



Mapping Colonial Waterbird Rookeries in Texas Coastal Zone

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History:

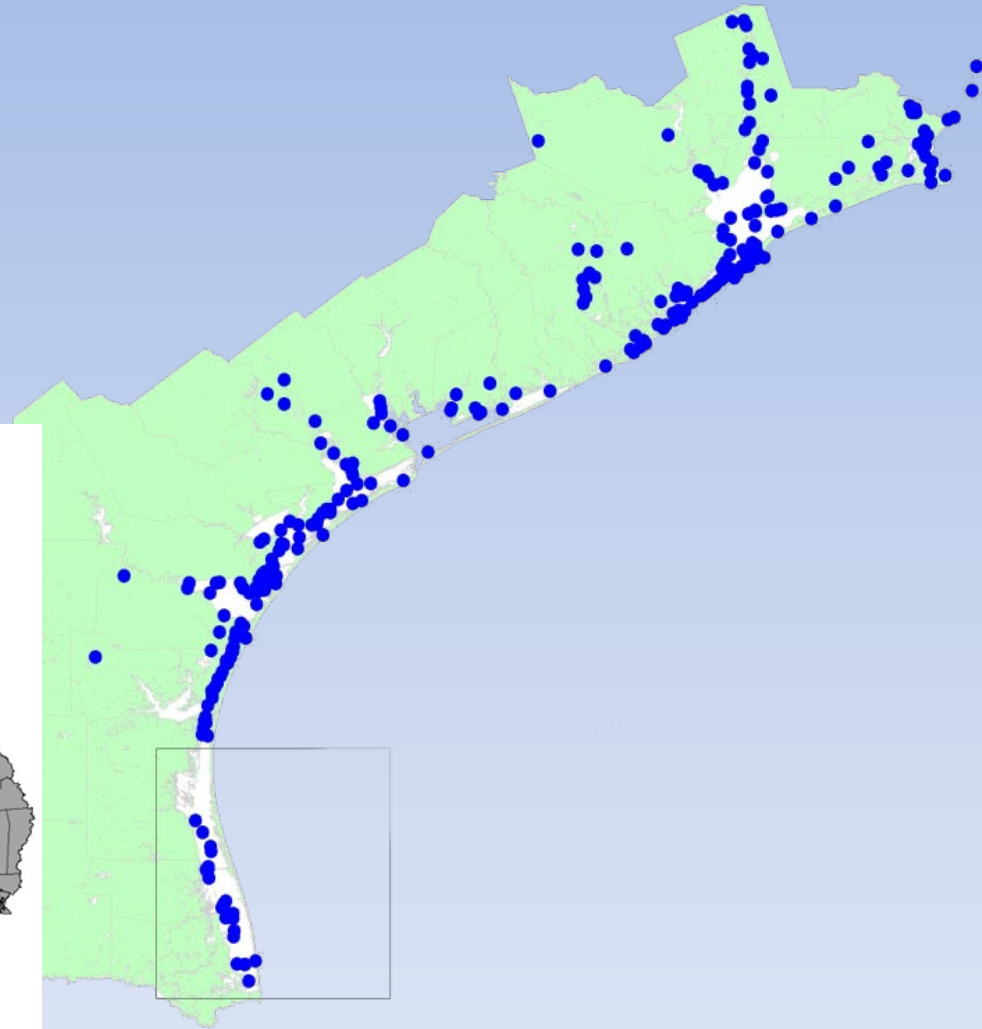
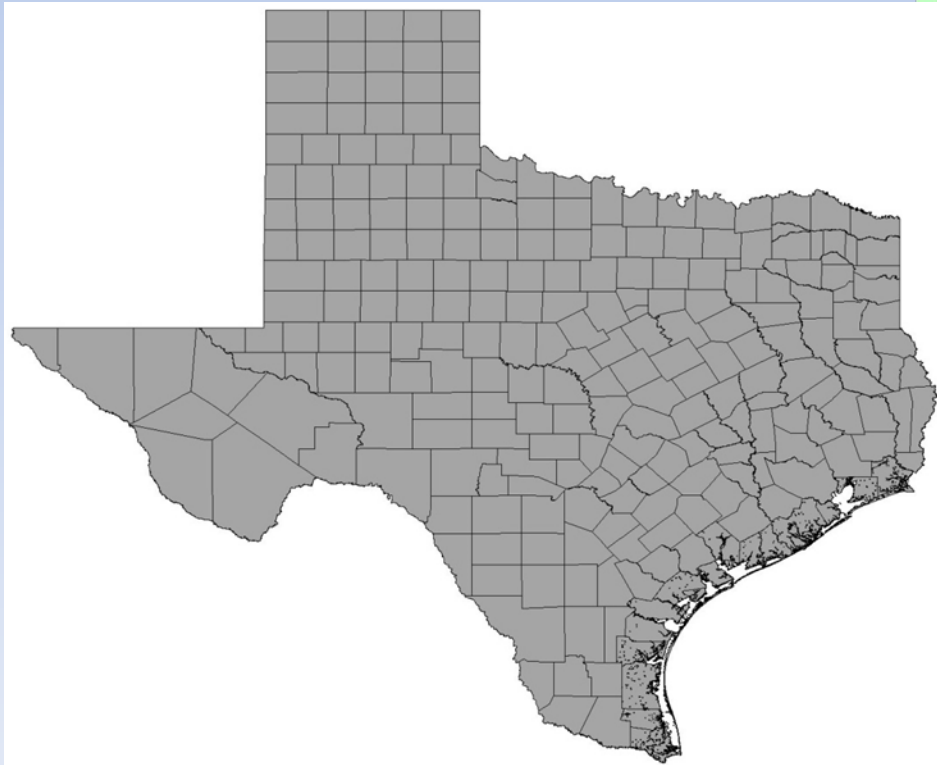
Surveys started in the late 1960's

