): Occurs in suburban areas where introduced.	Nature Serve (2015): Resident to northeastern Mexico; introduced in Florida and Hawaii; rare winter visitor to Texas. Lockwood and Freeman (2014): Common year-round resident in urban areas of Lower Rio Grande Valley, particularly Cameron and Hidalgo Counties.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
52.	*Egretta rufescens*	Reddish egret	Birds	Terrestrial	No[39]	-	No	T	G4	S3B	TPWD (2017): Nests on dry coastal islands of brushy thickets of prickly pear (*Opuntia sp.*) and yucca (*Yucca sp.*). Found in shallow salt ponds, tidal flats, and brackish marshes.	Nature Serve (2015): Breeding range from Bahamas and Yucatan coast up through Florida, Alabama, Louisiana, and Gulf coast of Texas, and California. Nonbreeding primarily in coastal regions of the breeding range to as far south as Puerto Rico and the Caribbean.	Nature Serve (2015): Approximately 2,500 to 100,000 individuals.
53.	*Pachyramphus aglaiae*	Rose-throated becard	Birds	Terrestrial	No[40]	-	No	T	G4G5	S1	Nature Serve (2015): Breeding habitat consists of mostly semi-arid regions, but occasionally humid areas with woodland, open forest, scrubby areas, and open areas with scattered trees. Nonbreeding habitat includes undisturbed tropical deciduous forests to second growth.	Nature Serve (2015): Breeding range includes Costa Rica and Mexico up through south Texas and Arizona. Nonbreeding includes north Mexico and south through the breeding range. Lockwood and Freeman (2014): Rare and irregular visitor to Lower Rio Grande Valley.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
54.	*Sterna fuscata*	Sooty tern	Birds	Terrestrial	Yes[41]	-	No	T	G5	S2B	Nature Serve (2015): Mostly found across warm oceans.	Lockwood and Freeman (2014): Rare and local summer resident along central and lower coasts of Texas.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
55.	*Empidonax traillii extimus*	Southwestern willow flycatcher	Birds	Terrestrial	Yes	E, Petitioned for Delisting: 90 Day Substantial	Designated- not in TX	E	G5T2	S1B	Nature Serve (2015): Found in riparian and wetland thickets with willow (*Salix sp.*) and/or tamarisk (*Tamarisk sp.*).	Nature Serve (2015): Breeding range includes portions of California, Nevada, Utah, Colorado, Arizona, New Mexico, western Texas and northwestern Mexico Winter range from central Mexico to northwestern Colombia.	Nature Serve (2015): Estimated 2,600 individuals.

[37] USFWS. 2014. Rufa red knot background information and threats assessment. Supplement to endangered and threatened wildlife and plants; final threatened status for the rufa red knot (Calidris canutus rufa) [Docket No. FWS-R5-ES-2013-0097; RIN AY17]. Pleasantville, New Jersey
[38] USFWS. 2003. Recovery plan for the red-cockaded Woodpecker (Picoides borealis) second revision. Atlanta, GA. 316 pp.
[39] Audubon. 2017. Reddish Egret. Available at http://www.audubon.org/field-guide/bird/reddish-egret. Accessed January 17, 2017.
[40] Audubon. 2017. Rose-throated becard. Available at http://www.audubon.org/field-guide/bird/rose-throated-becard. Accessed January 31, 2017.
[41] Audubon. 2017. Sooty Tern. Available at http://www.audubon.org/field-guide/bird/sooty-tern. Accessed February 1, 2017.

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56.	*Elanoides forficatus*	Swallow-tailed kite	Birds	Terrestrial	Yes[42]	-	No	T	G5	S2B	Nature Serve (2015): Require tall trees and open areas for foraging, often avoid arid areas. TPWD (2017): Found in marshes, along rivers, ponds, and lakes, also in lowland forested regions with swampy areas, ranging into open woodlands.	Nature Serve (2015): Brazil, Paraguay, Peru, Bolivia, and up through Central American and Mexico to east Texas, Louisiana, Florida, and into South Carolina.	Nature Serve (2015): Approximately 100,000 to 1,000,000 individuals.
57.	*Peucaea botterii texana*	Texas Botteri's sparrow	Birds	Terrestrial	Yes	-	No	T	G4T4	S3B	TPWD (2017): Found in short-grass plains and grasslands with scattered shrubs, bushes, yucca, sagebrush (*Artemisia tridentata*), or mesquite.	Miller et al (2013)[43]: Breeds from Veracruz, Mexico north through Copano Bay and the Rio Grande in Texas, and along the Gulf of Mexico.	Insufficient Information found.
58.	*Setophaga pitiayumi*	Tropical parula	Birds	Terrestrial	Yes[44]	-	No	T	G5	S3B	Nature Serve (2015): Found in low deciduous woodlands to high rain forests, mostly restricted to subtropical altitudes or latitudes, and absent from sea-level in the Tropical zone.	Nature Serve (2015): From South America north to Mexico and southern Texas, including Kennedy, Hidalgo, Brooks, and Willacy Counties Lockwood and Freeman (2014): Rare to uncommon resident in live oak woodlands of Brooks and Kenedy Counties; rare to uncommon summer resident of western Edwards Plateau.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
59.	*Coccyzus americanus*	Western yellow-billed cuckoo	Birds	Terrestrial	Yes	T	Designated- parts of Hudspeth, and Brewster Counties	-	G5T2T3	S4S5B	Nature Serve (2015): Generally breed in deciduous riparian woodlands, especially including cottonwood (*Populus deltoides*) and willow but with some mesquite and salt-cedar (tamarisk). Found in various forests, woodlands, and scrubs, during the nonbreeding season.	Nature Serve (2015): Nests in extreme western Texas. Possible subspecies in West Texas, DPS boundary along mountain ranges to the Big Bend area to the western boundary of the Pecos River drainage.	Nature Serve (2015): Approximately 1,000 to 10,000 individuals.
60.	*Plegadis chihi*	White-faced ibis	Birds	Terrestrial	Yes- But found in Texas all year round[45]	-	No	T	G5	S4B	Nature Serve (2015): Found in mostly freshwater habitats of river, marshes, swamps, and ponds.	Nature Serve (2015): Breeding range includes South America through Mexico up through western U.S.to Florida, Louisiana, Alabama, and Texas. Locally from California, Idaho, Oregon, Montana, North Dakota and formerly Minnesota. Nonbreeding range is California, southern Texas, Louisiana and south through South America breeding range.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
61.	*Geranoaetus (syn. Buteo) albicaudatus*	White-tailed hawk	Birds	Terrestrial	No[46]	-	No	T	G4G5	S4B	Nature Serve (2015): Rarely found in open forest, more common in open country, savanna, prairie, and arid habitats with cacti, mesquite, and bushes. TPWD (2017): Found on cordgrass flats, scrub-live oak, and prairies near the coast.	Nature Serve (2015): South American (Bolivia, Peru, Argentina, Venezuela, and Colombia) north through Sonora, Durango, Zacatecas, and central and southeastern Texas, formerly in Arizona.	All About Birds (2017): Population stable or increasing with an estimate of nearly 2 million birds.
62.	*Grus americana*	Whooping crane	Birds	Wetland	Yes	E	Designated- Aransas, Refugio, and Calhoun counties	E	G1	S1	Nature Serve (2015): Habitat during migration and winter includes shallow water of marshes, lakes, lagoons, salt flats, harvested grain fields, and barrier islands.	USFWS (2016)[47]: Primarily breed in Canada and migrate to Texas coast; the other migratory population is introduced and migrates between Wisconsin and Florida, there is also a non-migratory flock in Florida and another in Louisiana.	USFWS (2015)[48]: 603 individuals estimated.

[42] Hipes, D., D.R. Jackson, K. NeSmith, D. Printiss, A. Brandt. 2001. Field guide to the rare animals of Florida. Florida Natural Areas Inventory. Tallahassee, Florida.
[43] Miller, K.S., E.M. McCarthy, M.C. Woodin, and K. Withers. 2013. Nest success and reproductive ecology of the Texas Botteri's sparrow in exotic and native grasses. *Southeastern Naturalist* 12(2): 387-398.
[44] Audubon. 2017. Tropical Parula. Available at http://www.audubon.org/field-guide/bird/tropical-parula. Accessed January 31, 2017.
[45] All About Birds. 2017. White-faced Ibis. Available at https://www.allaboutbirds.org/guide/White-faced_Ibis/id. Accessed January 17, 2017.
[46] All About Birds. 2017. White-tailed Hawk. Available at https://www.allaboutbirds.org/guide/White-tailed_Hawk/id. Accessed February 1, 2017.
[47] USFWS. 2016. Report on Whooping Crane Recovery Activities. Available at https://www.fws.gov/uploadedFiles/WC%20Recovery%20Activities%20Report_Sept-April%202016_Appendices.pdf. Accessed February 27, 2017.
[48] USFWS. 2015. Whooping Crane. Current whooping crane populations (as of February 2015). Available at https://www.fws.gov/refuge/Quivira/wildlife_and_habitat/whooping_crane.html. Accessed February 27, 2017.

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Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
63.	*Mycteria americana*	Wood stork	Birds	Terrestrial	Yes[49]	T	No	T	G4	SHB, S2N	Nature Serve (2015): Found near brackish wetlands, swamps, marshes, lagoons, ponds, and flooded fields with chiefly freshwater.	Nature Serve (2015): South America including Peru, Bolivia, Argentina, and Ecuador up through the Atlantic Coast including South Carolina and Florida, as well as Cuba; post-breeding visitors to Texas from Mexico.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals. TPWD (2017): No breeding records in Texas since 1960.
64.	*Buteo albonotatus*	Zone-tailed hawk	Birds	Terrestrial	Yes[50]	-	No	T	G4	S3B	Nature Serve (2015): Prefer open deciduous or pine-oak woodlands of open arid country. TPWD (2017): Found along wooded canyons and tree-lined rivers of middle-slopes of desert mountains, often near watercourses.	Nature Serve (2015): California east through western Texas then extends south through much of South America.	All About Birds (2017): Populations increasing, with estimate of 2 million in breeding population.
65.	*Gammarus hyalelloides*	Diminutive amphipod	Crustaceans	Shallow Aquifer / Spring Aquatic	No	E	Designated- Reeves and Jeff Davis County, Texas	-	G1	S1	Nature Serve (2015): Found in desert spring outflow channels on substrates with interstitial spaces and within gravels and underneath rocks, commonly in microhabitats with flowing water. In springs with warm water and mineralized of sulfo-chloride type water being issued from a cave.	Nature Serve (2015): Known only from the Toyah Basin of the Pecos River drainage in Texas.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
66.	*Orconectes maletae*	Kisatchie painted crayfish	Crustaceans	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	S2	Nature Serve (2015): Occurs in leaf litter in freshwater; streams.	Nature Serve (2015): Texas and Louisiana.	Nature Serve (2015): Approximately 1,000 to 10,000 individuals.
67.	*Stygobromus pecki*	Peck's cave amphipod	Crustaceans	Shallow Aquifer / Spring Aquatic	No	E	Designated- Comal and Hays County, Texas	E	G1G2	S1	Nature Serve (2015): Occurs in subterranean springs.	Nature Serve (2015): Only found in Texas; known from Comal and Hueco Springs in Comal County.	Nature Serve (2015): Approximately 250 to 1,000 individuals.
68.	*Gammarus pecos*	Pecos amphipod	Crustaceans	Shallow Aquifer / Spring Aquatic	No	E	Designated- Pecos County, Texas	-	G1	S1	Nature Serve (2015): Occurs in spring or spring brook.	Inland Water Crustacean Specialist Group (1996)[51]: Diamond Y Spring and Leon Creek near Fort Stockton in Pecos County, Texas.	Insufficient Information found.
69.	*Notropis girardi*	Arkansas River shiner	Fishes	Freshwater Aquatic	No	T	Designated- not in Texas	T	G2	S2	Nature Serve (2015): Found in unshaded, shallow, turbid river channels with silt and sand substrates.	Nature Serve (2015): Canadian River in Oklahoma, Texas, and New Mexico and the Pecos River in New Mexico.	Nature Serve (2015): Unknown adult population, collected at 23 sites across range.
70.	*Macrhybopsis tetranema*	Peppered chub	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Found in shallow, continuously flowing, perennial streams.	Nature Serve (2015): Texas, New Mexico, Kansas, and Oklahoma.	Nature Serve (2015): 40 collection sites in two river extant in.
71.	*Gambusia gaigei*	Big Bend gambusia	Fishes	Freshwater Aquatic	No	E	No	E	G1	S1	Nature Serve (2015): Found in warm, freshwater, spring-fed vegetated sloughs, ponds, and marshes.	Nature Serve (2015): Only found in Texas in springs of the Big Bend National Park.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
72.	*Percina maculata*	Blackside darter	Fishes	Freshwater Aquatic	No[52]	-	No	T	G5	S1	Nature Serve (2015): Prefers quiet pools or pools with some current with sand or gravel bottoms, also in creeks and small to medium rivers.	Nature Serve (2015): Southern Canada and New York to Louisiana, Gulf drainages of Alabama, and the Neches River of the Sabine River drainage in Texas. TPWD (2017): Cypress, Red, and Sulfur River basins.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
73.	*Gambusia senilis*	Blotched gambusia	Fishes	Freshwater Aquatic	No	-	No	T	G3G4	SX	Nature Serve (2015): Found in marshes, outflows, backwaters, springs, stream channels and edges.	Nature Serve (2015): In the Rio de Sauz basin, Chihuahua and Durango, Mexico, Rio Conchos and tributaries, and formerly in the Devils River, Texas.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.

[49] USFWS. 2005. Wood stork *Mycteria americana*. Jacksonville, FL. 3 pp.
[50] All About Birds. 2017. Zone-tailed Hawk. Available at https://www.allaboutbirds.org/guide/Zone-tailed_Hawk/id. Accessed February 1, 2017.
[51] Inland Water Crustacean Specialist Group. 1996. Gammarus pecos. The IUCN Red List of Threatened Species 1996: e.T8904A12937683. Available at http://dx.doi.org/10.2305/IUCN.UK.1996.RLTS.T8904A12937683.en. Downloaded on 27 January 2017.
[52] Fuller, P. and M. Neilson. 2017. *Percina maculata*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. Available at https://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=823 Revision Date: 8/8/2011. Accessed January 31, 2017.

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74.	*Cycleptus elongatus*	Blue sucker	Fishes	Freshwater Aquatic	No	-	No	T	G3G4	S3	Nature Serve (2015): Occurs in impoundments as well as channels and flowing pools with a moderate current.	Nature Serve (2015): Mississippi River basin of Wisconsin and Minnesota, Missouri river drainage of the Dakotas and Montana, formerly in Ohio River drainage in Pennsylvania, Tennessee River basin of Alabama and Tennessee, and also in the Gulf Slope drainages of the Sabine River to the Rio Grande/Pecos River in Texas, New Mexico, and Mexico.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
75.	*Pteronotropis hubbsi*	Bluehead shiner	Fishes	Freshwater Aquatic	Yes-locally (NatureServe 2015)	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	T	G3	S1	Nature Serve (2015): Found in tannin-stained freshwater creeks, rivers, and shallow lakes which are highly vegetated with sand or sand/mud substrate.	Nature Serve (2015): Northeast Texas, southeast Oklahoma, and Arkansas.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
76.	*Notropis simus simus*	Bluntnose shiner	Fishes	Freshwater Aquatic	-	-	No	T	G2TX	SX	Nature Serve (2015): Often found below obstructions in main river channels with sand, silt, or gravel substrates.	Nature Serve (2015): Historically found in New Mexico, Mexico, Pecos River, and the upper Rio Grande in Texas.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
77.	*Ictalurus sp. 1*	Chihuahua catfish	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1G2	S1	Nature Serve (2015): Occurs in freshwater, benthic habitat.	Nature Serve (2015): Texas and New Mexico. Cibolo-Red Light, Black Hills-Fresno, and Big Bend watersheds.	Insufficient Information found.
78.	*Notropis chihuahua*	Chihuahua shiner	Fishes	Freshwater Aquatic	-	-	No	T	G3	S2	Nature Serve (2015): Prefer clear, cool water associated with nearby springs, found in channels of large creeks and small to medium rivers, as well as pools with slight current or gravel or sand bottom riffles with vegetation.	Nature Serve (2015): Near the mouth of Rio Conchos and lower Pecos River, Texas, also in the Rio Grande drainage and the smaller tributaries of Rio Conchos in Chihuahua and Durango, Mexico.	Nature Serve (2015): Collected from 33 occurrences, including 7 in Texas, the rest in Mexico.
79.	*Gambusia heterochir*	Clear Creek gambusia	Fishes	Freshwater Aquatic	No	E	No	E	G1	S1	Nature Serve (2015): Found in clear springs and outflows with dense vegetation and constant temperature.	Nature Serve (2015): Only found in the impounded headwaters of Wilkinson Springs in Menard County, Texas, in the Upper Clear Creek of the San Saba River system.	Nature Serve (2015): Approximately 1,000 to 10,000 individuals.
80.	*Cyprinodon elegans*	Comanche Springs pupfish	Fishes	Freshwater Aquatic	No	E	No	E	G1	S1	Nature Serve (2015): Occurs in freshwater springs and associated marshes and canals.	Nature Serve (2015): Only in Jeff Davis and Reeves Counties in Texas; found in a small series of springs, their outflows, and a system of irrigation channels interconnecting the following springs: Phantom Lake, San Solomon, Giffin, and Toyah Creek.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
81.	*Cyprinodon eximius*	Conchos pupfish	Fishes	Freshwater Aquatic	No	-	No	T	G3G4	S1	Nature Serve (2015): Uncommon in headsprings, often in marshes, backwaters, sloughs, margins of large streams, creek channels, and mouths of creeks tributary to larger rivers.	Nature Serve (2015): In the upper Rio Conchos system and Rio de Sauz basin in Mexico and the Rio Alamo in Chihuahua, also in the Terlingua Creek, Devils River, and Alamito Creek in Texas.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals.
82.	*Dionda diaboli*	Devils River minnow	Fishes	Freshwater Aquatic	No	T	Designated- Val Verde and Kinney Counties, Texas	T	G1	S1	Nature Serve (2015): Occupies spring-fed, clear, fast-flowing water over gravel substrate.	Nature Serve (2015): Known from the Devils River, San Felipe Creek, and Pinto Creek in Kinney and Val Verde Counties, Texas.	Nature Serve (2015): Approximately 2,500 to 100,000 individuals.
83.	*Etheostoma fonticola*	Fountain darter	Fishes	Freshwater Aquatic	No	E	Designated- Hays County, Texas	E	G1	S1	Nature Serve (2015): Found in densely vegetated springs, pools, rivers.	Nature Serve (2015): Only in Texas; endemic to the spring-fed upper San Marcos and Comal Rivers of Comal and Hays Counties.	Nature Serve (2015): Approximately 100,000 to 1,000,000 individuals.
84.	*Cyprinodon bovinus*	Leon Springs pupfish	Fishes	Freshwater Aquatic	No	E	Designated- Pecos County, Texas	E	G1	S1	Nature Serve (2015): Found in shallow, calm water of springs, marshes, and pools.	Nature Serve (2015): Leon Creek, a flood tributary of the Pecos River.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
85.	*Prietella phreatophila*	Mexican blindcat	Fishes	Freshwater Aquatic	No	E	No	-	Not ranked	Not ranked	Hendrickson et al. (2017)[53]: Aquifer habitat; deep groundwater passages, hand-dug wells.	Hendrickson et al. (2017): Northern Mexico (Coahuila and Tamaulipas); discovered in Val Verde County, Texas in 2016.	unknown

[53] Hendrickson, D.A., J. Johnson, P. Sprouse, S. Howard, G.P. Garrett, J.K. Krejca, A. Gluesenkamp, J.A. Davila Paulin, L. Dugan, A.E. Cohen, A. Hernandez Espriu, J.P. Sullivan, D.B. Fenolio, J. Karges, R. Smith, F.J. Garcia De Leon, B. Wolaver, J. Reddell. 2017. *Discovery of the Mexican Blindcat,* Prietella phreatophila*, in the U.S., and an update on its rangewide conservation status.* Presentation to Texas Academy of Science. Belton, Texas. 33 pp.

