THREATENED AND ENDANGERED SPECIES SURVEY REPORT

San Jose Island Beneficial Use Site
Port of Corpus Christi Authority Channel Deepening Project
Aransas County, Texas
SWG-2019-00067

January 14, 2022
January 18, 2022 (rev)

Prepared for:
Port of Corpus Christi Authority
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1.0 Background and Introduction

The Port of Corpus Christi Authority (PCCA) is requesting authorization from the U.S. Army Corps of Engineers (USACE) to conduct dredge and fill activities to deepen a portion of the existing Corpus Christi Ship Channel (CCSC), as well as a 5.5-mile extension of the ship channel to the natural minus 80-foot bathymetric contour in the Gulf of Mexico. The proposed Corpus Christi Ship Channel Deepening Project (CCSCDP; SWG-2019-00067) would deepen the channel from the eastern portion of Harbor Island into the Gulf of Mexico, an overall distance of 13.8 miles. The project is needed to accommodate the transit of fully laden Very Large Crude Carriers (VLCCs), which draft approximately 70 feet. The USACE determined a Draft Environmental Impact Statement (DEIS) will be required for the proposed project.

The PCCA is proposing to utilize six (6) separate Beneficial Use (BU) Placement Area (PA) sites in association with the proposed CCSC Deepening Project. Field surveying and quantification of sensitive resources within and surrounding the proposed BU sites are required to support the DEIS being prepared by the USACE.

Six distinct BU survey areas (PA4, SS1, SS2, HI-E, MI, and SJI) were established and surveyed based on information gathered from both PCCA and the USACE. All BU boundaries were provided to Triton Environmental Solutions, LLC (Triton) by PCCA, excluding PA4. The boundary for PA4 was downloaded from the USACE Geospatial website on April 20, 2021. To create the respective BU Project Study Areas (PSAs), Triton buffered each BU boundary by 500 feet per USACE requirements.

Triton established Global Positioning System (GPS) coordinates for survey boundaries, transects, and sample stations. Survey files were loaded onto Trimble GEO7x GPS units for field mapping, data collection, and navigation. The Threatened and Endangered Species (T&E) Survey was conducted within the limits of the survey boundaries shown on the enclosed plans (Figure 1; Exhibit E).

Prior to survey initiation, Triton developed a T&E survey plan for coordination with the resource agencies. On April 26, 2021, PCCA, Mott MacDonald, and Triton met with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Texas Parks and Wildlife Department (TPWD) to coordinate approval of Tritons T&E survey methodologies. All regulatory comments were incorporated into a revised plan, provided to the respective agencies, and no further comments were received.

Due to access restrictions within the San Jose Island (SJI) BU survey area, PA4, SS1, SS2, HI-E and MI were surveyed from April 27 – June 4, 2021, while access agreements for SJI were coordinated. The results of the field surveying and quantification of sensitive resources within and surrounding these five (PA4, SS1, SS2, HI-E and MI) proposed BU sites can be found within the November 10, 2021, finalized “Threatened and Endangered Species Survey Report” document (Triton, 2021). Once access agreements of the approximately 1,480.19-acre SJI PSA were established, a collaborative survey effort between Mott MacDonald and Triton was initiated to collect the necessary data discussed, above. Triton conducted the T&E survey to document habitat characterization, quantify faunal species occurrence and distribution, as well as characterize habitat utilization and behavioral patterns within the vicinity (i.e., 500-foot buffer) of the SJI PSA on October 18 and 20-22, 2021. Detailed descriptions of the sampling design and data collection methodology, data analysis and results, and representative photographs of the T&E surveys are presented in subsequent sections.

2.0 Methodology

2.1 Species of Concern

In preparation for the T&E survey, Triton consulted the USFWS' Information for Planning and Consultation (IPaC) List (accessed April 16, 2021) and reviewed TPWD-listed floral and faunal species of concern for Aransas County. Desktop data review coupled with pre-survey coordination with the resource agencies resulted in a comprehensive list of species of concern for the survey area. Pre-survey coordination with USFWS also resulted in the inclusion of two additional species: the Threatened Eastern Black Rail (*Laterallus jamaicensis ssp. jamaicensis*) and Texas Seaside Paintbrush (*Castilleja halophila*; Exhibit E). Exhibit A summarizes species of potential occurrence within the survey boundary and their federal and state listed status. Appropriate protocols were also established in the event any sea turtles or marine mammals were encountered during the survey period.

2.2 Desktop Analysis

To investigate representative habitats, Triton performed a desktop analysis of the SJI PSA. The analysis included the evaluation of any critical habitat boundaries, National Wetland Inventory (NWI) data, TPWD submerged aquatic vegetation (SAV), and NMFS/TPWD oyster reef databases. The results of the desktop analysis facilitated approved survey plan development (Exhibit E). Preliminary T&E survey transects, and observation points were established in the office with ArcGIS Pro software.

2.3 Survey Duration

Triton's T&E biologist conducted the 4-field day T&E survey in close coordination with other survey teams present (i.e., Mott MacDonald/Triton wetland and Triton aquatic survey teams). This coordination enabled collection of all necessary habitat data to support the overall habitat characterization component of the T&E survey. Strict procedures were implemented to ensure the T&E faunal observation survey was conducted removed from the other survey teams working in the area as much as is reasonably possible. For example, the T&E biologist and wetland teams started on opposite ends of the survey area, and wetland survey teams avoided T&E observation data collection points as much as possible. This alleviated disturbance within the immediate vicinity of the T&E survey observation points and walking transects, therefore minimizing observation bias.

2.4 Survey Methods

2.4.1 Habitat Characterization Survey

In order to capture habitats across the 1,480.19-acre SJI PSA, a coordinated collaborative effort occurred with the wetland survey teams, aquatic survey teams, and T&E biologist to work concurrently to characterize and delineate boundaries of all critical habitats. Approved transects for the wetland delineation survey were utilized for habitat survey mapping. Interpreted habitat boundaries created in the office were verified in-field using a Trimble sub-meter Geo7x GPS. Survey teams walked transects within the survey area to record habitat types. All habitats delineated by the wetland and aquatic survey teams were utilized for purposes of T&E habitat characterization for the PSA.

2.4.2 Faunal Observations

The T&E walking survey transects and stationary observation stations were created in the office utilizing habitats identified by NWI data coupled with aerial interpretation so that diverse habitats would be surveyed. Once in-field, the PSA was assessed for habitat diversity and apparent faunal use, and

modifications to transects and observation stations were made to represent the habitat complexities. Faunal observations occurred for a total of 4 days. Each day, observations were recorded via two (N = 2) walking transects and three (N = 3), one-hour stationary observation stations. Visual observations were supported by utilization of 10x50 binoculars and a 60x spotting scope.

All observed faunal species were recorded and a summary list of all observations is provided in Exhibit A. All avian species were observed and their location, habitat utilization, behavior, and the presence of any leg bands were recorded on survey data sheets. Observed behaviors were defined as the following:

FL-flight, avian locomotion.

FO-foraging, actively seeking food.

RO-roosting, period of rest.

P-preening, maintenance of feathers with beak.

B-breeding, adults exhibiting reproductive and/or nesting behaviors (i.e., courtship behaviors, incubating, brooding, alarm calls, or injury-feigning displays)

AG-aggression, standoff displays, pursuit; displacement by pursuit where aggressor forces nearby birds to flight.

Species location refers to the habitat use at the time of observation. Upon completion of the desktop analysis, anticipated habitats during the survey were characterized as open water, estuarine low marsh (tidal flats, mangrove marsh, algal flats, smooth cordgrass), estuarine high marsh, palustrine wetlands, upland coastal prairie, and Gulf beach/dune system (e.g., wet beach, dry beach).

2.4.3 Transect Counts

Triton walked transect(s), counting all faunal species observed and recorded their behavior and habitat usage. Waterfront transects were walked parallel to shorelines. A minimum of two walking transects were conducted each day, for a minimum of eight total walking transects.

2.4.4 Observation Stations

Triton observed and conducted faunal visual counting surveys for a period of one hour at each respective station. Observations were made at three, one-hour stations per day, or a total of 12 one-hour observations for the entire SJI PSA survey period. Data collected included species observed, habitat feature utilized, and behavior. Any banding (avian species) was identified and recorded to species.

2.5 Meteorological Observations and Photographic Record

Triton staff photograph documented the field survey collections and have included representative images of observations in Exhibit C. Additionally, Triton documented general meteorological conditions on daily field sheets. The selected tide station for the project was determined to be the Port Aransas, TX-Station ID: 8775237 and was accessed via the National Oceanic and Atmospheric Administration's (NOAA's) webpage at: https://tidesandcurrents.noaa.gov/stationhome.html?id=8775237. The Port Aransas Station was selected as the primary tidal reference station for the San Jose Island survey due to its close proximity to the PSA. Meteorological and tidal conditions for the survey period are provided in Exhibit D.

3.0 Results

3.1 Habitat Characteristics

Collectively, survey teams (Mott MacDonald/Triton wetland and Triton aquatic teams) identified and delineated 10 distinct habitats within the 1,480.19-acre survey area (Figure 2). For purposes of the T&E habitat evaluation, the following descriptions discuss dominant macrohabitats and notable T&E microhabitats (i.e., tidal flats, foreshore, etc.) throughout the survey area. A detailed, finer resolution discussion on all present habitats (i.e., macro and micro) is provided in Mott MacDonald's Waters and Wetlands Delineation Report (Mott MacDonald, 2022).

3.1.1 Open Water

The wetland delineation associated with the project identified 19 waterbodies, two of which are considered estuarine/marine and 17 of which are considered palustrine. According to the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979), estuarine/marine open waterbodies include the Aransas Channel and Gulf of Mexico Beach. These areas are classified as marine open ocean and its associated high-energy coastline with subtidal, unconsolidated bottom and estuarine deep-water tidal habitats with subtidal, unconsolidated bottom. The 17 palustrine water bodies were classified as palustrine, unconsolidated cobble-gravel bottom, permanently flooded.

3.1.2 Estuarine Low Marsh Wetlands

Estuarine low marsh wetlands were delineated within the western portion of the survey area, and were classified as estuarine intertidal persistent, regulatory flooded, hyperhaline/hypersaline according to the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979). Low marsh wetlands occurred within low-lying interior portions of the PSA, below the high tide line (HTL) and were closely associated to the mean high water (MHW) elevation. Low marsh wetlands were dominated by sparse vegetation consisting of saltwort (*Batis maritima*), shoregrass (*Distichlis littoralis*), Carolina wolfberry (*Lycium carolinianum*), and perennial glasswort (*Sarcocornia ambigua*), but are typically unvegetated or covered by a layer of blue green algae (*Lyngbya spp*). Low marsh wetlands were typically bounded by palustrine emergent coastal prairie wetlands on their landward boundary and extended outside of the western end of the survey boundary.

3.1.6 Palustrine Emergent Coastal Prairie Wetlands

Palustrine emergent coastal prairie wetlands were delineated across the entire PSA and were classified as palustrine, emergent, persistent, seasonally flooded, and palustrine, emergent, persistent, seasonally flooded, hyperhaline/hypersaline (Cowardin et al., 1979). Palustrine emergent prairie wetlands were located above the HTL and are not tidally influenced. Coastal prairie wetlands were typically located above the estuarine low marsh boundary and below the lower upland boundary. Coastal prairie wetlands were also present as interdunal mosaic wetlands located behind the primary dune ridge. Palustrine emergent coastal prairie wetlands were dominated by sea ox-eye daisy (*Borrichia frutescens*), saltgrass (*Distichlis spicata*), marsh fimbrystilis (*Fimbristylis castanea*), bigleaf marsh-elder (*Iva frutescens*), saltmeadow cordgrass (*Spartina patens*), and gulfdune paspalum (*Paspalum monostachyum*). Seaside Indian Paintbrush was not encountered during the survey; however, it's preferred habitat (i.e., hypersaline soils and shell barrens in *Borrichia frutescens* and *Spartina spartinae* shrubland) could have been contained within the observed palustrine emergent coastal prairie wetlands (Singhurst et al. 2020). These habitats

are alternatively wet and dry (due to seasonal rainfall events) and typically lack tidal influence but may contain halophytic species due to the influence of salt spray and repeated inundation and evaporation.

3.1.7 Upland Coastal Prairie

Coastal prairie uplands were delineated across the entire PSA. Coastal prairie uplands were typically located at elevations just above the palustrine emergent coastal prairie wetland boundaries. Upland coastal prairies were also present as interdunal mosaics, located behind the primary dune ridge. Upland coastal prairies within the PSA were dominated by little bluestem (*Schizachyrium scoparium*), partridge pea (*Chamaecrista fasciculata*), four-spike fingergrass (*Eustachys neglecta*), honey mesquite (*Prosopsis glandulosa*), and perennial ragweed (*Ambrosia psilostachya*).

3.1.8 Coastal Dune System

Coastal dune habitats (gulf beach, foreshore, backshore, coppice mounds, foredune, foredune ridges, and back dunes comprise the beach/dune system [Texas General Land Office (GLO), 2009]. The foreshore (wet beach) is affected by daily tides. The backshore (dry beach) is inundated only by storm tides and higher spring tides. The backshore also supplies sand to the dunes. Coppice mounds, the initial stages of dune growth, are formed as sand accumulates on the downwind side of plants and other obstructions on or immediately adjacent to the beach. Foredunes are the first clearly distinguishable, vegetated dune formations landward of the water. They are also the first to dissipate storm-generated wave and current energy. The foredune ridge is high, continuous, and well stabilized by vegetation (GLO, 2009). Coastal dune uplands and grasslands were located on the higher points of active primary and secondary sand dunes, beginning on the Gulf beach side, and traversing over the dunes to the backdune landscape. Coastal grasslands were found on the backdune side interspersed with interdunal swale wetlands. Dominant vegetation present within coastal dune uplands and grasslands include beach morning glory (*Ipomea pes-caprae*), bitter panicum (*Panicum amarum*), coastal groundcherry (*Physalis angustifolia*), Gulf croton (*Croton punctatus*), shoreline sea purslane (*Sesuvium portulacastrum*), bitter panic grass (*Panicum amarum*), and sea oats (*Uniola paniculata*).

Table 1. Threatened & Endangered species survey habitat characterization summary

Habitat Type	Acreage
Open Water	587.74
Marine Shoreline/Wet Beach	51.36
Backshore/Dry Beach	152.78
Estuarine Shoreline	0.36
Estuarine Low Marsh Wetlands	3.04
Palustrine Coastal Prairie Wetlands	134.37
Upland Sand Flats	89.43
Upland Coastal Prairie	269.62
Developed Land (Jetty)	0.85
Coastal Prairie Palustrine Wetland and Upland Mosaics	190.64
Habitat Totals:	**1,480.19**
Piping Plover Critical Habitat*	672.01

**Acreages not included in habitat characterization totals.*

3.2 Faunal Observations

A total of 43 avian species and 8 non-avian faunal species were observed during the survey period. Avian faunal observations were most prevalent throughout the survey with 1,996 individuals observed (Table

2). Exhibit A provides a cumulative list of all faunal observations and includes an abbreviation key, common name, scientific name, and observed PSA location. Avian guilds present included Pelecaniformes, wading birds, waterfowl, diurnal raptors, new world vultures, shorebirds, gulls, terns, swallows, and thrushes. The federal and state threatened piping plover (*Charadrius melodus*) and red knot (*Calidris canutus rufa*) were observed along with many species classified as highly imperiled or USFWS Birds of Conservation Concern (Tables 3 and 4). No avian bands were observed during the survey period.

Table 2. Total avian observations (N) and relative frequency by survey date.

Survey Date	Total Observations (N)	Relative Frequency (%)
October 18, 2021	379	19.0
October 20, 2021	639	32.0
October 21, 2021	766	38.4
October 22, 2021	212	10.6
Total	**1,996**	**100.0**

Table 3. Federal and state threatened Piping Plover and Red Knot observational summary data and their potential habitat

Species	N Observed	Behavior Observed	Habitat Utilized	Habitat Acreage	Date Observed	GPS Coordinates (DD)
Piping Plover (*Charadrius melodus*)	40	FL, FO, RO	WB, DB	204.14	10/18, 10/20, 10/21, 10/22	27.91722, -96.99557 27.90308, -97.00762 27.90959, -97.00185 27.91148, -97.00068 27.91410, -96.99821 27.89072, -97.01635 27.87757, -97.02567 27.87635, -97.02671 27.89754, -97.01162 27.88890, -97.01772 27.85021, -97.04205 27.85714, -97.03832 27.86491, -97.03385 27.86573, -97.03333 27.87121, -97.02995 27.87342, -97.02855 27.90609, -97.00448 27.90230, -97.00773 27.89434, -97.01356 27.89330, -97.01437
Red Knot (*Calidris canutus rufa*)	2	FO	WB	51.36	10/21	27.87036, -97.03049

Table 4. Number observed (N) and percent PSA utilization by maritime shorebird guild species, US Shorebird Conservation Plan, and Birds of Conservation Concern (IPaC).

	Abbreviation	Common Name	Scientific Name	N Observed	PSA Utilization (%)
1	AOC	American Oystercatcher	*Haematopus palliatus*	8	0.4
2	AV	American Avocet	*Recurvirostra americana*	1	0.1
3	BBP	Black-bellied Plover	*Pluvialis squatarola*	51	2.6
4	BP	Brown Pelican	*Pelecanus occidentalis*	138	6.9
5	COT	Common Tern	*Sterna hirundo*	1	0.1
6	D	Dunlin	*Calidris alpina*	131	6.6
7	GBT	Gull-billed Tern	*Gelochelidon nilotica*	32	1.6
8	HG	Herring Gull	*Larus argentatus*	26	1.3
9	LSP	Least Sandpiper	*Calidris minutilla*	71	3.6
10	LT	Least Tern	*Sternula antillarum*	11	0.6
11	PP	Piping Plover[1]	*Charadrius melodus*	40	2.0
12	RBG	Ring-billed Gull	*Larus delawarensis*	7	0.4
13	RE	Reddish Egret	*Egretta rufescens*	10	0.5
14	RK	Red Knot[2]	*Calidris canutus*	2	0.1
15	RST	Ruddy Turnstone	*Arenaria interpres*	29	1.5
16	RT	Royal Tern	*Thalasseus maximus*	100	5.0
17	SA	Sanderling	*Calidris alba*	633	31.7
18	SNP	Snowy Plover	*Charadrius alexandrinus*	48	2.4
19	SP	Semipalmated plover	*Charadrius semipalmatus*	48	2.4
20	SPOS	Spotted Sandpiper	*Actitis macularius*	11	0.6
21	SPS	Semipalmated Sandpiper	*Calidris pusilla*	16	0.8
22	W	Willet	*Tringa semipalmata*	93	4.7
23	WH	Whimbrel	*Numenius phaeopus*	23	1.2
24	WP	Wilson's Plover	*Charadrius wilsonia*	104	5.2
25	WSP	Western Sandpiper	*Calidris mauri*	83	4.2
-	**Total**	-	-	**1,717**	**86.5**

[1 & 2] *(red) denotes federally listed threatened species.*

Non-avian faunal observations included crustaceans, reptiles, and mammals. Observations and evidence of (i.e., tracks and scat) feral hogs, coyotes, and white-tailed deer were present across the entire site. Ghost, fiddler, and blue crabs were also present within the majority of the tidally influenced areas of the site. No sea turtles or nests (avian or sea turtle) were observed during the survey period.

3.3 Faunal Habitat Utilization

Three habitat types were utilized by various avian species. The most prevalent use occurred within the foreshore (wet beach) of shorelines accounting for 71.7% use and 1,189 individuals observed (Table 5). The second most utilized habitat was dry beach with 467 individuals observed, accounting for 28.2% of overall habitat use. The third highest utilized habitat was coppice mounds accounting for 0.1% (N = 2 individuals) of usage. Table 5 provides summary data related to total observations by habitat type and percent habitat utilized across the survey area. Additionally, Exhibit B provides further information regarding habitat utilization of maritime shorebird guild, U.S. Shorebird Conservation Plan, and Bird of Conservation Concern species.

Table 5. Total observations (N) by habitat type and percent habitat utilized.

Abbreviation	Habitat Type	Total Observations (N)	Percent Utilized
DB	Dry Beach	467	28.2
WB	Wet Beach	1,189	71.7
CM	Coppice Mounds	2	0.1
Total		**1,658**	**100.0**

3.4 Faunal Behavior Observations

Avian species exhibited three behaviors during the survey period. Foraging was the prevalent activity accounting for 59.4% of observed behavior (N = 1,185 observations). Roosting (23.6%, N = 472 observations) and flying (17.0%, N = 339 observations) followed (Table 6).

Table 6. Total observations (N) of behavior and percent behavior observed.

Abbreviation	Behavior	Total Observations (N)	Percent Behavior Observed
FL	Flight	339	17.0
FO	Forage	1,185	59.4
RO	Roosting	472	23.6
Total		**1,996**	**100.0**

3.5 Meteorological Observations and Photographic Record

Meteorological and tide conditions for each survey day are provided in Exhibit D. Air temperature ranged from 72.3°F on October 18th to 79.9°F on October 20th. Clear skies to cloudy skies were encountered. Wind velocities ranged from 3.4 miles per hour (mph) to 11.8 mph. No precipitation occurred during the survey period. Tide levels ranged from +1.01 feet NAVD88 observed on October 22nd to +2.23 feet NAVD88 on October 20th. Tidal areas and Gulf of Mexico beach (i.e., wet beach versus dry beach) varied depending on the day's tidal condition. Tidal stage (rising, falling) was recorded.

4.0 Discussion

The threatened and endangered species survey provided a comprehensive habitat characterization and snapshot of faunal species relative abundance, diversity, behavior, and utilization across the SJI PSA. Some general interpretations in trends based on the habitat characterization and observational data included:

Overall, SJI PSA comprised diverse and abundant desirable habitat (i.e., foreshore, backshore, Gulf-dune complex) for important avian species; including approximately 672.01 acres of USFWS identified piping plover critical habitat. Maritime shorebird guild and birds of conservation concern were observed in greatest abundance and comprised 86.5% (N = 1,717) of total avian observations. Further, the federally threatened piping plover (N=40) and red knot (N=2) were observed within PSA SJI. Moreover, foraging (59.4%) was the predominant behavior observed over the survey period. Collectively, these data suggest SJI provided valuable habitat and resources to support important avian species, including the federally threatened piping plover and red knot.

Habitat availability and the interpretations of habitat use (i.e., foreshore and various microhabitats versus upland coastal prairie) and differences in behavioral patterns (i.e., foraging versus flight), as indicated above, can provide important insights and be a valuable project planning tool to inform decision making processes related to placement of dredged material and/or inform habitat restoration/enhancement activities (e.g., beach nourishment, habitat creation, shoreline stabilization, etc.). The T&E habitat

characterization and species observational data provided herein should facilitate project planning and development of the DEIS with regard to potential impacts to, and appropriate conservations measures for, threatened and endangered species and their associated habitats.