Texas Colonial Waterbird Society 1973

TCWS Database From 1973 to Present

More than 600 colonies

Most are dredge material islands



**Texas Colonial Waterbird Society
Annual count Last two weeks of May**

**Organizing Board (NGO's,
Universities, State and Federal
Agencies)**

Goals:

**Provide and index to waterbird
population trends**

Stimulate interest in research

**Better understand life histories and
distribution of waterbird colonies**

**Facilitate coordination and
cooperation for conservation of
waterbirds**

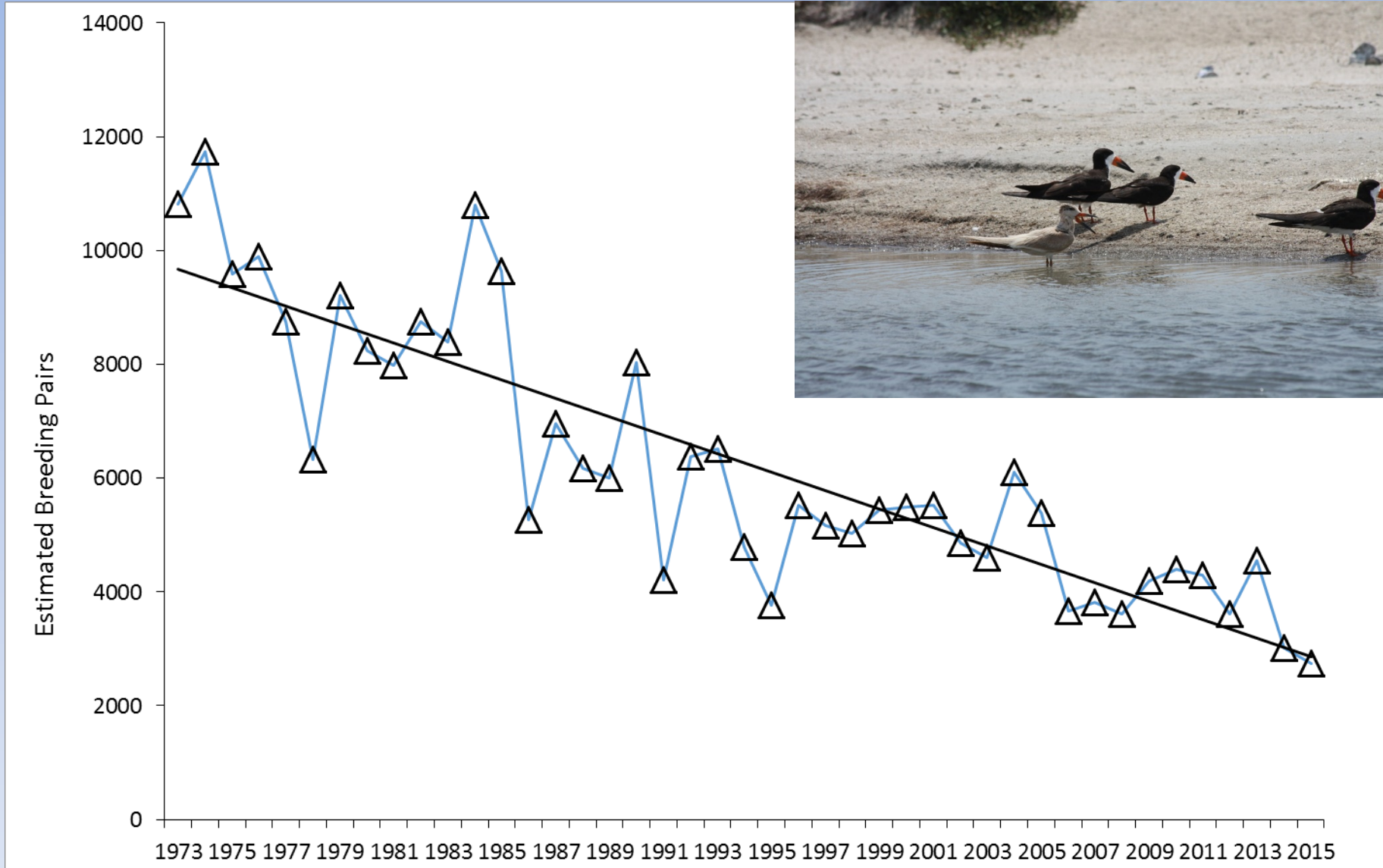
**Encourage management of habitat for
the benefit of colonial waterbirds**