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86.	*Ctenogobius claytonii*	Mexican goby	Fishes	Freshwater Aquatic	No	-	No	T	GNR	S1	Nature Serve (2015): Found in clear to muddy water with moderate to no current, substrates of clay, mud, sand, or gravel, and sparse to no vegetation. Can be in fresh and brackish coastal streams, lagoons, or rivers.	Nature Serve (2015): Laguna de Pajaritos, Veracruz Mexico, up through southern Texas and includes the Atlantic Slope of North America.	Pezold (2015)[54]: Locally common in Veracruz, Mexico, but otherwise uncommon throughout its range. Not recorded from the Rio Grande river in 30 years.
87.	*Campostoma ornatum*	Mexican stoneroller	Fishes	Freshwater Aquatic	No	-	No	T	G3G4	S1	Nature Serve (2015): Adults found in pools over gravel or sand bottoms or flowing segments of pools, undercut banks, or other cover, also in shallow riffles, runs, and pools of clear to slightly turbid, and in small to medium headwaters and creeks.	Nature Serve (2015): Widespread from Big Bend region to Rios Yaqui and Sonora to Nazas-Aquanaval basins in Zacatecas and endorheic systems of Chihuahua, also in Arizona and Rio Grande tributaries of Presidio and Brewster Counties, Texas.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
88.	*Cyprinella sp. 2*	Nueces shiner	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 12 Month Not Warranted	No	-	G1G2Q	S1S2	TPWD (2017)[55]: Found in cool, clear, spring-fed headwater of creeks.	TPWD (2017): In the upper reaches of the Nueces River in Texas.	Insufficient Information found.
89.	*Microphis brachyurus*	Opossum pipefish	Fishes	Aquatic	No	-	No	T	G4G5	S1	Nature Serve (2015): Young live in open ocean then return to fresh water to reproduce.	Nature Serve (2015): Throughout eastern Pacific, tropical Indo-Pacific, Atlantic regions, and the eastern Pacific near the terminus of the Panama Canal.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
90.	*Polyodon spathula*	Paddlefish	Fishes	Freshwater Aquatic	No	-	No	T	G4	S3	Nature Serve (2015): Found in slow-flowing water of river-margin lakes, channels, large and medium-sized rivers, oxbows, backwaters, and impoundments.	Nature Serve (2015): Gulf Slope drainages from Alabama to Galveston Bay, Texas, in the Mississippi River basin from New York to Montana and south to Louisiana.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals.
91.	*Gambusia nobilis*	Pecos gambusia	Fishes	Freshwater Aquatic	No	E	No	E	G2	S2	Nature Serve (2015): Found in shallow, clear, vegetated spring waters high in calcium carbonate as well as gypsum sinkhole habitats.	Nature Serve (2015): Texas and New Mexico in the Pecos River basin.	Nature Serve (2015): Estimated at over 1,000,000 individuals.
92.	*Cyprinodon pecosensis*	Pecos pupfish	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G2	S1	Nature Serve (2015): Usually found in high saline habitats including springs, gypsum sinkholes, and desert streams.	Nature Serve (2015): New Mexico and Pecos River in Texas.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
93.	*Cyprinella lepida*	Plateau shiner	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 12 Month Not Warranted	No	-	G1G2	S1S2	Nature Serve (2015): Occupies clear, cool, springs and spring-fed creeks; usually gravel substrate.	Nature Serve (2015): Only Frio and Sabinal Rivers in central Texas.	Nature Serve (2015): Population size unknown but thought to be small.
94.	*Macrhybopsis australis*	Prairie chub	Fishes	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G3	SNR	Nature Serve (2015): Found in creeks and rivers with sand and gravel substrates or in intermittent streams that possibly dry to isolated, salt-encrusted pools.	Nature Serve (2015): Red River basin, Texas Panhandle and along Oklahoma/Texas border.	Nature Serve (2015): Total population size unknown but presumed common.
95.	*Cyprinella proserpina*	Proserpine shiner	Fishes	Freshwater Aquatic	-	-	No	T	G3	S2	Nature Serve (2015): Found in pools and rocky runs of small rivers and creeks.	Nature Serve (2015): Basin of Rio Bravo, San Rodrigo, Rios San Carlos, and Devils River of Coahuila, Mexico; San Felipe, Independence, Pinto, and Las Moras creeks, and the Pecos River of Texas; of the Atlantic slope of North America.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
96.	*Gila pandora*	Rio Grande chub	Fishes	Freshwater Aquatic	No	-	No	T	G3	S1	Nature Serve (2015): Found near inflow of riffles and cover such as undercut banks, plant debris, and aquatic vegetation, also in flowing pools of creeks, headwaters, and small rivers.	Nature Serve (2015): Isolated population in the Davis Mountains, Texas, and was formerly common in creeks of the upper Rio Grande and Pecos River watersheds in New Mexico and Rio Grande and San Luis basin of Colorado.	Nature Serve (2015): Total adult population is unknown, but presumed to be greater than 10,000.
97.	*Etheostoma grahami*	Rio Grande darter	Fishes	Freshwater Aquatic	No	-	No	T	G2G3	S2	Nature Serve (2015): May hide among debris in vegetated pools or gravel and rubble areas, occurs in springs of the Edwards Plateau, clear rocky riffles and pools of small rivers and creeks.	Nature Serve (2015): Headwaters of the Rios San Juan and Salado in Mexico, and in the mainstream and spring-fed tributaries of the lower Pecos River downstream to the Devils River and Dolan, Rio Grande, San Felipe and Sycamore creeks.	Nature Serve (2015): Total population is unknown but common at a few sites in Mexico and Texas, even found to be the most abundant fish in a 10-km stretch below Amistad Reservoir.

[54] Pezold, F. 2015. *Ctenogobius claytonii*. The IUCN Red List of Threatened Species 2015: e.T185968A1796182. Available at http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T185968A1796182.en. Accessed January 31, 2017.
[55] TPWD. 2017. Nueces River Shiner. Available at http://txstate.fishesoftexas.org/cyprinella%20sp.htm. Accessed February 2, 2017.

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98.	*Hybognathus amarus*	Rio Grande silvery minnow	Fishes	Freshwater Aquatic	No	E	Designated - Not in TX	E	G1	SX	Nature Serve (2015): Found in freshwater rivers with slow to moderate flow usually with silt substrates; often found in pools, backwaters or eddies created by debris piles.	Nature Serve (2015): Rio Grande in New Mexico; presumed extirpated from Texas.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
99.	*Awaous banana*	River goby	Fishes	Freshwater Aquatic	No	-	No	T	G5	S1	Nature Serve (2015): Found in well-oxygenated waters over sand in flowing stream runs and pools. TPWD (2017): Enters ocean and brackish water, but prefers clear water with sandy or hard bottom and little to no vegetation.	Texas State University (2017)[56]: Gulf and Atlantic coasts of the U.S. south through the west indies, Central America, and to Venezuela, also from Mexico to northern Peru. In Texas found in the Rio Grande in Hidalgo and Cameron counties.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
100.	*Gambusia clarkhubbsi*	San Felipe gambusia	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1	S1	Nature Serve (2015): Occurs in spring-fed streams.	Nature Serve (2015): Only confirmed in San Felipe Creek, Val Verde County, Texas.	Nature Serve (2015): Several 1,000 individuals.
101.	*Gambusia georgei*	San Marcos gambusia	Fishes	Freshwater Aquatic	No	E	Designated- Hays County, Texas	E	GX	SX	Nature Serve (2015): Large, quiet, shallow, sparsely vegetated spring with a mud substrate.	Nature Serve (2015): Once in the San Marcos Spring and the upper San Marcos River in Texas.	Nature Serve (2015): Presumed extinct.
102.	*Notropis oxyrhynchus*	Sharpnose shiner	Fishes	Freshwater Aquatic	No	E	Designated- Baylor, Crosby, Fisher, Garza, Haskell, Kent, King, Knox, Stonewall, Throckmorton, and Young Counties, Texas	-	G3	S3	Nature Serve (2015): Occurs in gravel and sand run of medium to large rivers, and less often in mud-and sand-bottomed pools.	Nature Serve (2015): Historically found throughout the Brazos River, now rare or extirpated downstream of Possum Kingdom Reservoir.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals.
103.	*Scaphirhynchus platorynchus*	Shovelnose sturgeon	Fishes	Freshwater Aquatic	No	T- Similarity of appearance to the pallid sturgeon (*Scaphirhynchus albus*)[57]	No	T	G4	S2	Nature Serve (2015): Found over gravel and sand mix or mud areas with strong current in deep channels and embayments or large turbid rivers.	Nature Serve (2015): Missouri, Mississippi, and Ohio rivers and tributaries TPWD (2017): Red River below Lake Texoma.	Nature Serve (2015): Population is unknown but thought to be relatively large.
104.	*Notropis buccula*	Smalleye shiner	Fishes	Freshwater Aquatic	No	E	Designated- Baylor, Crosby, Fisher, Garza, Haskell, Kent, King, Knox, Stonewall, Throckmorton, and Young Counties, Texas	-	G2	S2	Nature Serve (2015): Occurs in the turbid, sandy channels of small to medium rivers.	Nature Serve (2015): Historically occurred throughout the Brazos River proper, Lampasas River, the Double Mountain and Salt Forks of the Upper Brazos River drainage. Possible population through introduction in the Colorado River above Buchanan Reservoir. Species has not been collected from the Lampasas River since 1951 and is likely extirpated from the mainstream of the Brazos River downstream of Possum Kingdom Reservoir.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
105.	*Pristis pectinata*	Smalltooth sawfish	Fishes	Marine Aquatic	Yes[58]	E	No	E	G1G3	SNR	Nature Serve (2015): Found in sheltered bays, on shallow banks and in estuaries; in freshwater and brackish water near river mouths.	Nature Serve (2015): Everglades National Park, including Florida Bay, Georgia and Mississippi; extirpated from Texas.	NMFS (2009): Currently there is no abundance estimate.
106.	*Trogloglanis pattersoni*	Toothless blindcat	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1G2	S1	Nature Serve (2015*):* Found in freshwater, benthic subterranean pools at 1,000–1,900 feet below surface.	Nature Serve (2015*)*: Five artesian wells penetrating the San Antonio Pool of the Edwards Aquifer.	Nature Serve (2013)[59]: Total population unknown but apparently abundant.

[56] Texas State University. 2017. Awaous banana. Fact sheet. Available at http://txstate.fishesoftexas.org/awaous%20banana.htm. Accessed February 28, 2017.
[57] USFWS. 2010. Threatened status for shovelnose sturgeon under the similarity of appearance provisions of the E Species Act. Washington, D.C.
[58] National Marine Fisheries Service (NMFS). 2009. Smalltooth sawfish recovery plan (*Pristis pectinata*). Prepared by the Smalltooth Sawfish Recovery Team for the NMFS. Silvery Spring, Maryland.
[59] NatureServe. 2013. Trogloglanis pattersoni. The IUCN Red List of Threatened Species 2013: e.T22273A19035299. Available at http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T22273A19035299.en. Downloaded on 02 February 2017.

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107.	*Erimyzon oblongus*	Western Creek chubsucker	Fishes	Freshwater Aquatic	No	-	No	T	G5	S2S3	Nature Serve (2015): Occasionally found in lakes, often near vegetation in silt-, gravel-, or sand-bottomed pools of clear headwaters, small rivers, and creeks. TPWD (2017): Rarely found in springs or impoundments, often in rivulets or marshes, spawning in river mouths or pools, lake outlets, riffles, or upstream creeks.	Nature Serve (2015): Gulf drainages from Georgia to the San Jacinto River in Texas, also in Michigan south to the lower Great Lakes and Mississippi River basins, formerly in Wisconsin.	Nature Serve (2015): Estimated at over 1,000,000 individuals.
108.	*Satan eurystomus*	Widemouth blindcat	Fishes	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1G2	S1	Nature Serve (2015): Occupies freshwater, benthic, subterranean pools.	Nature Serve (2015): Five artesian wells penetrating the San Antonio Pool of the Edwards Aquifer.	Nature Serve (2015): Population size unknown but may be large.
109.	*Rhadine exilis*	A ground beetle	Insects	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G3	S1	Nature Serve (2015): Species is a subterranean obligate.	Nature Serve (2015): Known from 45 to 50 caves in Bexar County, Texas.	Nature Serve (2015): Unknown population estimate.
110.	*Rhadine infernalis*	A ground beetle	Insects	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G2G3	S1	Nature Serve (2015): Species is a subterranean obligate.	Nature Serve (2015): Known from 36 to 39 caves in Bexar County, Texas.	Nature Serve (2015): Unknown population estimate.
111.	*Nicrophorus americanus*	American burying beetle	Insects	Terrestrial	No	E, Petitioned for Delisting: 90 Day Substantial	No	-	G2G3	S1	USFWS (2014)[60]: Found in soils conducive to excavation, but otherwise considered a habitat generalist.	Nature Serve (2015): Rhode Island, Oklahoma, Nebraska, South Dakota, Arkansas, and northeast Texas.	Nature Serve (2015): Approximately 1,000 – 2,500 individuals.
112.	*Batrisodes texanus*	Inner Space Cavern mold beetle	Insects	Terrestrial Karst	No	E	No	-	G2	SNR	Nature Serve (2015): Species is a subterranean obligate. TPWD (2017): Observed in small Edwards Limestone caves.	TPWD (2017): Known from caves in Travis and Williamson Counties.	Nature Serve (2015): Found in 8 caves.
113.	*Batrisodes cryptotexanus*	Dragonfly Cave mold beetle	Insects	Terrestrial Karst	No	-	No	-	G2	SNR	Nature Serve (2015): Species is a subterranean obligate. TPWD (2017): Observed in small Edwards Limestone caves.	Nature Serve (2016): Only known from caves in Williamson County, Texas.	Nature Serve (2016): Found in 8 caves.
114.	*Stygoparnus comalensis*	Comal Springs dryopid beetle	Insects	Shallow Aquifer / Spring Aquatic	No	E	Designated-Comal and Hays Counties, Texas	E	G1G2	S1	TPWD (2017): Benthic stream adults found on stream bottom or crawling along shores; larvae are vermiform and live in soil or decaying wood.	Nature Serve (2015): Only found in Texas in Comal and Fern Bank Springs in Hays County.	Nature Serve (2015): Population size unknown, but collected from only two, likely connected, sites.
115.	*Heterelmis comalensis*	Comal Springs riffle beetle	Insects	Shallow Aquifer / Spring Aquatic	No	E	Designated-Comal and Hays Counties, Texas	E	G1	S1	Nature Serve (2015): Occurs in gravel substrates and shallow riffles in springs.	Nature Serve (2015): Endemic to Texas; found primarily in Comal Springs, Comal County, however a single specimen was discovered in in San Marcos Springs, Hays County.	Nature Serve (2015): Approximately 50 to 2,500 individuals.
116.	*Haideoporus texanus*	Edwards Aquifer diving beetle	Insects	Shallow Aquifer / Spring Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1G2	S1	Nature Serve (2015): Occurs in caves and small crevices.	Nat Nature Serve (2015): Occupies the San Marcos pool of Edwards Aquifer.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
117.	*Batrisodes venyivi*	Helotes mold beetle	Insects	Terrestrial Karst	No	E	Designated-Bexar County, Texas	-	G1	S1	Nature Serve (2015): Species is a subterranean obligate.	TPWD (2017): Karst features in Bexar and Medina Counties.	Nature Serve (2015): Found in 8 caves.
118.	*Texamaurops reddelli*	Kretschmarr Cave mold beetle	Insects	Terrestrial Karst	No	E	No	-	G1G2	S1	Nature Serve (2015): Found lightly buried in silt, under rocks in total darkness of small isolated caves in the Edwards Limestone Formation.	Nature Serve (2015): Jollyville section of the Edwards Plateau within Kretschmarr, Amber, and Tooth caves of Travis County, Texas.	Nature Serve (2015): Approximately 1 to 1,000 individuals.
119.	*Automeris louisiana*	Louisiana eyed silkmoth	Insects	Aquatic / Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G1G3	SNR	Nature Serve (2015): Occurs in herbaceous wetlands.	Nature Serve (2015): Mississippi, southeast Texas, and coast of Louisiana.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
120.	*Danaus plexippus plexippus*	Monarch butterfly	Insects	Terrestrial	Yes	Petitioned for Listing T with Critical Habitat: 90 Day Substantial	Petitioned	-	G4	S4B	Nature Serve (2015): Breeding areas include patches of milkweed; utilize coastal migratory stopovers.	Nature Serve (2015): Summer breeding habitat in 48 states of the U.S., southern Canada, Australia, and New Zealand. Overwinter in the mountains of Mexico.	Nature Serve (2015): Estimated at over 1,000,000 individuals (70%-90% decline).

[60] USFWS. 2014. American Burying Beetle. Tulsa, Oklahoma. 29 pp.

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Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
121.	*Lepidostoma morsei*	Morse's little plain brown sedge	Insects	Aquatic / Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2G3	SNR	Nature Serve (2015): Found in dead plant detritus in freshwater, flowing streams and springs.	Nature Serve (2015): Found in Texas, Mississippi, Florida, and New Jersey.	Nature Serve (2015): Approximately 1 to 1,000 individuals.
122.	*Somatochlora margarita*	Texas emerald	Insects	Aquatic / Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	S2	Nature Serve (2015): Adults are river-breeding. TPWD (2016)[61]: Found in streams and bogs; pitcher-plant bogs	Nature Serve (2015): East Texas to central Louisiana. TPWD (2016): Known from nine Texas counties and may be the most common dragonfly in areas where it occurs (although it is rarely seen).	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
123.	*Lirceolus smithii*	Texas troglobitic water slater	Insects	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1G2	S1	Nature Serve (2015): Occurs in subaquatic; underground in aquifer.	Nature Serve (2015): Found in central Texas.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals.
124.	*Rhadine persephone*	Tooth Cave ground beetle	Insects	Terrestrial Karst	No	E	No	-	G1G2	S1	Nature Serve (2015): Prefers deep uncompacted silt in small isolated karst caves of the Edwards Limestone Formation.	Nature Serve (2015): Currently along an 8.7-mile distance in Travis and Williamson Counties, Texas, and known from approximately 27 locations.	Nature Serve (2015): Approximately 1 to 1,000 individuals.
125.	*Ursus americanus*	Black bear	Mammals	Terrestrial	No[62]	-	No	T	G5	S3	Nature Serve (2015): Found in forest wetlands, forests and nearby openings.	Nature Serve (2015): North of central Mexico throughout most of North America, except desert regions.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
126.	*Mustela nigripes*	Black-footed ferret	Mammals	Terrestrial	No	E	Designated- Not in TX	-	G1	SX	Nature Serve (2015): Found in grasslands, steppe, and shrub steppe open grasslands, like those used by prairie dogs, use burrows made by prairie dogs (*Cynomys sp.*).	Nature Serve (2015): Formerly included much of the Great Plains, semi-arid grasslands, and mountain basins of North America. Virtually extirpated across former range.	Nature Serve (2015): Approximately 250 to 1,000 individuals.
127.	*Oryzomys couesi*	Coues' rice rat	Mammals	Aquatic / Terrestrial	No	-	No	T	G5	S2	Nature Serve (2015): Found in tree-shaded grassy areas around resaca edge, cattail-bulrush marsh with shallower zone of aquatic grasses near shore.	Nature Serve (2015): Southern Texas (Cameron and Hidalgo Counties) south through Mexico, Central America, and Colombia and Panama, also Isla Cozumel and Jamaica.	Nature Serve (2015): U.S. population estimated at no more than 15,000 in 1979.
128.	*Herpailurus yagouaroundi cacomitli*	Gulf Coast jaguarundi	Mammals	Terrestrial	No	E, Petitioned for Critical Habitat: Findings Not Yet Made	Petitioned	E	G4T3	S1	Nature Serve (2015): Found in thick brushlands near water.	Nature Serve (2015): Southern tip of Texas and Mexico.	USFWS (2013)[63]: No confirmed sightings in Texas since 1986; range-wide estimate unknown.
129.	*Canis lupus*	Gray wolf	Mammals	Terrestrial	No	E	Designated - Not in TX	E	G4G5	SX	Nature Serve (2015): No particular habitat preference. TPWD (2017): Formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands.	Nature Serve (2015): Presumed extirpated in Texas; apparently secure throughout the majority of Canada, Alaska, Montana and Wisconsin; ranked vulnerable in Idaho, Minnesota, and Michigan; critically imperiled or presumed extirpated throughout central and southern U.S.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
130.	*Panthera onca*	Jaguar	Mammals	Terrestrial	No	E	Designated - Not in TX	E	G3	SH	Nature Serve (2015): Found in subtropical and tropical forests, thorn scrub, lowland scrub and woodland, swampy savanna or mangrove, lagoons, floating islands, or marshlands.	Nature Serve (2015): Occasionally move from Mexico into New Mexico and Arizona; occurs in Mexico, Central American (very rare except Belize), down through South America to northern Argentina TPWD (2017): no reliable Texas sightings since 1952.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals.
131.	*Ursus americanus luteolus*	Louisiana black bear	Mammals	Terrestrial	No	Delisted	No	T	G5T2	-	Nature Serve (2015): Requires diverse food resources, including hard-mast-producing species in diverse, productive bottomland forests.	Nature Serve (2015): Presently in the Tensas and Atchafalaya basins in Louisiana, historically in eastern Texas, Louisiana, and southern Mississippi.	Nature Serve (2015): Approximately 1 to 1,000 individuals.
132.	*Leopardus wiedii*	Margay	Mammals	Terrestrial	No	-	No	T	G4	SX	Nature Serve (2015): Found in arboreal terrestrial, prefers heavily forested areas, either evergreen or deciduous.	Nature Serve (2015): Formerly in the southern tip of Texas, currently south through Mexico to Central and South America.	Nature Serve (2015): Approximately 1 to 1,000 individuals.