5.0 Literature Cited

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Figure 1.
Project Vicinity Map

Threatened & Endangered Species SJI Vicinity Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

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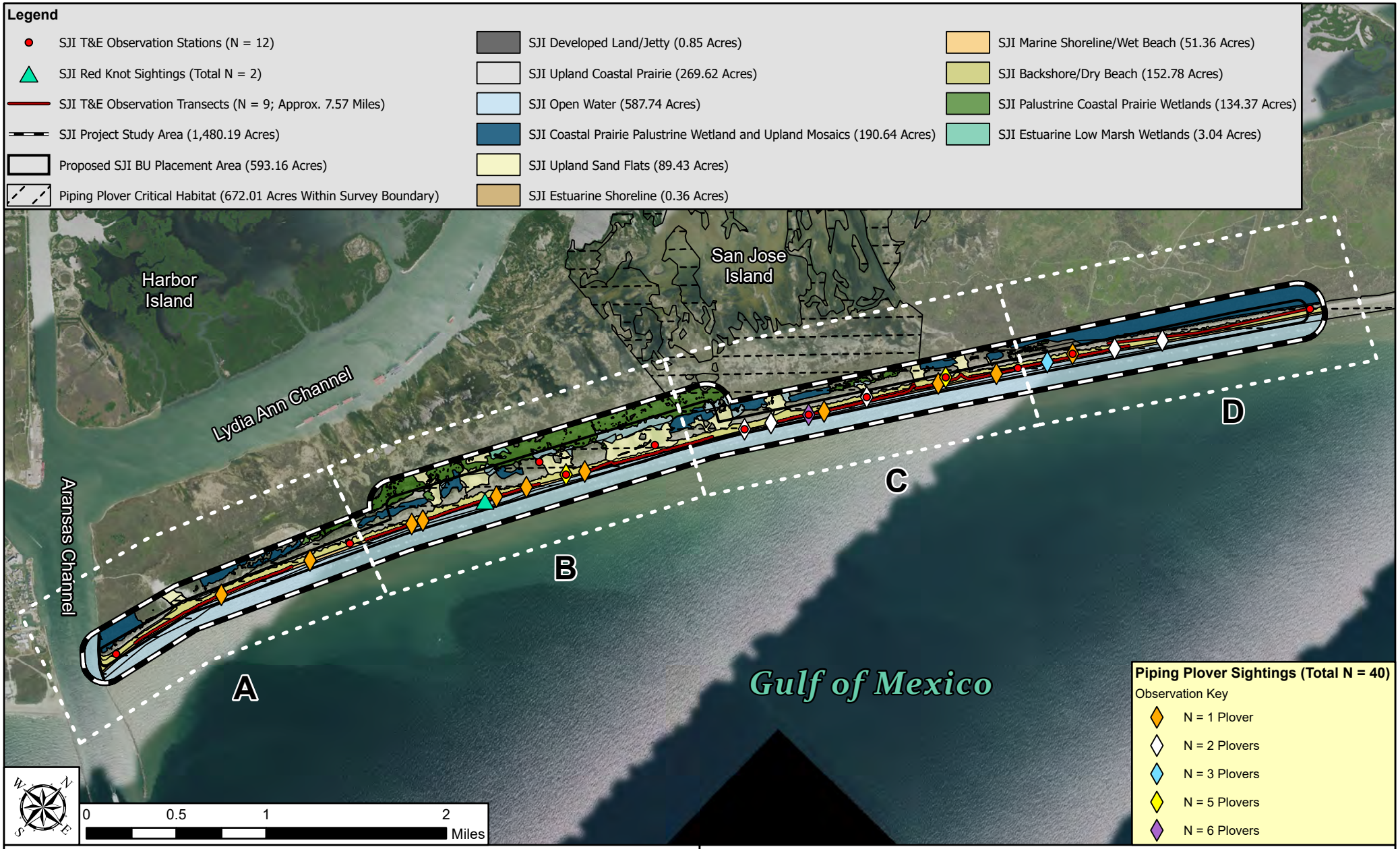
Map Notes:
-Base Map Source: Image obtained from ArcGIS Pro, World Imagery.
-BU Placement Area boundary shapefile provided by the Port of Corpus Christi Authority.
-Map preparation date: January 14, 2022 (JW).

Figure 2.
SJI T&E Survey Overview Map



Threatened & Endangered Species
SJI Survey Overview Map

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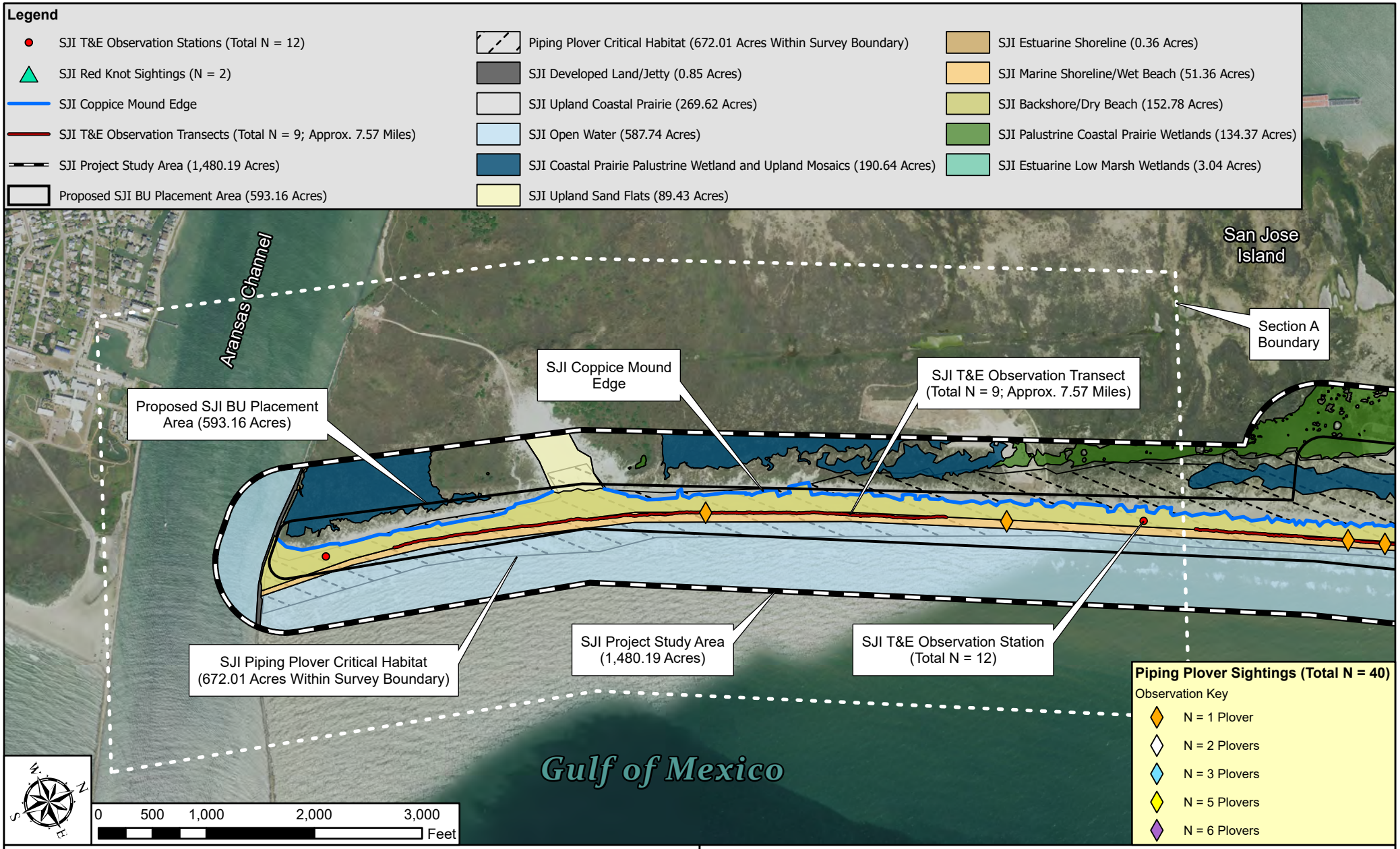
Map Notes:
-Base Map Source: Image obtained from TNRIS; NAIP 2020.
-SJI BU Placement Area boundary shapefile provided by the Port of Corpus Christi Authority.
-Habitat boundary shapefiles and acreages provided by Mott MacDonald.
-See SJI Section A - D Survey Results Maps for more detailed, overall survey results.
-Map preparation date: January 14, 2022 (JW).

Figure 3.
SJI T&E Section A – D Survey Results Maps



Threatened & Endangered Species
SJI Section A Survey Results Map

Corpus Christi Ship Channel Deepening Project
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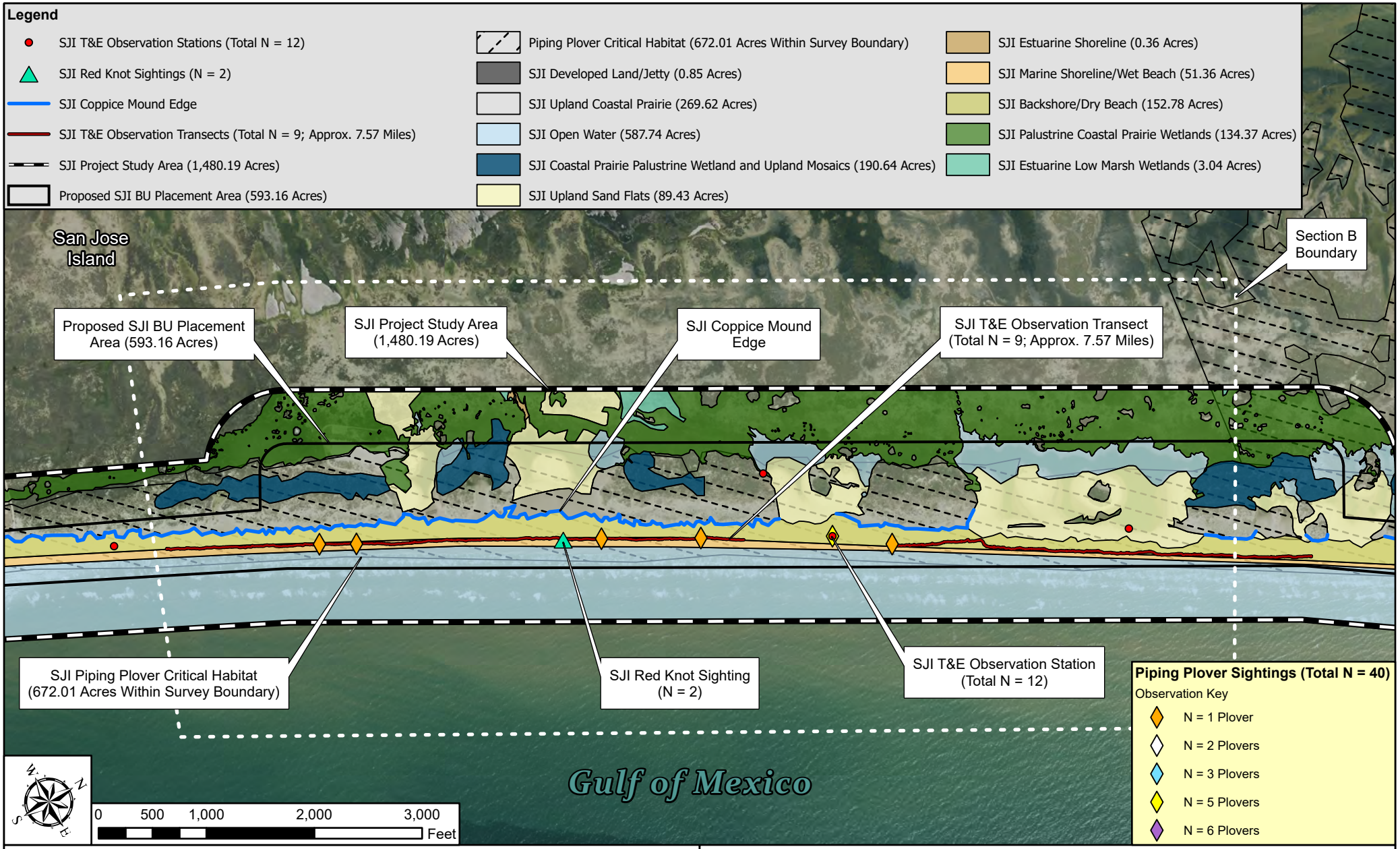
Map Notes:
-Base Map Source: Image obtained from TNRIS; NAIP 2020.
-SJI BU Placement Area boundary shapefile provided by the Port of Corpus Christi Authority.
-Habitat boundary shapefiles and acreages provided by Mott MacDonald.
-Total mileage and acreages on map represent totals across the entire SJI project study area.
-Map preparation date: January 14, 2022 (JW).



Threatened & Endangered Species
SJI Section B Survey Results Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

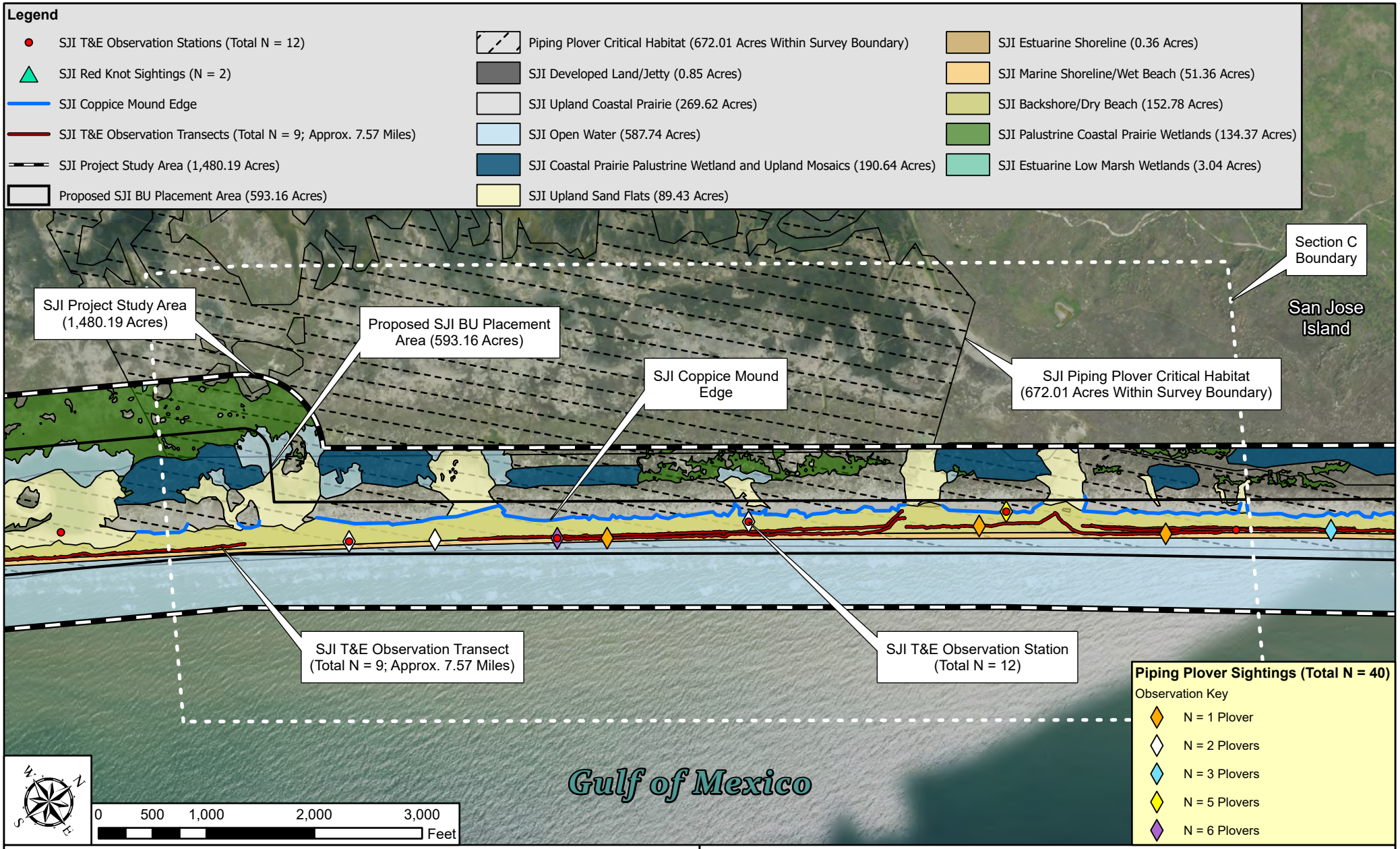
Prepared By:

Triton Environmental Solutions, LLC
P.O. Box 1755
Rockport, Texas 78381

Prepared For:

Port of Corpus Christi Authority
400 Harbor Drive
Corpus Christi, Texas 78401

Map Notes:
-Base Map Source: Image obtained from TNRIS; NAIP 2020.
-SJI BU Placement Area boundary shapefile provided by the Port of Corpus Christi Authority.
-Habitat boundary shapefiles and acreages provided by Mott MacDonald.
-Total mileage and acreages on map represent totals across the entire SJI project study area.
-Map preparation date: January 14, 2022 (JW).



Threatened & Endangered Species
SJI Section C Survey Results Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

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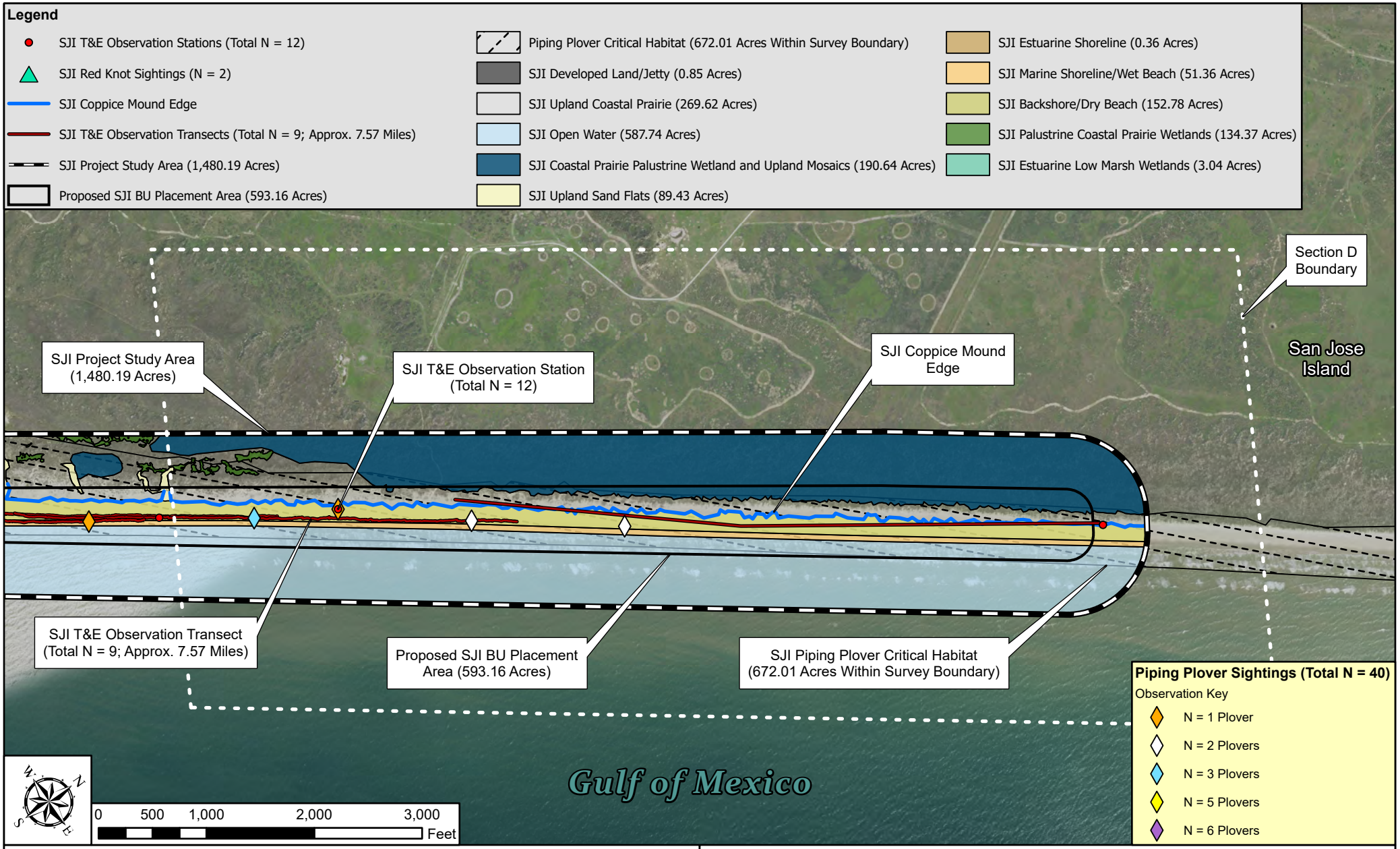
Map Notes:
-Base Map Source: Image obtained from TNRIS; NAIP 2020.
-SJI BU Placement Area boundary shapefile provided by the Port of Corpus Christi Authority.
-Habitat boundary shapefiles and acreages provided by Mott MacDonald.
-Total mileage and acreages on map represent totals across the entire SJI project study area.
-Map preparation date: January 14, 2022 (JW).



Threatened & Endangered Species
SJI Section D Survey Results Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

Prepared By:

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Map Notes:
-Base Map Source: Image obtained from TNRIS; NAIP 2020.
-SJI BU Placement Area boundary shapefile provided by the Port of Corpus Christi Authority.
-Habitat boundary shapefiles and acreages provided by Mott MacDonald.
-Total mileage and acreages on map represent totals across the entire SJI project study area.
-Map preparation date: January 14, 2022 (JW).

Exhibit A.
Faunal Species Summary Table – Federal, State, and Bird of Conservation Concern Status

	Abbreviation	Common Name	Scientific Name	Total Observations (N)	Frequency Observed (%)
1	AOC	American Oystercatcher*	*Haematopus palliatus*	8	0.4
2	AV	American Avocet*	*Recurvirostra americana*	1	0.1
3	BBP	Black-bellied Plover*	*Pluvialis squatarola*	51	2.6
4	BP	Brown Pelican*	*Pelecanus occidentalis*	138	6.9
5	BSW	Barn Swallow	*Hirundo rustica*	7	0.4
6	COT	Common Tern*	*Sterna hirundo*	1	0.1
7	CT	Caspian Tern	*Hydroprogne caspia*	117	5.9
8	D	Dunlin*	*Calidris alpina*	131	6.6
9	DCC	Double-Crested Cormorant	*Nannopterum auritum*	4	0.2
10	FT	Forester's Tern	*Sterna forsteri*	38	1.9
11	GBH	Great Blue Heron	*Ardeaherodias*	5	0.3
12	GBT	Gull-billed Tern*	*Gelochelidon nilotica*	32	1.6
13	GE	Great Egret	*Ardea alba*	2	0.1
14	HG	Herring Gull*	*Larus argentatus*	26	1.3
15	LBH	Little Blue Heron	*Egretta caerulea*	6	0.3
16	LG	Laughing Gull	*Leucophaeus atricilla*	38	1.9
17	LSP	Least Sandpiper*	*Calidris minutilla*	71	3.6
18	LT	Least Tern*	*Sternula antillarum*	11	0.6
19	NCO	Neotropic Cormorant	*Phalacrocorax brasilianus*	11	0.6
20	O	Osprey	*Pandion haliaetus*	7	0.4
21	PF	Peregrine Falcon	*Falco peregrinus*	2	0.1
22	PP	Piping Plover[1]	*Charadrius melodus*	40	2.0
23	RBG	Ring-billed Gull*	*Larus delawarensis*	7	0.4
24	RE	Reddish Egret*	*Egretta rufescens*	10	0.5
25	RK	Red Knot[2]	*Calidris canutus*	2	0.1
26	RST	Ruddy Turnstone*	*Arenaria interpres*	29	1.5
27	RT	Royal Tern*	*Thalasseus maximus*	100	5.0
28	SA	Sanderling*	*Calidris alba*	633	31.7
29	SNP	Snowy Plover*	*Charadrius alexandrinus*	48	2.4
30	SP	Semipalmated plover *	*Charadrius semipalmatus*	48	2.4
31	SPOS	Spotted Sandpiper*	*Actitis macularius*	11	0.6
32	SPS	Semipalmated Sandpiper*	*Calidris pusilla*	16	0.8
33	SSH	Sharp-Shinned Hawk	*Accipiter striatus*	1	0.1
34	ST	Sandwich Tern	*Thalasseus sandvicensis*	12	0.6
35	TH	Tricolor Heron	*Egretta tricolor*	1	0.1
36	TV	Turkey Vulture	*Cathartes aura*	18	0.9
37	W	Willet*	*Tringa semipalmata*	93	4.7
38	WH	Whimbrel*	*Numenius phaeopus*	23	1.2
39	WI	White Ibis	*Eudocimus albus*	4	0.2
40	WP	Wilson's Plover*	*Charadrius wilsonia*	104	5.2
41	WSP	Western Sandpiper*	*Calidris mauri*	83	4.2
42	WT	Wood Thrush	*Hylocichla mustelina*	5	0.3
43	WTH	White-Tailed Hawk	*Geranoaetus albicaudatus*	1	0.1
	Total			**1,996**	**100.0**

1 & 2 (red) denotes federally listed threatened species.