Meets Annually in the Fall
Discuss trends
Management Needs
Research



Black Skimmer



Concerns:

Loss of Nesting Habitat** (erosion, relative sea level rise, vegetation succession, undesirable plants)

Predators (mammals, raptors, humans, fire ants)

Human Disturbance **

Marine debris (fishing line, plastics)



2013



2015



Restoration Actions Since 2015 (Deepwater Funding Sources and GLO)

NRDA, NFWF, GLO. Approximately \$40,000,000.00

Nueces Bay Island Restoration

NFWF GEBF, Port of Corpus Christi, GLO and Costal Conservation Association \$4.85 M
Enhance 5 small islands (3.18 acres)



This year > 80 Islands managed

- Signs
- Undesirable Plant Control
- Fire Ant Control
- Predator Control
- Planting
- Nest Structure Construction



All of these efforts depend on accurate geospatial mapping



GLO Mission:

The Texas General Land Office (GLO) primarily serves the schoolchildren, veterans, and the environment of Texas. The agency does so by preserving our history, maximizing state revenue through innovative administration, and through the prudent stewardship of state lands and natural resources.

Texas General Land Office
George P. Bush, Commissioner

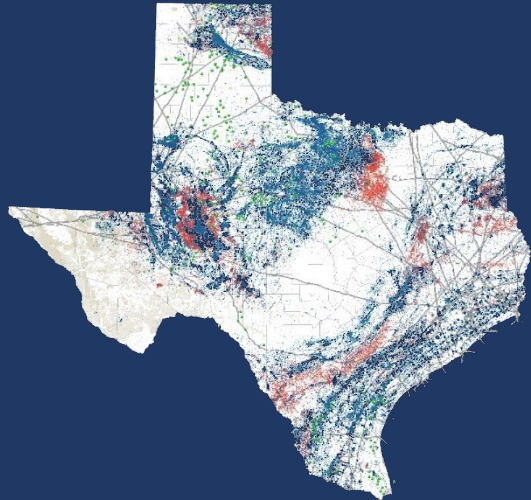




Geospatial Technology Services

*Providing the tools
to enable better decision-making
through the power of location.*

Mission: *The Geospatial Team at the General Land Office provides a foundation of tools, data, analyses, and solutions to agency staff, other agencies, project partners, and the general public. We strive to understand the technology, democratize access to location intelligence, set the standard for GIS in the state, and enhance geospatial information technologies to further the agency mission.*