[61] TPWD. 2016. Texas' Rarest Dragonflies Tied to Rare Natural Community, Pitcher-Plant Bogs. TPWD Non-game and Wildlife Diversity Program. Austin, Texas. https://texasnongameprogram.wordpress.com/2016/02/09/texas-rarest-dragonflies-closely-tied-to-rare-natural-community-pitcher-plant-bogs/. Accessed March 15, 2017.
[62] TPWD. 2017. Black Bear. Available at http://tpwd.texas.gov/huntwild/wild/species/blackbear/. Accessed January 30, 2017.
[63] USFWS. 2013. Gulf coast jaguarondi recovery plan. Albuquerque, New Mexico. 70 pp.

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Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
133.	*Leptonycteris nivalis*	Mexican long-nosed bat	Mammals	Terrestrial	Yes[64]	E	No	E	G3	S1	Nature Serve (2015): Roost in caves, mines, hollow trees, and abandoned buildings; vegetation types include desert scrub, pine forests, and open conifer-oak woodlands; generally arid areas where agave plants grow.	Nature Serve (2015): Southwestern Texas and New Mexico, and northern and central Mexico. TPWD (undated)[65]: Occurs in southwestern New Mexico, the Big Bend area of Texas, the Chinati Mountains of Presidio County, Texas and southward to central Mexico.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals.
134.	*Leopardus pardalis*	Ocelot	Mammals	Terrestrial	No	E, Petitioned for Critical Habitat: Findings Not Yet Made	Petitioned	E	G4	S1	Nature Serve (2015): In Texas: found in dense chaparral thickets. In other areas: found in tropical forests, mangrove forests, swampy savannas, brushland.	Nature Serve (2015): Texas, Louisiana, Arkansas, and Arizona; south through Mexico, Central America, and much of South America.	Nature Serve (2015): Unknown total population, but 80 to 120 in Texas.
135.	*Peromyscus truei comanche*	Palo Duro mouse	Mammals	Terrestrial	No	-	No	T	G5T2	S2	TPWD (2017): Found in woodlands in canyon country, rocky, juniper-mesquite covered slopes of steep-walled canyons of the Llano Estacado.	TPWD (2017)[66]: Randall, Armstrong, and Briscoe Counties.	Insufficient Information found.
136.	*Corynorhinus rafinesquii*	Rafinesque's big-eared bat	Mammals	Terrestrial	No[67]	-	No	T	G3G4	S3	TPWD (2017): Often found in abandoned man-made structures, culverts, or cavity trees of bottomland hardwoods.	Nature Serve (2015): Known primarily from the Gulf Coastal Plain, but from Florida to Virginia across to Illinois, and west to eastern Texas, Oklahoma, Arkansas, and Missouri.	Nature Serve (2015): Approximately 10,000 to 100,000 individuals.
137.	*Canis rufus*	Red wolf	Mammals	Terrestrial	No	E	No	E	G1Q	SX	Nature Serve (2015): Habitat generalists and includes the following if heavy vegetative cover exists: upland and lowland forests, shrublands, and coastal prairies and marshes.	Nature Serve (2015): Reintroduced and In the wild in North Carolina and in propagation populations on two islands in South Carolina and Florida; extirpated from Texas.	Nature Serve (2015): Approximately 100 in the wild in North Carolina and approximately 165 in captivity.
138.	*Lasiurus ega*	Southern yellow bat	Mammals	Terrestrial	Yes[68]	-	No	T	G5	S1	Nature Serve (2015): Found in a wide range from forest and open habitats, including dry and moist areas TPWD (2017): Often roosts in palm trees (*Arecaceae sp.*).	Nature Serve (2015): South America up through Mexico and southern Texas.	Nature Serve (2015): Approximately 100,000 to 1,000,000 individuals.
139.	*Euderma maculatum*	Spotted bat	Mammals	Terrestrial	Yes-Unknown if Texas population migrates[69]	-	No	T	G4	S2	Nature Serve (2015): Found in desert habitat to montane coniferous forests, including hayfields, pastures, river corridors, canyon bottoms, ponderosa pine (*Pinus ponderosa*) forests, and pinyon-juniper woodlands.	Nature Serve (2015): Central Mexico through western Texas, New Mexico, Arizona, California, Nevada, and up through Colorado, Montana and into British Columbia.	Nature Serve (2015): Approximately 2,500 to 100,000 individuals.
140.	*Dipodomys elator*	Texas kangaroo rat	Mammals	Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	T	G2	S2	Nature Serve (2015): Found in sparsely vegetated areas with sandy, loam clay; along fencerows, heavily grazed areas.	USFWS (2016)[70]: Eleven counties of north-central Texas; formerly occurred and may still be present in two counties of southwest Oklahoma.	Nature Serve (2015): Approximately 1,000 to 10,000 individuals.
141.	*Perimyotis subflavus*	Tri-colored bat	Mammals	Terrestrial	Yes	Petitioned for Listing: Under review	No	-	G2G3	S5	Nature Serve (2015): Found in riparian forests near streams; hibernate in caves and under bridges. TPWD (undated)[71]: Hibernates in caves during winter and forms small maternity colonies of 35 individuals or less in buildings, tree cavities, and rock crevices in summer.	Nature Serve (2015): Canada; eastern and central U.S. (including much of the eastern half of Texas); Mexico and Honduras.	Nature Serve (2015): Approximately 10,000 to 1,000,000 individuals.

[64] Schmidly, D.J., and R.D. Bradley. 2016. The Mammals of Texas, Seventh Edition. University of Texas Press, Austin. 720 pp
[65] TPWD. Undated. Mexican long-nosed based (Leptonycteris nivalis). http://tpwd.texas.gov/huntwild/wild/species/mexlongnose. Accessed March 15, 2017.
[66] TPWD. 2017. Palo Duro Mouse. Available at http://tpwd.texas.gov/huntwild/wild/species/pdmouse/. Accessed January 30, 2017.
[67] Lacki, M.J., and M.L. Bayless. 2013. A conservation strategy for Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) and southeastern myotis (*Myotis austroriparius*). Bat Conservation International. Austin, Texas.
[68] Kurta, A., and G.C. Lehr. 1995. Lasiurus ega. Mammalian Species 515:1-7
[69] Luce, R.J. and D. Keinath. 2007. Spotted bat (*Euderma maculatum*): A technical conservation assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project.
[70] USFWS. 2016. Texas kangaroo rat. Fact Sheet. Available at https://www.fws.gov/southwest/es/arlingtontexas/pdf/TKR_FactSheet_20160808.pdf. Accessed February 28, 2017.
[71] TPWD. Undated. Eastern Pipistrelle (*Pipistrellus subflavus*). http://tpwd.texas.gov/huntwild/wild/species/easpip. Accessed March 15, 2017.

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142.	*Trichechus manatus*	West Indian manatee	Mammals	Marine Aquatic	Yes	E, Petitioned for increased protections: Findings Not Yet Made; Petition to Revise Critical Habitat: 90 Day Substantial; Petition for Downlisting: 90 Day Substantial	Designated- not in TX; Petitioned	E	G2	-	Nature Serve (2015): Occurs in shallow coastal waters, estuaries, bays, rivers, and lakes.	Nature Serve (2015): Northern South America, West Indies/Caribbean region, Gulf of Mexico, Florida.	Nature Serve (2015): Population size unknown.
143.	*Nasua narica*	White-nosed coati	Mammals	Terrestrial	No[72]	-	No	T	G5	S2?	Nature Serve (2015): Found in near water, often in canyons or broken tropical forests of coastal plains, mesquite grassland, pine forest, or oak scrub.	Nature Serve (2015): Northern Colombia, South American up through Central America, Texas, New Mexico, and central Arizona. Schmidly and Bradley (2016)[73]: Southern Texas, infrequently reported, mostly near the Rio Grande.	Cuarón et al (2016)[74]: Numbers unknown but population estimates range from rare to common. Rare in the U.S.
144.	*Pseudotryonia adamantina*	Diamond tryonia	Mollusks	Freshwater Aquatic	No	E	Designated- Pecos County, Texas	-	G1	S1	Nature Serve (2015): Occurs on mud substrates on margins of seeps, marshes, and small springs with flowing water and associated with cattails and sedge wetlands, but not marshy pools.	Nature Serve (2015): Endemic to a 1.24-mile section of the Diamond Y spring system and associated outflows of the Pecos River Valley near Fort Stockton in Pecos County, Texas.	Nature Serve (2015): Approximately 250 to 10,000 individuals.
145.	*Fusconaia (syn. Quincuncina) mitchelli*	False spike	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	GH	SH	Howell (2014)[75]: Found in slow to medium flowing creeks and rivers with sand, gravel or cobble substrates; not found in deep waters or impoundments.	Howell (2014): Endemic to the Guadalupe-San Antonio, Colorado, and Brazos Rivers in Central Texas.	Howell (2014): Living specimens found in 2013, but abundance numbers are not given.
146.	*Radiocentrum ferrissi*	Fringed mountainsnail	Mollusks	Terrestrial[76]	No	Petitioned for Listing: 90 Day Not Substantial	No	-	G1	S1	Nature Serve (2015): Species is terrestrial, no other information provided.	Nature Serve (2015): Texas and New Mexico, known from Texas only from fossil record (Franklin Mountains, El Paso County).	Insufficient Information found.
147.	*Quadrula aurea*	Golden orb	Mollusks	Freshwater Aquatic	No	Candidate	No	T	G1	S2	Nature Serve (2015): Found in flowing freshwater streams with sand/gravel substrate. Howell (2014): Occurs in rivers and modified creeks, but is not impoundments. except in Lake Corpus Christi (Nueces River Drainage) where it inhabits wind-swept points where conditions may simulate flowing water environments. It usually occurs in firm mud, sand, and gravel at depths to at least 3 m.	Nature Serve (2015): Upper and Lower Guadalupe, Nueces, and San Marcos Rivers in Texas. Howell (2014): Endemic only to the Guadalupe-San Antonio basins of Central Texas. Reports from other systems represent misidentifications of other quadrulids.	Nature Serve (2015): Approximately 2,500 to 100,000 individuals. Howell (2014): New populations have been discovered in the Guadalupe-San Antonio drainage in recent years.
148.	*Tryonia circumstriata*	Gonzales tryonia	Mollusks	Freshwater Aquatic	No	E	Designated- Pecos County, Texas	-	G1	S1	Nature Serve (2015): Occurs on mud substrates on margins of seeps, marshes, and small springs with fresh water and associated with cattails and sedges.	Nature Serve (2015): Occurs in Pecos County, Texas in the Diamond Y springs system and associated outflows.	Nature Serve (2015): Approximately 50 to 2,500 individuals.
149.	*Pleurobema riddellii*	Louisiana pigtoe	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1G2	S1	Howell (2014): Found in creeks and rivers in bottoms of clay, mud, sand, and gravel, sometimes mixed with silt or detritus, often in shallow to moderate depths with slow to swift flows. Does not prefer lakes or reservoirs.	Howell (2014): San Jacinto River to the Sulphur River in Texas. Long believed extirpated from the upper Trinity River (type locality), but recent studies have found survivors persisting there.	Howell (2014): Very rare in Texas in recent decades; however, recent surveys have found it surviving at more sites than recognized earlier.

[72] Wilson, D. E. and D.M. Reeder eds. 2005. Mammal species of the world: a taxonomic and geographic reference (Vol. 1). JHU Press. Available at https://books.google.com/books?hl=en&lr=&id=JgAMbNSt8ikC&oi=fnd&pg=PR19&ots=Qdg01PnY5a&sig=Nrrwu8XPsbxY300P8uSVr2Ajtic#v=onepage&q&f=false. Accessed January 30, 2017.
[73] Schmidly, D.J., and R.D. Bradley. 2016. The Mammals of Texas, Seventh Edition. University of Texas Press, Austin. 720 pp. Print.
[74] Cuarón, A.D., K. Helgen, F. Reid, J. Pino, and J.F. González-Maya. 2016. *Nasua narica*. The IUCN Red List of Threatened Species 2016: e.T41683A45216060. Available at http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T41683A45216060.en. Accessed January 30, 2017.
[75] Howell, R.G. 2014. Field guide to Texas freshwater mussels. Second Edition. BioStudies. Kerrville, Texas. Print.
[76] Metcalf, A., and R.A. Smartt (eds). 1997. Land Snails of New Mexico: Bulletin 10. New Mexico Museum of Natural History and Science. 47 pp.

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150.	*Truncilla cognata*	Mexican fawnsfoot	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1Q	S1	Howell (2014): Found in flowing waters of the Rio Grande in substrates of sand, mud, and gravel; not found in reservoirs.	Howell (2014): Endemic to the Rio Grande drainage in Texas and Mexico.	Nature Serve (2015): Approximately 1 to 250 individuals.
151.	*Phreatodrobia imitata*	Mimic cavesnail	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Found in freshwater subterranean habitat.	Nature Serve (2015): 2 wells on the Edwards Aquifer.	Insufficient Information found.
152.	*Arkansia wheeleri*	Ouachita rock pocketbook	Mollusks	Freshwater Aquatic	No	E	No	-	G1	SH	Howell (2014): Found in moderate-size, slow-flowing rivers and occasionally in side channels or backwaters on gravel and cobble, or occasionally in sand, frequently in deeper pools.	Nature Serve (2015): Currently known from Red River and Ouachita River systems. Single shells were recovered from Pine and Sanders Creek in Texas. Howell (2014): Two shells were recovered from the Red River in Lamar county.	Nature Serve (2015): Approximately 1,000 to 2,500 individuals.
153.	*Assiminea pecos*	Pecos assiminea snail	Mollusks	Aquatic / Terrestrial[77]	No	E	Designated-Pecos and Reeves Counties, Texas	E	G1	S1	Nature Serve (2015): Semi-aquatic; found in herbaceous wetlands and along spring edges with vegetation primarily of American three-square (*Scirpus americanus*), common reed (*Phragmites australis*) and spike rush (*Eleocharis spp.*).	Nature Serve (2015): In the Diamond Y spring system in Texas; in a spring in the Roswell area of the Pecos River Valley in New Mexico.	Nature Serve (2015): Approximately 1000 to 10,000 individuals.
154.	*Pyrgulopsis texana*	Phantom Cave springsnail	Mollusks	Freshwater Aquatic	No	E	Designated-Reeves and Jeff Davis Counties, Texas	-	G1	S1	Nature Serve (2015): Found in artesian springs, specifically where streams issues from caves and about 100 feet downstream.	Nature Serve (2015): Found in three springs in the vicinity of Balmorhea, Reeves County, Texas and in a small area of Phantom Lake Spring, Phantom Cave, Texas.	Nature Serve (2015): Estimated at over 1,000,000 individuals.
155.	*Tryonia cheatumi*	Phantom tryonia	Mollusks	Freshwater Aquatic	No	E	Designated-Reeves and Jeff Davis Counties, Texas	-	G1	S1	Nature Serve (2015): Currently only found in modified waters on the margins of spring flows, with preference to firm substrate and in soft mud downstream from the source before modification.	Nature Serve (2015): Found in the drainage of Toyah Creek and the Pecos River basin in Jeff Davis and Reeves Counties, Texas in three springs systems: San Solomon Spring, Phantom Lake, and East Sandia Spring.	Nature Serve (2015): Approximately 2,500 to 1,000,000 individuals.
156.	*Potamilus metnecktayi*	Salina mucket	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: Findings Not Yet Made	No	T	G1	S1	Nature Serve (2015): Found in freshwater, flowing streams and rivers with sand and gravel substrate. Howell (2014): Found in the main stem of the Rio Grande and historically in some Mexican tributaries in flowing waters with mud and gravel habitats or occasionally in softer substrates; typically recorded in waters less than 1.5 m deep. Not known from reservoirs.	Nature Serve (2015): Rio Grande in Texas, south down to Mexico. Howell (2014): Endemic to Rio Grande drainage only. Currently only known to persist between Big Bend and the mouth of the Pecos River.	Nature Serve (2015): Approximately 1,000 to ,2500 individuals.
157.	*Lampsilis satura*	Sandbank pocketbook	Mollusks	Freshwater Aquatic	No	-	No	T	G2	S1	Howell (2014): Not confirmed in reservoirs, but found in larger creeks and rivers with slow to moderate flows and substrates of stable sand, firm mud, and gravel.	Nature Serve (2015): Known from western Gulf drainages of Louisiana, Arkansas, Mississippi, and Texas as well as southern portions of the Mississippi Interior basin, and possibly reported in Oklahoma. Howell (2014): Found in San Jacinto River to Big Cypress Bayou, and possibly in the Red and Sulphur rivers, though not confirmed from either Jacinto or Trinity in recent years.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.