**Indicates maritime shorebird guild species. U.S. Shorebird Conservation Plan and/or Bird of Conservation Concern, IPaC.*

Summary of all Non-Avian Species Observed, October 18 & October 20-22, 2021

	Abbreviation	Common Name	Scientific Name	Classification
1	GC	Ghost Crab	*Ocypode quadrata*	Crustacean
2	FC	Fiddler Crab	*Uca longisignalis*	Crustacean
3	BC	Blue Crab	*Callinectes sapidus*	Crustacean
4	FH	Feral Hog	*Sus scrofa*	Mammal
5	COY	Coyote	*Canis latrans*	Mammal
6	WTD	White-Tailed Deer	*Odocoileus virginianus*	Mammal
7	BTJ	Black-Tailed Jackrabbit	*Lepus californicus*	Mammal
8	CGS	Checkered Garter Snake	*Thamnophis marcianus*	Reptile

Exhibit B.

Number observed (N) and percent habitat utilization (parenthesis) for maritime shorebird guild species, U.S. Shorebird Conservation Plan, and Bird of Conservation Concern (IPaC)

	Abbreviation	Common Name	Wet Beach (WB)	Dry Beach (DB)
1	AOC	American Oystercatcher	5 (100.0)	-
2	AV	American Avocet	1 (100.0)	-
3	BBP	Black-bellied Plover	36 (70.6)	15 (29.4)
4	BP	Brown Pelican	28 (100.0)	-
5	CT	Common Tern	84 (100.0)	-
6	D	Dunlin	80 (65.0)	43 (35.0)
7	GBT	Gull-billed Tern	21 (100.0)	-
8	HG	Herring Gull	22 (91.7)	2 (8.3)
9	LSP	Least Sandpiper	54 (76.1)	17 (23.9)
10	LT	Least Tern	8 (100.0)	-
11	PP	Piping Plover[1]	19 (48.7)	20 (51.3)
12	RBG	Ring-billed Gull	6 (100.0)	-
13	RE	Reddish Egret	9 (100.0)	-
14	RK	Red Knot[2]	2 (100.0)	-
15	RST	Ruddy Turnstone	26 (89.7)	3 (10.3)
16	RT	Royal Tern	77 (100.0)	-
17	SA	Sanderling	348 (59.2)	240 (40.8)
18	SNP	Snowy Plover	27 (57.4)	20 (42.6)
19	SP	Semipalmated plover	40 (83.3)	8 (16.7)
20	SPOS	Spotted Sandpiper	6 (54.5)	5 (45.5)
21	SPS	Semipalmated Sandpiper	14 (87.5)	2 (12.5)
22	W	Willet	61 (70.9)	25 (29.1)
23	WH	Whimbrel	13 (65.0)	7 (35.0)
24	WP	Wilson's Plover	70 (71.4)	28 (28.6)
25	WSP	Western Sandpiper	60 (72.3)	23 (27.7)
Total Observations and (Mean Habitat Utilization):			**1,117 (82.5)**	**458 (17.5)**

1 & 2 (red) denotes federally listed threatened species.

Exhibit C.
T&E Survey Photographic Documentation

TRITON ENVIRONMENTAL SOLUTIONS LLC

Corpus Christi Ship Channel Deepening Project (SWG-2019-00067) - San Jose Island PSA

Port of Corpus Christi Authority
400 Harbor Drive
Corpus Christi, Texas 78401

Survey Period: October 18 & 20-22, 2021

Threatened and Endangered Species Survey Summary:

- Total of 4 survey days.
- 9 walking transects & 12 stationary observation points for survey period.
- 43 avian species observed; 1,996 total individuals over the survey period.
- 8 non-avian faunal species observed.

Corpus Christi Channel Deepening Project (SWG-2019-00067)

T&E Survey Photo Exhibit – SJI Placement Area

Survey Period: October 18 & 20-22, 2021

October 18

Observation Point 1

Observation Point 2

Observation Point 3

October 20

Observation Point 1

Observation Point 2

Observation Point 3

Corpus Christi Channel Deepening Project (SWG-2019-00067)

T&E Survey Photo Exhibit – SJI Placement Area

Survey Period: October 18 & 20-22, 2021

October 21

Observation Point 1

Observation Point 2

Observation Point 3

October 22

Observation Point 1

Observation Point 2

Observation Point 3

Exhibit D.
NOAA Tides & Currents Port Aransas Station: Meteorological & Tide Table

Port Aransas Tide Station (ID: 8775237)
NOAA Tides & Currents

Date	Time (LST)	Air Temp (°F)	Baro Pressure (Mb)	Tide, Verified (Feet NAVD88)	Water Temp (°F)	Wind Speed (mph)	Wind Gusts (mph)	Wind Direction (deg.)	Precipitation (in.)
10/18/2021	7:00	72.3	1018.8	1.83	77.9	5.4	7.4	83	
10/18/2021	8:00	74.7	1019.5	1.94	77.9	3.4	7.8	102	
10/18/2021	9:00	74.3	1020.0	1.72	77.9	8.1	10.1	73	
10/18/2021	10:00	75.0	1020.0	1.89	78.1	5.1	9.6	73	
10/18/2021	11:00	75.2	1019.6	2.05	78.1	7.2	10.9	74	
10/18/2021	12:00	75.9	1019.0	2.07	78.1	5.1	9.8	108	0
10/18/2021	13:00	74.8	1017.8	2.05	78.3	9.6	12.7	63	
10/18/2021	14:00	75.0	1016.9	2.09	78.3	10.7	15.4	67	
10/18/2021	15:00	75.6	1016.5	2.07	78.3	9.4	14.5	73	
10/18/2021	16:00	76.3	1016.3	2.02	78.3	10.7	15.0	85	
10/20/2021	7:00	73.2	1016.8	1.65	77.4	3.4	4.5	24	
10/20/2021	8:00	73.6	1017.5	1.59	77.0	3.6	4.9	26	
10/20/2021	9:00	76.8	1017.9	1.65	76.8	4.5	5.1	57	
10/20/2021	10:00	77.4	1018.1	1.75	76.5	6.0	6.7	57	
10/20/2021	11:00	77.5	1018.2	1.87	76.5	8.5	11.4	55	
10/20/2021	12:00	78.3	1018.2	1.99	76.3	8.5	11.4	71	0
10/20/2021	13:00	79.2	1017.2	2.15	76.1	9.2	11.4	70	
10/20/2021	14:00	79.3	1016.6	2.23	76.3	8.3	10.9	86	
10/20/2021	15:00	78.8	1016.3	2.19	76.3	7.6	10.1	66	
10/20/2021	16:00	79.9	1016.0	2.23	76.8	8.5	13.4	104	
10/21/2021	7:00	74.7	1018.4	1.27	77.4	4.5	5.8	340	
10/21/2021	8:00	75.6	1019.1	1.21	77.2	7.2	7.8	359	
10/21/2021	9:00	74.7	1020.0	1.10	77.0	7.2	9.4	8	
10/21/2021	10:00	76.6	1020.2	1.11	77.0	5.8	8.3	26	
10/21/2021	11:00	77.7	1019.9	1.27	77.0	7.8	9.6	12	
10/21/2021	12:00	77.2	1019.4	1.47	77.2	10.1	11.4	37	0
10/21/2021	13:00	78.1	1018.8	1.69	77.4	10.9	12.1	59	
10/21/2021	14:00	78.8	1017.8	1.87	77.5	7.8	10.1	64	
10/21/2021	15:00	79.5	1017.4	2.00	77.7	7.4	10.3	79	
10/21/2021	16:00	79.5	1017.3	2.00	77.5	8.1	10.3	68	

10/21/2021	17:00	79.3	1017.3	1.98	77.5	6.7	8.7	92	
10/22/2021	7:00	73.4	1016.6	1.35	78.6	5.1	6.7	347	0
10/22/2021	8:00	73.0	1017.1	1.19	78.3	6.3	8.1	344	
10/22/2021	9:00	74.3	1017.4	1.16	78.1	9.2	10.3	16	
10/22/2021	10:00	76.1	1017.5	1.01	78.1	7.8	10.5	38	
10/22/2021	11:00	78.3	1017.2	1.27	77.9	3.8	8.9	39	
10/22/2021	12:00	77.7	1016.7	1.42	78.1	8.9	10.7	66	
10/22/2021	13:00	77.9	1015.6	1.63	78.1	9.6	11.2	60	
10/22/2021	14:00	77.9	1014.6	1.78	78.3	10.9	13.2	73	
10/22/2021	15:00	78.6	1014.0	1.99	78.6	11.8	15.0	67	

Table Source: Meteorological Observations - NOAA Tides & Currents https://tidesandcurrents.noaa.gov/stationhome.html?id=8775237
Precipitation Source: https://www.ncei.noaa.gov/products/land-based-station

Table Key

- LST: Local Standard Time
- Baro Pressure (Mb): Millibars, unit of measurement for atmospheric pressure
- °F: degrees Fahrenheit
- in.: inches
- deg.: degrees
- mph: miles per hour
- Feet NAVD88: Established for vertical control surveying in the United States of America based upon the General Adjustment of the North American Datum of 1988. Shown in feet.

Exhibit E.
Approved T&E Survey Plan

Port of Corpus Christi Authority Channel Deepening Project

Threatened and Endangered (T&E) Species Survey Plan

Objective: To develop and conduct a threatened and endangered species survey to fully support the development of a Draft Environmental Impact Statement (DEIS). The survey plan was coordinated with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Services (NMFS), and Texas Parks and Wildlife Department (TPWD) on April 26, 2021. The plan and methodologies described herein is a result of this coordination.

1. Survey Areas (per Scope): Placement Areas (PAs) SS1, PA4, SS2, HI-E, SJI, and MI. Each listed PA has been buffered 500-feet. All listed PAs, including respective buffers will be surveyed.
2. Resource Agency Input on Species of Concern
   - 2.1. USFWS Information for Planning and Consultation List (Attachment A, accessed April 16, 2021)
     - 2.1.1. Attendees of the April 26, 2021 meeting approved the species listed in Attachment A.
     - 2.1.2. TPWD provided listed species for Nueces, San Patricio, and Aransas counties. These species have been added to Attachment A.
     - 2.1.3. USFWS provided information for the Eastern Black Rail and Texas Seaside Paintbrush. These species have been added to Attachment A.
     - 2.1.4. NMFS indicated sea turtles are primary species of concern for survey areas. Also, NMFS confirmed the habitat boundaries resulting from the survey would sufficiently support evaluation of Essential Fish Habitat (EFH) for development of the DEIS.
3. Perform desktop habitat analysis of the six (6) Placement Areas.
   - 3.1. Critical Habitat Boundaries, National Wetland Inventory (NWI) Data; TPWD submerged aquatic vegetation (SAV) and TPWD oyster reef databases (if available)
     - 3.1.1. Potential habitats: Freshwater emergent wetlands, estuarine wetlands (high and low), marine deepwater, forebeach ('wet beach'), backbeach ('dry beach'), tidal and non-tidal flats, seagrass, oysters, and upland habitat.
4. Survey Methodologies (all methodologies proposed were discussed and approved with feedback from the natural resource agencies during the April 26, 2021 meeting.
   - 4.1. Habitat Survey. The wetland survey team, aquatic survey team, and T&E biologist will work concurrently to field verify NWI wetlands identified in the desktop analysis, described in Step 3 above. Approved transects for the wetland delineation survey will be utilized for habitat survey mapping. Interpreted habitat boundaries created in the office, will be ground-truthed and verified using a Trimble sub-meter GeoXH GPS. Survey teams will walk transects within the survey area to record habitat types. All habitats delineated by the wetland and aquatic survey teams will also be utilized for purposes of habitat characterization.
   - 4.2. Faunal Observations (Including maritime shorebird guild species and migratory birds)
     - 4.2.1. Data collected will include the species and type of use, habitat feature being utilized, and substrate type. Any banding (avian species) will attempt to be identified and recorded to species. A sample observation record log is provided in Attachment C.
     - 4.2.2. Transect Counts

4.2.2.1. Walking transects were oriented so that they, generally, intersected multiple potential habitat types within the survey area and ran parallel to shorelines.

4.2.2.2. Triton will walk transect(s) counting all faunal species observed. Visual observations will be supported by utilization of 8x42 binoculars and a 60x spotting scope. If a shorebird or other avian species is sighted, the bird will be observed and its location, behavior, and the presence of any leg bands will be recorded on survey data sheets (Attachment C).

4.2.2.3. Faunal Observation Stations.

4.2.2.3.1. Triton will observe and conduct visual counting surveys for a period of one hour at each respective station. The threatened and endangered survey transects and observation stations were created in the office utilizing habitats identified by NWI coupled with aerial interpretation so that diverse habitats will be surveyed. Minor modifications to transects and observation stations may be necessary in field.

4.2.3. Survey Duration.

4.2.3.1. Triton's T&E biologist will and conduct all T&E surveying concurrently and in conjunction with other survey teams (i.e., wetland survey teams and aquatic survey teams). The T&E biologist will survey each of the six PA sites for a minimum of 4 days of faunal observations, respectively. The anticipated survey schedule is included in Attachment D.

4.2.3.2. Sea Turtles.

4.2.3.2.1. Triton will be extremely vigilant about sea turtle sightings during the survey. Any sea turtle sighting including tracks and nests will be immediately coordinated with the Amos Rehabilitation Keep (ARK) and/or Dr. Donna Shaver (National Park Service). Sea turtle disturbance will be strictly avoided. Triton will also provide ARK our anticipated survey schedule.

4.2.3.2.2. Sea Turtle Sighting Contact Information:

4.2.3.2.2.1. **ARK Hotline (361) 749-6793**

4.2.3.2.2.2. **If you see a stranded or nesting sea turtle call the (NPS) Turtle Hotline: 1-866-TURTLE5**

5. Observations during the T&E survey will be recorded on the observation record provided in Attachment C and will include the following:
   5.1. Faunal observations (as outlined, above).
   5.2. General meteorological conditions (e.g., cloud cover, wind direction, wind speed, air temperature, tide level according to nearest station, etc.)
   5.3. Avian band observations
6. Photographic Record. Triton will obtain representative photos of the habitats at each survey observation station.
7. GIS database management
   7.1. ArcGIS 10.4 and Pro software was utilized to create preliminary habitat boundaries, survey transects, and observation stations. Based on the aerial interpretation, transects and observation stations were oriented so that they intersected multiple potential habitat types within the survey area. Triton will utilize a Trimble sub-meter GeoXH for the T&E survey effort. Data collected in the field will be processed using ArcGIS 10.4 and Pro software to create

habitat/vegetation community maps within the survey boundaries. Data will be collected in NAD83, TXS, Feet.

Attachments:

Attachment A: Coordinated and Approved Species Lists: IPAC Report, USFWS Eastern Black Rail and Texas Seaside Paintbrush, and TPWD Counties Lists
Attachment B: T&E Survey Maps
Attachment C: Observation Record
Attachment D: Anticipated Survey Schedule

Attachment A: Coordinated and Approved Species Lists: IPAC Report, USFWS Eastern Black Rail and Texas Seaside Paintbrush, and TPWD Counties Lists

1.1. Review USFWS Information for Planning and Consultation List (accessed April 16, 2021)
- 1.1.1. Gulf Coast Jaguarundi
- 1.1.2. Ocelot
- 1.1.3. West Indian Manatee
- 1.1.4. Attwater's Greater Prairie Chicken
- 1.1.5. Eastern Black Rail
- 1.1.6. Northern Aplomado Falcon
- 1.1.7. Piping Plover
- 1.1.8. Red Knot
- 1.1.9. Whooping Crane
- 1.1.10. Green Sea Turtle
- 1.1.11. Hawksbill Sea Turtle
- 1.1.12. Kemp's Ridley Sea Turtle
- 1.1.13. Leatherback Sea Turtle
- 1.1.14. Loggerhead Sea Turtle
- 1.1.15. Slender Rush-pea
- 1.1.16. South Texas Ambrosia
- 1.1.17. Others Not Listed
- 1.1.18. National Marine Fisheries Service (NMFS), Essential Fish Habitat (EFH)
  - 1.1.18.1. Recommendations other than what is listed (i.e., Giant Manta Ray)
- 1.1.19. Migratory Birds (with IPAC probability of presence in survey area during survey duration)
  - 1.1.19.1. American Golden-plover; mid to high April, mid May.
  - 1.1.19.2. American Oyster Catcher; low to high. BS.
  - 1.1.19.3. Bald Eagle; none. BS.
  - 1.1.19.4. Black Rail; Low in April. BS.
  - 1.1.19.5. Black Scoter; none.
  - 1.1.19.6. Black Skimmer; High April – June; BS mid-May to June.
  - 1.1.19.7. Black-legged Kittiwake; midrange early April.
  - 1.1.19.8. Bonaparte's Gull; midrange early April, low probability remaining April.
  - 1.1.19.9. Brown Pelican; High April-June. BS.
  - 1.1.19.10. Buff-breasted Sandpiper; low to mid probability April – May.
  - 1.1.19.11. Clapper Rail; Mid-probability. BS.
  - 1.1.19.12. Common Loon; April-May mid-probability. BS.
  - 1.1.19.13. Common Tern; April-June mid to high probability. BS: May-June.
  - 1.1.19.14. Double-crested Cormorant; High probability. BS.
  - 1.1.19.15. Dunlin; High probability April and May.
  - 1.1.19.16. Gull-billed Tern; Mid to high probability; BS.
  - 1.1.19.17. Herring Gull; Mid to high probability; BS.
  - 1.1.19.18. Hudsonian Godwit; April low, May mid. One week each.
  - 1.1.19.19. King Rail; April low/mid. BS.
  - 1.1.19.20. Le Conte's Sparrow; none.
  - 1.1.19.21. Least Tern; High. BS.

1.1.19.22. Lesser Yellowlegs; High.
1.1.19.23. Long-billed Curlew; High.
1.1.19.24. Long-tailed Duck; None.
1.1.19.25. Magnificent Frigatebird; High.
1.1.19.26. Marbled Godwit; Mid/High.
1.1.19.27. Nelson's Sparrow; Low (Apr).
1.1.19.28. Northern Gannet; None.
1.1.19.29. Prothonotary Warbler; April-High, May-mid. BS.
1.1.19.30. Red-breasted Merganser; Low/Mid-April to May.
1.1.19.31. Red-necked Phalarope; None.
1.1.19.32. Reddish Egret; High. BS.
1.1.19.33. Ring-billed Gull; Mid/High.
1.1.19.34. Royal Tern; High. BS.
1.1.19.35. Ruddy Turnstone; Mid to High.
1.1.19.36. Seaside Sparrow; Mid. BS.
1.1.19.37. Semipalmated Sandpiper; Mid to High.
1.1.19.38. Short-billed Dowitcher; Mid to High.
1.1.19.39. Sooty Tern; Mid-range probability first week of May. BS.
1.1.19.40. Surf Scoter; None.
1.1.19.41. Swallow-tailed Kite; Low-range probability mid-April. BS.
1.1.19.42. Whimbrel; Mid-range probability April and first week of May.
1.1.19.43. White-winged Scoter; None.
1.1.19.44. Willet; High. BS.
1.1.19.45. Wilson's Plover; High. BS.

1.1.20. IPAC Probability of Presence within Six (6) PA Sites from April – June. Any species denoted in green, above, indicates probability of presences within the survey areas. A "BS" label indicates breeding season during survey period.