Contact the Geospatial Team: Geospatial@glo.texas.gov | 512-463-4352

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Geospatial Team

Business Units Supported

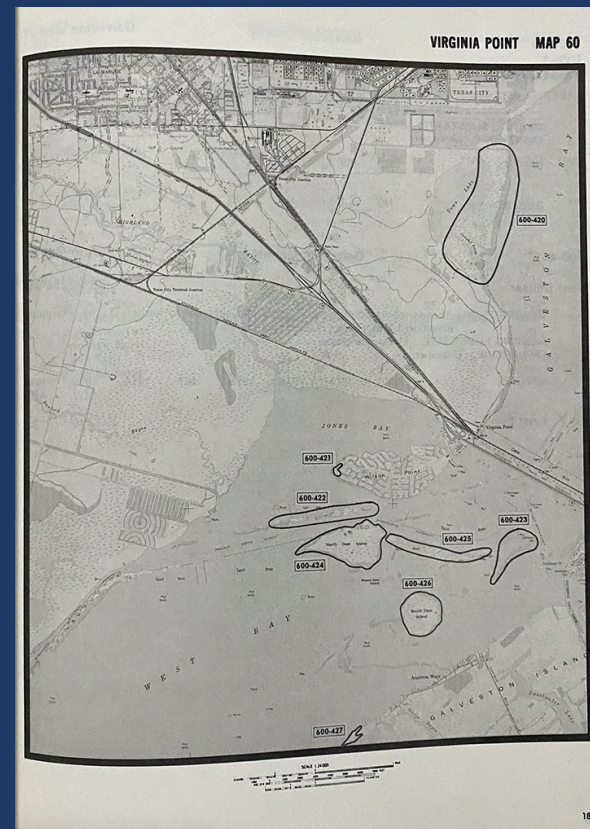
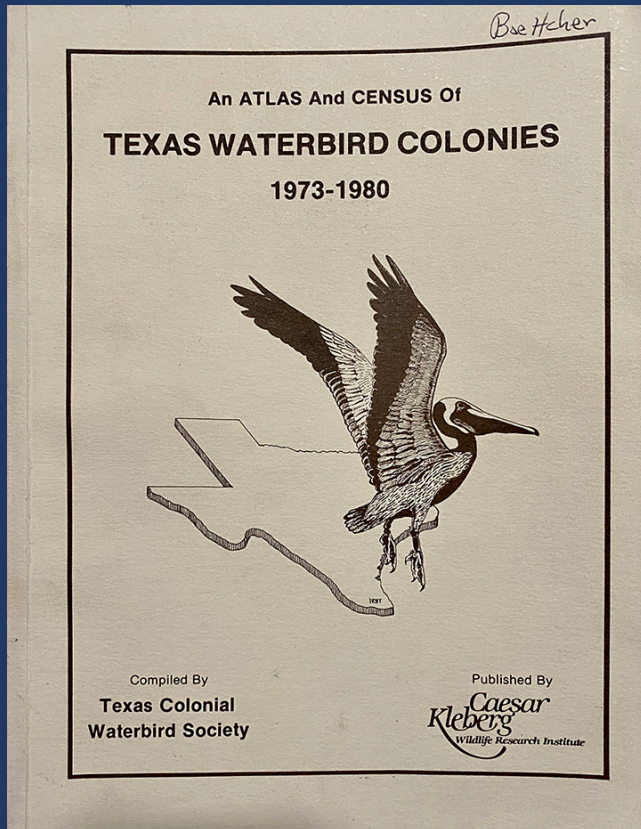
- Surveying Services
- Appraisal Services
- Construction Services
- Asset Management
- Archives & Records
- Governmental Relations
- Energy Resources
- Leasing Operations
- **Oil Spill Prevention & Response**
- **Coastal Resources**
- **Coastal Field Operations**
- Veterans Land Board
- Other state, federal, local governmental entities
- Universities/research institutions
- Private citizens/NGOs



Rookery Mapping in Texas Coastal Zone

Historical Overview

- TCWS: An Atlas and Census of Texas Colonial Waterbird Colonies 1973 -1980 (1982)



Nueces County Port Ingleside Map 98
27°49'/97°12'

614-185 I-HO-2 Corpus Christi Channel Spoil

DESCRIPTION: Two dredged material islands. Approximately 260 ha and 64 ha, maximum elevation to 10 m. Human disturbance moderate.

NESTING SUBSTRATE: Sandy clay, grasses, shrubs, scattered small trees.

OWNERSHIP: Nueces County Navigation District.