[77] Johnson, P.D., A.E. Bogan, K.M. Brown, N.M. Burkhead, J.R. Cordeiro, J.T. Garner, P.D. Hartfield, D.A.W. Lepitzki, G.L. Mackie, E. Pip, T.A. Tarpley, J.S. Tiemann, N.V. Whelan, and E.E. Strong. 2013. Conservation Status of Freshwater Gastropods of Canada and the United States. *Fisheries* 38(6): 247-282. Aquatic/Terrestrial

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158.	*Quadrula houstonensis*	Smooth pimpleback	Mollusks	Freshwater Aquatic	No	Candidate	No	T	G2	S1S2	Howell (2014): Found in moderate-size creeks, rivers, and some reservoirs in substrates of mud, sand, and gravel.	Howell (2014): Endemic to Colorado and Brazos drainage basins. Reports from other waters are based on misidentification.	Nature Serve (2015): Approximately 2,500 to 10,000 individuals. Howell (2014): Although several newly recognized populations have been discovered in recent years. This species had declined in abundance.
159.	*Obovaria jacksoniana*	Southern hickorynut	Mollusks	Freshwater Aquatic	No	-	No	T	G2	S1	Nature Serve (2015): Observed in small to large rivers with medium sized gravel and low to moderate current.	Nature Serve (2015): Historically found from Alabama to eastern Texas, and in the Mississippi embayment as far north as southeastern Missouri. Reported in the Mississippi River, Yazoo and Big Black River drainages in Mississippi. Howell (2014): Texas populations found in the Neches-Angelina, Sabine, and Big Cypress systems.	Howell (2014): Very rare, found at only two locations in several decades.
160.	*Lampsilis bracteata*	Texas fatmucket	Mollusks	Freshwater Aquatic	No	Candidate	No	T	G1	S1	Howell (2014): Found in flowing creeks and smaller rivers with firm mud, stable sand, and gravel bottoms, in shallower waters. Some populations inhabit cracks in rock layers or among bald cypress roots. Established populations are not known from impoundments but specimens deposited in the upper reaches of reservoirs may endure for limited periods of time.	Howell (2014): Endemic to the upper Guadalupe-San Antonio and Colorado drainages of the Texas Hill Country and Edwards Plateau. It does not occur in the lower river reaches on the coastal plain.	Nature Serve (2015): Approximately 1 to 250 individuals. Howell (2014): Since the 1970s, this species has been reduced to a limited number of small populations at scattered, isolated locations.
161.	*Truncilla macrodon*	Texas fawnsfoot	Mollusks	Freshwater Aquatic	No	Candidate	No	T	G2Q	S1	Nature Serve (2015): Found in larger streams and rivers with moderate flow with a sand/ gravel, or sand/mud substrate.	USFWS (2016)[78]: Lower Colorado, San Saba, and Brazos Rivers in Texas.	Howell (2014): Quite rare historically and its conservation status is far from secure.
162.	*Potamilus amphichaenus*	Texas heelsplitter	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: Findings Not Yet Made	No	T	G1G2	S1	Howell (2014): Found in moderately flowing rivers and larger creeks with mud, sand, or fine gravel environments; adapts well to some reservoirs.	Howell (2014): Endemic to the Neches-Angelina, Sabine, and possibly Trinity rivers in Texas.	Nature Serve (2015): Approximately 2,500 to 100,000 individuals.
163.	*Popenaias popeii*	Texas hornshell	Mollusks	Freshwater Aquatic	No	E	No	T	G1	S1	Nature Serve (2015): Found at the start and end of narrow, freshwater streams with small-grained substrate. Howell (2014): Not known from reservoirs, often in moderate-size creeks and rivers with slow to moderate flows, and clay or mixed substrate types, avoiding shifting sand or deep silt. Often near banks, boulders or in crevices as well as pools, runs, and terraces.	Nature Serve (2015): Lower Pecos River in New Mexico and Lower Rio Grande River in Brownsville, Texas; south to Potosi, Mexico. Occurs in Brewster, Terrell, Val Verde, Webb, and Zapata counties, Texas.	Nature Serve (2015): Approximately 1,000 to 2,500 individuals.
164.	*Fusconaia askewi*	Texas pigtoe	Mollusks	Freshwater Aquatic	No	-	No	T	G2G3	S2S3	Howell (2014): Not typical of reservoirs, found in mid-size creeks and rivers with slow to moderate flows and mud, gravel, sand, or mixed substrates.	Nature Serve (2015): Texas records from Neches and Sabine rivers, also from San Jacinto Rivers, additionally found in western gulf drainages of Louisiana. Howell (2014): Possibly in Sulphur and Red Rivers.	Howell (2014): More numerous than previously thought.
165.	*Quadrula petrina*	Texas pimpleback	Mollusks	Freshwater Aquatic	No	Candidate	No	T	G2	S1	Howell (2014): Found in moderate to large creeks and rivers in flowing waters and mud, sand, or gravel bottoms, or sometimes in gravel-filled cracks in bedrock, often at depths less than 2 m. Not known from impoundments.	Howell (2014): Endemic to the Colorado and Guadalupe-San Antonio systems of Central Texas.	Howell (2014): Dramatically reduced in abundance and distribution in recent years, but found surviving at a number of new locations since 2006.

[78] USFWS. 2016. Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notification of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions. *Federal Register* 81(322): 87246-87272.

Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
166.	*Fusconaia lananensis*	Triangle pigtoe	Mollusks	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	T	G1Q	S1	Howell (2014): Found in moderate-size creeks and rivers in mud, sand, and fine gravel with slow to moderate flows in the eastern Texas Pineywoods. Not known from reservoirs.	Howell (2014): Endemic to the Angelina River and Attoyac Bayou of the upper Neches-Angelina system and Village Creek in the lower drainage basin.	Howell (2014): Limited distribution, quite rare, often confused with Texas Pigtoe
167.	*Thymophylla tephroleuca*	Ashy dogweed	Plants	Terrestrial	No	E	No	E	G2	S2	Nature Serve (2015): Found in fine sand or sandy-loam soils in forested woodlands, grasslands, or shrubland chaparral.	Nature Serve (2015): South Texas in Starr and Zapata Counties.	USFWS (2011)[79]: Reported population size exceeds several hundreds of thousands of individuals, with a potential population size exceeding one million individuals in just one of the metapopulations.
168.	*Salvia pentstemonoides*	Big red sage	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Found in clay or silt soils along creekbeds or steep slopes in drainages of oak or maple-oak woodlands.	Nature Serve (2015): Endemic to the Edwards Plateau in Texas.	Nature Serve (2015): Estimated at less than a few hundred individuals.
169.	*Echinocereus reichenbachii var albertii*	Black lace cactus	Plants	Terrestrial	No	E	No	E	G5T1Q	S1	Nature Serve (2015): Found in sandy soils in grasslands, thorn shrublands, and mesquite-acacia woodlands. USFWS (2009) [80]: Found near watercourses in moderately saline soils.	Nature Serve (2015): Endemic to South Texas coastal bend area. Only in Texas in Jim Wells, Kleberg, Nueces, and Refugio Counties. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Also found in McMullen and Atascoca Counties, Texas.	Nature Serve (2015): Population size difficult to measure because sampling method not systematic. USFWS (2009): Reported population sizes have exceeded 1,000 during most surveys.
170.	*Streptanthus bracteatus*	Bracted twistflower	Plants	Terrestrial	No	Candidate	No	-	G1G2	S1S2	Nature Serve (2015): Found on slopes in oak-juniper woodlands with well-drained soils.	Nature Serve (2015): Only found in a small area of the Edwards Plateau in Texas.	Holder (2014)[81]: 11 populations or population fragments. USFWS (2016)[82]: Potential maximum population is approximately 7,500 individuals.
171.	*Genistidium dumosum*	Brush-pea	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Found on low elevation, limestone hills with Chihuahuan Desert scrub vegetation.	Nature Serve (2015): Between Terlingua and Lajitas, Brewster County, Texas (3 populations); 1 population in Coahuila, Mexico.	Nature Serve (2015): Texas populations has less than 50 plants, very rare across range.
172.	*Coryphantha ramillosa*	Bunched Cory cactus	Plants	Terrestrial	No	T	No	T	G2G3T2T3	S2S3	Nature Serve (2015): Found on rocky slopes, ledges, and gravelly flats on Boquillas or Santa Elena limestones in succulent scrub of the Chihuahuan Desert.	Nature Serve (2015): Occupies substantial portion of northern part of Coahuila, Mexico extending into near the Rio Grande in Texas.	Nature Serve (2015): Estimated 5,000 to 10,000 plants in Brewster and Terrell Counties, Texas.
173.	*Paronychia congesta*	Bushy whitlowwort	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Found in shrubland/ chaparral on rocky slopes and ridges of the Bordas Escarpment.	Nature Serve (2015): Occurs in south Texas. Poole et al. (2007)[83]: Jim Hogg County, Texas.	Nature Serve (2015): Two populations: 2,000 individuals at one site and 100 at the other.
174.	*Pediomelum pentaphyllum*	Chihuahua scurfpea	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1G2	SH	Nature Serve (2015): Found in bare areas in desert, grassland /herbaceous, shrubland/chaparral with; sandy, loamy soil.	Nature Serve (2015): New Mexico, Arizona, west Texas, and Chihuahua, Mexico. Poole et al. (2007): Presidio County, Texas.	Nature Serve (2015): 120 plants in New Mexico; 700 plants in Arizona. Poole et al. (2007): Known in Texas from one plant collected around 1853.
175.	*Hexalectris revoluta*	Chisos coralroot	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G2	SNR	Nature Serve (2015): Found under heavy leaf litter in oak-pine-juniper forests on hillsides.	Poole et al (2007): Mountains of Brewster and Culberson Counties, Texas; also mountains in U.S. in Arizona, New Mexico, and Mexico in Nuevo Leon and San Luis Potosi.	Nature Serve (2015): Approximately 250 individuals.

[79] U.S. Fish and Wildlife Service (USFWS). 2011. Ashy Dogweed (*Thymophylla* [=*Dyssodia*] *tephroleuca*)—5-year Status Review: Summary and Evaluation. USFWS Corpus Christi Field Office. Corpus Christi, Texas. 37 pp.
[80] U.S. Fish and Wildlife Service (USFWS). 2009. Black Lace Cactus (*Echinocereus reichenbachii* var. *albertii*)—5-year Review: Summary and Evaluation. USFWS Corpus Christi Ecological Services Field Office. Corpus Christi, Texas. 32 pp.
[81] Holder, M.R. 2014. A petition to list the bracted twistflower, *Streptanthus bracteatus* a. gray, as endangered or threatened and request for emergency listing under the endangered species act. Notice of petition. 48 pp.
[82] U.S. Fish and Wildlife Service (USFWS). 2016. Species Assessment and Listing Priority Assessment Form: Bracted Twistflower (*Streptanthus bracteatus*). USFWS Southwest Region. Albuquerque, New Mexico. 29 pp.
[83] Poole, J.M, W.R. Carr, D.M. Price, and J.R. Singhurst. 2007. Rare plants of Texas. Texas A&M University Press. Print.

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176.	*Echinocereus chisoensis var chisoensis*	Chisos Mountains hedgehog cactus	Plants	Terrestrial	No	T	No	T	G2T1	S1	Nature Serve (2015): Found at moderate elevations on unconsolidated gravelly fan and terrace deposits of grasslands or open xeromorphic shrublands of the Chihuahuan Desert.	Nature Serve (2015): Only in Big Bend National Park, Texas.	Terry et al (2013)[84]: Estimated at 1,000 individuals, decreasing though.
177.	*Physostegia correllii*	Correll's false dragon-head	Plants	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	S2	Nature Serve (2015): Occupies wetlands, roadside and irrigation ditches.	Nature Serve (2015): Texas, southern Louisiana, and northern Mexico.	Nature Serve (2015): Less than 15 occurrences.
178.	*Cyperus cephalanthus*	Cryptic flatsedge	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Not Substantial	No	-	G3?Q	S1	Nature Serve (2015): Occurs in coastal prairies.	Nature Serve (2015): West Gulf Coastal Plain in southwestern Louisiana and southeastern Texas; and in South America.	Nature Serve (2015): Approximately 2000 plants in Louisiana; 50 plants in Texas; South. America population unknown.
179.	*Echinocereus davisii*	Davis' green pitaya	Plants	Terrestrial	No	E	No	E	G5T1	S1	Nature Serve (2015): Grows on spikemoss (*Selaginella sp.*)-covered patches of novaculite (quartz-like) outcrops in full sun, among sparse Chihuahuan desert scrub.	Nature Serve (2015): Only found in Texas in Brewster County.	USFWS (2012)[85]: Population of more than 500,000 throughout the Caballos formation.
180.	*Donrichardsia macroneuron*	Don Richard's spring moss	Plants	A/T[86]	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Grows on boulders in limestone springs.	Nature Serve (2015): Springs on South Llano River in Edwards County, Texas.	Nature Serve (2015): Known from one occurrence.
181.	*Geocarpon minimum*	Earth fruit (Tinytim)	Plants	Terrestrial	No	T	No	T	G2	S1	Nature Serve (2015): Found in saline prairies and sandstone glades. TPWD (2017): Found in vegetated edges of slick spots in saline barren complex with claypan soils, just above floodplain of Neches River, mostly found on the cryptogamic lip along slick spot perimeter.	Nature Serve (2015): Anderson County, Texas; also Louisiana; Arkansas; and Missouri. Historically more widespread in Missouri.	USFWS (2016)[87]: 37 populations, mostly on public or protected land, with 4 in Texas. Species is close to delisting.
182.	*Festuca ligulata*	Guadalupe fescue	Plants	Terrestrial	No	E	Designated-Brewster County, Texas	-	G1	S1	Nature Serve (2015): Occupies pine-oak-juniper woodlands on slopes greater than 1,830 feet above mean sea level.	Nature Serve (2015): Trans-Pecos, Texas and Coahuila, Mexico.	Nature Serve (2015): 150 individuals in Big Bend National Park in Texas; unknown number on private land in Coahuila, Mexico.
183.	*Schoenoplectus hallii*	Hall's bulrush	Plants	A/T	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2G3	S1	Nature Serve (2015): Terrestrial (cropland and grassland) to emergent (herbaceous wetlands).	Nature Serve (2015): Texas, Illinois, Indiana, Kansas, Kentucky, Missouri, Oklahoma, and Nebraska. In Wise County, Texas.	Nature Serve (2015): Estimated at thousands of individuals.
184.	*Fissidens hallii*	Hall's pocket moss	Plants	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	SNR	Nature Serve (2015): Found in forested wetlands; especially cypress (*Taxodium sp.*) swamps.	Nature Serve (2015): Texas, Florida, Louisiana, and South Carolina.	Center for Biological Diversity (2010)[88]: Significantly rare, estimated fewer than 100 populations, but unknown.
185.	*Quercus hinckleyi*	Hinckley's oak	Plants	Terrestrial	No	T	No	T	G2	S1	Nature Serve (2015): Found at mid-elevations of arid, rocky, limestone-derived soils or limestone outcrops of Chihuahuan Desert shrublands.	Nature Serve (2015): At least one record in Mexico, otherwise known from the Chihuahuan desert of Brewster and Presidio Counties, Texas.	Nature Serve (2015): Majority of populations contain less than 100 trees.
186.	*Frankenia johnstonii*	Johnston's frankenia	Plants	Terrestrial	No	Delisted	No	E	G3	S3	Nature Serve (2015): Found in open thorn shrublands on rocky areas where soils are saline, sometimes with high concentrations of gypsum.	Nature Serve (2015): Zapata and Starr Counties., southwest Texas and near Monterrey in Nuevo Leon, Mexico.	Nature Serve (2015): Approximately 1,000 plants in Texas; several hundred in Mexico.
187.	*Abronia macrocarpa*	Large-fruited sand-verbena	Plants	Terrestrial	No	E	No	E	G2	S2	Nature Serve (2015): Found in deep, well-drained sands, within a post oak (*Quercus stellata)*-grassland.	Nature Serve (2015): Only in Freestone, Leon, and Robertson Counties in Texas.	Nature Serve (2015): Several thousand estimated.

[84] Terry, M., Heil, K., and Corral-Díaz, R. 2013. *Echinocereus chisoensis*. The IUCN Red List of Threatened Species 2013: e.T152215A610853. Available at http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T152215A610853.en. Downloaded on 01 February 2017

[85] USFWS. 2012. 5 year review of Davis's Green Pitaya *Echinocereus viridiflorus* var. *davisii* Houghton and Nellie's Cory Cactus *Escobaria minima* (Baird) D.R. Hunt (Syn. *Coryphantha minima* Baird). Austin, Texas. 37 pp.

[86] Bryophyte Specialist Group. 2000. *Donrichardsia macroneuron*. The IUCN Red List of Threatened Species 2000: e.T39166A10166698. Available at http://dx.doi.org/10.2305/IUCN.UK.2000.RLTS.T39166A10166698.en. Downloaded on 02 February 2017.

[87] USFWS. 2016. 5 Year Review of Geocarpon minimum. Conway, Arkansas. 42 pp.

[88] Center for Biological Diversity. 2010. Petition to list 404 aquatic, riparian and wetland species from the southeastern United States as threatened or endangered under the Endangered Species Act. 1145 pp.

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188.	*Agalinis calycina*	Leoncita false-foxglove	Plants	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Occurs in herbaceous freshwater wetlands.	Nature Serve (2015): Western Texas, New Mexico, and Coahuila, Mexico.	Sivinksi (2011)[89]: Two extant populations in the U.S., in protected areas.
189.	*Potamogeton clystocarpus*	Little Aguja pondweed	Plants	Freshwater Aquatic	No	E	No	E	G1	S1	TPWD (2017): Found in intermittent, spring-fed stream with rocky substrate in a mountain canyon.	TPWD (2017): Only found on private property in one place in Jeff Davis County, Texas.	USFWS (1994)[90]: No populations observed after 1992.
190.	*Sclerocactus mariposensis*	Lloyd's mariposa cactus	Plants	Terrestrial	No	T	No	T	G2	S2	Nature Serve (2015): Found in at low to mid-elevations in sotol-lechuguilla primarily on the Boquillas formation in arid, limestone-derived, gravelly soils on gentle slopes. USFWS (2018)[91]: Occurs in sparsely vegetated, highly fractured limestones of Chisos, Santa Elena, Sue Peaks, Del Carmen, Telephone Canyon, Boquillas, Glen Rose, Del Rio Clay, Aguja, and Pen formations. Elevation range 2,460 to 3,770 feet; highest probability on Mariscal-Rock Outcrop Complex.	Nature Serve (2015): Occurs in Central Coahuila, Mexico and the Chihuahuan Desert in Texas. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Occurs in Central Coahuila, Mexico and in Presidio, Brewster, and Terrell Counties in the Chihuahuan Desert in Texas	Heil & Terry (2013)[92]: Abundant throughout range.
191.	*Agalinis navasotensis*	Navasota false foxglove	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Occupies grassland/ herbaceous savannahs. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Closely associated with little bluestem (*Schizachyrium scoparium*) and possibly other native grasses.	Nature Serve (2015): Sandstone outcrop in Grimes County in east Texas. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Known from two other populations occurring on sandy soils in Grimes and Tyler Counties in Texas.	Nature Serve (2015): Only one occurrence of less than 500 individuals.
192.	*Spiranthes parksii*	Navasota ladies' tresses	Plants	Terrestrial	No	E, Petitioned for Delisting: 90 Day Not Substantial	No	E	G3	S3	Nature Serve (2015): Found along the Navasota River and intermittent tributaries of rivers, in openings in post oak (*Quercus stellata*) woodlands in sandy loam soil. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Found along the outer margins of first-order (HUC-12) watercourses, in openings in post oak (*Quercus stellata*) woodlands in sandy loam soil.	Nature Serve (2015): Eastern Texas along the Navasota River, in Bastrop, Brazos, Burleson, Fayette, Freestone, Grimes, Jasper, Leon, Limestone, Madison, Milam, Robertson, and Washington Counties.	Nature Serve (2015): Approximately 2,000 individuals.
193.	*Hibiscus dasycalyx*	Neches River rose-mallow	Plants	Terrestrial	No	T	Designated-Nacogdoches, Houston, Trinity, Cherokee, and Harrison Counties, Texas	-	G1	S1	Nature Serve (2015): Found along margins of riparian woodlands in seasonally wet soils and in openings of shrub swamps, often near standing water.	Nature Serve (2015): Only in east Texas in Cherokee, Harrison, Houston, and Trinity Counties.	Nature Serve (2015): Most recent estimates account for 2,200 plants, with an additional 210 plants at introduced sites.
194.	*Escobaria (syn. Coryphantha) minima*	Nellie Cory cactus	Plants	Terrestrial	No	E	No	E	G1	S1	Nature Serve (2015): Found in rock crevices on novaculite (quartz-like) outcrops in Chihuahuan desert scrub.	Nature Serve (2015): Only found in Texas in Brewster County.	USFWS (2012): Population of more than 1,000,000 throughout the Caballos formation.
195.	*Helianthus paradoxus*	Pecos/Puzzle sunflower	Plants	Terrestrial	No	T	Designated-Pecos County, Texas	T	G2	S1	Nature Serve (2015): Found in permanently saturated saline soils.	Nature Serve (2015): In four areas of New Mexico and two areas in Pecos and Reeves Counties, Texas.	Nature Serve (2015): Possibly 3,000 individuals, locally abundant, though some small nonviable populations exist in New Mexico.
196.	*Asclepias prostrata*	Prostrate milkweed	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1G2	S1S2	Nature Serve (2015): Found in fine, sandy loam soils in grasslands and shrublands	Nature Serve (2015*)*: Starr and Zapata Counties in Texas and Tamaulipas, Mexico.	Insufficient Information found.
197.	*Symphyotrichum puniceum var. scabricaule*	Rough-stemmed aster	Plants	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G5T2	S2	Nature Serve (2015): Found in bog and pond habitats.	Nature Serve (2015): Central, eastern Texas; Louisiana; Mississippi.	Strong and Williams (2015)[93]: Known from 31 extant sites; population sizes are unreported

[89] Sivinski, R.C. 2011. *Agalinis calycina* (Leoncita false-foxglove): A conservation status assessment. 2011 ESA Section 6 Progress Report. Santa Fe, New Mexico. 17 pp.
[90] USFWS. 1994. Little Aguja Pondweed recovery plan. Albuquerque, New Mexico. 85 pp.
[91] USFWS. 2018. Lloyd's mariposa cactus (*Sclerocactus mariposensis* (Hester) N.P Taylor) five-year review: Summary and evaluation. Austin Ecological Services Field Office, Austin, Texas. 41 pp.
[92] Heil, K. & Terry, M. 2013. *Sclerocactus mariposensis*. The IUCN Red List of Threatened Species 2013: e.T152052A591676. Available at http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T152052A591676.en. Downloaded on 01 February 2017.
[93] Strong, A., and P. Williams. 2015. Data synthesis and species assessments to aid in determining future candidate or listed status for plants from the USFWS lawsuit settlements—Final performance report as required by the Endangered Species Program, Texas, Grant No. TX E-146-R (F12AP00864). Texas Parks and Wildlife Department. Austin, Texas. 198 pp.