IPaC **U.S. Fish & Wildlife Service**

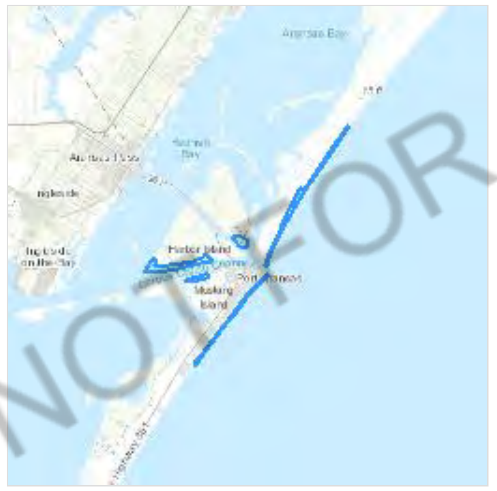
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Aransas and Nueces counties, Texas



Local office

Texas Coastal Ecological Services Field Office

(281) 286-8282
(281) 488-5882

4444 Corona Drive, Suite 215
Corpus Christi, TX 78411

http://www.fws.gov/southwest/es/TexasCoastal/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gulf Coast Jaguarundi Herpailurus (=Felis) yagouaroundi cacomitli — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3945

Ocelot Leopardus (=Felis) pardalis — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4474

West Indian Manatee Trichechus manatus — Threatened
Marine mammal
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/4469

Birds

NAME	STATUS

Attwater's Greater Prairie-chicken Tympanuchus cupido attwateri — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7259

Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10477

Northern Aplomado Falcon Falco femoralis septentrionalis — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1923

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1864

Whooping Crane Grus americana — Endangered
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/758

Reptiles

NAME	STATUS

Green Sea Turtle Chelonia mydas — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/6199

Hawksbill Sea Turtle Eretmochelys imbricata — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/3656

Kemp's Ridley Sea Turtle Lepidochelys kempii — Endangered
Wherever found
There is **proposed** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/5523

Leatherback Sea Turtle Dermochelys coriacea — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1493

Loggerhead Sea Turtle Caretta caretta — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1110

Flowering Plants

NAME	STATUS

Slender Rush-pea Hoffmannseggia tenella — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5298

South Texas Ambrosia Ambrosia cheiranthifolia Wherever found	Endangered

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3331

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Piping Plover Charadrius melodus https://ecos.fws.gov/ecp/species/6039#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird

species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
American Oystercatcher Haematopus palliatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black Rail Laterallus jamaicensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7717	Breeds Mar 1 to Sep 15
Black Scoter Melanitta nigra This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

Black Skimmer Rynchops niger — Breeds May 20 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5234

Black-legged Kittiwake Rissa tridactyla — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Bonaparte's Gull Chroicocephalus philadelphia — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Brown Pelican Pelecanus occidentalis — Breeds Jan 15 to Sep 30
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6034

Buff-breasted Sandpiper Calidris subruficollis — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9488

Clapper Rail Rallus crepitans — Breeds Apr 10 to Oct 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Common Loon gavia immer — Breeds Apr 15 to Oct 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Tern Sterna hirundo — Breeds May 10 to Sep 10
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4963

Double-crested Cormorant phalacrocorax auritus — Breeds Apr 20 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/3478

Dunlin Calidris alpina arcticola — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Gull-billed Tern Gelochelidon nilotica — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9501

Herring Gull Larus argentatus — Breeds Apr 20 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Hudsonian Godwit Limosa haemastica — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

King Rail Rallus elegans — Breeds May 1 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8936

Le Conte's Sparrow Ammodramus leconteii — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Least Tern Sterna antillarum — Breeds Apr 20 to Sep 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Long-tailed Duck Clangula hyemalis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/7238

Magnificent Frigatebird Fregata magnificens — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nelson's Sparrow Ammodramus nelsoni — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Northern Gannet Morus bassanus — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-breasted Merganser Mergus serrator — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Red-necked Phalarope Phalaropus lobatus — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Reddish Egret Egretta rufescens — Breeds Mar 1 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/7617

Ring-billed Gull Larus delawarensis — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Royal Tern Thalasseus maximus — Breeds Apr 15 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Ruddy Turnstone Arenaria interpres morinella — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Seaside Sparrow Ammodramus maritimus — Breeds May 10 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper Calidris pusilla — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Sooty Tern Onychoprion fuscatus — Breeds Mar 10 to Jul 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Surf Scoter Melanitta perspicillata — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Swallow-tailed Kite Elanoides forficatus — Breeds Mar 10 to Jun 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8938

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

White-winged Scoter Melanitta fusca — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Willet Tringa semipalmata — Breeds Apr 20 to Aug 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wilson's Plover Charadrius wilsonia — Breeds Apr 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted

Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

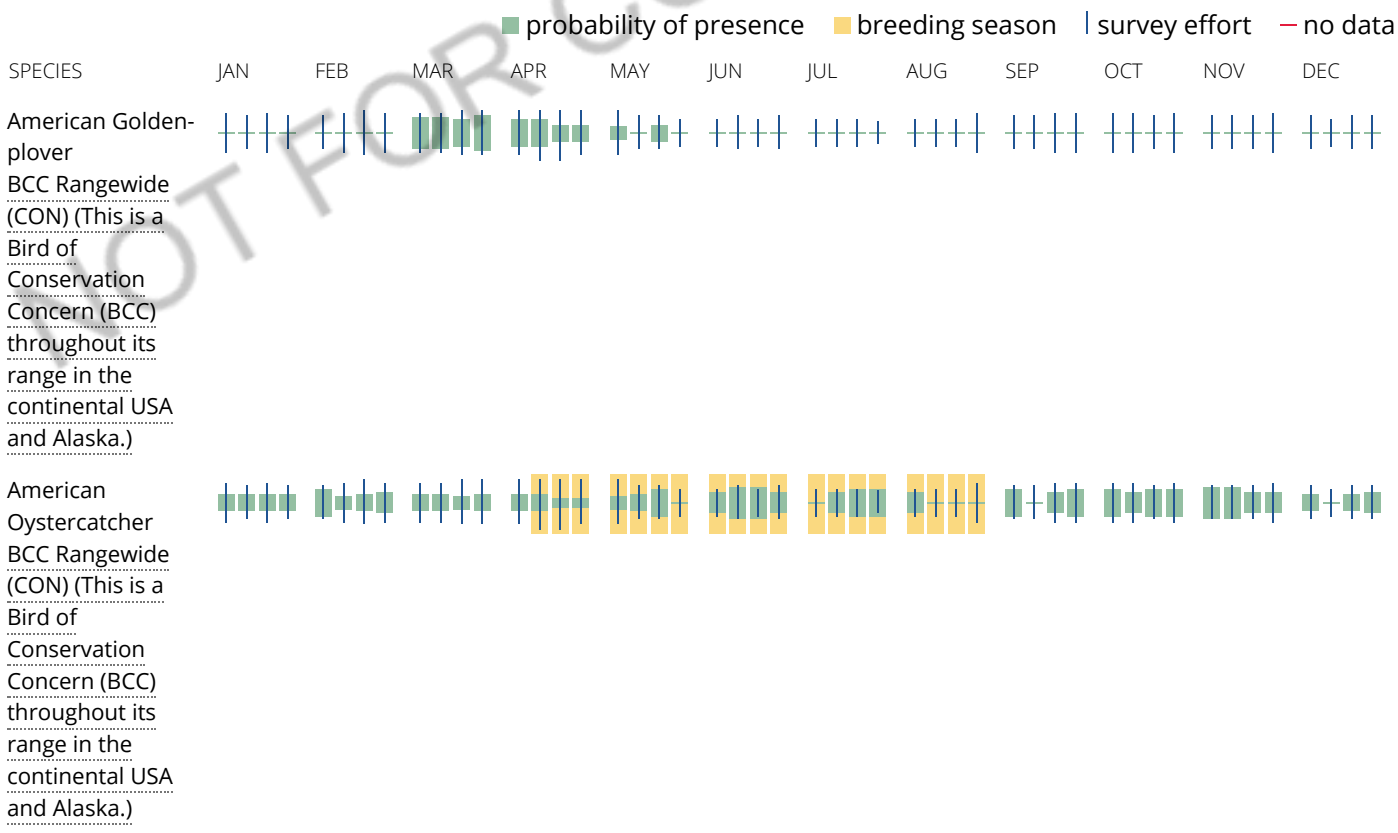
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

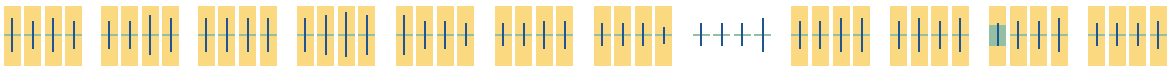
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

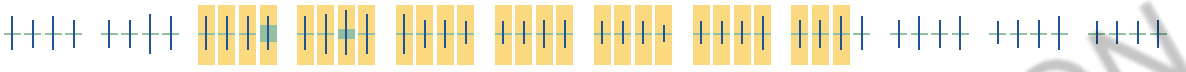
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Black Rail
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Black Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Black-legged Kittiwake Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

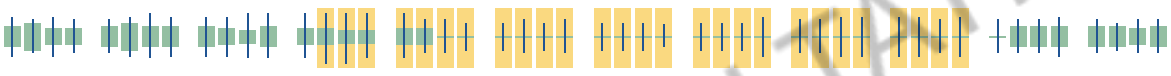
Bonaparte's Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Brown Pelican Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Buff-breasted Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Clapper Rail BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

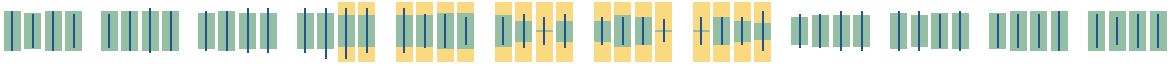
Common Loon Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Common Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

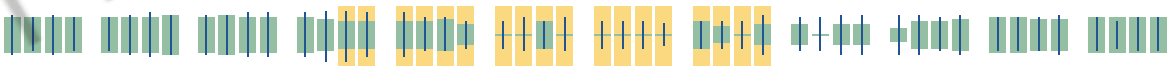
Double-crested Cormorant Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Dunlin BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

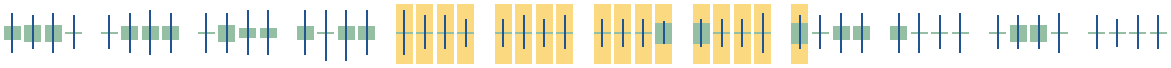
Gull-billed Tern BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Herring Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



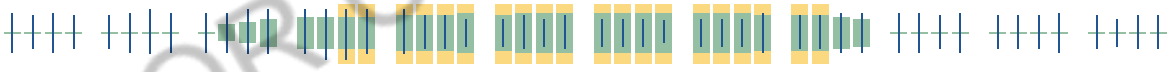
Hudsonian Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

King Rail BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

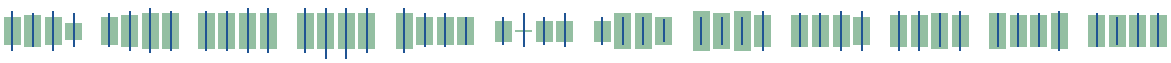


Le Conte's Sparrow BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Least Tern BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Lesser Yellowlegs BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-billed Curlew BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-tailed Duck Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

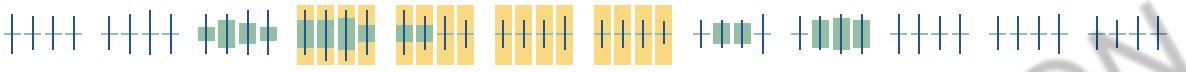
Magnificent Frigatebird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Marbled Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nelson's Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

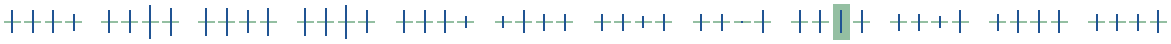
Northern Gannet
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Prothonotary Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

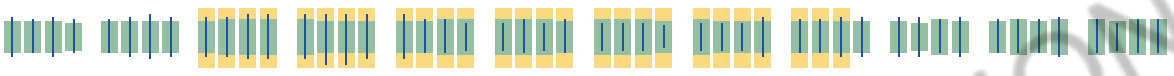


Red-breasted Merganser
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Red-necked Phalarope Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Reddish Egret BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

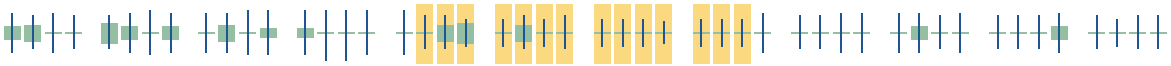


Ring-billed Gull Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Royal Tern Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Ruddy Turnstone BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Seaside Sparrow BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

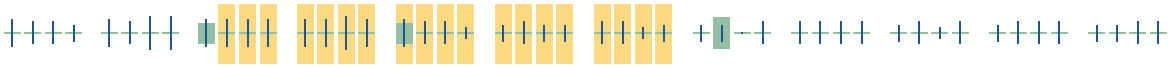


SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Semipalmated Sandpiper BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Sooty Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Surf Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

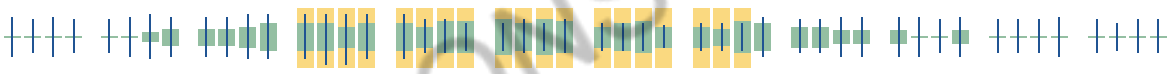
Swallow-tailed Kite
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

White-winged Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wilson's Plover
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project

intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee Trichechus manatus
https://ecos.fws.gov/ecp/species/4469

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

ESTUARINE AND MARINE DEEPWATER

- M1UBL
- E1UBL
- E1AB3L
- E1UBLx

ESTUARINE AND MARINE WETLAND

- M2USN
- M2USP
- E2USN
- E2EM1N
- E2USP
- E2USPs
- E2EM1P
- E2USM

FRESHWATER EMERGENT WETLAND

- PEM1Ah
- PEM1C

FRESHWATER POND

- PUSA
- PUSC

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Castilleja halophila (Orobanchaceae): A new species from the Texas Coastal Bend

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and

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ABSTRACT

Castilleja halophila is here proposed as a new species endemic to saline to hypersaline soils and shell barrens of the barrier islands and near coast of Aransas, Nueces and San Patricio counties of the middle Gulf Coast of Texas. The new species is apparently a local derivative of *C. indivisa*, the most common species of *Castilleja* of the eastern third and coastal areas of the state. *Castilleja halophila* is characterized by its early flowering January to April (rarely June); distally white bract coloration occasionally suffused with pale pink; strict growth habit and usually solitary, unbranched stems reaching 45-74 cm in height. Specimens collected were hemiparasitic on salt tolerant species of *Iva* (Asteraceae). The new species can tolerate both hypersaline soils and soils of lower salinity but appears unable to compete with *C. indivisa* in non-saline areas thus making the two species more or less parapatric in distribution. Low population numbers, limited distribution, and sea level rise are considered major risk factors associated with the continued survival of the species. We suggest the species be assigned a Global rarity classification of G1.
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Key Words: *Castilleja halophila*, *Castilleja indivisa*, Texas Seaside Paintbrush, Gulf Coast, Coastal Bend, hypersaline, saline soils, competitive exclusion principle, early flowering period

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Castilleja is primarily a New World genus of approximately 200 species, twelve of which are native to Texas (Kartesz 2015; Egger et al. 2019). *Castilleja lindheimeri* was the only known Texas endemic until now. Recent field study in the mid-Texas coastal plain has resulted in the discovery of an annual species of *Castilleja*, the second known endemic species for Texas, which is described herein.

The earliest mention of strictly coastal, white-bracted populations of what was referred to as *Castilleja indivisa* Engelmann in the mid-Gulf Coastal Plain of Texas was by Pennell (1935). On page 541, Pennell states in footnote 304, "Albino specimens, with snow-white bracts, reported as forming entire colonies on shell and sand reefs between Aransas Pass and Port Aransas, San Patricio Co., Texas, April 21, 1935; specimens from G. W. Goldsmith in Herb. Academy of Natural Sciences of Philadelphia."
It is apparent that Pennell never visited the area, as he did not report traits such as the height of the plants, distribution of individuals in the colony, branching pattern, etc., which also differ from typical *C. indivisa*. Pennell gives the location as between Aransas Pass and Port Aransas, San Patricio County. The county cited is in error, as this geographic location is in Nueces County. At this locale, the Nueces-San Patricio county line is near the eastern shoreline of Aransas Pass, just west of the Gulf Intracoastal Waterway. The

Waterway was not constructed at this location until 1941, at which time it was extended south to Corpus Christi (Leatherwood 2010). The entire area east of the mainland is part of Nueces County.

The second mention of this white-bracted population is in the *Flora of the Texas Coastal Bend* (Jones 1975, 1977, both p. 180; 1982, p. 181). Jones states, "a form occurring on shell islands in Redfish Bay and on adjacent mainland around Rockport and Aransas Pass has white instead of red bracts and calyces. Very attractive and showy. March to May, rarely in Sept. and Oct." The word "form" is apparently used in a general sense, and not as the English version of *forma*. The color of the bracts and calyces is given as white instead of red. It may be noted that some specimens of *Castilleja indivisa* may be described as red but are better characterized as predominantly coral or orange-red. Large populations may contain occasional individuals with whitish, cream to yellow, or rose-tipped bracts. The description ends with "very attractive and showy" which is used by Jones throughout the book's editions as a descriptor to designate such handsome plants. Redfish Bay includes the waters near the main shore, which is also the main route of the Gulf Intracoastal Waterway from Corpus Christi Bay north to Traylor and Talley islands.

A third mention of these "albino" *Castilleja* plants is in Lehman et al. (2005), the book being a rewrite of Jones' Flora of the Texas Coastal Bend. It includes on p. 293 a verbatim repeat of the *Castilleja* treatments from Jones (p. 180; p. 181).

Lastly, Egger et al. (2019), in a treatment of *Castilleja* in the Flora of North America, specifically mentions the undescribed *Castilleja* species closely related to *C. indivisa*, on Stedman Island, near Aransas Pass, Nueces Co., Texas. They recommend that the plant be given nomenclatural recognition. For this *Castilleja*, the process to recognition as a species took 85 years and six mentions in the literature.

In 2014, it was decided to expand the literary study to include field investigations to relocate the populations, determine the number of individuals, compare them with *Castilleja indivisa*, and determine the taxonomic and conservation status of those plants occurring on the shell and sand islands of Redfish Bay, Stedman and Harbor islands, the adjacent mainland, and nearby areas. The results of this investigation are given following, in essence, recognition of the population of plants with distally pure white bracts as a new species of *Castilleja*.

Castilleja halophila J.R. Singhurst, J.M. Egger, J.N. Mink, and W.C. Holmes sp. nov.
TYPE: UNITED STATES. TEXAS. Nueces County. Stedman Island (in Redfish Bay), 2.9 km E. of jct. of Hwy. 90 and Hwy. 361 on north and south side of Texas Hwy 361, 0.9-2.4 m elevation, ca. 1 m above m.s.l.; flowers white (drying cream-colored), hypersaline soils, saline flats and saline coastal prairies, 24 February 2015, *J. R. Singhurst 21335* (holotype: BAYLU, isotype: TEX) (Figure 1).

Figure 1. Photograph of *Castilleja halophila* holotype from Stedman Island, 24 February 2015. (Photo by J.N. Mink & W.C. Holmes).

Similar to *Castilleja indivisa* but differing in flowering January to April (rarely to early June), white-tipped bracts infrequently suffused with pale pink; stems slender, solitary and unbranched, 45-74 cm height, and occurrence in hypersaline and shell barrens on coastal barrier islands (Figures 2 and 3). *Castilleja indivisa* flowers most profusely in March through May, though flowering specimens are recorded virtually year round, and usually has coral to orange-red or red-tipped bracts, with occasional yellowish or rose variants; stems usually well-branched from near the base to about 35 cm height, and does not occur in hypersaline and coastal shell barrens.

Annual herb. Taproot slender, to 10 cm long, secondary roots slender. Stem slender, strict, rarely branched, glabrate to villous and often stipitate-glandular distally, 45-74 cm tall, discernably 4-angular, reddish to purple. Leaves rather clustered at the base, but not forming a distinct rosette, becoming sparse with relatively wide internodes on the stem; leaf bases sessile to obscurely clasping; blades narrowly lanceolate to linear, 5-10 cm long, to about 1 cm wide, entire to occasionally with a pair of short, spreading, linear-lanceolate lobes, glabrate to short hirsute. Inflorescence spicate, unbranched 10-15 (25) cm long, pilose with longer, non-glandular hairs and an underlayer of minute, stipitate glandular hairs. Bracts 1.5-3 cm in length, lanceolate to oblanceolate, apices rounded, the bases green, abruptly turning white about midway to the tip, irregularly suffused with pale pink when not fully mature; veins 5, conspicuous, originating at the base, somewhat curved and ending at the apex. Flowers sessile; calyx tubular, 20-26 mm long, the right pair and the left pair laterally fused into one segment each, which is cleft into 2 terminal segments about 10 mm from the rounded to emarginate apices; proximally green to about midway to the tip or higher, the distal portion white; corollas 18-30 cm long, the tube whitish, the beak (upper lip) about 1/5 the length of the corolla, pale green to pale yellow, stipitate-glandular, slightly falcate, included to weakly exserted to about 8 mm from the calyx at maturity (Figure 7); teeth of the lower corolla lip three, obscurely saccate to leaflike, green; stigmas exserted, capitate to shallowly bi-lobed, yellow to yellow-green or cream. Capsule ca. 1.2 cm long, 2 carpellate. Seeds pale straw-colored, +/- 1.0 mm in diameter along longest axis; seed coats loose-fitting, shallowly reticulate, radial walls smooth, inner tangential walls mostly ruptured at maturity.

PARATYPES: UNITED STATES. TEXAS. Texas. Aransas County: Aransas Pass (on mainland), Jct. of W Strapp Ave. and N Rife Street on N side of N Rife Street, remnant saline coastal prairie, 4 March 2019, *J. N. Mink, W. C. Holmes, J. R. Singhurst* and *D. Ilfrey 1886* (BAYLU); Nueces County: Port Aransas, 21 April 1935, *G. W. Goldsmith s.n.* (PH, TEX); North side of St. Rt. 361 on Stedman Island, 1.3 road miles ESE of RR crossing on E edge of city of Aransas Pass, 275335N, 970730E, 3 April 1992, *W. R. Carr 11714* (TEX); Along causeway between Aransas Pass and Port Aransas, 18 March 1996, *P. A. Fryxell 5062* (TEX); Stedman Island, 27°53'37.56"N, 97°07'35.60E, 1 m elevation, 13 June 2014, *W. Franks s.n.* (WTU), in seed and late flowering; Stedman Island, 2.9 km east of Aransas Pass, Texas on Hwy 361, 6 March 2016, *W. C. Holmes, J. R. Singhurst,* and *J. N. Mink 16540* (BAYLU), specimen includes host plant; Adjacent to both side of TX Hwy. 361 on Stedman Island between Aransas Pass and Port Aransas, 2 April 2016, *J. M. Egger 1570* (CAS, GH, MO, US, WTU); Harbor Island, 7.24 km E of jct. of Hwy 90 and Hwy 361 on north side of Hwy 361, flowers white, 1.5-2.1 m elevation, coastal Prairie and hypersaline flats, 5 April 2019, *J. R. Singhurst 22275* (BAYLU).

Figure 2. Photograph of *Castilleja halophila* taken at the type locality on Stedman Island, 24 February 2015. (Photo by J.R. Singhurst).

Figure 3. Photograph of *Castilleja halophila* habit and habitat taken at the type locality on Stedman Island, 24 February 2015. Note the scattered occurrence, strict habit, unbranched, solitary stems, and extended flowering period indicated by brown bracts and flowers. (Photo by J.R. Singhurst).

Phenology: *Castilleja halophila* was observed flowering in January to early April, though occasional plants in flower are found among those in seed as late as mid-June (e.g. *W. Franks* s.n., WTU) (Figures 5 & 6.).

Habitat and distribution: saline to hypersaline soils and shell barrens in herbaceous vegetation, including *Borrichia frutescens*/*Spartina spartinae* Shrubland, *Spartina spartinae-Monanthochloe littoralis-Sueda linearis* Herbaceous Vegetation and infrequently in *Avicennia germinans*/*Batis maritima* Shrubland (NatureServe Explorer 2020); 0.5-2.0 m above sea level; Stedman Island and Harbor Island, Nueces County and sporadic in Aransas Pass, Aransas County, Texas (Figure 4). Reported on sand islands in Red Fish Bay (Nueces, Aransas, and San Patricio counties) by Jones (1975, 1977, 1982), though he cited no specimens nor specific locations.