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198.	*Helianthus occidentalis* ssp. *plantagineus*	Shinner's sunflower	Plants	Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G5T2T3	S2S3	Nature Serve (2015): Found in sand on top of clay on savannahs.	Nature Serve (2015): Arkansas, Texas, and Louisiana.	Center for Biological Diversity (2010): Between 10 and 15 populations in Texas and 5 in Arkansas.
199.	*Hoffmannseggia tenella*	Slender rushpea	Plants	Terrestrial	No	E	No	E	G1	S1	Nature Serve (2015): Occurs in sparsely vegetated openings within grasslands with clay soils; occasionally found on creek banks. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Occurs in coastal shortgrass prairies dominated by buffalo grass and other native grasses, on vertisol soils and sandy-clay soils.	Nature Serve (2015): Only in Nueces County, Texas. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Only found in Nueces and Kleberg Counties in Texas.	Nature Serve (2015): Over 10,000 individuals.
200.	*Eriocaulon koernickianum*	Small-headed pipewort	Plants	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	S1	Nature Serve (2015): Found in seepages and wet depressions; specifically in Texas in sandy, acidic seepages.	Nature Serve (2015): Arkansas, Oklahoma, Texas, and Georgia.	Nature Serve (2015): Hundreds or thousands of individual plants per location.
201.	*Ambrosia cheiranthifolia*	South Texas ambrosia	Plants	Terrestrial	No	E	No	E	G2	S2	Nature Serve (2015): Found in grasslands and mesquite-dominated shrublands. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Occurs in coastal shortgrass prairies dominated by buffalograss and other native grasses, on vertisol soils and sandy-clay soils.	Nature Serve (2015): Coastal south Texas, south to Tamaulipas, Mexico. Found in Cameron, Kleberg, and Nueces Counties, Texas.	Nature Serve (2015): Individuals difficult to count because of extensive spreading rhizomes. Infrequent or rare. Hempel (2009)[94]: several thousands of stems estimated across at least 6 extant sites
202.	*Astrophytum asterias*	Star cactus	Plants	Terrestrial	No	E	No	E	G1G2	S1S2	TPWD (2017): Grows in sparse openings between shrub thickets in mesquite grasslands or thorny shrublands. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Most often found in sparsely vegetated, gravelly, marginally saline and/or gypseous clay soils formed over sandstone of Jackson, Yeguas, and Laredo geological formations; some sites are in the Goliad formation caliche.	Nature Serve (2015): Starr County in south Texas, and Tamaulipas, Mexico. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: May also occur in Zapata County Texas. Reports from Hidalgo and Cameron Counties Texas are inaccurate.	Janssen et al. (2010)[95]: Approximately 5,124 individuals were recorded across 25 properties in Texas.
203.	*Cryptantha crassipes*	Terlingua Creek cat's-eye	Plants	Terrestrial	No	E	No	E	G1	S1	Nature Serve (2015): Found in barren/sparse vegetation on low xeric hills with high levels of clay and gypsum.	Nature Serve (2015): Endemic to Texas; only found in Brewster County.	USFWS (1994)[96]: Known from 10 sites with approximately 4,500 plants.
204.	*Ayenia limitaris*	Texas ayenia	Plants	Terrestrial	No	E	No	E	G2	S1	TPWD (2017): Found on terraces and floodplains in subtropical, riparian woodlands with dense vegetation and a canopy cover of approximately with 95%. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Found on partial shade (edges and openings) of shrublands and savannas on a wide range of alluvial soils.	Nature Serve (2015): Cameron County, Texas, and Coahuila and Tamaulipas, Mexico. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Found Cameron, Willacy, and Hidalgo Counties in Texas, and Coahuila and Tamaulipas, Mexico. May extend into Kenedy County in Texas.	USFWS (2016)[97]: total population estimated at more than 4,000 individuals, with more than 1,000 individuals in Texas.
205.	*Leavenworthia texana*	Texas golden gladecress	Plants	Terrestrial	No	E	Designated-Sabine and San Augustine Counties, Texas	-	G1	S1	Nature Serve (2015): Occurs on the Weches formation in herbaceous communities of wet glades with shallow calcareous soils.	Nature Serve (2015): On the Weches formation in San Augustine and Sabine Counties, Texas.	USFWS (2013)[98]: population at four monitored sites exceeded 1,000 individuals in 2005, 2007, and 2009.

[94] Hempel, A. 2009. Reproductive biology, genetics and ecology of South Texas ambrosia: implications for the management, recovery and reintroduction—Interim Report as required by the Endangered Species Program, Texas, Grant No. TX E-110-R. Texas Parks and Wildlife Department. Austin, Texas. 14 pp.
[95] Janssen, G.K., J.M. Poole, and P.S. Williamson. 2010. Final Report as required by the Endangered Species Program, Texas, Grant No. TX E-46-R: The research and recovery of star cactus (*Astrophytum asterias*). Texas Parks and Wildlife Department. Austin, Texas. 142 pp.
[96] U.S. Fish and Wildlife Service (USFWS). 1994. Terlingua Creek Cat's-eye recovery plan. Albuquerque, New Mexico. 76 pp.
[97] U.S. Fish and Wildlife Service (USFWS). 2016. Recovery plan for the Tamaulipan kidneypetal (Texas ayenia) (*Ayenia limitaris*). USFWS Southwest Region. Albuquerque, New Mexico. 106 pp.
[98] U.S. Fish and Wildlife Service (USFWS). 2013. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Texas Golden Gladecress and Threatened Status for Neches River Rose-Mallow; Final Rule. 78 Federal Register 56026.

Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
206.	*Callirhoe scabriuscula*	Texas poppy-mallow	Plants	Terrestrial	No	E	No	E	G2	S2	Nature Serve (2015): Occurs in grasslands, shin oak (*Quercus havardii*) shrublands, and open oak or mesquite woodlands in deep, loose sand.	Nature Serve (2015): Coke, Mitchell, and Runnels Counties, Texas.	Nature Serve (2015): 10 populations; individual number unknown.
207.	*Hymenoxys texana*	Texas prairie dawn	Plants	Terrestrial	No	E	No	E	G2	S2	Nature Serve (2015): Found in poorly drained, sparsely vegetated or barren areas and in grasslands at the bases of small mounds. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Found in poorly drained, moderately saline clays in sparse grasslands, often in bare spots at the bases of small mounds.	Nature Serve (2015): Only found in Harris County, Texas.	USFWS (2015)[99]: Known populations contain more than an estimated 50,000 individuals
208.	*Bartonia texana*	Texas screwstem	Plants	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	S2	Nature Serve (2015): Occupies creeks, bogs, forested wetlands, scrub-shrub wetlands.	Nature Serve (2015): East Texas and Louisiana.	Nature Serve (2015): Estimated at less than 1,000 individuals.
209.	*Styrax texanus (Syn. Styrax platanifolius ssp texanus)*	Texas snowbells	Plants	Terrestrial	No	E	No	E	G3T1	S1	TPWD (2017): Grows in the crevices along steep limestone cliffs along streams and in gravel of dry creek beds. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Grows in cliffs, rocky slopes and creek beds and up to 150 meters (500 feet) from first-, second-, and third-order streams.	TPWD (2017): Edwards, Real, and Val Verde Counties, Texas. Poole et al (2007): Also in Kinney County, Texas.	USFWS (2008)[100]: 22 known natural populations with an estimated number of individuals totaling less than 1,000
210.	*Phlox nivalis ssp texensis*	Texas trailing phlox	Plants	Terrestrial	No	E	No	E	G4T2	S2	Nature Serve (2015): Found in fire-maintained openings in deep, sandy soil in upland longleaf pine (*Pinus palustris*) savannahs and post oak-bluejack oak (*Quercus stellata-Q. incana)* woodlands.	Nature Serve (2015): Only known from Hardin, Polk, and Tyler Counties in Texas.	Nature Serve (2015): Less than 750 individuals.
211.	*Trillium texanum*	Texas trillium	Plants	Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G2	S2	Nature Serve (2015): Found in bogs, along springs, and in forest woodlands.	Nature Serve (2015): Texas and Louisiana.	Nature Serve (2015): 3 populations in Louisiana, 8 in Texas.
212.	*Zizania texana*	Texas wild rice	Plants	Freshwater Aquatic	No	E	Designated- Hays County, Texas	E	G1	S1	Nature Serve (2015): Found in clear, flowing, relatively constant temperature spring waters with a sand/silt/clay or gravel substrate.	Nature Serve (2015): Only found in the headwaters of the San Marcos River in Hays County, Texas.	Nature Serve (2015): Less than 500 individuals.
213.	*Amsonia tharpii*	Tharp's blue-star	Plants	Terrestrial	No	Petitioned for Listing: 90 Day Substantial	No	-	G1	S1	Nature Serve (2015): Found in open areas in grassland/herbaceous and shrubland/chaparral; soils are generally shallow and well drained.	Nature Serve (2015): Three populations in New Mexico and one site in Texas Poole et al. (2007): Known from Pecos County, Texas, and Eddy County, New Mexico.	Nature Serve (*2015*): Populations in New Mexico has less than 100 individuals and other two have a few thousand individuals combined.
214.	*Sclerocactus brevihamatus ssp. tobuschii*	Tobusch fishhook cactus	Plants	Terrestrial	No	E, Proposed for Downlisting	No	T	G4T3	S3	USFWS (2010)[101]: Occupies shallow, gravelly soil amongst areas of exposed limestone .	Nature Serve (2015): On the escarpment of the Edwards Plateau in the Central Texas Hill Country. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Found in Kerr, Bandera, Real, Edwards, Uvalde, Kinney, Val Verde, and Kimble Counties in Texas. Recently found in Sutton and Medina Counties in Texas.	USFWS (2010): Documented on 10 protected reserves, largest population has reached 1,100 individuals.

[99] U.S. Fish and Wildlife Service (USFWS). 2015. Texas prairie dawn-flower (*Hymenoxys texana*)—5-year Review: Summary and Evaluation. USFWS Texas Coastal Ecological Services Field Office. Houston, Texas. 34 pp.
[100] U.S. Fish and Wildlife Service (USFWS). 2008. Texas snowbells (*Styrax platanifolius* ssp. *texanus*—5-year Review: Summary and Evaluation. USFWS Austin Ecological Services Field Office. Austin, Texas. 17 pp.
[101] USFWS. 2010. Tobusch Fishhook Cactus 5 Year Review. Austin, Texas. 49 pp.

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215.	*Manihot walkerae*	Walker's manioc	Plants	Terrestrial	No	E	No	E	G2	S1	Nature Serve (2015): Occurs in grassland-thornscrub in sandy-loam soils underlain by caliche. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Closely associated with outcrops of indurated caliche of the Goliad Formation.	Nature Serve (2015): Known from Hidalgo County, Texas, and adjacent areas of Mexico. Christina Williams, USFWS, personal communication to Erik Huebner, LCRA TSC, on November 20, 2018: Known from Hidalgo, Starr, and Duval Counties in Texas, and Tamaulipas, Mexico. Likely to occur in Brooks, Jim Hogg, and Webb Counties in Texas is association with caliche outcrops.	Nature Serve (2015): Probably less than 1,000 individuals.
216.	*Physaria pallida*	White bladderpod	Plants	Terrestrial	No	E	No	E	G1	S1	Nature Serve (2015): Found in open areas associated with exposed calcareous outcrops which are perpetually wet.	Nature Serve (2015): Endemic to San Augustine County, Texas.	Nature Serve (2015): Approximately 3,500 plants.
217.	*Physaria thamnophila*	Zapata bladderpod	Plants	Terrestrial	No	E	Designated- Starr County, Texas	E	G1	S1	Nature Serve (2015): Plants may grow entangled in small shrubs or cacti; found in sandy loam or gravel substrates in open, evergreen thorn shrublands	Nature Serve (2015): Starr and Zapata Counties, Texas.	Nature Serve (2015): Probably fewer than 1,000 individuals.
218.	*Macrochelys temminckii*	Alligator snapping turtle	Reptiles	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	T	G3G4	S3	Nature Serve (2015): Found in deep water of freshwater streams and rivers with slow flow rates.	Nature Serve (2015): Southeastern U.S. to Gulf Coast. In Texas, from San Antonio River east.	Nature Serve (2015): Approximately 2,500 - 100,000 individuals.
219.	*Eretmochelys imbricata*	Atlantic hawksbill sea turtle	Reptiles	Marine Aquatic	Yes[102]	E	Designated - Not in TX	E	G3T3Q	S1	TPWD (2017): Found in warmer, clear, waters offshore waters of mainland and island shelves; nest on sandy beaches close to coral reefs and are more common in general near coral reefs.	Nature Serve (2015): Gulf of Mexico and occasionally on Texas coast; also found in warmer waters of the Atlantic, Pacific, Indian Oceans from Japan to Australia and the British Iles to southern Brazil.	Nature Serve (2015): Approximately 10,000 - 100,000 individuals.
220.	*Coniophanes imperialis*	Black-striped snake	Reptiles	Terrestrial	No	-	No	T	G4G5	S2	Nature Serve (2015): Found in edges of marshy or wet areas, forests, savannas, and agricultural landscapes.	Nature Serve (2015): Southern Texas through eastern Mexico, Belize, eastern and northern Guatemala, and in Honduras at low to moderate elevations. Locally on the Pacific slope in Oaxaca.	Nature Serve (2015): Approximately 100,000 - 1,000,000 individuals.
221.	*Nerodia harteri*	Brazos water snake	Reptiles	Freshwater Aquatic	No	-	No	T	G2	S1	Nature Serve (2015): Found along shorelines of impoundments, next to water's edge of fast-flowing rocky streams free of dense vegetation.	Nature Serve (2015): Only in the Brazos River drainage in north-central Texas.	Nature Serve (2015): Approximately 2,500 - 100,000 individuals.
222.	*Graptemys caglei*	Cagle's map turtle	Reptiles	Freshwater Aquatic	No	-	No	T	G3	S1	Nature Serve (2015): Optimal habitat includes riffles and pools, found in rivers with shallow to average depth and moderate flow with mostly silt or gravel substrates, as well as gravel bars connecting long pool areas.	Nature Serve (2015): Guadalupe River system of Texas including segments of the Guadalupe and San Marcos rivers.	Nature Serve (2015): Approximately 2,500 - 100,000 individuals.
223.	*Trimorphodon vilkinsonii*	Chihuahuan Desert lyre snake	Reptiles	Terrestrial	No	-	No	T	G4	S3	Nature Serve (2015): Found in mountains, hills, rock outcrops, canyons, fissured bluffs, and arroyos with dry, rocky terrain. In areas of desert plants or riparian vegetation, found on desert flats with creosote bush (*Larrea sp.*) or canyons with mesquite. TPWD (2017): Found in predominantly limestone-surfaced crevices of the desert.	Nature Serve (2015): Reported at elevations from at least 2,821 to 6,089 feet from southwestern New Mexico, in western Texas, and in Coahuila and Chihuahua Mexico.	Nature Serve (2015): Approximately 10,000 - 1,000,000 individuals.
224.	*Kinosternon hirtipes murrayi*	Chihuahuan mud turtle	Reptiles	Freshwater Aquatic	No	-	No	T	G5T5	S1	TPWD (2017): Prefers bodies of freshwater with much aquatic vegetation.	Klym (2008)[103]: Found in Presidio County, Texas.	Klym (2008): Very limited in Texas.

[102] NMFS and USFWS. 1998. Recovery plan for the US Pacific population of the hawksbill turtle (*Eretmochelys imbricata*). Silvery Spring, Maryland.
[103] Klym, M. 2008. An introduction to Texas turtles. Texas parks and wildlife. 17 pp.

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Ref. No.	Scientific Name	Common Name	Taxon	General Habitat	Migratory	Federal Status	Critical Habitat	TX State Status	Nature Serve Global Rank	Nature Serve State Rank	Habitat Notes	Range and Distribution Notes	Abundance Notes
225.	*Nerodia paucimaculata*	Concho water snake	Reptiles	Freshwater Aquatic	No	Delisted	No	-	G2	S2	Nature Serve (2015): Inhabits fast-flowing rocky streams and their margins, specifically where flat, unshaded and unsilted rocks are at or close to the water's edge and at shallow riffles. Also occur along shorelines of lakes, ponds, and impoundments.	Nature Serve (2015): Only in the Colorado and Concho River drainages of Texas.	Nature Serve (2015): Approximately 10,000 – 1,000,000 individuals.
226.	*Sceloporus arenicola*	Dunes Sagebrush Lizard	Reptiles	Terrestrial	No	Not Listed	No		G2	S1	Nature Serve (2005): Found in the Monahan Sandhills in Texas. Occurs around active and semi-stabilized sand dunes.	Nature Serve (2005): 5,000 – 20,000 square kilometers in New Mexico and five Texas counties (Andrews, Crane, Gaines, Ward, and Winkler)	Nature Serve (2005): Approximately 10,000 – 1,000,000 individuals
227.	*Chelonia mydas*	Green sea turtle	Reptiles	Marine Aquatic	Yes	T	No	T	G3	S3	Nature Serve (2015): Found in convergence zones in the open ocean as well as shallow, low-energy waters with abundant submerged vegetation.	Nature Serve (2015): Atlantic, Pacific, and Indian oceans.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
228.	*Lepidochelys kempii*	Kemp's ridley sea turtle	Reptiles	Marine Aquatic	Yes[104]	E, Petitioned for Critical Habitat: Findings Not Yet Made	No	E	G1	S3	Nature Serve (2015): Found in shallow coastal and estuarine waters with sandy or muddy substrates.	Nature Serve (2015): Adults only in Gulf of Mexico; immatures in Gulf of Mexico and Atlantic Ocean off coast of U.S.	Nature Serve (2015): Approximately 10,000 - 100,000 individuals.
229.	*Dermochelys coriacea*	Leatherback sea turtle	Reptiles	Marine Aquatic	Yes	E	Designated-Not in TX	E	G2	S1S2	Nature Serve (2015): Pelagic, often found near continental shelf; also in gulfs, bays and estuaries. Found on land only to breed and as hatchlings.	Nature Serve (2015): Circumglobal in temperate waters of the Atlantic, Indian, and Pacific Oceans. May travel hundreds or thousands of miles between nesting beaches and marine waters. Found along Atlantic, Gulf, and Pacific coasts of continental U.S., as well as Hawaii.	Nature Serve (2015): Approximately 10,000 - 1,000,000 individuals.
230.	*Caretta caretta*	Loggerhead sea turtle	Reptiles	Marine Aquatic	Yes	T	Designated- Not in TX	T	G1	S1	Nature Serve (2015): Found near shorelines in warm temperature and subtropical regions, mostly over the continental shelf and in lagoons, creeks, mouths of rivers, estuaries, and bays.	Nature Serve (2015): Rarely far from mainland shores, ranges into temperate zones in summer. Found in the warmer parts of the Atlantic, Indian, and Pacific oceans and Caribbean and Mediterranean seas.	Nature Serve (2015): Approximately 100,000 - 1,000,000 individuals.
231.	*Pituophis ruthveni*	Louisiana pine snake	Reptiles	Terrestrial	No	T	No	T	G2	S1	TPWD (2017): Found in mixed deciduous and longleaf pine (*Pinus palustris*) woodlands.	Nature Serve (2015): West and central Louisiana and the central portion of East Texas.	Nature Serve (2015): Estimated at a few thousand individuals.
232.	*Phrynosoma hernandesi*	Mountain short-horned lizard	Reptiles	Terrestrial	No	-	No	T	G5	S3	Nature Serve (2015): Often found in open, openly wooded, or shrubby areas with sparse ground level vegetation and rocky to sandy soils of semiarid plains to high mountains.	Nature Serve (2015): Southern Canada through eastern Montana, the Dakotas, Wyoming, Nebraska, Colorado, Utah, eastern Nevada, New Mexico, Arizona, and west Texas to southern Durango.	Nature Serve (2015): Approximately 10,000 - 1,000,000 individuals.
233.	*Leptodeira septentrionalis septentrionalis*	Northern cat-eyed snake	Reptiles	Terrestrial	No	-	No	T	G5	S2	TPWD (2017): Found in dense thickets bordering ponds and streams and in thorn brush woodlands.	Nature Serve (2015): Southern Texas to northwestern South America in northern Peru, Ecuador, Venezuela, and Colombia.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
234.	*Cemophora coccinea copei*	Northern scarlet snake	Reptiles	Terrestrial	No	-	No	T	G5T5	S3	TPWD (2017): Occurs in mixed hardwood scrub on sandy soils.	Tennant (1998)[105]: Northeast and eastern edge of Texas.	Tennant (1998): Fairly common.
235.	*Crotaphytus reticulatus*	Reticulate collared lizard	Reptiles	Terrestrial	No	-	No	T	G3	S2	Nature Serve (2015): Occur in thorny shrubland/ chaparral; often found on rocks, but also on mesquite flats; burrows in soil and hides in fallen logs.	Nature Serve (2015): Southern Texas; Coahuila, Nuevo Leon, and Tamaulipas, Mexico.	Nature Serve (2015): Approximately 2,500 - 10,000 individuals.
236.	*Coleonyx reticulatus*	Reticulated gecko	Reptiles	Terrestrial	No	-	No	T	G3	S3	Nature Serve (2015): Found in rocky areas in desert regions, specifically limestone canyons.	Nature Serve (2015): Brewster and Presidio Counties of the Big Bend region of Texas into adjacent Mexico.	Hammerson (2007)[106]: More common in Texas than was previously believed, probably stable, but population information is inadequate.
237.	*Pseudemys gorzugi*	Rio Grande cooter	Reptiles	Freshwater Aquatic	No	Petitioned for Listing: 90 Day Substantial	No	-	G3G4	S2	Nature Serve (2015): Found in rivers and perennial tributaries with substrate of sand or rock.	Nature Serve (2015): Rio Grande and Pecos Rivers of Texas and southern New Mexico.	Nature Serve (2015): Approximately 2,500 - 100,000 individuals.

[104] NMFS, USFWS, Secretary of Environment and Natural Resources, Mexico (SEMARNAT). 2011. Bi-National Recovery Plan for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii*), Second Revision. National Marine Fisheries Service. Silver Spring, Maryland.
[105] Tennant, A. 1998. A field guide to Texas snakes. Second Edition. Print.
[106] Hammerson, G.A. 2007. *Coleonyx reticulatus*. The IUCN Red List of Threatened Species 2007: e.T64037A12738857. Available at http://dx.doi.org/10.2305/IUCN.UK.2007.RLTS.T64037A12738857.en. Accessed January 30, 2017.

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238.	*Liochlorophis vernalis*	Smooth green snake	Reptiles	Terrestrial	No	-	No	T	G5	SX	Nature Serve (2015): Found in marshes, meadows, grassy fields at forest edges, stream edges, mountain shrubland, moist open woodland, vacant lots, and abandoned farmland. TPWD (2017): Found in mesic coastal shortgrass prairie vegetation.	Nature Serve (2015): Across southern Canada south through New Jersey, Virginia, West Virginia, Maryland, Ohio, Indiana, Illinois, Missouri, Nebraska, New Mexico, Chihuahua, Utah, and disjunctly to southeastern Texas. TPWD (2017): Formerly found in the Gulf Coastal Plain.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
239.	*Drymobius margaritiferus*	Speckled racer	Reptiles	Terrestrial	No	-	No	T	G5	S1	Nature Serve (2015): Found in a variety of habitats, including subtropical and tropical moist, wet, and dry primary and secondary forests. TPWD (2017): Found in areas with dense vegetation and litter on the ground, often in dense thickets near water or in riparian woodlands.	Nature Serve (2015): Southern Texas through much of Mexico, Central American, and into northern Colombia in South America.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.
240.	*Holbrookia lacerata*	Spot-tailed earless lizard	Reptiles	Terrestrial	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G3G4	S2	Nature Serve (2015): Found in moderately open prairie-brushland regions, particularly fairly flat areas free of vegetation; also, oak-juniper woodlands and mesquite-prickly pear associations.	Nature Serve (2015): Central and southern Texas and northern Mexico.	Nature Serve (2015): Total population size is unknown, but appears to be uncommon or rare.
241.	*Phrynosoma cornutum*	Texas horned lizard	Reptiles	Terrestrial	No	-	No	T	G4G5	S4	Nature Serve (2015): Found in prairies, bajadas, dunes, foothills, playa edges, and deserts with open arid and semiarid regions with sparse vegetation of grass, cactus, scrubby trees, or brush. TPWD (2017): Hides under rocks or in rodent burrows when inactive. Burrows into soil, usually sandy to rocky.	Nature Serve (2015): Southwestern Missouri and central Kansas through southeastern Colorado, south through Oklahoma and Texas, into eastern and southern New Mexico, and southeastern Arizona to northeastern Mexico.	Nature Serve (2015): Approximately 10,000 to >1,000,000 individuals.
242.	*Drymarchon melanurus erebennus*	Texas indigo snake	Reptiles	Terrestrial	No	-	No	T	G5T4	S3	TPWD (2017): Found in dense riparian corridors of thornbush-chaparral woodlands. Also found in irrigated and suburban croplands. Requires moist microhabitats, such as rodent burrows.	TPWD (2017): South of the Balcones Escarpment and Guadalupe River in Texas.	Tennant (1998): Slowly declining in U.S.
243.	*Cemophora coccinea lineri*	Texas scarlet snake	Reptiles	Terrestrial	No	-	No	T	G5T2	S1S2	TPWD (2017): Found in mixed hardwood scrub on sandy soils.	Tennant (1998): Adjacent to Texas lower Gulf Coast.	Tennant (1998): Very rare.
244.	*Gopherus berlandieri*	Texas tortoise	Reptiles	Terrestrial	No	-	No	T	G4	S2	Nature Serve (2015): Found in sandy well-drained soils of open scrub woods, lomas, arid brush, grass-cactus associations. Found in shallow depressions at the base of cactus or bush or burrowed underground when inactive.	Nature Serve (2015): South of a line connecting Del Rio, Rockport, and San Antonio in Texas, through Coahuila into San Luis Potosi, Mexico.	National Park Service (2017)[107]: Historically widespread and abundant, but has decreased.
245.	*Crotalus horridus*	Timber rattlesnake	Reptiles	Terrestrial	No	-	No	T	G4	S4	Nature Serve (2015): Prefers hardwood forests, swampy areas, floodplains, river bottoms, hydric hammocks, or cane fields in the south. While deciduous forests and dry ridges interspersed with open areas are preferred in the Midwest. TPWD (2017): Found in abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto.	Nature Serve (2015): Florida to central New England, and west to eastern Texas, central Oklahoma, Kansas, and Nebraska. Also reported in Iowa and Minnesota.	Nature Serve (2015): Approximately 100,000 to >1,000,000 individuals.

[107] National Park Service. 2017. Texas tortoise monitoring. Available at https://science.nature.nps.gov/im/units/guln/monitor/texas_tortoise.cfm. Accessed January 30, 2017.

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246.	*Tantilla cucullata*	Trans-Pecos black-headed snake	Reptiles	Terrestrial	No	-	No	T	G3	S2	Nature Serve (2015): Found in rocky canyons with steep-sides and oak, juniper, and pinyon pine, as well as in hilly grasslands, streamside woodlands, and low hills of arid grasslands. Often found with creosote bush, yucca, agave (*Agave americana*), juniper, and cholla (*Cylindropuntia sp.*).	Nature Serve (2015): Trans-Pecos region of West Texas through the Big Bend region and east to Dolan Falls area in Val Verde County.	Nature Serve (2015): Approximately 2,500 - 1,000,000 individuals.
247.	*Deirochelys reticularia miaria*	Western chicken turtle	Reptiles	Freshwater Aquatic	No	Petitioned for Listing with Critical Habitat: 90 Day Substantial	Petitioned	-	G5T5	SNR	USFWS (2016)[108]: Found in shallow and slow-moving waters of swamps, ponds, lakes, and streams.	TPWD (2008): Eastern third of Texas as far west as Dallas/Fort Worth; west of the Mississippi River, in Louisiana, Arkansas, Missouri, and Oklahoma.	USFWS (2016): Unknown but presumed to be rare and declining.

[108] USFWS. 2016. Western Chicken Turtle. Factsheet. Arlington, Texas ecological services field office. 2 pp.

Ref. No.	Scientific Name	Common Name	HCP Covered Species ?	Vegetation Clearing[1]	Vegetation Maintenance	Soil Disturbance / Surface grading	Excavation	Nuisance (noise/light/ activity)	Collision/ Avoidance	Fill (aquatic habitats)	Consider Measures for Avoidance or Minimization	Overall Assessment (Exposure and Effects)	Notes and Discussion
1.	*Eurycea waterlooensis*	Austin blind salamander	No	1	1	1	1	0	0	1	X	1	Although this species is federally listed, and LCRA TSC Activities may occur over the Edwards Aquifer, impacts on the surface or shallow subsurface should have minimal effects on the species or its deep aquifer habitat. Consider measures to minimize impacts to water quality during construction.
2.	*Eurycea sosorum*	Barton Springs salamander	Yes	2	1	2	1	0	0	1	X	2	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species.
3.	*Notophthalmus meridionalis*	Black-spotted newt	No	2	1	2	1	1	0	3	X	1	Species is petitioned for federal listing with positive 90-day finding and may occur near areas with exposure to the LCRA TSC Activities. While LCRA TSC typically avoids impacts to wetlands and aquatic habitats, there is potential for impacts during construction from vegetation clearing, soil disturbance, and fill within the small or temporary water bodies used by the species. However, the likelihood of actual listing is uncertain at this time.
4.	*Eurycea robusta*	Blanco blind salamander	No	1	1	1	1	0	0	1	X	1	Species is petitioned for federal listing with positive 90-day finding and LCRA TSC Activities may occur over the Edwards Aquifer. However, impacts on the surface or shallow subsurface should have minimal effects on the species or its deep-aquifer habitat. Consider measures to minimize impacts to water quality during construction.
5.	*Eurycea latitans*	Cascade Caverns salamander	No	2	1	2	1	0	0	1	X	2	Species is petitioned for federal listing with positive 90-day finding and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species. However, the likelihood of actual listing is uncertain at this time.
6.	*Eurycea tridentifera*	Comal blind salamander	No	1	1	1	1	0	0	1	X	1	Species is petitioned for federal listing and LCRA TSC Activities may occur over the Edwards Aquifer, impacts on the surface or shallow subsurface should have minimal effects on the species or its deep aquifer habitat. Consider measures to minimize impacts to water quality during construction.
7.	*Eurycea* sp. 8	Comal Springs salamander	No	2	1	2	1	0	0	1	X	2	Species is petitioned for federal listing with positive 90-day finding and may occur in areas with exposure to the LCRA TSC Activities. There is potential for impacts during construction or ongoing from vegetation clearing, soil disturbance, and fill within the small or temporary water bodies used by the species. However, the likelihood of actual listing is uncertain at this time.
8.	*Eurycea naufragia*	Georgetown salamander	Yes	2	1	2	1	0	0	1	X	2	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species.
9.	*Anaxyrus (syn. Bufo) houstonensis*	Houston toad	Yes	3	2	3	2	1	1	1	X	3	Species is federally listed and occurs in a broad region where LCRA TSC Activities may occur. There is potential for impacts associated with a variety of Potential Effect Pathways.
10.	*Eurycea tonkawae*	Jollyville Plateau salamander	Yes	2	1	2	1	0	0	1	X	2	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species.
11.	*Rhinophrynus dorsalis*	Mexican burrowing toad	No	1	1	3	3	0	0	2		1	Species is not federally listed, and future listing seems unlikely given its broad overall range and estimated abundance. Species has a very restricted range in Texas and little exposure to LCRA TSC Activities.
12.	*Smilisca baudinii*	Mexican treefrog	No	3	1	1	0	0	0	2		1	Species is not federally listed, and future listing seems unlikely given its broad overall range and estimated abundance. Species has a very restricted range in Texas and little exposure to LCRA TSC Activities.
13.	*Eurycea chisholmensis*	Salado Springs salamander	Yes	2	1	2	1	0	0	1	X	2	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species.

[1] 0) none- not possible to impact
1) low- possible but not expected
2) medium- 50/50 chance
3) likely- expected or probably yes

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14.	*Eurycea nana*	San Marcos salamander	Yes	2	1	2	1	0	0	1	X	2	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species.
15.	*Hypopachus variolosus*	Sheep frog	No	3	1	2	2	0	0	2		1	Species is not federally listed, and future listing seems unlikely given its broad overall range and estimated abundance.
16.	*Siren* sp 1	South Texas siren (large form)	No	1	0	1	0	0	0	3		1	Species is not federally listed, and future listing potential is unknown. However, exposure of this aquatic species to LCRA TSC Activities is low given its ability to span waterways and wetlands.
17.	*Typhlomolge (syn. Eurycea) rathbuni*	Texas blind salamander	No	1	1	1	1	0	0	1	X	1	Although this species is federally listed and LCRA TSC Activities may occur over the Edwards Aquifer, impacts on the surface or shallow subsurface should have minimal effects on the species or its deep aquifer habitat. Consider measures to minimize impacts to water quality during construction.
18.	*Eurycea neotenes*	Texas salamander	No	2	1	2	1	0	0	1	X	2	Species is petitioned for federal listing with positive 90-day finding and LCRA TSC Activities may occur in areas occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species. However, the likelihood of actual listing is uncertain at this time.
19.	*Leptodactylus fragilis*[2]	White-lipped frog	No	3	1	1	0	0	0	2		1	Species is not federally listed, and future listing seems unlikely given its broad overall range and estimated abundance.
20.	*Texella reddelli*	Bee Creek Cave harvestman	Yes	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented, since the species is now known to not be a true troglobite. This species could be affected by activities that involve excavation or surface disturbance.
21.	*Texella reyesi*	Bone Cave harvestman	No	1	1	2	3	0	0	0	X	2	Species is federally listed (and petitioned for delisting) and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
22.	*Cicurina venii*	Braken Bat Cave meshweaver	No	0	0	2	0	0	0	0		0	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Hedin et al. (2018)[3] suggests synonomy with *Cicurina madla*, making *C. venii* not a valid taxon.
23.	*Texella cokendolpheri*	Cokendolpher Cave harvestman	No	1	1	2	3	0	0	0	X	2	Species is federally listed and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
24.	*Cicurina vespera*	Government Canyon Bat Cave meshweaver	No	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
25.	*Tayshaneta microps*	Government Canyon Bat Cave spider	Yes	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
26.	*Cicurina madla*	Madla Cave meshweaver	Yes	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
27.	*Cicurina baronia*	Robber Baron Cave meshweaver	No	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.

[2] Frost, Darrel R. 2016. Amphibian Species of the World: an Online Reference. Version 6.0 (Accessed 1/17/2017). Electronic Database accessible at http://research.amnh.org/herpetology/amphibia/index.html. American Museum of Natural History, New York, USA.

[3] Hedin, M., S. Derkarabetian, J. Blair, and P. Paquin. 2018. Sequence capture phylogenomics of eyeless *Cicurina* spiders from Texas caves, with emphasis on US federally-endangered species from Bexar County (Araneae, Hahniidae). *ZooKeys* 769:49-76.

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28.	*Cicurina loftini*	no common name	No	1	1	2	3	0	0	0	X	2	Species is not federally listed but LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Hedin et al. (2018) suggests *Cicurina loftini* may be synonymous with C. vespera, a federally listed species. Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
29.	*Tartarocreagris texana*	Tooth Cave pseudoscorpion	No	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
30.	*Tayshaneta myopica*	Tooth Cave spider	Yes	1	1	2	3	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
31.	*Falco peregrinus anatum*	American peregrine falcon	No	1	1	0	0	1	1	0	X	1	Species has been delisted. Consider measures to minimize risk of collisions and electrocutions.
32.	*Tympanuchus cupido attwateri*	Attwater's greater prairie-chicken	No	2	1	1	0	3	2	0	X	2	Species is federally listed but, with known occurrences only on dedicated conservation lands, is unlikely to be exposed to the effects of LCRA TSC Activities. The species is not likely to be exposed to the LCRA TSC Activities. Consider measures to avoid known localities during routing and siting. Consider measures to minimize risk of collisions and electrocutions.
33.	*Peucaea aestivalis*	Bachman's sparrow	No	3	1	0	0	1	1	0	X	1	Species considered for federal listing but removed from the candidate list in the early 1990s. Species is not likely to be reconsidered for federal listing in the foreseeable future. Consider measures to minimize risk of collisions and electrocutions.
34.	*Haliaeetus leucocephalus*	Bald eagle	No	1	1	0	0	2	2	1	X	2	Species has been delisted but remains protected by Bald and Golden Eagle Protection Act. Consider measures to minimize collision and electrocution risk, and to discourage use of transmission towers as nest sites.
35.	*Laterallus jamaicensis*	Black rail	No	2	1	0	0	2	2	1	X	2	Species petitioned for listing with a positive 90-day finding. Species occurs in coastal marshes that are unlikely to be exposed to LCRA TSC Activities. Consider conservation measures to avoid likely habitats and to minimize risk of collisions and electrocutions.
36.	*Vireo atricapilla*	Black-capped vireo	No	3	3	0	0	1	1	0	X	3	Species has been delisted. Consider measures to minimize risk of collisions.
37.	*Glaucidium brasilianum cactorum*	Cactus ferruginous pygmy-owl	No	3	1	0	0	2	1	0	X	1	Species has been delisted; although, the Texas population was never federally listed. Consider measures to minimize risk of collisions and electrocutions.
38.	*Buteogallus anthracinus*	Common black-hawk	No	2	1	0	0	2	1	1	X	1	Species is not federally listed, and future listing seems unlikely given the species' wide range and stable population. This highly localized nesting species in west Texas is not likely to be exposed to LCRA TSC Activities. Consider measures to minimize risk of collisions and electrocutions.
39.	*Numenius borealis*	Eskimo curlew	No	0	0	0	0	0	0	0	X	0	Species presumed extinct.
40.	*Setophaga chrysoparia*	Golden-cheeked warbler	Yes	3	2	0	0	1	1	0	X	3	Species is federally listed (petitioned for delisting with negative 90-day finding). LCRA TSC Activities may occur in areas of occupied habitat and impacts are possible. Consider measures to minimize risk of collisions and electrocutions.
41.	*Vermivora chrysoptera*	Golden-winged warbler	No	1	1	0	0	0	1	0	X	1	Species is petitioned for listing with a positive 90-day finding. Species does not nest or overwinter in Texas but may migrate across the eastern part of the state. Exposure to LCRA TSC Activities is possible during migration, but the likelihood of impact is low. Consider measures to minimize risk of collisions and electrocutions.
42.	*Buteo plagiatus (syn. Asturina nitida)*	Gray hawk	No	2	1	0	0	2	1	1	X	1	Species is not federally listed, and future listing seems unlikely given the species' wide range and relatively large population. This highly localized occurrences in Texas is not likely to be exposed to LCRA TSC Activities. Consider measures to minimize risk of collisions and electrocutions.
43.	*Sterna antillarum athalassos*	Interior least tern	No	1	1	1	0	2	2	1	X	1	Species is federally listed but nesting colonies are unlikely to occur in areas that may be exposed to LCRA TSC Activities. Species is mostly found along major rivers or shores of water bodies and could collide with transmission lines. Consider measures to minimize risk of collisions and electrocutions.