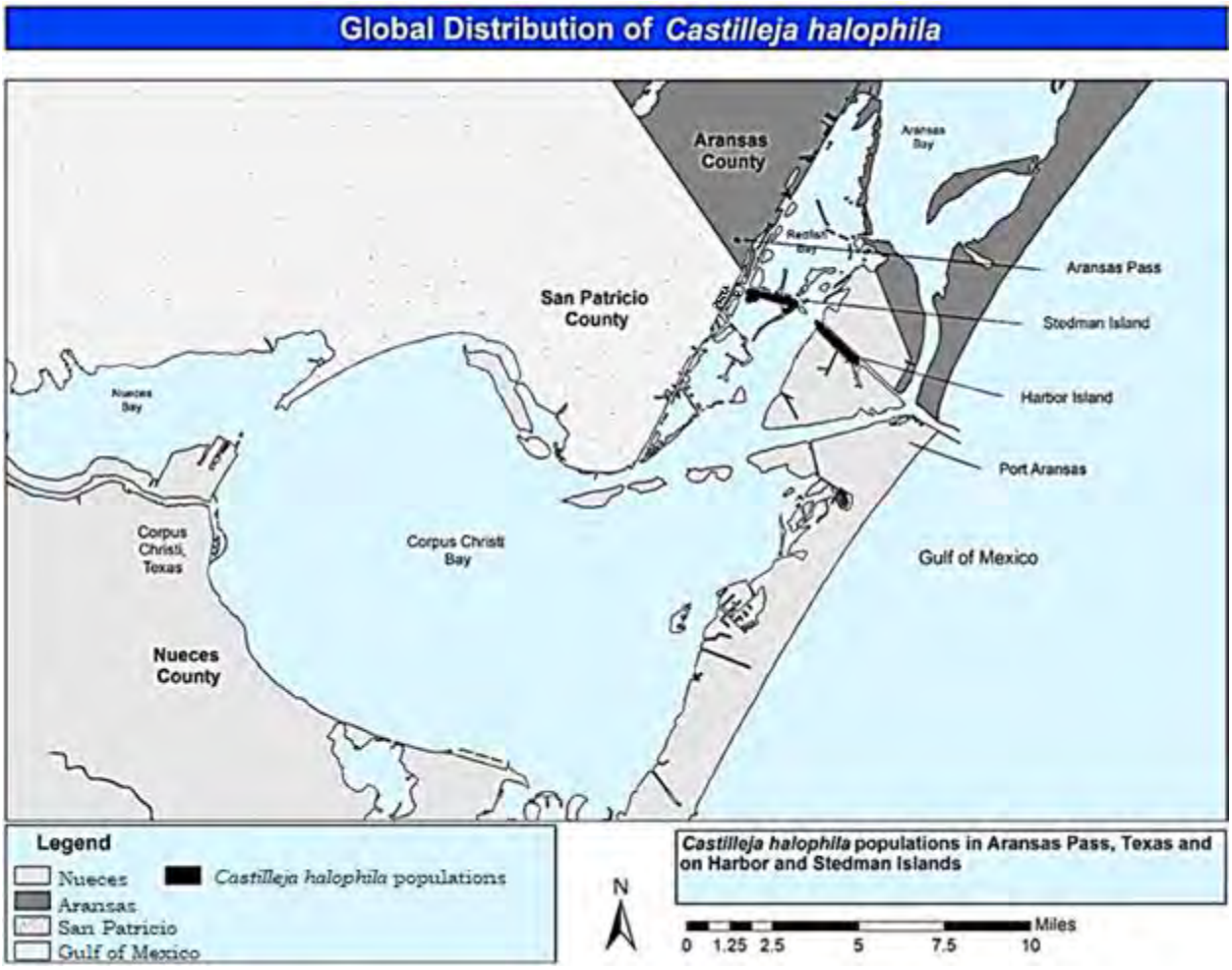

Figure 4. – Known global distribution of *Castilleja halophila.* Map by J.R. Singhurst & J.N. Mink.

Castilleja halophila is hemiparasitic on halophilic species of *Iva* (Asteraceae), *W.C.Holmes* et al. *16540* (BAYLU), and is apparently limited to areas of high salinity, as indicated by nearby species. These include *Avicennia germinans*, *Batis maritima*, *Borrichia frutescens*, *Cakile geniculata.*, *Conoclinium betonicifolium*, *Distichlis spicata*, *Fimbristylis castanea*, *Flaveria brownii*, *Heliotropium curassavicum*, *Iva texensis*, *Lycium carolinianum*, *Monanthochloe littoralis*, *Paspalum monostachyum*, *Rayjacksonia phyllocephala*, *Schizachyrium littorale*, *Sesuvium portulacastrum*, *Spartina spartinae*, *Sporobolus virginicus* and *Suaeda linearis*. Other peripheral species occurring in close proximity include the woody exotics *Leucaena leucocephala*, *Nerium oleander*, *Schinus terebinthifolius* and *Tamarix* spp. Several

occurrences of *C. halophila* have been confirmed from Aransas Pass on the mainland, these being taller and with tips of bracts white colored, but most individuals exhibiting hybridization and introgression. Most *Castilleja* in Aransas Pass appear nearer to *C. indivisa* as to bract tip and flower color, size of plants, and branching. Other species within this habitat are typically found in prairies rather than coastal marshes indicating that the soil has less salinity. No plants with distally coral, orange-red, or red bracts have been found in the hypersaline sand and shell islands.

Figures 5 & 6: Photographs of *Castilleja halophila*, dehiscent seed capsules (L) and superior view of inflorescence with bracts, calyx lobes, and corolla beaks (R) taken at the type locality on Stedman Island, 24 February 2015. (Photo by J.R. Singhurst)

Figure 7: Photograph of *Castilleja halophila*, close up of flower showing the shortly exserted corolla with bi-lobed stigma taken at the type locality on Stedman Island, 2 April 2016. (Photo by J.M. Egger)

Relationships and Identification: Evidence indicates *Castilleja halophila* is a local derivative of *C. indivisa*. This is supported by the general morphological similarity of the two species, the inclusion of the white-bracted plants within *C. indivisa* by Pennell (1935), Jones (1975, 1977, 1982) and Egger et al. (2019). Jones' decision to use the name *C. indivisa* may have been influenced by the treatment of the genus in the *Manual of the Vascular Plants of Texas* by Holmgren in Correll and Johnston (1970), newly published and considered to be the authoritative source on the Texas flora, which excluded any mention of these coastal white-bracted populations. Also, of the known species of *Castilleja* distributed in the eastern third and coastal areas of Texas (Turner et al. 2003; Kartesz 2015), *C. indivisa* is the most common and widely distributed species of the genus (Nesom 1992).

The inability of *Castilleja indivisa* to withstand saltwater and hypersaline soils apparently prevents colonization of the barrier islands. The near total exclusion of *C. halophila* from mainland areas (i.e., the coastal ridge) seems related to it being outcompeted by *C. indivisa*, which apparently possesses attributes conducive to non-hypersaline soils and a non-aquatic environment, while *C. halophila* is largely tied to such substrates. This may represent an example of the Competitive Exclusion Principal. *Castilleja halophila* can apparently occupy both the barrier island niche and the adjacent non-hypersaline mainland but is limited almost completely to the barrier islands because it cannot compete successfully with or is genetically swamped by interactions with *C. indivisa* populations in the non-hypersaline mainland habitats. Additional studies are planned.

Castilleja indivisa may be distinguished from *C. halophila* by its coral, orange-red to red tipped bracts. These colors suggest that *C. indivisa* is pollinated diurnally by hummingbirds, butterflies, and/or bees, this being supported by Grant and Grant 1968, Duffield 1972, and Egger et al. 2019. However, large populations (100-200 or more individuals) of *C. indivisa* usually have several plants with creamy-white to yellow or rose-tipped bracts, which are easily distinguishable from the white bract tips of *C. halophila*. The white bracts of *Castilleja halophila* suggest pollination by crepuscular and/or nocturnally active insects such as flies and moths (Baker 1961; Fægri and Pijl 1979; Goyret et al. 2008). Attempts in February and March to capture pollinators failed. We do note that *C. halophila* has a very long flowering period (January to June and occasionally longer). This could be an adaptation to compensate for uncertainty of pollination during periods of unpredictable weather events, high coastal winds, flooding, excessive rain, higher than normal spring tides, etc., which may affect both the plants and pollinators, thus hindering pollen receipt.

Other field characteristics that reliably distinguish the two species include the following. *Castilleja halophila* is mostly strict, with unbranched, solitary stems, 45-74 cm tall, grows in open colonies, often with 2-5 m or more distance between individual plants, has white bracts tips sometimes suffused with pale pink, flowers mostly January to mid-April, and is tolerant of hypersaline soils and apparently able to withstand periods of salt water flooding and occasional hurricanes. *Castilleja indivisa* usually has coral, red-orange, or red tipped bracts, is 25-35 cm tall, considerably branched from the base, and occurs in dense colonies, with the plants often touching to overlapping.

Differences between these two species are summarized in the following couplet:

1. Distal portions of bracts pure white, sometimes suffused with pale pink; stems strict, rarely branched, 45-74 cm tall; known only from the mid-Texas Coastal Bend in Nueces, Aransas, and San Patricio counties, restricted to saline to hypersaline flats and shell barrens on saline coastal prairies..……..…..*C. halophila*
1. Distal portions of bracts usually coral, red-orange, or red, with occasional variants pale yellow, creamy-white, peach, or rose; stems ascending-erect, usually branched from near the base, 25-35 cm tall; found throughout eastern and coastal Texas on non-saline substrates…….……*C. indivisa*

Etymology of names: Scientific name from the genus *Castilleja,* for Domingo Castillejo (1744-1793), an 18th century Spanish botanist at Cadiz, Spain, and the species name from the Latin, *halo* (salt) and *phila* (loving), a reference to its occurrence in hypersaline (maritime) areas. For a common name, the authors recommend Texas Seaside Paintbrush, from the habitat preference.

Conservation status. *Castilleja halophila* is of critical conservation concern because of its highly restricted distribution (see Figure 4) and low population, estimated counts consist of about 1275 individuals (1200 on Stedman Island, 50 on Harbor Island, and 25 in Aransas Pass).

Although storms and hurricanes may negatively impact *C. halophila* habitat, this species has presumably evolved and locally thrived under these weather cycles. We believe that human impacts represent the greatest threat to these populations. These threats include

1. Sea level rise due to global warming.
2. Maritime transports and commerce, including effects of large ship and barge traffic, dredging, channelization, and related maintenance factors.
3. Recreational use and development for fishing, marinas, and motorized vehicle traffic.

Considering these threats and the low population numbers cited above, we recommend a status of G1 worldwide and S1 for the state of Texas.

ACKNOWLEDGEMENTS

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Steps that project proponents should take to determine if their action area includes suitable eastern black rail habitat:

1) **Use IPaC** to map your proposed project area and generate a species list. This consultation code should be included as well as the generated IPaC letter in communications with the Service.

   If eastern black rails (BLRA) are on your species list proceed to step 2.

2) **Desktop Modeling of BLRA habitat**: In order to prioritize areas that may be used by eastern black rails, habitat within the action area should be modeled for BLRA. We recommend using habitat features that are appropriate for modeling this species including National Wetland Inventory (NWI), National Hydrography Dataset (NHD), The USDA Web Soil Survey, and aerial imagery.

   All or some of these data sources can be used to assess potential rail habitat. Additional data sources are also valid and can be used. Important features for rails include:

   a. Areas that may be irregularly flooded;
   b. Have the suitable shallow water features;
   c. Potential upland ecotones that rails use during high water events;
   d. Vegetation cover (i.e., dense overhead cover for a rail); and
   e. Vegetation type. On the Gulf Coast, in Texas coastal salt marshes, eastern black rails occupy high elevation zones dominated by gulf cordgrass (*Spartina spartinae*) and salt meadow cordgrass (*S. patens*), which may be accompanied by few shrub species such as eastern baccharis (*Baccharis halimifolia*) or marsh elder (*Iva fructescens*). Two additional plant species found in association are salt grass (*Distichlis spicata)* and sea oxeye (*Borrichia fructescens*).

   In any documentation shared with the Service, please describe the mapping process that was used to identify potential suitable eastern black rail habitat.

3) **Timing of the proposed action within suitable eastern black rail habitat:** Coordinate with the Texas Coastal Ecological Service's Field Office to determine the next steps and potential conservation measures that may be implemented to avoid and minimize adverse effects to rails within the project's action area.

BLRA Survey language:

The Service would request that a species survey be conducted within modeled suitable black rail habitat prior to construction if work would need to occur between from March 1 - September 30 in those areas or would result in the permanent removal of rail habitat. Or project proponents may assume BLRA presence within suitable habitat. Please be aware that the Service is still in the process of developing a national protocol for eastern BLRA surveys but this is not likely to be completed this year. Survey recommendations will be given on a project by project basis,

please coordinate with the Texas Coastal Ecological Service's Office. A 10(A)(1)(a) permit is not necessary for playback or passive audio recording surveys.

Potential Conservation Measures

- The species may be present in all of the Texas coastal counties year-round. The species is most vulnerable during breeding, chick rearing, and the flightless molt period. Where black rails are present, avoid disturbance activities March 1st through September 30th in suitable BLRA habitat (e.g., dense overhead cover, moist soils that are occasionally dry and interspersed or adjacent to shallow water, depths up to 5 cm but typically <3 cm) as described in the Final Rule (pgs. 63767, 63798, and 63800). If this timing restriction cannot be achieved then the we recommend the following measures:
    - A survey should be done prior to the start of the proposed action to assess BLRA breeding activity within the planned project area. Or project proponents may assume presence of BLRA within suitable habitat. Survey recommendations will be given on a project by project basis, please coordinate with the Texas Coastal Ecological Service's Office.
    - Efforts will be made to mitigate noise and vibration within and adjacent to BLRA habitat (i.e., within the action area), especially during the breeding season (March 1 – September 1). These efforts include planning and preforming work outside of peak breeding call times (i.e., one hour before and after dawn and one hour before and after dusk) for BLRA.
    - A biological monitor on site should maintain pathways to refugia and avoid clearing in a way that creates isolated pockets of suitable BLRA habitat on the project site. In part this is done by linear clearing in the direction of refugia, and avoiding clearing by decreasing concentric circles.
    - The biological monitor may also be required to maintain a sufficiently slow pace of equipment moving through potential habitat which allows for the escape of the birds a head. Biological monitors should be aware that the species will run to escape oncoming disturbance and are highly unlikely to fly during day light.
    - The biological monitor will have authority to stop work immediately if BLRA chick or eggs are observed within the project area. In addition, the Texas Coastal Ecological Service's Office should be contacted immediately at (281)286-8282.
    - If temporary access routes, pipeline routes, or staging areas occur within potential BLRA habitat the contractor must minimize traffic in these areas therefore minimizing the construction foot print, by limiting the number of ingress and egress routes to the maximum extent possible.

Measures that should be recommended for proposed projects with potential BLRA habitat within the action area year-round

- Marking the project boundary will be conducted in cases where there is a risk of damage to areas outside the project area but within the action area.
- Efforts will be made to mitigate noise and vibration in project areas adjacent to BLRA habitat (i.e., within the action area), especially during the breeding, nesting, and flightless

molt (March 1 – September 1). These efforts include planning and preforming work outside of peak breeding call times (i.e., one hour before and after dawn and two hours before and after dusk) for BLRA.

- Keep lighting pointed at work zone for nighttime work and turn off at night while work is not being conducted, as possible. All permanent lighting should be pointed away from potential BLRA habitat, be down shielded, and should follow the Dark Skies or Texas Bird City guidelines for lighting.
- Projects involving revegetation of disturbed areas should use native plants which mimic the local site composition. Propagation of woody species should be avoided.
- Clearing of BLRA habitat must be done in a way that allows for the escape of the birds toward refugia areas which will remain after the completion of the project. Project managers should avoid clearing in a way that creates isolated pockets of suitable BLRA habitat. In part this is done by linear clearing in the direction of refugia, and avoiding clearing by decreasing concentric circles.
- If equipment is used within potential BLRA habitat it is important to avoid rutting. (i.e., long term surface damage as described in the Final Rule.

Last Update: 3/5/2021

ARANSAS COUNTY

AMPHIBIANS

black-spotted newt *Notophthalmus meridionalis*

Terrestrial and aquatic: Terrestrial habitats used by adults are typically poorly drained clay soils that allow for the formation of ephemeral wetlands. A wide variety of vegetation associations are known to be used, such as thorn scrub and pasture. Aquatic habitats used for reprodution are a variety of ephemeral and permanent water bodies.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

sheep frog *Hypopachus variolosus*

Terrestrial and aquatic: Predominantly grassland and savanna; largely fossorial in areas with moist microclimates.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

southern crawfish frog *Lithobates areolatus areolatus*

Terrestrial and aquatic: The terrestial habitat is primarily grassland and can vary from pasture to intact prairie; it can also include small prairies in the middle of large forested areas. Aquatic habitat is any body of water but preferred habitat is ephemeral wetlands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S3

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Woodhouse's toad *Anaxyrus woodhousii*

Terrestrial and aquatic: A wide variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes. Aquatic habitats are equally varied.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: SU

BIRDS

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

ARANSAS COUNTY

BIRDS

Black Rail *Laterallus jamaicensis*

Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: LT | State Status: T | SGCN: Y
Endemic: N | Global Rank: G3 | State Rank: S2

Franklin's gull *Leucophaeus pipixcan*

This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: S2N

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G3 | State Rank: S2

northern aplomado falcon *Falco femoralis septentrionalis*

Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species

Federal Status: LE | State Status: E | SGCN: Y
Endemic: N | Global Rank: G4T2T3 | State Rank: S1

piping plover *Charadrius melodus*

Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT | State Status: T | SGCN: Y
Endemic: N | Global Rank: G3 | State Rank: S2N

reddish egret *Egretta rufescens*

Resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear

Federal Status: | State Status: T | SGCN: Y

ARANSAS COUNTY

BIRDS

Endemic: N | Global Rank: G4 | State Rank: S2B

Rufa Red Knot *Calidris canutus rufa*

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT | State Status: T | SGCN: Y

Endemic: N | Global Rank: G4T2 | State Rank: S2N

swallow-tailed kite *Elanoides forficatus*

Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Federal Status: | State Status: T | SGCN: Y

Endemic: N | Global Rank: G5 | State Rank: S2B

tropical parula *Setophaga pitiayumi*

Semi-tropical evergreen woodland along rivers and resacas. Texas ebony, anacua and other trees with epiphytic plants hanging from them. Dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas; breeding April to July.

Federal Status: | State Status: T | SGCN: Y

Endemic: N | Global Rank: G5 | State Rank: S3B

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status: | State Status: | SGCN: Y

Endemic: N | Global Rank: G4T4 | State Rank: S2

white-faced ibis *Plegadis chihi*

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status: | State Status: T | SGCN: Y

Endemic: N | Global Rank: G5 | State Rank: S4B

ARANSAS COUNTY

BIRDS

white-tailed hawk *Buteo albicaudatus*

Near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4B

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

wood stork *Mycteria americana*

Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

FISH

alligator gar *Atractosteus spatula*

From the Red River to the Rio Grande (Hubbs et al. 2008); occurs in the Trinity River upstream of Lake Livingston. Found in rivers, streams, lakes, swamps, bayous, bays and estuaries typically in pools and backwater habitats. Floodplains inundated with flood waters provide spawning and nursery habitats.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

Oceanic Whitetip Shark *Carcharhinus longimanus*

Habitat description is not available at this time.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNR	State Rank: S2

ARANSAS COUNTY

FISH

opossum pipefish *Microphis brachyurus*

Adults are only found in low salinity waters of estuaries or freshwater tributaries within 30 miles of the coast (Gilmore 1992), where they also give birth. Young move or are carried into more saline waters off the coast after birth. Newly released larvae must have conditions near 18 ppt salinity for at least two weeks after birth to survive, indicating a physiology adapted for downstream transport to estuarine and marine environments (Frias-Torres 2002). Juvenile migration toward the ocean depends on water flow regimes, salinity, and vegetation for cover and capturing prey (Frias-Torres 2002). Seawalls, docks, and riprap construction destroy habitat and poor water quality and alteration of flow regimes may prevent migration (NMFS 2009).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3N

saltmarsh topminnow *Fundulus jenkinsi*

Occupies estuaries and the edges of saltmarsh habitats along the Gulf coast in salinities of 4-20 ppt in Spartina dominated tidal creeks and wetlands (Peterson & Ross 1991; Peterson & Turner 1994; Lopez et al. 2010; and Griffith 1974). Requires access to small interconnected tidal creeks for feeding and reproduction. Spawning occurs from March to August during high tide events (Robertson Thesis, 2016). Non-migratory.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S1

Shortfin Mako Shark *Isurus oxyrinchus*

Habitat description is not available at this time.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNR	State Rank: S2

snook *Centropomus undecimalis*

Juvenile common snook are generally restricted to the protection of riverine, salt marshes, seagrass beds, and estuary environments. These environments offer shallow water and an overhanging vegetative shoreline. Juvenile common snook can survive in waters with lower oxygen levels than adults. Adult common snook inhabit many fresh, estuarine, and marine environments including mangrove forests, beaches, river mouths, nearshore reefs, salt marshes, sea grass meadows, and near structure (pilings, artificial reefs, etc.). Adult common snook appear to be less sensitive to cold water temperatures than larvae or small juveniles. The lower lethal limit of water temperature is 48.2°-57.2° F (9°-14° C) for juveniles and 42.8°-53.6° F (6°-12° C) for adults (Hill 2005, Press 2010).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3?

southern flounder *Paralichthys lethostigma*

This is an estuarine-dependent species that inhabits riverine, estuarine and coastal waters, and prefers muddy, sandy, or silty substrates (Reagan and Wingo 1985). Individuals can tolerate wide temperature (~5-35°C) and salinity ranges (0-60 ppt). Southern Flounder spawn in offshore waters of the Gulf of Mexico from October to February (Reagan and Wingo 1985). The oceanic larval stage is pelagic and lasts 30–60 days. Metamorphosing individuals enter estuaries and migrate towards low-salinity headwaters, where settlement occurs (Burke et al. 1991, Walsh et al. 1999). The young fish enter the bays during late winter and early spring, occupying seagrass; some may move further into coastal rivers and bayous. Juveniles remain in estuaries until the onset of sexual maturation (approximately two years), at which time they migrate out of estuaries to join adults on the inner continental shelf. Adult southern flounder leave the bays during the fall for spawning in the Gulf of Mexico. They spawn for the first time when two years old at depths of 50 to 100 feet. Although most of the adults leave the bays and enter the Gulf for spawning during the winter, some remain behind and spend winter in the bays. Those in the Gulf will reenter the bays in the spring. The spring influx is gradual and does not occur with large concentrations that characterize the fall emigration.

Federal Status:	State Status:	SGCN: Y

ARANSAS COUNTY

FISH

Endemic: N | Global Rank: G5 | State Rank: S5

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status: | State Status: | SGCN: Y

Endemic: | Global Rank: G3G4 | State Rank: SNR

Gulf Dune Grasshopper *Trimerotropis schaefferi*

Coastal dunes and areas behind the dunes.

Federal Status: | State Status: | SGCN: Y

Endemic: Y | Global Rank: G2G3 | State Rank: S2?

Manfreda giant-skipper *Stallingsia maculosus*

Most skippers are small and stout-bodied; name derives from fast, erratic flight; at rest most skippers hold front and hind wings at different angles; skipper larvae are smooth, with the head and neck constricted; skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk

Federal Status: | State Status: | SGCN: Y

Endemic: N | Global Rank: G1 | State Rank: S1

MAMMALS

Aransas short-tailed shrew *Blarina hylophaga plumbea*

Excavates burrows in sandy soils underlying mottes of live oak trees or in areas with little to no ground cover.