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44.	*Tympanuchus pallidicinctus*	Lesser prairie-chicken	No	1	1	0	0	1	1	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species unlikely to be exposed to LCRA TSC Activities in the near future and participation in existing conservation programs could address the need for take authorization. Consider measures to minimize risk of collisions and electrocutions.
45.	*Strix occidentalis lucida*	Mexican spotted owl	No	1	1	0	0	1	1	0	X	1	Species is federally listed but occurs in remote and rugged habitats where it is not likely to be exposed to the LCRA TSC Activities. Consider measures to minimize risk of collisions and electrocutions.
46.	*Falco femoralis septentrionalis*	Northern aplomado falcon	No	1	1	1	0	1	2	0	X	1	Species is federally listed, and LCRA TSC Activities may occur in areas occupied by the species. Vegetation clearing and/or maintenance could impact the species. Species may also collide with transmission lines or be disturbed by nuisance, with a slight possibility of nesting on a structure. Consider measures to minimize risk of collisions and electrocutions.
47.	*Camptostoma imberbe*	Northern beardless-tyrannulet	No	3	1	0	0	0	1	0	X	1	Species is not federally listed, and future listing seems unlikely due to the species' wide range and relatively large global population. Consider measures to minimize risk of collisions and electrocutions.
48.	*Charadrius melodus*	Piping plover	Yes	1	1	1	0	2	2	1	X	2	Species is federally listed and occurs in areas where it may be exposed to the LCRA TSC Activities. Species occurs in non-breeding season on coastal beaches and mud flats except when migrating with some potential for activities to occur close to coastal wintering habitats and potential for collision with transmission lines. Consider measures to minimize risk of collisions and electrocutions.
49.	*Calidris canutus rufa*	Red knot	Yes	0	0	0	0	1	2	0	X	1	Species is federally listed and winters coastally and migrates across parts of Texas where LCRA TSC Activities may occur. There is a possibility of collision with transmission lines, if lines are located close to appropriate shorebird stopover habitat. Consider measures to minimize risk of collisions and electrocutions.
50.	*Picoides borealis*	Red-cockaded woodpecker	Yes	3	2	1	0	2	1	0	X	2	Species is federally listed and occurs in habitats that may be crossed by LCRA TSC Activities. Species may be impacted by vegetation clearing and construction-related activities. Consider measures to minimize risk of collisions and electrocutions.
51.	*Amazona viridigenalis*	Red-crowned parrot	No	2	1	0	0	1	2	0	X	1	Species is federally listed but is most common in urban areas of the Lower Rio Grande Valley. Potential for exposure to LCRA TSC Activities is low and potential for impact is also low. Consider measures to minimize risk of collisions and electrocutions.
52.	*Egretta rufescens*	Reddish egret	No	1	1	1	0	2	2	0	X	1	Species is not federally listed but occurs in areas that are unlikely to be exposed to the LCRA TSC Activities (i.e., coastal mudflat and beach habitats). Likelihood of future listing is low due to the species' wide range and relatively abundant population. Consider measures to minimize risk of collisions and electrocutions.
53.	*Pachyramphus aglaiae*	Rose-throated becard	No	1	1	0	0	1	1	0	X	1	Species is not federally listed and is generally a rare species that does not nest regularly in the state. Species is unlikely to be exposed to LCRA TSC Activities. Consider measures to minimize risk of collisions and electrocutions.
54.	*Sterna fuscata*	Sooty tern	No	0	0	0	0	1	1	0	X	1	Species is not federally listed and occurs mostly over open oceans. When on-shore, usually on coastal beach, it is unlikely to be impacted by LCRA TSC Activities. Consider measures to minimize risk of collisions and electrocutions.
55.	*Empidonax traillii extimus*	Southwestern willow flycatcher	No	3	3	0	0	1	1	0	X	2	Species is federally listed and occurs in areas that could be exposed to LCRA TSC Activities. Species could be impacted by clearing or modification of breeding habitat. Consider measures to minimize risk of collisions and electrocutions.
56.	*Elanoides forficatus*	Swallow-tailed kite	No	2	1	0	0	2	1	0	X	1	Species is not federally listed, and future listing seems unlikely given the species' relatively large population within a wide range. Consider measures to minimize risk of collisions and electrocutions.
57.	*Peucaea botterii texana*	Texas Botteri's sparrow	No	2	1	0	0	1	1	0	X	1	Species is not federally listed, and future listing seems unlikely given the species' wide range and relatively abundant population. Consider measures to minimize risk of collisions and electrocutions.
58.	*Setophaga pitiayumi*	Tropical parula	No	3	1	0	0	0	1	0	X	1	Species is not federally listed, and future listing seems unlikely due to the species' wide range and abundant population. Consider measures to minimize risk of collisions and electrocutions.
59.	*Coccyzus americanus*	Western yellow-billed cuckoo	No	3	1	0	0	1	2	0	X	2	Species is federally listed but is unlikely to occur in areas that may be exposed to LCRA TSC Activities. Species may be impacted by vegetation clearing and modification. Consider measures to minimize risk of collisions and electrocutions.

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60.	*Plegadis chihi*	White-faced ibis	No	2	1	0	0	1	1	2	X	1	Species is not federally listed, and future listing seems unlikely due to the species' wide range and abundant population. Consider measures to minimize risk of collisions and electrocutions.
61.	*Geranoaetus (syn. Buteo) albicaudatus*	White-tailed hawk	No	1	1	0	0	1	1	0	X	1	Species is not federally listed, and future listing seems unlikely due to the species' wide range and abundant population. These birds commonly perch on transmission line structures, so consider measures to minimize risk of collisions and electrocutions.
62.	*Grus americana*	Whooping crane	Yes	1	1	0	0	3	2	1	X	2	Species is federally listed and there is some potential for activities to occur in or close to wintering range. The migration corridor covers a large portion of the state and migrating birds could collide with transmission lines. Consider measures to minimize risk of collisions and electrocutions.
63.	*Mycteria americana*	Wood stork	No	1	1	1	0	2	3	2	X	1	Species is federally listed but does not nest in the state – limiting its exposure to the LCRA TSC Activities. This species is a rare migratory visitor. Consider measures to minimize risk of collisions and electrocutions.
64.	*Buteo albonotatus*	Zone-tailed hawk	No	1	1	0	0	3	1	0	X	1	Species is not federally listed, and future listing seems unlikely given an increasing population. Consider measures to minimize risk of collisions and electrocutions.
65.	*Gammarus hyalelloides*	Diminutive amphipod	No	1	1	1	1	0	0	1	X	1	Species is federally listed but has a highly restricted range that makes it unlikely to be exposed to the LCRA TSC Activities. Consider measures to avoid limited known occurrences.
66.	*Orconectes maletae*	Kisatchie painted crayfish	No	1	1	2	1	0	0	0		1	Species is petitioned for federal listing with a positive 90-day finding. The species' range in Texas is at the extreme edge of the Plan Area and it is unlikely to be exposed to the LCRA TSC Activities.
67.	*Stygobromus pecki*	Peck's cave amphipod	Yes	1	1	1	1	0	0	1	X	1	Species is federally listed and there is some potential for activities in and around occupied spring systems to affect the species, as it "…is often found in large numbers associated with the major spring runs at Comal [Springs]" (Bio-West, Inc. 2009)[4]. Given the frequency and abundance with which this species is found in surface aquatic habitats (in stream bottom detritus) at spring outlets, and its apparent dependence on groundwater discharge even in these surface habitats, vegetation clearing and management or soil disturbance at the surface could impact the species. Consider measures to protect water quality.
68.	*Gammarus pecos*	Pecos amphipod	No	1	1	1	1	0	0	1	X	1	Species is federally listed but has a highly restricted range unlikely to be exposed to or impacted by LCRA TSC Activities. Consider measures to minimize impacts to water quality.
69.	*Notropis girardi*	Arkansas River shiner	No	1	0	1	0	0	0	1	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
70.	*Macrhybopsis tetranema*	Peppered chub	No	1	1	0	0	0	0	1	X	1	Species is petitioned for federal listing with a positive 90-day finding but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
71.	*Gambusia gaigei*	Big Bend gambusia	No	0	0	0	0	0	0	0		0	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Known populations are within protected lands (Big Bend National Park), unless new populations are found it is not expected to be impacted.
72.	*Percina maculata*	Blackside darter	No	1	0	1	0	0	0	0		1	Species is not federally listed, and large range and population make future listing unlikely. Species occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
73.	*Gambusia senilis*	Blotched gambusia	No	0	0	0	0	0	0	0		0	Species is extirpated from the state.
74.	*Cycleptus elongatus*	Blue sucker	No	1	0	1	0	0	0	0		1	Species is not federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
75.	*Pteronotropis hubbsi*	Bluehead shiner	No	1	1	1	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
76.	*Notropis simus simus*	Bluntnose shiner	No	0	0	0	0	0	0	0		0	Sub-species is believed extinct.

[4] Bio-West, Inc. 2009. Analysis of Species Requirements in Relation to Spring Discharge Rates and Associated Withdrawal Reductions and Stages for Critical period management of the Edwards Aquifer. Report to the Steering Committee for the Edwards Aquifer Recovery Implementation Program. Available at: http://eaahcp.org/wp-content/uploads/2019/02/Appendix-D.pdf. Accessed on June 28, 2019.

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77.	*Ictalurus sp. 1*	Chihuahua catfish	No	1	1	1	1	0	0	1	X	1	Species is petitioned for federal listing with a positive 90-day finding but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
78.	*Notropis chihuahua*	Chihuahua shiner	No	1	0	1	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
79.	*Gambusia heterochir*	Clear Creek gambusia	No	1	1	0	0	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range. Consider measures to avoid aquatic habitats.
80.	*Cyprinodon elegans*	Comanche Springs pupfish	No	1	1	0	0	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range. Consider measures to avoid aquatic habitats.
81.	*Cyprinodon eximius*	Conchos pupfish	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Future listing seems unlikely given the species' relatively large population across its range.
82.	*Dionda diaboli*	Devils River minnow	No	1	1	1	1	0	0	1	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range. Consider measures to avoid aquatic habitats.
83.	*Etheostoma fonticola*	Fountain darter	No	1	0	0	0	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range. Consider measures to avoid aquatic habitats.
84.	*Cyprinodon bovinus*	Leon Springs pupfish	No	1	1	0	0	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range. Consider measures to avoid aquatic habitats.
85.	*Prietella phreatophila*	Mexican blindcat	No	0	0	0	1	0	0	0		0	Species uses deep aquifer habitats and is unlikely to be exposed to the effects of LCRA TSC Activities.
86.	*Ctenogobius claytonii*	Mexican goby	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range and may be extirpated from Texas.
87.	*Campostoma ornatum*	Mexican stoneroller	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
88.	*Cyprinella sp. 2*	Nueces shiner	No	1	1	1	1	0	0	1		1	Species was petitioned for federal listing but deemed not warranted.
89.	*Microphis brachyurus*	Opossum pipefish	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
90.	*Polyodon spathula*	Paddlefish	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Future listing seems unlikely given the species' relatively large population across its range.
91.	*Gambusia nobilis*	Pecos gambusia	No	1	0	0	0	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range. Consider measures to avoid aquatic habitats.
92.	*Cyprinodon pecosensis*	Pecos pupfish	No	1	1	0	0	0	0	1	X	1	Species is petitioned for federal listing with a positive 90-day finding but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
93.	*Cyprinella lepida*	Plateau shiner	No	1	1	1	1	0	0	1		1	Species was petitioned for federal listing but deemed not warranted.
94.	*Macrhybopsis australis*	Prairie chub	No	1	1	1	1	0	0	1	X	1	Species is petitioned for listing with a positive 90-day finding. Species occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
95.	*Cyprinella proserpina*	Proserpine shiner	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
96.	*Gila pandora*	Rio Grande chub	No	0	0	0	0	0	0	0		0	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Species has a highly restricted range.

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Ref. No.	Scientific Name	Common Name	HCP Covered Species ?	Vegetation Clearing[1]	Vegetation Maintenance	Soil Disturbance / Surface grading	Excavation	Nuisance (noise/light/ activity)	Collision/ Avoidance	Fill (aquatic habitats)	Consider Measures for Avoidance or Minimization	Overall Assessment (Exposure and Effects)	Notes and Discussion
97.	*Etheostoma grahami*	Rio Grande darter	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
98.	*Hybognathus amarus*	Rio Grande silvery minnow	No	0	0	0	0	0	0	0		0	Species is considered extirpated from Texas.
99.	*Awaous banana*	River goby	No	1	0	1	0	0	0	0	X	1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Future listing seems unlikely given the species' relatively large population across its range.
100.	*Gambusia clarkhubbsi*	San Felipe gambusia	No	1	1	0	0	0	0	1	X	1	Species is petitioned for listing with a positive 90-day finding. Species occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
101.	*Gambusia georgei*	San Marcos gambusia	No	0	0	0	0	0	0	0		0	Species is presumed extinct.
102.	*Notropis oxyrhynchus*	Sharpnose shiner	No	1	1	0	1	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
103.	*Scaphirhynchus platorynchus*	Shovelnose sturgeon	No	1	1	0	0	0	0	0		0	Species is federally listed due to similarity of appearance with the pallid sturgeon, but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities.
104.	*Notropis buccula*	Smalleye shiner	No	1	1	0	1	0	0	0	X	1	Species is federally listed but occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
105.	*Pristis pectinata*	Smalltooth sawfish	No	0	0	0	0	0	0	0		0	Extirpated from the state.
106.	*Trogloglanis pattersoni*	Toothless blindcat	No	0	0	1	1	0	0	1	X	1	Species is federally listed but occurs in deep aquifer aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to protect water quality.
107.	*Erimyzon oblongus*	Western Creek chubsucker	No	1	0	1	0	0	0	0		1	Species is not federally listed and occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Future listing seems unlikely given the species' relatively large population across its range.
108.	*Satan eurystomus*	Widemouth blindcat	No	0	0	1	1	0	0	1	X	1	Species is federally listed but occurs in deep aquifer aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to protect water quality.
109.	*Rhadine exilis*	A ground beetle with no common name	Yes	1	1	2	2	0	0	0	X	2	Species is federally listed and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
110.	*Rhadine infernalis*	A ground beetle with no common name	Yes	1	1	2	2	0	0	0	X	2	Species is federally listed and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
111.	*Nicrophorus americanus*	American burying beetle	No	1	1	2	2	1	0	0		2	Species is federally listed (petitioned for delisting) but does not occur widely in Texas. LCRA TSC Activities are unlikely to occur within the known range of the species.
112.	*Batrisodes texanus*	Inner Space Cavern mold beetle	No	1	1	2	2	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
113.	*Batrisodes cryptotexanus*	Dragonfly Cave mold beetle	No	1	1	2	2	0	0	0	X	2	Species is federally listed and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.

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114.	*Stygoparnus comalensis*	Comal Springs dryopid beetle	No	1	1	1	1	0	0	1	X	1	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets where the species is known to occur. However, this species has been described as stygobitic (i.e., living exclusively in groundwater) and, while it has been very occasionally found in surface waters near spring outlets, it is unlikely to rely on such surface habitats (i.e., "…it is presumed that these subterranean invertebrates [including the Comal Springs dryopid beetle] are not suited for survival in surface conditions…;" Bio-West, Inc. 2018)[5]. Therefore, this species is unlikely to be affected by clearing or maintenance of vegetation or soil disturbances at the surface.
115.	*Heterelmis comalensis*	Comal Springs riffle beetle	Yes	1	1	1	1	0	0	1	X	1	Species is federally listed, and LCRA TSC Activities may occur in proximity to spring outlets and spring runs occupied by the species. Species may occur more widely than currently documented. Vegetation clearing or maintenance, and soil disturbance could affect surface habitat for this species.
116.	*Haideoporus texanus*	Edwards Aquifer diving beetle	No	1	1	1	1	0	0	1	X	1	Species is petitioned for federal listing with a positive 90-day finding. LCRA TSC Activities may occur over the Edwards Aquifer, but are unlikely to impact this deep-aquifer species. Consider measures to minimize water quality impacts.
117.	*Batrisodes venyivi*	Helotes mold beetle	Yes	1	1	2	2	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
118.	*Texamaurops reddelli*	Kretschmarr Cave mold beetle	No	1	1	2	2	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance. Not included as a Covered Species due to commitment by LCRA TSC to rely on existing programmatic HCPs for take authorization.
119.	*Automeris louisiana*	Louisiana eyed silkmoth	No	2	1	1	0	1	0	0		1	Species is petitioned for listing with a positive 90-day finding. Habitat could be disturbed by vegetation manipulation, but the species is restricted to the coastal prairie of extreme southeast Texas and is unlikely to be exposed to LCRA TSC Activities.
120.	*Danaus plexippus plexippus*	Monarch butterfly	No	3	3	0	0	1	2	0	X	2	Species is petitioned for federal listing with a positive 90-day finding. However, actual likelihood of listing is uncertain at this time. Vegetation manipulation and grading could disturb breeding habitat, including causing destruction of eggs, caterpillars, or chrysalises. There is potential for exposure and impacts from the LCRA TSC Activities.
121.	*Lepidostoma morsei*	Morse's little plain brown sedge	No	2	2	0	0	1	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Eggs and larva are aquatic and not likely to be impacted by the LCRA TSC Activities. Adults could be present in vegetation along the margins of a stream. Consider measures to avoid contact with adults, such as seasonal restrictions on activities.
122.	*Somatochlora margarita*	Texas emerald	No	1	1	0	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species' restricted range and habitat type suggest a low likelihood of exposure to the LCRA TSC Activities. Consider measures to avoid contact with adults, such as seasonal restrictions on activities.
123.	*Lirceolus smithii*	Texas troglobitic water slater	No	0	0	1	1	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. LCRA TSC Activities may occur over the Edwards Aquifer, but are unlikely to impact this deep-aquifer species. Consider measures to minimize water quality impacts.
124.	*Rhadine persephone*	Tooth Cave ground beetle	Yes	1	1	2	2	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
125.	*Ursus americanus*	Black bear	No	1	0	0	0	1	0	0		1	Species is not federally listed and is restricted in regular occurrence to mountainous regions of Trans Pecos. Species is not likely to be exposed to the LCRA TSC Activities in a manner that would cause significant impact.
126.	*Mustela nigripes*	Black-footed ferret	No	0	0	0	0	0	0	0		0	Species is extirpated from Texas.
127.	*Oryzomys couesi*	Coues' rice rat	No	2	1	2	1	0	0	0		1	Species is not federally listed and is highly range-restricted. Future listing seems unlikely due to the species' wide range and potentially large population. Species is not likely to be exposed to the LCRA TSC Activities.
128.	*Herpailurus yagouaroundi cacomitli*	Gulf Coast jaguarundi	No	2	1	1	0	2	1	0	X	1	Species is federally listed but may no longer occur in Texas despite anecdotal reports.

[5] Bio-West, Inc. 2018. Memorandum: Item M Net Disturbance and Incidental Take Assessment for 2018 EARIP ITP Annual Report. Ed Oborny (Bio-West, Inc.) to Scott Storment and Chad Furl. December 26, 2018. Available at: http://eaahcp.org/flow-protection-measures/net-disturbance-incidental-take/. Accessed on June 28, 2019.

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129.	*Canis lupus*	Gray wolf	No	0	0	0	0	0	0	0		0	Species is extirpated from Texas.
130.	*Panthera onca*	Jaguar	No	0	0	0	0	0	1	0		1	Species is at best an extremely rare visitor and unlikely to be exposed to LCRA TSC Activities.
131.	*Ursus americanus luteolus*	Louisiana black bear	No	1	1	0	0	1	0	0		1	Species has been delisted.
132.	*Leopardus wiedii*	Margay	No	0	0	0	0	0	0	0		0	Species is extirpated from Texas.
133.	*Leptonycteris nivalis*	Mexican long-nosed bat	No	1	1	0	0	1	1	0	X	1	Species is federally listed but is unlikely to be impacted by the LCRA TSC Activities. Habitat could be disturbed by vegetation clearing or maintenance, although species largely occurs in remote, rugged areas where LCRA TSC Activities are unlikely to occur. Consider measures to avoid removal of agave plants.
134.	*Leopardus pardalis*	Ocelot	Yes	3	1	1	0	2	1	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat used by the species. Species could be disturbed by vegetation clearing or maintenance, or through nuisance.
135.	*Peromyscus truei comanche*	Palo Duro mouse	No	2	1	2	2	1	0	0		1	Species is not federally listed. Species is restricted to rugged caprock near Palo Duro Canyon and is not likely to be exposed to the LCRA TSC Activities.
136.	*Corynorhinus rafinesquii*	Rafinesque's big-eared bat	No	3	1	0	0	2	1	0		2	Species is not federally listed and is not known to be affected by white-nose syndrome. Future listing seems unlikely.
137.	*Canis rufus*	Red wolf	No	0	0	0	0	0	0	0		0	Species is extirpated from Texas.
138.	*Lasiurus ega*	Southern yellow bat	No	3	1	0	0	2	1	0		2	Species is not federally listed and is not known to be affected by white-nose syndrome. Future listing seems unlikely.
139.	*Euderma maculatum*	Spotted bat	No	1	1	0	0	1	1	0		1	Species is not federally listed and is not known to be affected by white-nose syndrome. Future listing seems unlikely. Species occurs in remote habitat and is unlikely to be exposed to impacts from LCRA TSC Activities.
140.	*Dipodomys elator*	Texas kangaroo rat	No	3	1	2	2	1	0	0	X	2	Species is petitioned for federal listing with a positive 90-day finding. However, likelihood of actual listing is uncertain at this time. LCRA TSC Activities are unlikely to occur in the near future in areas within the range of the species.
141.	*Perimyotis subflavus*	Tri-colored bat	No	2	1	0	0	1	1	0	X	1	Species is petitioned for federal listing and is significantly affected in parts of its range by white-nose syndrome. However, the likelihood of actual listing is uncertain at this time. Species likely roosts in trees during active periods but hibernates in caves. Vegetation clearing could cause minor loss of habitat, but direct impacts to bats could be avoided through seasonal restrictions on clearing. Likely to be exposed to impacts from LCRA TSC Activities.
142.	*Trichechus manatus*	West Indian manatee	No	0	0	0	0	1	1	1		1	Species is federally listed but unlikely to be exposed to LCRA TSC Activities.
143.	*Nasua narica*	White-nosed coati	No	2	1	0	0	0	0	0		1	Species is not federally listed and future listing seems unlikely due to the species' wide range and potentially abundant numbers outside of Texas. Species is unlikely to be exposed to LCRA TSC Activities.
144.	*Pseudotryonia adamantina*	Diamond tryonia	No	1	1	1	1	0	0	1	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
145.	*Fusconaia (syn. Quincuncina) mitchelli*	False spike	No	1	0	1	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
146.	*Radiocentrum ferrissi*	Fringed mountainsnail	No	0	0	0	0	0	0	0		0	Species is only known from Texas from fossil record from Franklin Mountains (El Paso County).
147.	*Quadrula aurea*	Golden orb	No	1	0	1	0	0	0	0	X	1	Species is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
148.	*Tryonia circumstriata*	Gonzales tryonia	No	1	1	1	1	0	0	1	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.

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149.	*Pleurobema riddellii*	Louisiana pigtoe	No	1	0	1	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
150.	*Truncilla cognata*	Mexican fawnsfoot	No	1	0	1	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
151.	*Phreatodrobia imitata*	Mimic cavesnail	No	1	1	1	1	0	0	1	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species occurs in deep aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid impacts to water quality.
152.	*Arkansia wheeleri*	Ouachita rock pocketbook	No	1	1	1	1	0	0	1	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
153.	*Assiminea pecos*	Pecos assiminea snail	No	1	1	1	0	1	0	1	X	1	Species is federally listed but occurs in a highly restricted range not expected to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
154.	*Pyrgulopsis texana*	Phantom Cave springsnail	No	1	1	1	1	0	0	1	X	1	Species is federally listed but occurs in a highly restricted range not expected to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
155.	*Tryonia cheatumi*	Phantom tryonia	No	1	1	1	1	0	0	1	X	1	Species is federally listed but occurs in a highly restricted range not expected to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
156.	*Potamilus metnecktayi*	Salina mucket	No	1	0	1	0	0	0	1	X	1	Species is petitioned for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
157.	*Lampsilis satura*	Sandbank pocketbook	No	0	0	1	0	0	0	0	X	1	Species is not federally listed and future listing is unlikely due to relatively robust population size and distribution. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
158.	*Quadrula houstonensis*	Smooth pimpleback	No	1	0	1	0	0	0	0	X	1	Species is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
159.	*Obovaria jacksoniana*	Southern hickorynut	No	0	0	1	0	0	0	0	X	1	Species is not federally listed but is highly rare. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
160.	*Lampsilis bracteata*	Texas fatmucket	No	1	0	1	0	0	0	0	X	1	Species is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
161.	*Truncilla macrodon*	Texas fawnsfoot	No	1	0	1	0	0	0	0	X	1	Species is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
162.	*Potamilus amphichaenus*	Texas heelsplitter	No	1	0	1	0	0	0	0	X	1	Species is petitioned for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
163.	*Popenaias popeii*	Texas hornshell	No	1	0	1	0	0	0	0	X	1	Species is proposed for federal listing as endangered. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
164.	*Fusconaia askewi*	Texas pigtoe	No	0	0	1	0	0	0	0	X	1	Species is not federally listed and future listing is unlikely due to relatively robust population size and distribution. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
165.	*Quadrula petrina*	Texas pimpleback	No	1	0	1	0	0	0	0	X	1	Species is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
166.	*Fusconaia lananensis*	Triangle pigtoe	No	1	0	1	0	0	0	0	X	1	Species is petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
167.	*Thymophylla tephroleuca*	Ashy dogweed	No	3	2	3	0	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.

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168.	*Salvia pentstemonoides*	Big red sage	No	3	3	3	1	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
169.	*Echinocereus reichenbachii var albertii*	Black lace cactus	No	3	2	2	0	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
170.	*Streptanthus bracteatus*	Bracted twistflower	No	3	2	3	1	0	0	0	X	2	Candidate species for federal listing and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
171.	*Genistidium dumosum*	Brush-pea	No	2	1	3	1	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
172.	*Coryphantha ramillosa*	Bunched Cory cactus	No	2	2	3	0	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
173.	*Paronychia congesta*	Bushy whitlowwort	No	2	1	3	1	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
174.	*Pediomelum pentaphyllum*	Chihuahua scurfpea	No	1	0	1	0	0	0	0		0	This species is under review for potential future listing, but has not been sighted in Texas since 1871. LCRA TSC Activities are unlikely to affect the species due to avoidance.
175.	*Hexalectris revoluta*	Chisos coralroot	No	1	0	0	0	0	0	0		0	This species is under review for potential future listing, but occurs at mid to high elevations in the Chisos and Guadalupe Mountains. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
176.	*Echinocereus chisoensis var chisoensis*	Chisos Mountains hedgehog cactus	No	2	1	2	2	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
177.	*Physostegia correllii*	Correll's false dragon-head	No	1	2	1	1	0	0	1	X	1	Species is under review for federal listing, but occurs in association with wetlands habitats where LCRA TSC Activities are likely to avoid creating subsurface disturbances. LCRA TSC Activities are unlikely to affect this species due to lack of exposure.
178.	*Cyperus cephalanthus*	Cryptic flatsedge	No	1	1	1	1	0	0	0		1	No federal status and 90-day “not substantial” finding.
179.	*Echinocereus davisii*	Davis' green pitaya	No	1	1	1	0	0	0	0	X	1	Species is federally listed and is restricted to steep, Caballos novaculite outcrops in Brewster County. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
180.	*Donrichardsia macroneuron*	Don Richard’s spring moss	No	1	1	1	1	0	0	1	X	1	Species is under review for federal listing, but is known from only one location at a spring outlet. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
181.	*Geocarpon minimum*	Earth fruit (Tinytim)	No	1	1	2	0	0	0	0	X	1	Species is federally listed and restricted to four Texas localities. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
182.	*Festuca ligulata*	Guadalupe fescue	No	0	0	0	0	0	0	0		0	Species is proposed for federal listing and exists at one Texas locality between 1,800 to 2,000 meters in the Chisos Mountains. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
183.	*Schoenoplectus hallii*	Hall's bulrush	No	3	2	3	1	0	0	3	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
184.	*Fissidens hallii*	Hall's pocket moss	No	3	1	3	1	0	0	2	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
185.	*Quercus hinckleyi*	Hinckley's oak	No	2	2	3	0	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
186.	*Frankenia johnstonii*	Johnston's frankenia	No	3	3	3	1	0	0	0		2	Delisted species.

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187.	*Abronia macrocarpa*	Large-fruited sand-verbena	No	2	1	2	0	0	0	0	X	1	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
188.	*Agalinis calycina*	Leoncita false-foxglove	No	1	1	1	0	0	0	0		1	Species is under review for federal listing, but occurs in wetland habitats on protected lands. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
189.	*Potamogeton clystocarpus*	Little Aguja pondweed	No	1	1	1	0	0	0	2		1	Species is federally listed with one known Texas locality in aquatic habitat. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
190.	*Sclerocactus mariposensis*	Lloyd's mariposa cactus	No	1	1	1	0	0	0	0	X	1	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
191.	*Agalinis navasotensis*	Navasota false foxglove	No	3	3	3	1	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
192.	*Spiranthes parksii*	Navasota ladies' tresses	No	3	3	3	2	0	0	0	X	2	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
193.	*Hibiscus dasycalyx*	Neches River rose-mallow	No	2	1	2	0	0	0	3	X	1	Species is federally listed, and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
194.	*Escobaria (syn. Coryphantha) minima*	Nellie Cory cactus	No	1	1	1	0	0	0	0	X	1	Species is federally listed and is restricted to steep, Caballos novaculite outcrops in Brewster County. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
195.	*Helianthus paradoxus*	Pecos/Puzzle sunflower	No	1	1	1	0	0	0	0	X	1	Species is federally listed and is restricted in Texas to two populations within rare wetlands called, ciénegas. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
196.	*Asclepias prostrata*	Prostrate milkweed	No	2	1	3	1	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
197.	*Symphyotrichum puniceum var. scabricaule*	Rough-stemmed aster	No	2	1	2	1	0	0	3	X	1	Species is under review for federal listing, but occurs in wetland habitats. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
198.	*Helianthus occidentalis* ssp. *plantagineus*	Shinner's sunflower	No	3	3	3	2	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
199.	*Hoffmannseggia tenella*	Slender rushpea	No	3	2	2	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
200.	*Eriocaulon koernickianum*	Small-headed pipewort	No	1	1	1	2	0	0	3	X	1	Species is under review for federal listing, but occurs in wetland habitats. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
201.	*Ambrosia cheiranthifolia*	South Texas ambrosia	No	3	2	3	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
202.	*Astrophytum asterias*	Star cactus	No	2	1	2	1	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
203.	*Cryptantha crassipes*	Terlingua Creek cat's-eye	No	1	1	2	0	0	0	0	X	1	Species is federally listed and known from ten sites of the Boquillas Formation (Trans-Pecos shrub savanna) in Brewster County. LCRA TSC Activities are unlikely to affect the species due to avoidance.
204.	*Ayenia limitaris*	Texas ayenia	No	3	1	3	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.

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205.	*Leavenworthia texana*	Texas golden gladecress	No	1	1	1	0	0	0	1	X	1	Species is federally listed and known from few sites within Plan Area in wetland habitats. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
206.	*Callirhoe scabriuscula*	Texas poppy-mallow	No	2	2	3	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
207.	*Hymenoxys texana*	Texas prairie dawn	No	2	2	3	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
208.	*Bartonia texana*	Texas screwstem	No	1	1	1	1	0	0	1	X	1	Species is under review for federal listing, but occurs in wetland habitats. LCRA TSC Activities are unlikely to affect the species due to lack of exposure.
209.	*Styrax texanus (Syn. Styrax platanifolius ssp texanus)*	Texas snowbells	No	2	2	2	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
210.	*Phlox nivalis ssp texensis*	Texas trailing phlox	No	2	1	3	1	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
211.	*Trillium texanum*	Texas trillium	No	3	1	2	1	0	0	3	X	1	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
212.	*Zizania texana*	Texas wild rice	No	1	1	1	0	0	0	0	X	1	Species is federally listed and known from only the upper reach of San Marcos River. LCRA TSC Activities generally avoid disturbing aquatic habitats and are unlikely to affect the species due to lack of exposure.
213.	*Amsonia tharpii*	Tharp's blue-star	No	2	1	3	1	0	0	0	X	2	This species is under review for potential future listing. LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
214.	*Sclerocactus brevihamatus ssp. tobuschii*	Tobusch fishhook cactus	No	3	1	3	2	0	0	0	X	3	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
215.	*Manihot walkerae*	Walker's manioc	No	3	2	2	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
216.	*Physaria pallida*	White bladderpod	No	3	2	2	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
217.	*Physaria thamnophila*	Zapata bladderpod	No	3	2	2	0	0	0	0	X	2	Species is federally listed and LCRA TSC Activities could affect habitat. Individuals of this species could be destroyed by vegetation clearing, construction, or vegetation maintenance.
218.	*Macrochelys temminckii*	Alligator snapping turtle	No	1	1	1	0	0	0	0	X	1	Species is petitioned for federal listing with Critical Habitat with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
219.	*Eretmochelys imbricata*	Atlantic hawksbill sea turtle	No	0	0	0	0	1	1	0	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
220.	*Coniophanes imperialis*	Black-striped snake	No	3	1	2	2	1	1	2	X	2	Species is not federally listed. Species is restricted to the southern tip of Texas, but is a fairly common across its range. Vegetation clearing, maintenance, and surface impacts could disturb habitat. Consider measures to minimize risk of collisions.
221.	*Nerodia harteri*	Brazos water snake	No	2	1	1	1	0	0	0	X	1	Species is not federally listed and does not occur in areas where activities are expected to occur in the immediate future. Species is mostly aquatic and can be found on banks and shorelines, which could be affected by vegetation clearing or maintenance. Consider measures to avoid aquatic habitats.
222.	*Graptemys caglei*	Cagle's map turtle	No	2	1	1	0	1	0	0	X	1	Species is not federally listed. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.

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223.	*Trimorphodon vilkinsonii*	Chihuahuan Desert lyre snake	No	1	1	2	0	1	0	0	X	1	Species is not federally listed and future listing seems unlikely due to the species' wide range and abundant population. Consider measures to minimize risk of collisions.
224.	*Kinosternon hirtipes murrayi*	Chihuahuan mud turtle	No	1	0	1	0	0	0	0	X	1	Species is not federally listed. Species has a highly restricted range, occurring in one creek in the Big Bend region. Species is not likely to conflict with LCRA TSC Activities, but measures to avoid impacts could be emplaced if needed.
225.	*Nerodia paucimaculata*	Concho water snake	No	2	1	1	1	0	0	0	X	1	Species has been delisted; however, it is present in areas that may be impacted in the immediate future. Mostly aquatic, the species can be found on banks and shorelines, which could be affected by vegetation clearing or maintenance. Consider measures to avoid aquatic habitats.
226.	*Sceloporus grenicolus*	Dunes sagebrush lizard	No	1	1	3	3	1	1	0	X	2	Species is petitioned for listing, but the likelihood of actual listing is too uncertain and the Texas Conservation Plan may provide an avenue for ESA compliance if listed. Vegetation clearing, maintenance, and surface impacts could disturb habitat. Range is in a region where LCRA TSC Activities are unlikely to occur in the near future.
227.	*Chelonia mydas*	Green sea turtle	No	0	0	0	0	2	1	0	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Species comes ashore only to nest, and is known to nest in Texas only on South Padre Island. Consider measures to avoid nesting habitats.
228.	*Lepidochelys kempii*	Kemp's ridley sea turtle	No	0	0	0	0	2	0	0	X	1	Species is federally listed and is petitioned for Critical Habitat. Species occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. This species comes to shore only to nest, and most but not all nesting in Texas occurs on Padre Island National Seashore. Consider measures to avoid nesting habitats.
229.	*Dermochelys coriacea*	Leatherback sea turtle	No	0	0	0	0	1	1	0	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Species has very few nesting records, with all from Padre Island, thus activities are not likely to impact. Consider measures to avoid nesting habitats.
230.	*Caretta caretta*	Loggerhead sea turtle	No	0	0	0	0	2	1	0	X	1	Species is federally listed but occurs in aquatic habitats that are unlikely to be impacted by the LCRA TSC Activities. Species comes ashore only to nest. Although a rare nester in the state, potential exists for nesting to occur along full length of Texas coast. Consider measures to avoid nesting habitats.
231.	*Pituophis ruthveni*	Louisiana pine snake	No	3	1	2	1	1	1	0		2	Species known distribution in the Plan Area is limited to one population on federal lands. Species could be disturbed by clearing or maintenance in longleaf pine forests, although this species does not occur in portions of the state where LCRA TSC Activities are likely to occur in the near future.
232.	*Phrynosoma hernandesi*	Mountain short-horned lizard	No	0	0	0	0	0	0	0		0	Species is not federally listed. Species occurs in higher elevations of mountain ranges, not in areas where LCRA TSC Activities are expected to occur in the immediate future.
233.	*Leptodeira septentrionalis septentrionalis*	Northern cat-eyed snake	No	3	1	2	1	1	1	2	X	2	Species is not federally listed and future listing seems unlikely given its broad overall range and estimated abundance. Species has a very restricted range in Texas. Consider measures to minimize risk of collisions.
234.	*Cemophora coccinea copei*	Northern scarlet snake	No	1	1	3	3	1	0	0		2	Species is not federally listed and future listing seems unlikely due to relatively robust population size. This species does not occur in areas where LCRA TSC Activities are expected to occur in the immediate future.
235.	*Crotaphytus reticulatus*	Reticulate collared lizard	No	1	1	3	3	1	1	0		2	Species is not federally listed. Vegetation clearing, maintenance, and surface impacts could disturb habitat; direct impacts are possible if grading occurred during cold-weather periods. Species' range is in a region where activities are likely to occur in the future. Consider measures to minimize risk of collisions.
236.	*Coleonyx reticulatus*	Reticulated gecko	No	1	0	2	0	0	0	0		1	Species is not federally listed. Species occurs only in remote and rugged areas of Trans Pecos unlikely to be affected by LCRA TSC Activities.
237.	*Pseudemys gorzugi*	Rio Grande cooter	No	1	1	1	0	1	1	0	X	1	Species is not federally listed. Species occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.
238.	*Liochlorophis vernalis*	Smooth green snake	No	1	1	3	2	1	0	1	X	1	Species is not federally listed. Species occurs in coastal prairie habitat and outside of areas where LCRA TSC Activities are expected to occur in the near future. Future listing seems unlikely.
239.	*Drymobius margaritiferus*	Speckled racer	No	2	1	2	1	1	1	1	X	1	Species is not federally listed. Species may be restricted in occurrence to state parks and national wildlife refuges, where LCRA TSC Activities will not occur.

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240.	*Holbrookia lacerata*	Spot-tailed earless lizard	Yes	1	1	3	3	1	1	0	X	2	Species is petitioned for listing with Critical Habitat with 90-Day Substantial petition finding. Vegetation clearing, maintenance, and surface impacts could disturb habitat; direct impacts are possible if grading occurred during cold-weather periods. Range is in a region where LCRA TSC Activities are likely to occur in the future.
241.	*Phrynosoma cornutum*	Texas horned lizard	No	2	2	2	1	1	2	0	X	2	Species is not federally listed. Species occurs across much of south and west Texas where activities are likely to occur in the immediate future. This species continues to be abundant range-wide and listing seems unlikely. Consider measures to minimize risk of collisions.
242.	*Drymarchon melanurus erebennus*	Texas indigo snake	No	3	1	3	3	1	1	2	X	2	Species is not federally listed. Species occurs across south Texas south of the Edwards Plateau and Guadalupe River. Consider measures to minimize risk of collisions.
243.	*Cemophora coccinea lineri*	Texas scarlet snake	No	1	1	3	3	1	1	0	X	3	Species is not federally listed. Species' range is in the existing infrastructure and the projected future growth areas associated with the Texas lower Gulf Coast. Direct impacts to species might be able to be avoided with pre-construction surveys.
244.	*Gopherus berlandieri*	Texas tortoise	No	2	2	2	1	1	2	0	X	2	Species is not federally listed. Species occurs across much of south Texas where activities are likely to occur in the immediate future. Federal listing seems unlikely.
245.	*Crotalus horridus*	Timber rattlesnake	No	3	1	3	2	1	2	1	X	3	Species is not federally listed. Species occurs in portions of the state where activities are likely to occur in the near future. Federal listing seems unlikely due to wide distribution and abundance. Consider measures to minimize risk of collisions.
246.	*Tantilla cucullata*	Trans-Pecos black-headed snake	No	1	1	2	0	1	0	0	X	2	Species is not federally listed. Species occurs in rugged terrain of Trans Pecos east to Del Rio; vegetation clearing would have little effect on its desert habitat. There is some chance of disturbing a snake through construction of transmission line structures.
247.	*Deirochelys reticularia miaria*	Western chicken turtle	No	1	1	1	0	1	1	0	X	1	Species is not federally listed. Species occurs in aquatic habitats unlikely to be impacted by the LCRA TSC Activities. Consider measures to avoid aquatic habitats.

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