Federal Status: | State Status: | SGCN: Y

Endemic: Y | Global Rank: G5T1Q | State Rank: S1

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status: | State Status: | SGCN: Y

Endemic: | Global Rank: G5 | State Rank: S3

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status: | State Status: | SGCN: Y

Endemic: N | Global Rank: G4 | State Rank: S1S3

ARANSAS COUNTY

MAMMALS

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

mountain lion *Puma concolor*

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

ocelot *Leopardus pardalis*

Restricted to mesquite-thorn scrub and live-oak mottes; avoids open areas. Dense mixed brush below four feet; thorny shrublands; dense chaparral thickets; breeds and raises young June-November.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1

Padre Island kangaroo rat *Dipodomys compactus compactus*

Dunes and open sandy areas near the coast.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4T3	State Rank: S3

southern yellow bat *Lasiurus ega*

Relict palm grove is only known Texas habitat. Neotropical species roosting in palms, forages over water; insectivorous; breeding in late winter. Roosts in dead palm fronds in ornamental palms in urban areas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3S4

swamp rabbit *Sylvilagus aquaticus*

Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks and rivers.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S3S4

ARANSAS COUNTY

MAMMALS

West Indian manatee *Trichechus manatus*

Large rivers, brackish water bays, coastal waters. Warm waters of the tropics, in rivers and brackish bays but may also survive in salt water habitats. Very sensitive to cold water temperatures. Rarely occurring as far north as Texas. Gulf and bay system; opportunistic, aquatic herbivore.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S1

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. telmalestes

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

white-nosed coati *Nasua narica*

Woodlands, riparian corridors and canyons.Most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground and in trees; omnivorous; may be susceptible to hunting, trapping, and pet trade

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S1

MOLLUSKS

No accepted common name *Nesovitrea suzannae*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G1	State Rank: S1

REPTILES

Atlantic hawksbill sea turtle *Eretmochelys imbricata*

Inhabit tropical and subtropical waters worldwide, in the Gulf of Mexico, especially Texas. Hatchling and juveniles are found in open, pelagic ocean and closely associated with floating lgae/seagrass mats. Juveniles then migrate to shallower, coastal areas, mainly coral reefs and rocky areas, but also in bays and estuaries near mangroves when reefs are absent; seldom in water lmore than 65 feet deep. They feed on sponges, jellyfish, sea urchins, molluscs, and crustaceans. Nesting occurs from April to November high up on the beach where there is vegetation for cover and little or no sand. Some migrate, but others stay close to foraging areas - females are philopatric.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S2

ARANSAS COUNTY

REPTILES

eastern box turtle *Terrapene carolina*

Terrestrial: Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

green sea turtle *Chelonia mydas*

Inhabits tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. Adults and juveniles occupy inshore and nearshore areas, including bays and lagoons with reefs and seagrass. They migrate from feeding grounds (open ocean) to nesting grounds (beaches/barrier islands) and some nesting does occur in Texas (April to September). Adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds.

Federal Status: LT	State Status: T	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S3B, S3N

Kemp's Ridley sea turtle *Lepidochelys kempii*

Inhabits tropical, subtropical, and temperate waters of the northwestern Atlantic Ocean and Gulf of Mexico. Adults are found in coastal waters with muddy or sandy bottoms. Some males migrate between feeding grounds and breeeding grounds, but some don't. Females migrate between feeding and nesting areas, often returning to the same destinations. Nesting in Texas occurs on a smaller scale compared to other areas (i.e. Mexico). Hatchlings are quickly swept out to open water and are rarely found nearshore. Similarly, juveniles often congregate near floating algae/seagrass mats offshore, and move into nearshore, coastal, neritic areas after 1-2 years and remain until they reach maturity. They feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G1	State Rank: S3

leatherback sea turtle *Dermochelys coriacea*

Inhabit tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. Nesting is not common in Texas (March to July). Most pelagic of the seaturtles with the longest migration (>10,000 miles) between nesting and foraging sites. Are able to dive to depths of 4,000 feet. They are omnivorous, showing a preference for jellyfish.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G2	State Rank: S1S2

loggerhead sea turtle *Caretta caretta*

Inhabits tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. They migrate from feeding grounds to nesting beaches/barrier islands and some nesting does occur in Texas (April to September). Beaches that are narrow, steeply sloped, with coarse-grain sand are preffered for nesting. Newly hatched individuals depend on floating alage/seaweed for protection and foraging, which eventually transport them offshore and into open ocean. Juveniles and young adults spend their lives in open ocean, offshore before migrating to coastal areas to breed and nest. Foraging areas for adults include shallow continental shelf waters.

Federal Status: LT	State Status: T	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S4

slender glass lizard *Ophisaurus attenuatus*

ARANSAS COUNTY

REPTILES

Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Texas diamondback terrapin *Malaclemys terrapin littoralis*

Coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive. Bay islands are important habitats. Nests on oyster shell beaches.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4T3Q	State Rank: S2

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

Texas indigo snake *Drymarchon melanurus erebennus*

Terrestrial: Thornbush-chaparral woodland of south Texas, in particular dense riparian corridors.Can do well in suburban and irrigated croplands. Requires moist microhabitats, such as rodent burrows, for shelter.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5T4	State Rank: S4

Texas scarlet snake *Cemophora lineri*

Terrestrial: Prefers well drained soils with a variety of forest, grassland, and scrub habitats.

Federal Status:	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1S2

Texas tortoise *Gopherus berlandieri*

Terrestrial: Open scrub woods, arid brush, lomas, grass-cactus association; often in areas with sandy well-drained soils. When inactive occupies shallow depressions dug at base of bush or cactus; sometimes in underground burrow or under object. Eggs are laid in nests dug in soil near or under bushes.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2

ARANSAS COUNTY

REPTILES

western box turtle *Terrapene ornata*

Terrestrial: Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

western massasauga *Sistrurus tergeminus*

Terrestrial: Shortgrass or mixed grass prairie, with gravel or sandy soils. Often found associated with draws, floodplains, and more mesic habitats within the arid landscape. Frequently occurs in shrub encroached grasslands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3S4

PLANTS

awnless bluestem *Bothriochloa exaristata*

Coastal prairies on black clay; Perennial; Flowering April-Dec; Fruiting April- Dec

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

awnless leastdaisy *Chaetopappa imberbis*

In woodlands on lomas of Carrizo sand (TEX-LL specimens Carr 23875, 12507). Mar- May.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Bailey's ballmoss *Tillandsia baileyi*

Epiphytic on various trees and tall shrubs, perhaps most common in mottes of Live oak on vegtated dunes and flats in coastal portions of the South Texas Sand Sheet, but also on evergreen sub-tropical woodlands along resacas in the Lower Rio Grande Valley; flowering (February-)April-May, but conspicuous throughout the year

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S2

coastal gay-feather *Liatris bracteata*

Coastal prairie grasslands of various types, from salty prairie on low- lying somewhat saline clay loams to upland prairie on nonsaline clayey to sandy loams; flowering in fall

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

ARANSAS COUNTY

PLANTS

Elmendorf's onion *Allium elmendorfii*

Grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

Indianola beakrush *Rhynchospora indianolensis*

Locally abundant in cattle pastures in some areas (at least during wet years), possibly becoming a management problem in such sites; Perennial; Flowering/Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3Q	State Rank: S3

Jones' nailwort *Paronychia jonesii*

Occurs in early successional open areas on deep well-drained sand; Biennial Annual; Flowering March-Nov; Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

sand Brazos mint *Brazoria arenaria*

Sandy areas in South Texas; Annual; Flowering/Fruiting March-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

seaside beebalm *Monarda maritima*

Occurs in grasslands and pastures on sandy soil near the coast (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2Q	State Rank: S2

South Texas yellow clammyweed *Polanisia erosa ssp. breviglandulosa*

Sand plains of south Texas (Iltis 1958). Flowering early spring-mid fall.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T3T4	State Rank: S3S4

Texas peachbush *Prunus texana*

Occurs at scattered sites in various well drained sandy situations; deep sand, plains and sand hills, grasslands, oak woods, 0-200 m elevation; Perennial; Flowering Feb-Mar; Fruiting Apr-Jun

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

ARANSAS COUNTY

PLANTS

Texas willkommia *Willkommia texana var. texana*

Mostly in sparsely vegetated shortgrass patches within taller prairies on alkaline or saline soils on the Coastal Plain (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4T3	State Rank: S3

Tharp's dropseed *Sporobolus tharpii*

Occurs on barrier islands, shores of lagoons and bays protected by the barrier islands, and on shores of a few near-coastal ponds. Plants occur at the bases of dunes, in interdune swales and sandflats, and on upper beaches. The substrate is of Holocene age.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Tharp's rhododon *Rhododon angulatus*

Deep, loose sands in sparsely vegetated areas on stabilized dunes of Pleistocene barrier islands; flowering (May-) June-September, sometimes later with appropriate rainfall

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1Q	State Rank: S1

threeflower broomweed *Thurovia triflora*

Near coast in sparse, low vegetation on a veneer of light colored silt or fine sand over saline clay along drier upper margins of ecotone between between salty prairies and tidal flats; further inland associated with vegetated slick spots on prairie mima mounds; flowering September-November

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

Traub's rainlily *Cooperia traubii*

Primarily sandy loam, open fields, coastal plains. Flowering early summer--mid fall (Jul--Nov) (Flagg, Smith & Flory 2002).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

tree dodder *Cuscuta exaltata*

Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

velvet spurge *Euphorbia innocua*

Open or brushy areas on coastal sands and the South Texas Sand Sheet; Perennial; Flowering Sept-April; Fruiting Nov-July

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

ARANSAS COUNTY

PLANTS

Wright's trichocoronis *Trichocoronis wrightii var. wrightii*

Most records from Texas are historical, perhaps indicating a decline as a result of alteration of wetland habitats; Annual; Flowering Feb-Oct; Fruiting Feb-Sept

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T3	State Rank: S2

Last Update: 3/5/2021

NUECES COUNTY

AMPHIBIANS

black-spotted newt *Notophthalmus meridionalis*

Terrestrial and aquatic: Terrestrial habitats used by adults are typically poorly drained clay soils that allow for the formation of ephemeral wetlands. A wide variety of vegetation associations are known to be used, such as thorn scrub and pasture. Aquatic habitats used for reprodution are a variety of ephemeral and permanent water bodies.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

sheep frog *Hypopachus variolosus*

Terrestrial and aquatic: Predominantly grassland and savanna; largely fossorial in areas with moist microclimates.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

South Texas siren (Large Form) *Siren sp. 1*

Aquatic: Mainly found in bodies of quiet water, permanent or temporary, with or without submergent vegetation. Wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods, but does require some moisture to remain.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNRQ	State Rank: S1

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

BIRDS

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

Black Rail *Laterallus jamaicensis*

Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

NUECES COUNTY

BIRDS

Botteri's sparrow *Peucaea botterii*

Two allopatric subspecies occur in Texas. The arizonae subspecies found in the Trans Pecos is considered to be a vagrant because there is just one record from Presidio County in 1997. The other subspecies, texana, can be found regularly in sacahuista habitat (or cordgrass flats) in counties that along the lower coastline like Kenedy, Willacy, and Cameron counties, but also rarely in Kleberg and Brooks counties. This migratory species does not overwinter in Texas. Breeding birds return in spring and sit fairly visibly on (low) commanding perches like fence posts or mesquite limbs where males sing vigorously throughout summer.

Federal Status:	State Status: T	SGCN: Y
Endemic:	Global Rank: G4	State Rank: S3B

Franklin's gull *Leucophaeus pipixcan*

This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

northern aplomado falcon *Falco femoralis septentrionalis*

Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T2T3	State Rank: S1

piping plover *Charadrius melodus*

Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

reddish egret *Egretta rufescens*

NUECES COUNTY

BIRDS

Resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2B

Rufa Red Knot *Calidris canutus rufa*

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

sooty tern *Onychoprion fuscatus*

Primarily an offshore bird; does nest on sandy beaches and islands, breeding April-July.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S1B

swallow-tailed kite *Elanoides forficatus*

Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2B

Texas Botteri's sparrow *Peucaea botterii texana*

Grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite, or yucca; nests on ground of low clump of grasses

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S3B

tropical parula *Setophaga pitiayumi*

Semi-tropical evergreen woodland along rivers and resacas. Texas ebony, anacua and other trees with epiphytic plants hanging from them. Dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas; breeding April to July.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B

NUECES COUNTY

BIRDS

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

white-faced ibis *Plegadis chihi*

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

white-tailed hawk *Buteo albicaudatus*

Near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4B

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

wood stork *Mycteria americana*

Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

FISH

american eel *Anguilla rostrata*

Originally found in all river systems from the Red River to the Rio Grande. Aquatic habtiats include large rivers, streams, tributaries, coastal watersheds, estuaries, bays, and oceans. Spawns in Sargasso Sea, larva move to coastal waters, metamorphose, and begin upstream movements. Females tend to move further upstream than males (who are often found in brackish estuaries). American Eel are habitat generalists and may be found in a broad range of habitat conditions including slow- and fast-flowing waters over many substrate types. Extirpation in upstream drainages attributed to reservoirs that impede upstream migration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

NUECES COUNTY

FISH

fat snook *Centropomus parallelus*

Occupies freshwater, estuarine, and marine areas near mangroves, rocky overhangs or protected riverbanks, but is most commonly found inshore (freshwater). Spawning occurs from March-August in freshwater. After hatching, larvae disperse with the currents to estuarine areas (Gilmore et al. 1983, McMichael and Parsons 1989). Juveniles migrate from freshwater to estuarine areas based on flow and salinity regimes.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3?

Oceanic Whitetip Shark *Carcharhinus longimanus*

Habitat description is not available at this time.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNR	State Rank: S2

opossum pipefish *Microphis brachyurus*

Adults are only found in low salinity waters of estuaries or freshwater tributaries within 30 miles of the coast (Gilmore 1992), where they also give birth. Young move or are carried into more saline waters off the coast after birth. Newly released larvae must have conditions near 18 ppt salinity for at least two weeks after birth to survive, indicating a physiology adapted for downstream transport to estuarine and marine environments (Frias-Torres 2002). Juvenile migration toward the ocean depends on water flow regimes, salinity, and vegetation for cover and capturing prey (Frias-Torres 2002). Seawalls, docks, and riprap construction destroy habitat and poor water quality and alteration of flow regimes may prevent migration (NMFS 2009).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3N

Shortfin Mako Shark *Isurus oxyrinchus*

Habitat description is not available at this time.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNR	State Rank: S2

snook *Centropomus undecimalis*

Juvenile common snook are generally restricted to the protection of riverine, salt marshes, seagrass beds, and estuary environments. These environments offer shallow water and an overhanging vegetative shoreline. Juvenile common snook can survive in waters with lower oxygen levels than adults. Adult common snook inhabit many fresh, estuarine, and marine environments including mangrove forests, beaches, river mouths, nearshore reefs, salt marshes, sea grass meadows, and near structure (pilings, artificial reefs, etc.). Adult common snook appear to be less sensitive to cold water temperatures than larvae or small juveniles. The lower lethal limit of water temperature is 48.2°-57.2° F (9°-14° C) for juveniles and 42.8°-53.6° F (6°-12° C) for adults (Hill 2005, Press 2010).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3?

southern flounder *Paralichthys lethostigma*

NUECES COUNTY

FISH

This is an estuarine-dependent species that inhabits riverine, estuarine and coastal waters, and prefers muddy, sandy, or silty substrates (Reagan and Wingo 1985). Individuals can tolerate wide temperature (~5-35°C) and salinity ranges (0-60 ppt). Southern Flounder spawn in offshore waters of the Gulf of Mexico from October to February (Reagan and Wingo 1985). The oceanic larval stage is pelagic and lasts 30–60 days. Metamorphosing individuals enter estuaries and migrate towards low-salinity headwaters, where settlement occurs (Burke et al. 1991, Walsh et al. 1999). The young fish enter the bays during late winter and early spring, occupying seagrass; some may move further into coastal rivers and bayous. Juveniles remain in estuaries until the onset of sexual maturation (approximately two years), at which time they migrate out of estuaries to join adults on the inner continental shelf. Adult southern flounder leave the bays during the fall for spawning in the Gulf of Mexico. They spawn for the first time when two years old at depths of 50 to 100 feet. Although most of the adults leave the bays and enter the Gulf for spawning during the winter, some remain behind and spend winter in the bays. Those in the Gulf will reenter the bays in the spring. The spring influx is gradual and does not occur with large concentrations that characterize the fall emigration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

Comanche harvester ant *Pogonomyrmex comanche*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

Gladiator short-winged katydid *Dichopetala gladiator*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

Gulf Dune Grasshopper *Trimerotropis schaefferi*

Coastal dunes and areas behind the dunes.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2?

Manfreda giant-skipper *Stallingsia maculosus*

Most skippers are small and stout-bodied; name derives from fast, erratic flight; at rest most skippers hold front and hind wings at different angles; skipper larvae are smooth, with the head and neck constricted; skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1

NUECES COUNTY

MAMMALS

barrier island Texas pocket gopher *Geomys personatus personatus*

Limited information available. Likely found in sandy soils.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4TNR	State Rank: SNR

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S3

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

maritime pocket gopher *Geomys personatus maritimus*

Fossorial, in deep sandy soils; feeds mostly from within burrow on roots and other plant parts, especially grasses; ecologically important as prey species and in influencing soils, microtopography, habitat heterogeneity, and plant diversity

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4T2	State Rank: S2

mountain lion *Puma concolor*

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

NUECES COUNTY

MAMMALS

ocelot *Leopardus pardalis*

Restricted to mesquite-thorn scrub and live-oak mottes; avoids open areas. Dense mixed brush below four feet; thorny shrublands; dense chaparral thickets; breeds and raises young June-November.

Federal Status: LE | State Status: E | SGCN: Y
Endemic: N | Global Rank: G4 | State Rank: S1

Padre Island kangaroo rat *Dipodomys compactus compactus*

Dunes and open sandy areas near the coast.

Federal Status: | State Status: | SGCN: Y
Endemic: Y | Global Rank: G4T3 | State Rank: S3

southern yellow bat *Lasiurus ega*

Relict palm grove is only known Texas habitat. Neotropical species roosting in palms, forages over water; insectivorous; breeding in late winter. Roosts in dead palm fronds in ornamental palms in urban areas.

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: S3S4

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G2G3 | State Rank: S3S4

West Indian manatee *Trichechus manatus*

Large rivers, brackish water bays, coastal waters. Warm waters of the tropics, in rivers and brackish bays but may also survive in salt water habitats. Very sensitive to cold water temperatures. Rarely occurring as far north as Texas. Gulf and bay system; opportunistic, aquatic herbivore.

Federal Status: LT | State Status: T | SGCN: Y
Endemic: N | Global Rank: G2G3 | State Rank: S1

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. telmalestes

Federal Status: | State Status: | SGCN: Y
Endemic: N | Global Rank: G4 | State Rank: S4

white-nosed coati *Nasua narica*

Woodlands, riparian corridors and canyons.Most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground and in trees; omnivorous; may be susceptible to hunting, trapping, and pet trade

Federal Status: | State Status: T | SGCN: Y
Endemic: N | Global Rank: G5 | State Rank: S1

NUECES COUNTY

MOLLUSKS

No accepted common name *Millerelix gracilis*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G2G3	State Rank: S2?

REPTILES

Atlantic hawksbill sea turtle *Eretmochelys imbricata*

Inhabit tropical and subtropical waters worldwide, in the Gulf of Mexico, especially Texas. Hatchling and juveniles are found in open, pelagic ocean and closely associated with floating lgae/seagrass mats. Juveniles then migrate to shallower, coastal areas, mainly coral reefs and rocky areas, but also in bays and estuaries near mangroves when reefs are absent; seldom in water lmore than 65 feet deep. They feed on sponges, jellyfish, sea urchins, molluscs, and crustaceans. Nesting occurs from April to November high up on the beach where there is vegetation for cover and little or no sand. Some migrate, but others stay close to foraging areas - females are philopatric.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S2

green sea turtle *Chelonia mydas*

Inhabits tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. Adults and juveniles occupy inshore and nearshore areas, including bays and lagoons with reefs and seagrass. They migrate from feeding grounds (open ocean) to nesting grounds (beaches/barrier islands) and some nesting does occur in Texas (April to September). Adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds.

Federal Status: LT	State Status: T	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S3B, S3N

Kemp's Ridley sea turtle *Lepidochelys kempii*

Inhabits tropical, subtropical, and temperate waters of the northwestern Atlantic Ocean and Gulf of Mexico. Adults are found in coastal waters with muddy or sandy bottoms. Some males migrate between feeding grounds and breeeding grounds, but some don't. Females migrate between feeding and nesting areas, often returning to the same destinations. Nesting in Texas occurs on a smaller scale compared to other areas (i.e. Mexico). Hatchlings are quickly swept out to open water and are rarely found nearshore. Similarly, juveniles often congregate near floating algae/seagrass mats offshore, and move into nearshore, coastal, neritic areas after 1-2 years and remain until they reach maturity. They feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G1	State Rank: S3

leatherback sea turtle *Dermochelys coriacea*

Inhabit tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. Nesting is not common in Texas (March to July). Most pelagic of the seaturtles with the longest migration (>10,000 miles) between nesting and foraging sites. Are able to dive to depths of 4,000 feet. They are omnivorous, showing a preference for jellyfish.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G2	State Rank: S1S2

NUECES COUNTY

REPTILES

loggerhead sea turtle *Caretta caretta*

Inhabits tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. They migrate from feeding grounds to nesting beaches/barrier islands and some nesting does occur in Texas (April to September). Beaches that are narrow, steeply sloped, with coarse-grain sand are preffered for nesting. Newly hatched individuals depend on floating alage/seaweed for protection and foraging, which eventually transport them offshore and into open ocean. Juveniles and young adults spend their lives in open ocean, offshore before migrating to coastal areas to breed and nest. Foraging areas for adults include shallow continental shelf waters.

Federal Status: LT	State Status: T	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S4

Mexican blackhead snake *Tantilla atriceps*

Terrestrial: Shrubland savanna.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1

slender glass lizard *Ophisaurus attenuatus*

Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Tamaulipan spot-tailed earless lizard *Holbrookia subcaudalis*

Terrestrial: Habitats include moderately open prairie-brushland regions, particularly fairly flat areas free of vegetation or other obstructions (e.g., open meadows, old and new fields, graded roadways, cleared and disturbed areas, prairie savanna, and active agriculture including row crops); also, oak-juniper woodlands and mesquite-prickly pear associations (Axtell 1968, Bartlett and Bartlett 1999).

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: S2

Texas diamondback terrapin *Malaclemys terrapin littoralis*

Coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive. Bay islands are important habitats. Nests on oyster shell beaches.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4T3Q	State Rank: S2

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

Texas indigo snake *Drymarchon melanurus erebennus*

NUECES COUNTY

REPTILES

Terrestrial: Thornbush-chaparral woodland of south Texas, in particular dense riparian corridors.Can do well in suburban and irrigated croplands. Requires moist microhabitats, such as rodent burrows, for shelter.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5T4	State Rank: S4

Texas scarlet snake *Cemophora lineri*

Terrestrial: Prefers well drained soils with a variety of forest, grassland, and scrub habitats.

Federal Status:	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1S2

Texas tortoise *Gopherus berlandieri*

Terrestrial: Open scrub woods, arid brush, lomas, grass-cactus association; often in areas with sandy well-drained soils. When inactive occupies shallow depressions dug at base of bush or cactus; sometimes in underground burrow or under object. Eggs are laid in nests dug in soil near or under bushes.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2

western box turtle *Terrapene ornata*

Terrestrial: Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

western hognose snake *Heterodon nasicus*

Terrestrial: Shortgrass or mixed grass prairie, with gravel or sandy soils. Often found associated with draws, floodplains, and more mesic habitats within the arid landscape. Frequently occurs in shrub encroached grasslands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

western massasauga *Sistrurus tergeminus*

Terrestrial: Shortgrass or mixed grass prairie, with gravel or sandy soils. Often found associated with draws, floodplains, and more mesic habitats within the arid landscape. Frequently occurs in shrub encroached grasslands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3S4

NUECES COUNTY

PLANTS

black lace cactus *Echinocereus reichenbachii var. albertii*

Grasslands, thorn shrublands, mesquite woodlands on sandy, somewhat saline soils on coastal prairie, most frequently in naturally open areas sparsely covered with brush of a low stature not resulting from disturbance or along creeks in ecotonal areas between this upland type and lower areas dominated by halophytic grasses and forbs; flowering April-June

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G5T1Q	State Rank: S1

Buckley's spiderwort *Tradescantia buckleyi*

Occurs on sandy loam or clay soils in grasslands or shrublands underlain by the Beaumount Formation.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Cory's croton *Croton coryi*

Grasslands and woodland openings on barrier islands and coastal sands of South Texas, inland on South Texas Sand Sheet; Annual; Flowering July-Oct; Fruiting July-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

crestless onion *Allium canadense var. ecristatum*

Occurs on poorly drained sites on sandy substrates within coastal prairies of the Coastal Bend area (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T3	State Rank: S3

Drummond's rushpea *Hoffmannseggia drummondii*

Open areas on sandy clay; Perennial

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Elmendorf's onion *Allium elmendorfii*

Grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

Greenman's bluet *Houstonia parviflora*

Grass pastures. Feb- Apr. (Correll and Johnston 1970).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

NUECES COUNTY

PLANTS

Jones' nailwort *Paronychia jonesii*

Occurs in early successional open areas on deep well-drained sand; Biennial Annual; Flowering March-Nov; Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Jones's rainlilly *Cooperia jonesii*

Hardpan swales and other seasonally moist low areas (Jones 1977). Flowering mid summer--early fall (Jul--Oct) (Flagg, Smith & Flory 2002).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3Q	State Rank: S3

large selenia *Selenia grandis*

Occurs in seasonally wet clayey soils in open areas; Annual; Flowering Jan-April; Fruiting Feb-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

lila de los llanos *Echeandia chandleri*

Most commonly encountered among shrubs or in grassy openings in subtropical thorn shrublands on somewhat saline clays of lomas along Gulf Coast near mouth of Rio Grande; also observed in a few upland coastal prairie remnants on clay soils over the Beaumont Formation at inland sites well to the north and along railroad right-of-ways and cemeteries; flowering (May-) September-December, fruiting October-December

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S2S3

Mexican mud-plantain *Heteranthera mexicana*

Wet clayey soils of resacas and ephemeral wetlands in South Texas and along margins of playas in the Panhandle; flowering June-December, only after sufficient rainfall

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S1

plains gumweed *Grindelia oolepis*

Coastal prairies on heavy clay (blackland) soils, often in depressional areas, sometimes persisting in areas where management (mowing) may maintain or mimic natural prairie disturbance regimes; crawfish lands; on nearly level Victoria clay, Edroy clay, claypan, possibly Greta within Orelia fine sandy loam over the Beaumont Formation, and Harlingen clay; roadsides, railroad rights-of-ways, vacant lots in urban areas, cemeteries; flowering April-December

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S2

NUECES COUNTY

PLANTS

sand Brazos mint *Brazoria arenaria*

Sandy areas in South Texas; Annual; Flowering/Fruiting March-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

slender rush-pea *Hoffmannseggia tenella*

Coastal prairie grasslands on level uplands and on gentle slopes along drainages, usually in areas of shorter or sparse vegetation; soils often described as Blackland clay, but at some of these sites soils are coarser textured and lighter in color than the typical heavy clay of the coastal prairies; flowering April-November

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

South Texas ambrosia *Ambrosia cheiranthifolia*

Grasslands and mesquite-dominated shrublands on various soils ranging from heavy clays to lighter textured sandy loams, mostly over the Beaumont Formation on the Coastal Plain; in modified unplowed sites such as railroad and highway right-of-ways, cemeteries, mowed fields, erosional areas along small creeks; Perennial; Flowering July-November

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S1

South Texas spikesedge *Eleocharis austrotexana*

Occurring in miscellaneous wetlands at scattered locations on the coastal plain; Perennial; Flowering/Fruiting Sept

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Texas peachbush *Prunus texana*

Occurs at scattered sites in various well drained sandy situations; deep sand, plains and sand hills, grasslands, oak woods, 0-200 m elevation; Perennial; Flowering Feb-Mar; Fruiting Apr-Jun

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Texas stonecrop *Lenophyllum texanum*

Found in shrublands on clay dunes (lomas) at the mouth of the Rio Grande and on xeric calcareous rock outcrops at scattered inland sites; Perennial; Flowering/Fruiting Nov-Feb

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

NUECES COUNTY

PLANTS

Texas windmill grass *Chloris texensis*

Sandy to sandy loam soils in relatively bare areas in coastal prairie grassland remnants, often on roadsides where regular mowing may mimic natural prairie fire regimes; flowering in fall

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

Tharp's dropseed *Sporobolus tharpii*

Occurs on barrier islands, shores of lagoons and bays protected by the barrier islands, and on shores of a few near-coastal ponds. Plants occur at the bases of dunes, in interdune swales and sandflats, and on upper beaches. The substrate is of Holocene age.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Tharp's rhododon *Rhododon angulatus*

Deep, loose sands in sparsely vegetated areas on stabilized dunes of Pleistocene barrier islands; flowering (May-) June-September, sometimes later with appropriate rainfall

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1Q	State Rank: S1

tree dodder *Cuscuta exaltata*

Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

velvet spurge *Euphorbia innocua*

Open or brushy areas on coastal sands and the South Texas Sand Sheet; Perennial; Flowering Sept-April; Fruiting Nov-July

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Welder machaeranthera *Psilactis heterocarpa*

Grasslands , varying from midgrass coastal prairies, and open mesquite-huisache woodlands on nearly level, gray to dark gray clayey to silty soils; known locations mapped on Victoria clay, Edroy clay, Dacosta sandy clay loam over Beaumont and Lissie formations; flowering September-November

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

NUECES COUNTY

PLANTS

Wright's trichocoronis *Trichocoronis wrightii var. wrightii*

Most records from Texas are historical, perhaps indicating a decline as a result of alteration of wetland habitats; Annual; Flowering Feb-Oct; Fruiting Feb-Sept

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T3	State Rank: S2

Last Update: 3/5/2021

SAN PATRICIO COUNTY

AMPHIBIANS

black-spotted newt *Notophthalmus meridionalis*

Terrestrial and aquatic: Terrestrial habitats used by adults are typically poorly drained clay soils that allow for the formation of ephemeral wetlands. A wide variety of vegetation associations are known to be used, such as thorn scrub and pasture. Aquatic habitats used for reprodution are a variety of ephemeral and permanent water bodies.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

sheep frog *Hypopachus variolosus*

Terrestrial and aquatic: Predominantly grassland and savanna; largely fossorial in areas with moist microclimates.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

South Texas siren (Large Form) *Siren sp. 1*

Aquatic: Mainly found in bodies of quiet water, permanent or temporary, with or without submergent vegetation. Wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods, but does require some moisture to remain.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNRQ	State Rank: S1

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

BIRDS

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

Black Rail *Laterallus jamaicensis*

Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

SAN PATRICIO COUNTY

BIRDS

Botteri's sparrow *Peucaea botterii*

Two allopatric subspecies occur in Texas. The arizonae subspecies found in the Trans Pecos is considered to be a vagrant because there is just one record from Presidio County in 1997. The other subspecies, texana, can be found regularly in sacahuista habitat (or cordgrass flats) in counties that along the lower coastline like Kenedy, Willacy, and Cameron counties, but also rarely in Kleberg and Brooks counties. This migratory species does not overwinter in Texas. Breeding birds return in spring and sit fairly visibly on (low) commanding perches like fence posts or mesquite limbs where males sing vigorously throughout summer.

Federal Status:	State Status: T	SGCN: Y
Endemic:	Global Rank: G4	State Rank: S3B

Franklin's gull *Leucophaeus pipixcan*

This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

northern aplomado falcon *Falco femoralis septentrionalis*

Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus; nests in old stick nests of other bird species

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T2T3	State Rank: S1

piping plover *Charadrius melodus*

Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

reddish egret *Egretta rufescens*

SAN PATRICIO COUNTY

BIRDS

Resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2B

Rufa Red Knot *Calidris canutus rufa*

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

swallow-tailed kite *Elanoides forficatus*

Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2B

Texas Botteri's sparrow *Peucaea botterii texana*

Grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite, or yucca; nests on ground of low clump of grasses

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S3B

tropical parula *Setophaga pitiayumi*

Semi-tropical evergreen woodland along rivers and resacas. Texas ebony, anacua and other trees with epiphytic plants hanging from them. Dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas; breeding April to July.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

white-faced ibis *Plegadis chihi*

SAN PATRICIO COUNTY

BIRDS

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

white-tailed hawk *Buteo albicaudatus*

Near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4B

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

wood stork *Mycteria americana*

Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

FISH

Oceanic Whitetip Shark *Carcharhinus longimanus*

Habitat description is not available at this time.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNR	State Rank: S2

opossum pipefish *Microphis brachyurus*

Adults are only found in low salinity waters of estuaries or freshwater tributaries within 30 miles of the coast (Gilmore 1992), where they also give birth. Young move or are carried into more saline waters off the coast after birth. Newly released larvae must have conditions near 18 ppt salinity for at least two weeks after birth to survive, indicating a physiology adapted for downstream transport to estuarine and marine environments (Frias-Torres 2002). Juvenile migration toward the ocean depends on water flow regimes, salinity, and vegetation for cover and capturing prey (Frias-Torres 2002). Seawalls, docks, and riprap construction destroy habitat and poor water quality and alteration of flow regimes may prevent migration (NMFS 2009).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3N

SAN PATRICIO COUNTY

FISH

Shortfin Mako Shark *Isurus oxyrinchus*

Habitat description is not available at this time.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: GNR	State Rank: S2

snook *Centropomus undecimalis*

Juvenile common snook are generally restricted to the protection of riverine, salt marshes, seagrass beds, and estuary environments. These environments offer shallow water and an overhanging vegetative shoreline. Juvenile common snook can survive in waters with lower oxygen levels than adults. Adult common snook inhabit many fresh, estuarine, and marine environments including mangrove forests, beaches, river mouths, nearshore reefs, salt marshes, sea grass meadows, and near structure (pilings, artificial reefs, etc.). Adult common snook appear to be less sensitive to cold water temperatures than larvae or small juveniles. The lower lethal limit of water temperature is 48.2°-57.2° F (9°-14° C) for juveniles and 42.8°-53.6° F (6°-12° C) for adults (Hill 2005, Press 2010).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3?

southern flounder *Paralichthys lethostigma*

This is an estuarine-dependent species that inhabits riverine, estuarine and coastal waters, and prefers muddy, sandy, or silty substrates (Reagan and Wingo 1985). Individuals can tolerate wide temperature (~5-35°C) and salinity ranges (0-60 ppt). Southern Flounder spawn in offshore waters of the Gulf of Mexico from October to February (Reagan and Wingo 1985). The oceanic larval stage is pelagic and lasts 30–60 days. Metamorphosing individuals enter estuaries and migrate towards low-salinity headwaters, where settlement occurs (Burke et al. 1991, Walsh et al. 1999). The young fish enter the bays during late winter and early spring, occupying seagrass; some may move further into coastal rivers and bayous. Juveniles remain in estuaries until the onset of sexual maturation (approximately two years), at which time they migrate out of estuaries to join adults on the inner continental shelf. Adult southern flounder leave the bays during the fall for spawning in the Gulf of Mexico. They spawn for the first time when two years old at depths of 50 to 100 feet. Although most of the adults leave the bays and enter the Gulf for spawning during the winter, some remain behind and spend winter in the bays. Those in the Gulf will reenter the bays in the spring. The spring influx is gradual and does not occur with large concentrations that characterize the fall emigration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

Manfreda giant-skipper *Stallingsia maculosus*

Most skippers are small and stout-bodied; name derives from fast, erratic flight; at rest most skippers hold front and hind wings at different angles; skipper larvae are smooth, with the head and neck constricted; skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1

SAN PATRICIO COUNTY

INSECTS

No accepted common name *Disonycha stenosticha*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

No accepted common name *Ormiscus albofasciatus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

No accepted common name *Cenophengus pallidus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

No accepted common name *Dacoderus steineri*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

No accepted common name *Cryptocephalus downiei*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G1	State Rank: SH

MAMMALS

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S3

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4

SAN PATRICIO COUNTY

MAMMALS

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4 State Rank: S1S3

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

maritime pocket gopher *Geomys personatus maritimus*

Fossorial, in deep sandy soils; feeds mostly from within burrow on roots and other plant parts, especially grasses; ecologically important as prey species and in influencing soils, microtopography, habitat heterogeneity, and plant diversity

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G4T2 State Rank: S2

mountain lion *Puma concolor*

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S2S3

ocelot *Leopardus pardalis*

Restricted to mesquite-thorn scrub and live-oak mottes; avoids open areas. Dense mixed brush below four feet; thorny shrublands; dense chaparral thickets; breeds and raises young June-November.

Federal Status: LE State Status: E SGCN: Y
Endemic: N Global Rank: G4 State Rank: S1

southern yellow bat *Lasiurus ega*

Relict palm grove is only known Texas habitat. Neotropical species roosting in palms, forages over water; insectivorous; breeding in late winter. Roosts in dead palm fronds in ornamental palms in urban areas.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3S4

swamp rabbit *Sylvilagus aquaticus*

Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks and rivers.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

SAN PATRICIO COUNTY

MAMMALS

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S3S4

West Indian manatee *Trichechus manatus*

Large rivers, brackish water bays, coastal waters. Warm waters of the tropics, in rivers and brackish bays but may also survive in salt water habitats. Very sensitive to cold water temperatures. Rarely occurring as far north as Texas. Gulf and bay system; opportunistic, aquatic herbivore.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S1

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. telmalestes

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

white-nosed coati *Nasua narica*

Woodlands, riparian corridors and canyons.Most individuals in Texas probably transients from Mexico; diurnal and crepuscular; very sociable; forages on ground and in trees; omnivorous; may be susceptible to hunting, trapping, and pet trade

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S1

MOLLUSKS

No accepted common name *Praticolella candida*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

REPTILES

Atlantic hawksbill sea turtle *Eretmochelys imbricata*

Inhabit tropical and subtropical waters worldwide, in the Gulf of Mexico, especially Texas. Hatchling and juveniles are found in open, pelagic ocean and closely associated with floating lgae/seagrass mats. Juveniles then migrate to shallower, coastal areas, mainly coral reefs and rocky areas, but also in bays and estuaries near mangroves when reefs are absent; seldom in water lmore than 65 feet deep. They feed on sponges, jellyfish, sea urchins, molluscs, and crustaceans. Nesting occurs from April to November high up on the beach where there is vegetation for cover and little or no sand. Some migrate, but others stay close to foraging areas - females are philopatric.

Federal Status: LE	State Status: E	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S2

SAN PATRICIO COUNTY

REPTILES

green sea turtle *Chelonia mydas*

Inhabits tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. Adults and juveniles occupy inshore and nearshore areas, including bays and lagoons with reefs and seagrass. They migrate from feeding grounds (open ocean) to nesting grounds (beaches/barrier islands) and some nesting does occur in Texas (April to September). Adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds.

Federal Status: LT	State Status: T	SGCN: Y
Endemic:	Global Rank: G3	State Rank: S3B, S3N

slender glass lizard *Ophisaurus attenuatus*

Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Tamaulipan spot-tailed earless lizard *Holbrookia subcaudalis*

Terrestrial: Habitats include moderately open prairie-brushland regions, particularly fairly flat areas free of vegetation or other obstructions (e.g., open meadows, old and new fields, graded roadways, cleared and disturbed areas, prairie savanna, and active agriculture including row crops); also, oak-juniper woodlands and mesquite-prickly pear associations (Axtell 1968, Bartlett and Bartlett 1999).

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: S2

Texas diamondback terrapin *Malaclemys terrapin littoralis*

Coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive. Bay islands are important habitats. Nests on oyster shell beaches.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G4T3Q	State Rank: S2

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

Texas indigo snake *Drymarchon melanurus erebennus*

Terrestrial: Thornbush-chaparral woodland of south Texas, in particular dense riparian corridors.Can do well in suburban and irrigated croplands. Requires moist microhabitats, such as rodent burrows, for shelter.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5T4	State Rank: S4

SAN PATRICIO COUNTY

REPTILES

Texas scarlet snake *Cemophora lineri*

Terrestrial: Prefers well drained soils with a variety of forest, grassland, and scrub habitats.

Federal Status:	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1S2

Texas tortoise *Gopherus berlandieri*

Terrestrial: Open scrub woods, arid brush, lomas, grass-cactus association; often in areas with sandy well-drained soils. When inactive occupies shallow depressions dug at base of bush or cactus; sometimes in underground burrow or under object. Eggs are laid in nests dug in soil near or under bushes.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S2

timber (canebrake) rattlesnake *Crotalus horridus*

Terrestrial: Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

western box turtle *Terrapene ornata*

Terrestrial: Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

western massasauga *Sistrurus tergeminus*

Terrestrial: Shortgrass or mixed grass prairie, with gravel or sandy soils. Often found associated with draws, floodplains, and more mesic habitats within the arid landscape. Frequently occurs in shrub encroached grasslands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3S4

PLANTS

arrowleaf milkvine *Matelea sagittifolia*

Most consistently encountered in thornscrub in South Texas; Perennial; Flowering March-July; Fruiting April-July and Dec?

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

SAN PATRICIO COUNTY

PLANTS

Billie's bitterweed *Tetraneuris turneri*

Grasslands on shallow sandy soils and caliche outcrops (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

coastal gay-feather *Liatris bracteata*

Coastal prairie grasslands of various types, from salty prairie on low- lying somewhat saline clay loams to upland prairie on nonsaline clayey to sandy loams; flowering in fall

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

crestless onion *Allium canadense var. ecristatum*

Occurs on poorly drained sites on sandy substrates within coastal prairies of the Coastal Bend area (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T3	State Rank: S3

Croft's bluet *Houstonia croftiae*

Occurs in sparsely vegetated areas in grasslands or among shrubs (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Drummond's rushpea *Hoffmannseggia drummondii*

Open areas on sandy clay; Perennial

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Elmendorf's onion *Allium elmendorfii*

Grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

Greenman's bluet *Houstonia parviflora*

Grass pastures. Feb- Apr. (Correll and Johnston 1970).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Indianola beakrush *Rhynchospora indianolensis*

SAN PATRICIO COUNTY

PLANTS

Locally abundant in cattle pastures in some areas (at least during wet years), possibly becoming a management problem in such sites; Perennial; Flowering/Fruiting April-Nov

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3Q	State Rank: S3

Jones's rainlilly *Cooperia jonesii*

Hardpan swales and other seasonally moist low areas (Jones 1977). Flowering mid summer--early fall (Jul--Oct) (Flagg, Smith & Flory 2002).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3Q	State Rank: S3

large selenia *Selenia grandis*

Occurs in seasonally wet clayey soils in open areas; Annual; Flowering Jan-April; Fruiting Feb-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

lila de los llanos *Echeandia chandleri*

Most commonly encountered among shrubs or in grassy openings in subtropical thorn shrublands on somewhat saline clays of lomas along Gulf Coast near mouth of Rio Grande; also observed in a few upland coastal prairie remnants on clay soils over the Beaumont Formation at inland sites well to the north and along railroad right-of-ways and cemeteries; flowering (May-) September-December, fruiting October-December

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S2S3

low spurge *Euphorbia peplidion*

Occurs in a variety of vernally-moist situations in a number of natural regions; Annual; Flowering Feb-April; Fruiting March-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

net-leaf bundleflower *Desmanthus reticulatus*

Mostly on clay prairies of the coastal plain of central and south Texas; Perennial; Flowering April-July; Fruiting April-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

plains gumweed *Grindelia oolepis*

Coastal prairies on heavy clay (blackland) soils, often in depressional areas, sometimes persisting in areas where management (mowing) may maintain or mimic natural prairie disturbance regimes; crawfish lands; on nearly level Victoria clay, Edroy clay, claypan, possibly Greta within Orelia fine sandy loam over the Beaumont Formation, and Harlingen clay; roadsides, railroad rights-of-ways, vacant lots in urban areas, cemeteries; flowering April-December

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S2

SAN PATRICIO COUNTY

PLANTS

Refugio rainlily *Zephyranthes refugiensis*

Occurs on deep heavy black clay soils or sandy loams in swales or drainages on herbaceous grasslands or shrublands on level to rolling landscapes underlain by the Lissie Formation.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

sand Brazos mint *Brazoria arenaria*

Sandy areas in South Texas; Annual; Flowering/Fruiting March-April

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

seaside beebalm *Monarda maritima*

Occurs in grasslands and pastures on sandy soil near the coast (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2Q	State Rank: S2

South Texas false cudweed *Pseudognaphalium austrotexanum*

In sandy grasslands on eroded area above saline flats; along edge of sendero through mesquite woodland and shrub mottes on sandy loam; on gravel and silt bars and flats in scour plain of streams (TEX-LL specimens Carr 23682, 29264, 22647, 27206). Oct-Jan, sometimes in spring.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

South Texas spikesedge *Eleocharis austrotexana*

Occurring in miscellaneous wetlands at scattered locations on the coastal plain; Perennial; Flowering/Fruiting Sept

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

South Texas yellow clammyweed *Polanisia erosa ssp. breviglandulosa*

Sand plains of south Texas (Iltis 1958). Flowering early spring-mid fall.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T3T4	State Rank: S3S4

Texas peachbush *Prunus texana*

Occurs at scattered sites in various well drained sandy situations; deep sand, plains and sand hills, grasslands, oak woods, 0-200 m elevation; Perennial; Flowering Feb-Mar; Fruiting Apr-Jun

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

SAN PATRICIO COUNTY

PLANTS

Texas stonecrop *Lenophyllum texanum*

Found in shrublands on clay dunes (lomas) at the mouth of the Rio Grande and on xeric calcareous rock outcrops at scattered inland sites; Perennial; Flowering/Fruiting Nov-Feb

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Texas willkommia *Willkommia texana var. texana*

Mostly in sparsely vegetated shortgrass patches within taller prairies on alkaline or saline soils on the Coastal Plain (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4T3	State Rank: S3

Texas windmill grass *Chloris texensis*

Sandy to sandy loam soils in relatively bare areas in coastal prairie grassland remnants, often on roadsides where regular mowing may mimic natural prairie fire regimes; flowering in fall

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

Tharp's dropseed *Sporobolus tharpii*

Occurs on barrier islands, shores of lagoons and bays protected by the barrier islands, and on shores of a few near-coastal ponds. Plants occur at the bases of dunes, in interdune swales and sandflats, and on upper beaches. The substrate is of Holocene age.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

threeflower broomweed *Thurovia triflora*

Near coast in sparse, low vegetation on a veneer of light colored silt or fine sand over saline clay along drier upper margins of ecotone between between salty prairies and tidal flats; further inland associated with vegetated slick spots on prairie mima mounds; flowering September-November

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

tree dodder *Cuscuta exaltata*

Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

velvet spurge *Euphorbia innocua*

Open or brushy areas on coastal sands and the South Texas Sand Sheet; Perennial; Flowering Sept-April; Fruiting Nov-July

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

SAN PATRICIO COUNTY

PLANTS

Welder machaeranthera *Psilactis heterocarpa*

Grasslands , varying from midgrass coastal prairies, and open mesquite-huisache woodlands on nearly level, gray to dark gray clayey to silty soils; known locations mapped on Victoria clay, Edroy clay, Dacosta sandy clay loam over Beaumont and Lissie formations; flowering September-November

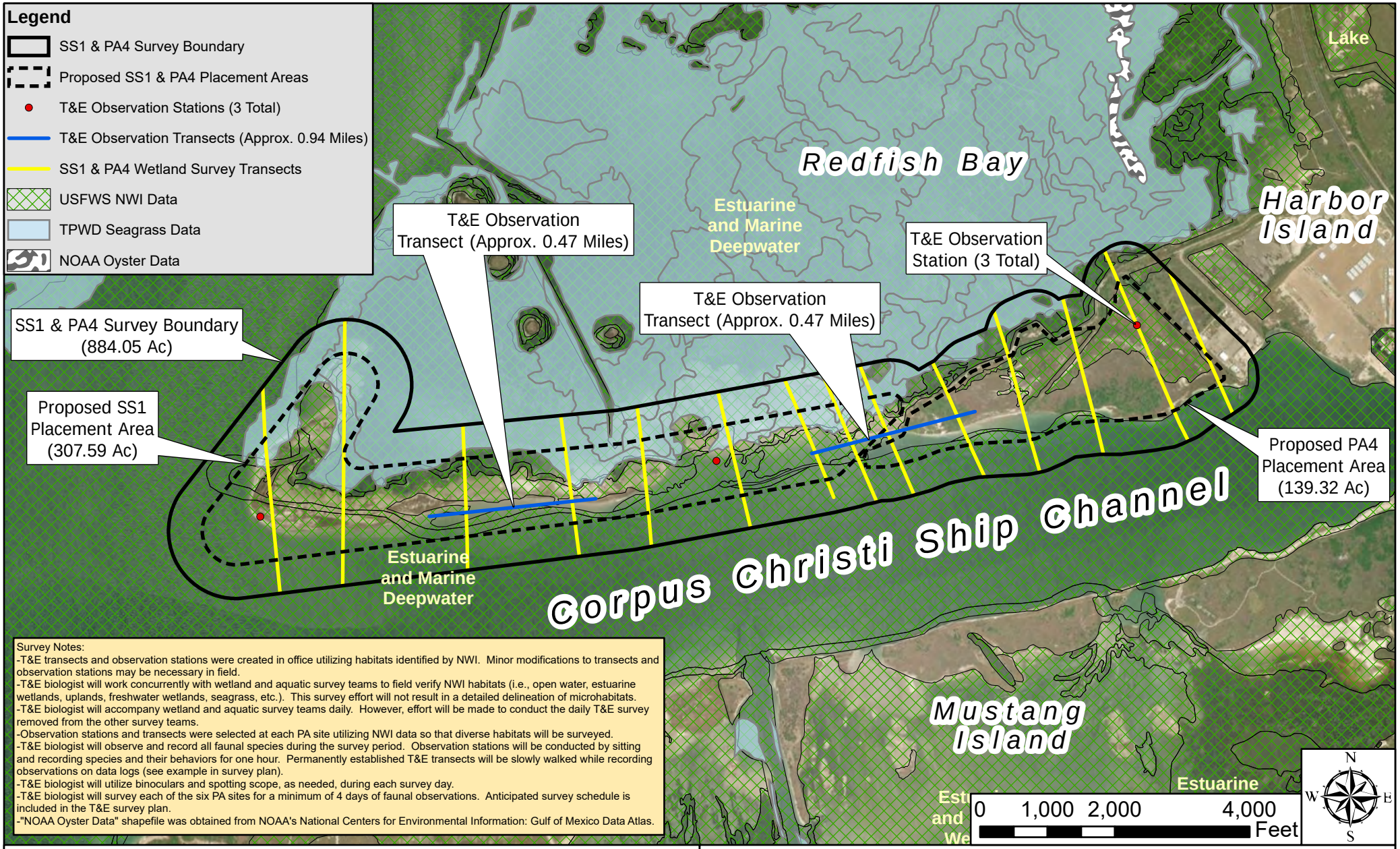
Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2S3

Wright's trichocoronis *Trichocoronis wrightii var. wrightii*

Most records from Texas are historical, perhaps indicating a decline as a result of alteration of wetland habitats; Annual; Flowering Feb-Oct; Fruiting Feb-Sept

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T3	State Rank: S2

Attachment B: T&E Survey Maps



Survey Notes:
-T&E transects and observation stations were created in office utilizing habitats identified by NWI. Minor modifications to transects and observation stations may be necessary in field.
-T&E biologist will work concurrently with wetland and aquatic survey teams to field verify NWI habitats (i.e., open water, estuarine wetlands, uplands, freshwater wetlands, seagrass, etc.). This survey effort will not result in a detailed delineation of microhabitats.
-T&E biologist will accompany wetland and aquatic survey teams daily. However, effort will be made to conduct the daily T&E survey removed from the other survey teams.
-Observation stations and transects were selected at each PA site utilizing NWI data so that diverse habitats will be surveyed.
-T&E biologist will observe and record all faunal species during the survey period. Observation stations will be conducted by sitting and recording species and their behaviors for one hour. Permanently established T&E transects will be slowly walked while recording observations on data logs (see example in survey plan).
-T&E biologist will utilize binoculars and spotting scope, as needed, during each survey day.
-T&E biologist will survey each of the six PA sites for a minimum of 4 days of faunal observations. Anticipated survey schedule is included in the T&E survey plan.
-"NOAA Oyster Data" shapefile was obtained from NOAA's National Centers for Environmental Information: Gulf of Mexico Data Atlas.

Threatened & Endangered Species
SS1 & PA4 Survey Overview Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

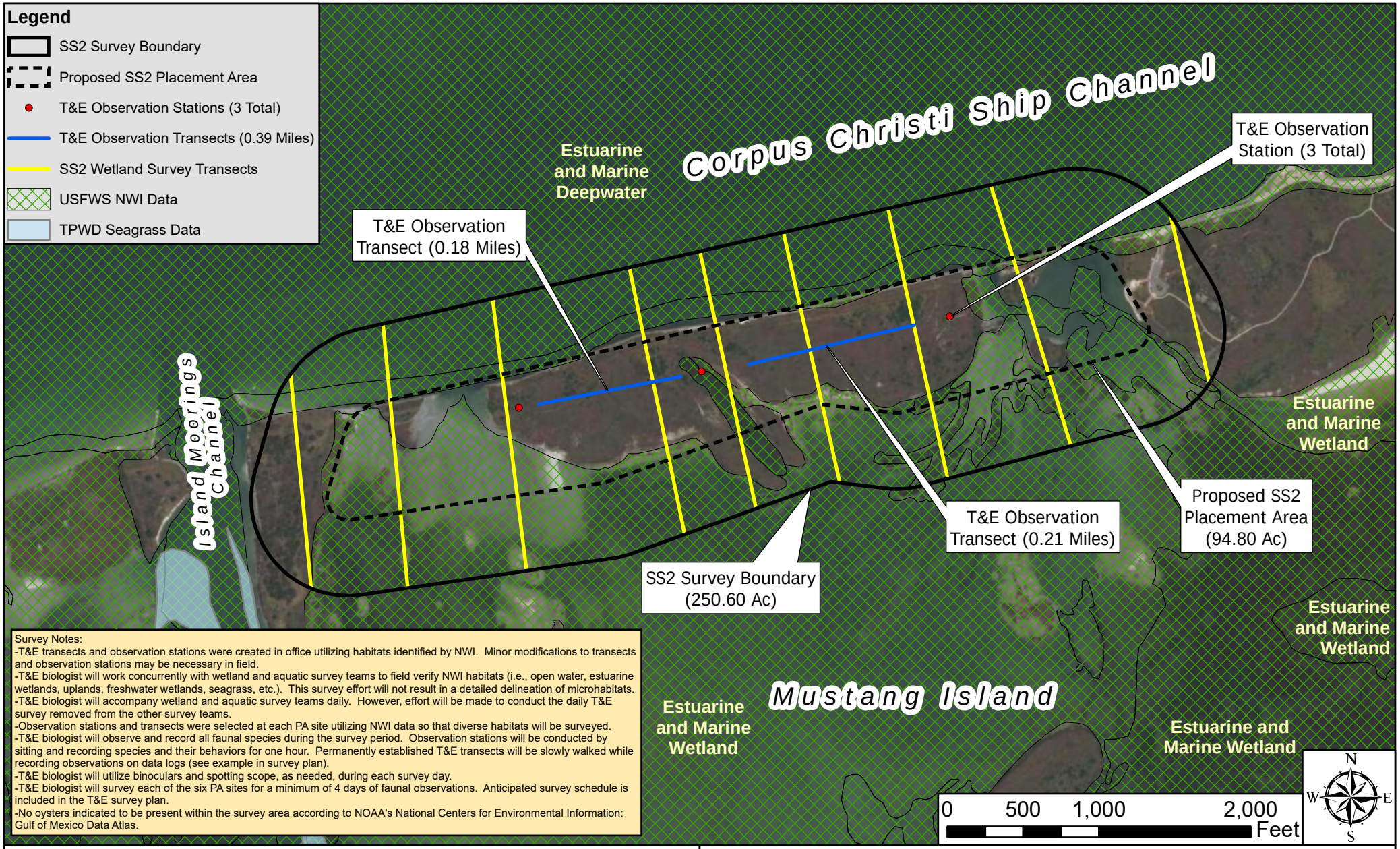
Prepared By:

Triton Environmental Solutions, LLC
P.O. Box 1755
Rockport, TX 78381

Prepared For:

Port of Corpus Christi Authority
222 Power Street
Corpus Christi, Texas 78401

Map Notes:
-BaseMap Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
-Placement Area boundary and shapefiles for SS1, SS2, HI-E, & SJI were provided by the Port of Corpus Christi Authority.
-The shapefile for PA4 was obtained from the U.S. Army Corps of Engineers.
-Map preparation Date: April 26, 2021 (JW).



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-No oysters indicated to be present within the survey area according to NOAA's National Centers for Environmental Information: Gulf of Mexico Data Atlas.

Threatened & Endangered Species
SS2 Survey Overview Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

Prepared By:

Triton Environmental Solutions, LLC
P.O. Box 1755
Rockport, TX 78381

Prepared For:

Port of Corpus Christi Authority
222 Power Street
Corpus Christi, Texas 78401

Map Notes:
-BaseMap Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
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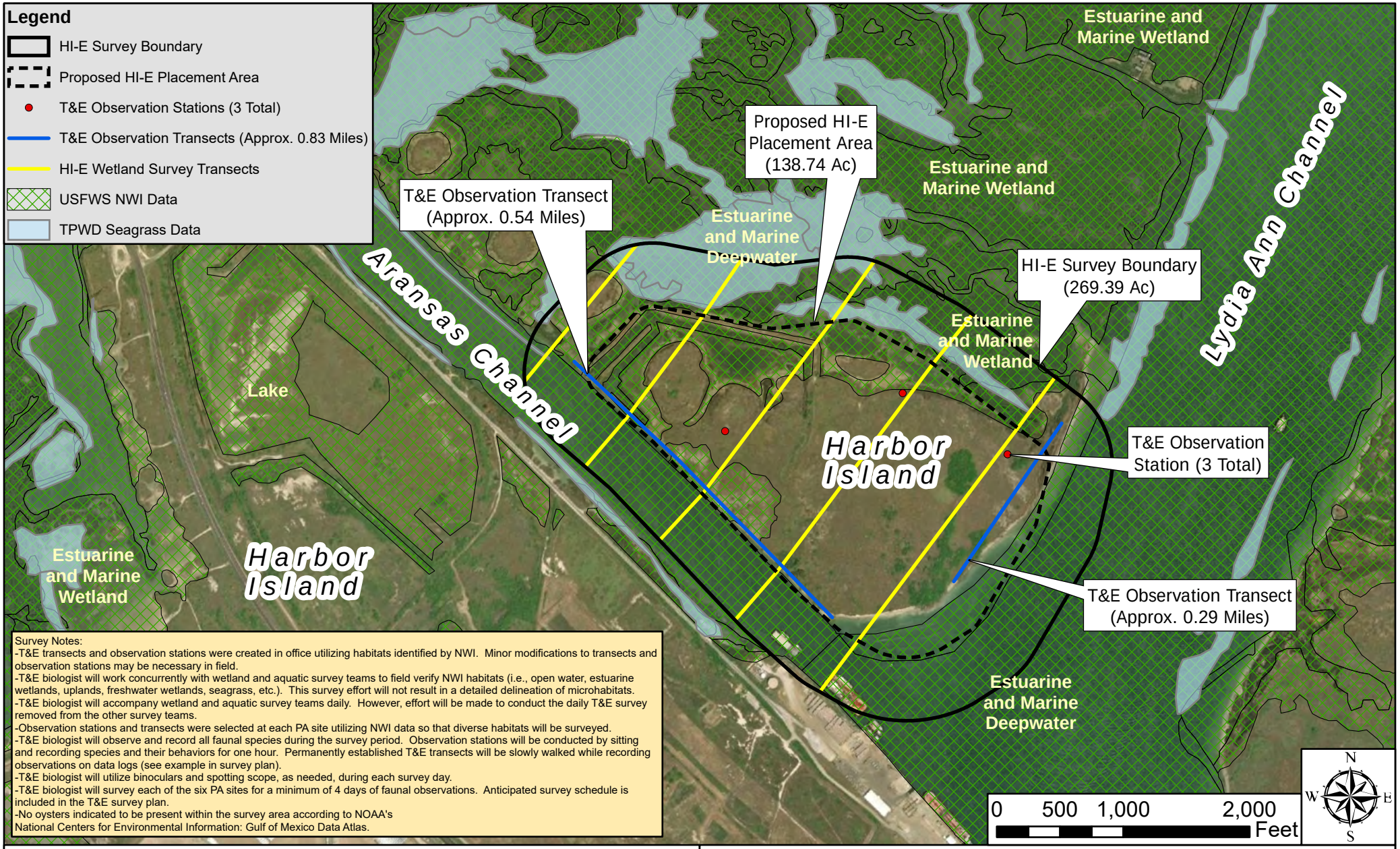
-Map preparation Date: April 26, 2021 (JW).



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-No oysters indicated to be present within the survey area according to NOAA's National Centers for Environmental Information: Gulf of Mexico Data Atlas.

Threatened & Endangered Species
HI-E Survey Overview Map
Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

Prepared By:

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Rockport, TX 78381

Prepared For:

Port of Corpus Christi Authority
222 Power Street
Corpus Christi, Texas 78401

Map Notes:
-BaseMap Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
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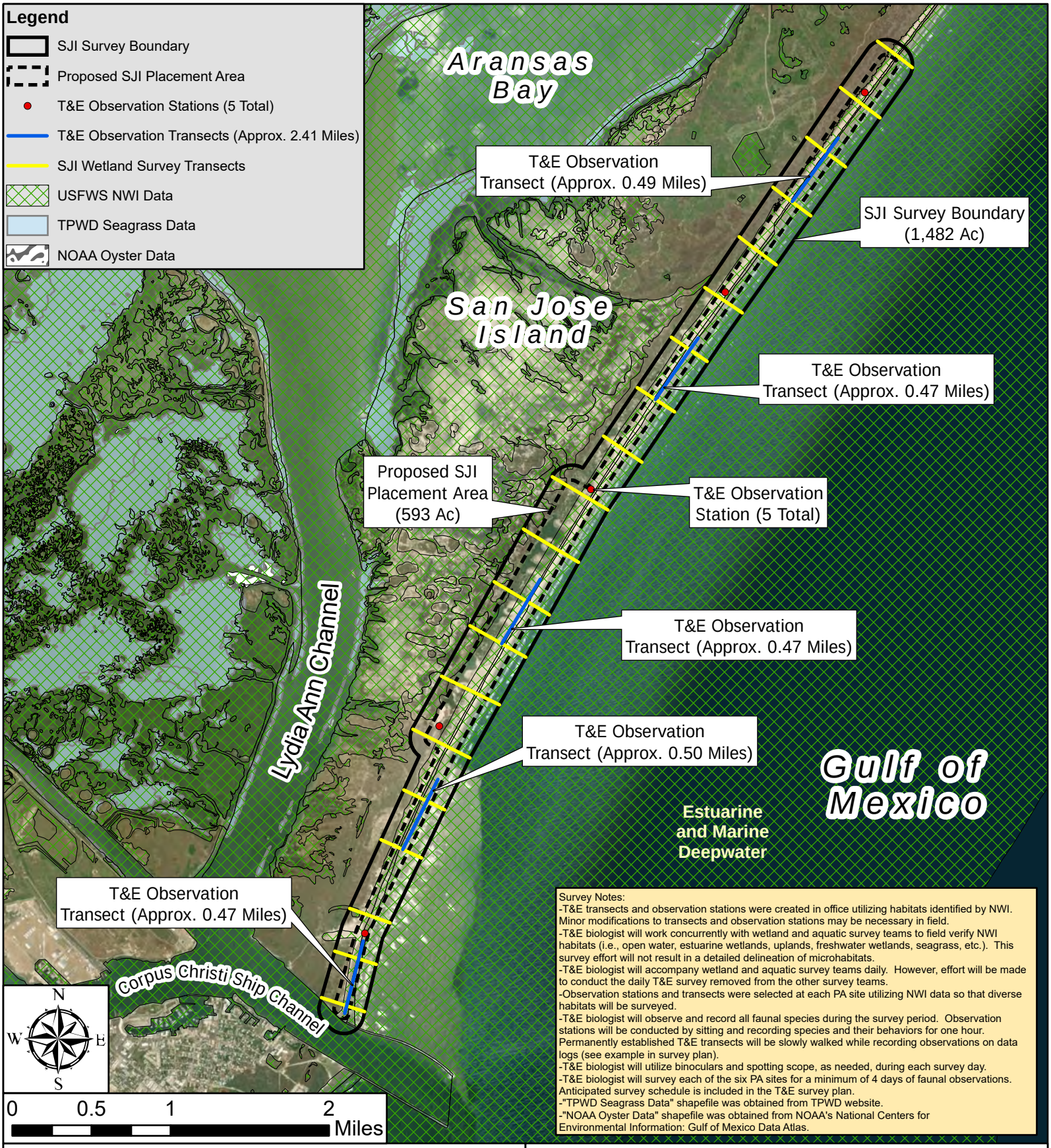
-Map preparation Date: April 26, 2021 (JW).



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-"TPWD Seagrass Data" shapefile was obtained from TPWD website.
-"NOAA Oyster Data" shapefile was obtained from NOAA's National Centers for Environmental Information: Gulf of Mexico Data Atlas.

Threatened & Endangered Species
SJI Survey Overview Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

Prepared By:
Triton Environmental Solutions, LLC
P.O. Box 1755
Rockport, Texas 78381

Prepared For:
Port of Corpus Christi Authority
222 Power Street
Corpus Christ, Texas 78401

Map Notes:
-BaseMap Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
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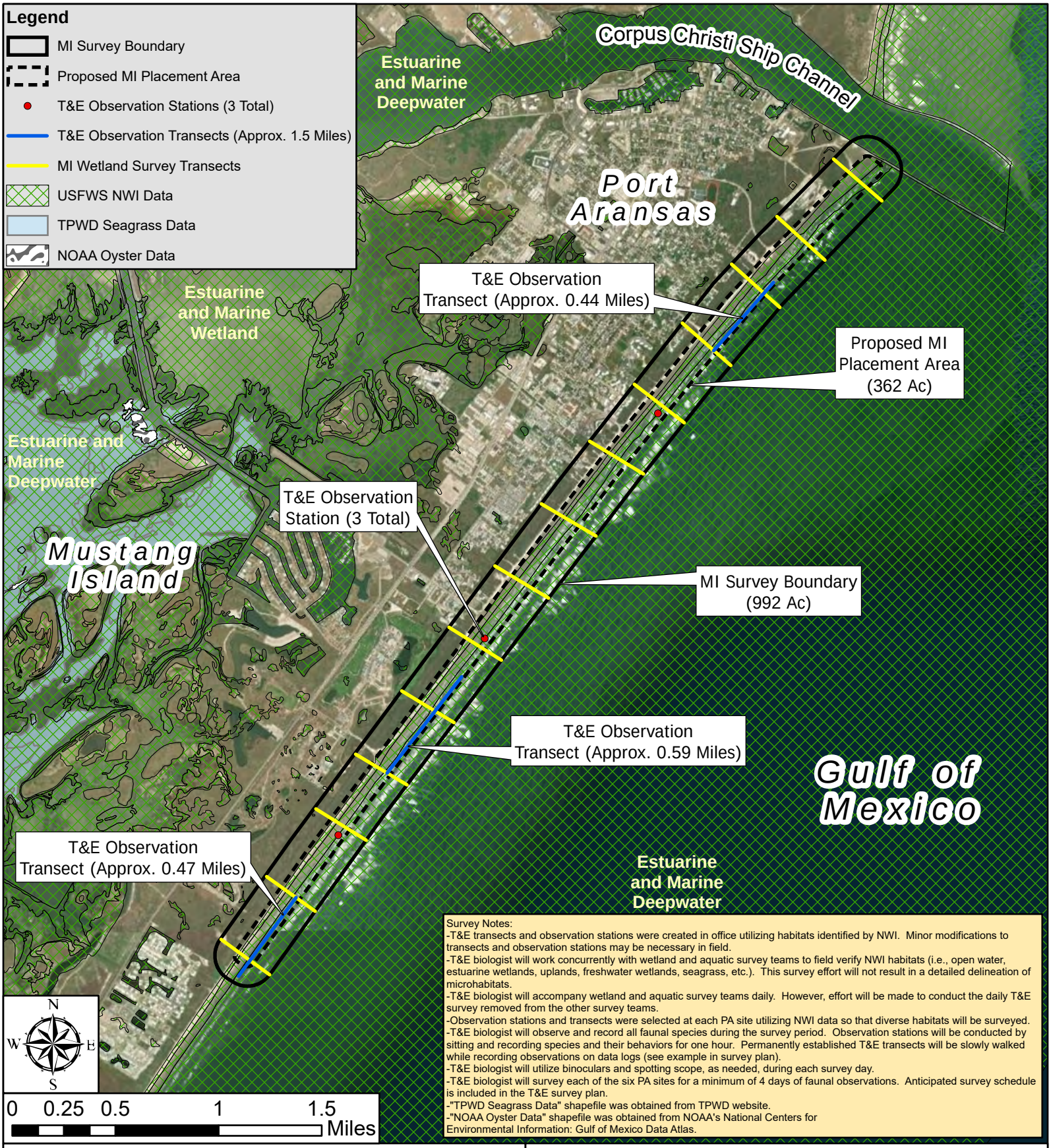
-Map preparation Date: April 26, 2021 (JW).



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-"NOAA Oyster Data" shapefile was obtained from NOAA's National Centers for Environmental Information: Gulf of Mexico Data Atlas.

Threatened & Endangered Species
MI Survey Overview Map

Corpus Christi Ship Channel Deepening Project
(SWG-2019-00067)

Prepared By:
Triton Environmental Solutions, LLC
P.O. Box 1755
Rockport, Texas 78381

Prepared For:
Port of Corpus Christi Authority
222 Power Street
Corpus Christ, Texas 78401

Map Notes:
-BaseMap Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
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-The shapefile for PA4 was obtained from the U.S. Army Corps of Engineers.
-Map preparation Date: April 26, 2021 (JW).

Attachment C: Observation Record

Example T&E Survey Record

Location: SJI Beach Transcect

Date: ____________ Weather ____________ Wind Direction ____________

Observer(s): ____________ Tidal Stage ____________ Temperature ____________

Start Time: ____________ End Time: ____________ Wind Speed ____________

Species Observed	Habitat	Behavior	Notes.

Attachment D: Anticipated Survey Schedule

PCCA 75-Foot Deepening Project (No. 18038A)

Field Investigations Timeline