SPECIES	1973 EP	1974 EP	1975 EP	1976	1977 GWB*	1978 EP	1979 EP	1980 EP
Great Blue Heron	16	25	24	NS	IA		IA	42
Bl.-Cr. Night Heron	1		10					
Roseate Spoonbill	340	200						
Laughing Gull	5		6					1
Gull-Billed Tern	100		102			30		
Least Tern								
Black Skimmer	20		25					25

Nueces County Port Ingleside Map 98
27°46'/97°10'

614-186 I-HO-4 Shamrock Island

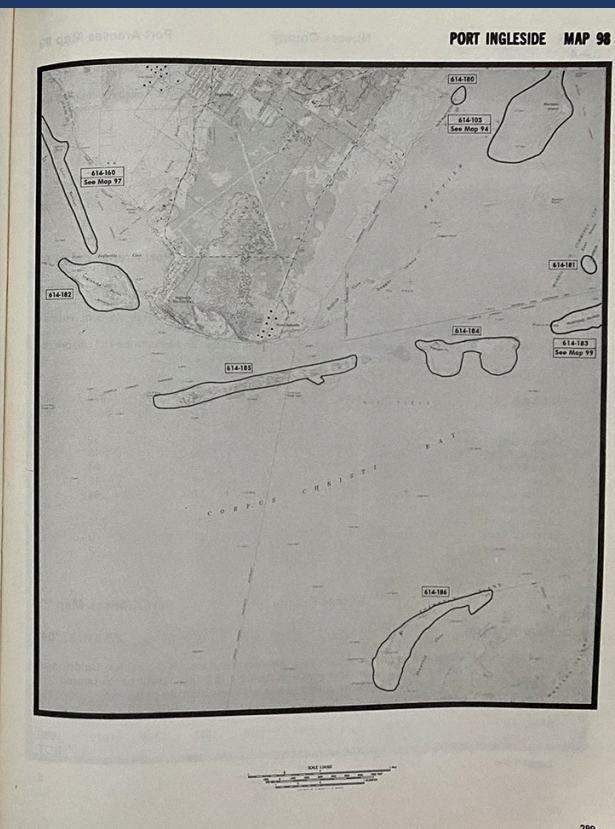
DESCRIPTION: Natural island, colony size 1.5 ha, maximum elevation 2 m. Human disturbance moderate to occasionally severe.

NESTING SUBSTRATE: Sand and shell beaches and ridges, grasses and subshrubs to 0.5 m, annuals and shrubs to 1 m, prickly pear to 1 m, yuccas and salt cedar to 3 m.

OWNERSHIP: Private ownership.

SPECIES	1973 GWB*	1974 EP	1975 EP	1976 BRC	1977 BRC	1978 BRC	1979 BRC	1980 BRC
Great Blue Heron	20	45	33	28	32	22	34	55
Little Blue Heron		2						
Cattle Egret	12	40	25	94	220	304	110	25
Reddish Egret	10	16	14	4	21	18	78	50
Great Egret	10	16	16	12	42	22	170	20
Snowy Egret	6	31	20	24	46	2	55	20
Louisiana Heron		19	6	40	64	46	40	25
Bl.-Cr. Night Heron	2	25	9	26	53	34	43	40
White-Faced Ibis				300	34	1	49	25
Roseate Spoonbill	32	52	90	86	200	74	124	75
Laughing Gull	1000	430	550	725	2890	2250	3600	2000
Gull-Billed Tern		13	12					
Forster's Tern		7				8		
Sooty Tern								15
Least Tern		5		2	36			
Royal Tern		75	4	2	2	4	5	
Sandwich Tern								60
Caspian Tern								30
Black Skimmer	50	410	200	44	252	225	320	120

288



Rookery Mapping in Texas Coastal Zone

Historical Overview

- TCWS Database (2002)
- Coastal Bend Bay and Estuaries Program (CBBEP) Central Coast Rookeries Mapping (2003-08)
- University of Texas Bureau of Economic Geology (UT-BEG) Rookery Island Geoenvironmental Mapping (Lidar & CIR Aerial Survey 2014-15)
- Audubon Texas Rookery Island Mapping (2014-16)



Overview of Rookery Mapping Efforts

<i>Name/Title</i>	<i>Data Type</i>	<i>Publish Year</i>	<i>Creator</i>	<i>Number of Colony</i>	<i>Extent</i>	<i>Source</i>
An Atlas and Census of Texas Waterbird Colonies 1973-1980	Hard-copy Book	1982	TCWS	317 (130 Coastal)	Statewide	Caesar Kleberg WRI
Rooks80s.shp	Shapefile (polygons)	Unknown	Unknown	282	Coastwide	Unknown
Rookeries	Shapefile (polygons)	1996	TGLO	194	Coastwide	TGLO
TCWS_Rooks_2002	Shapefile (points)	2002	USFWS /TCWS	287	Coastwide	USFWS /TCWS
CBBEP_Rooks_2003	Shapefile (points)	2003	CBBEP	137	Central Coast	CBBEP

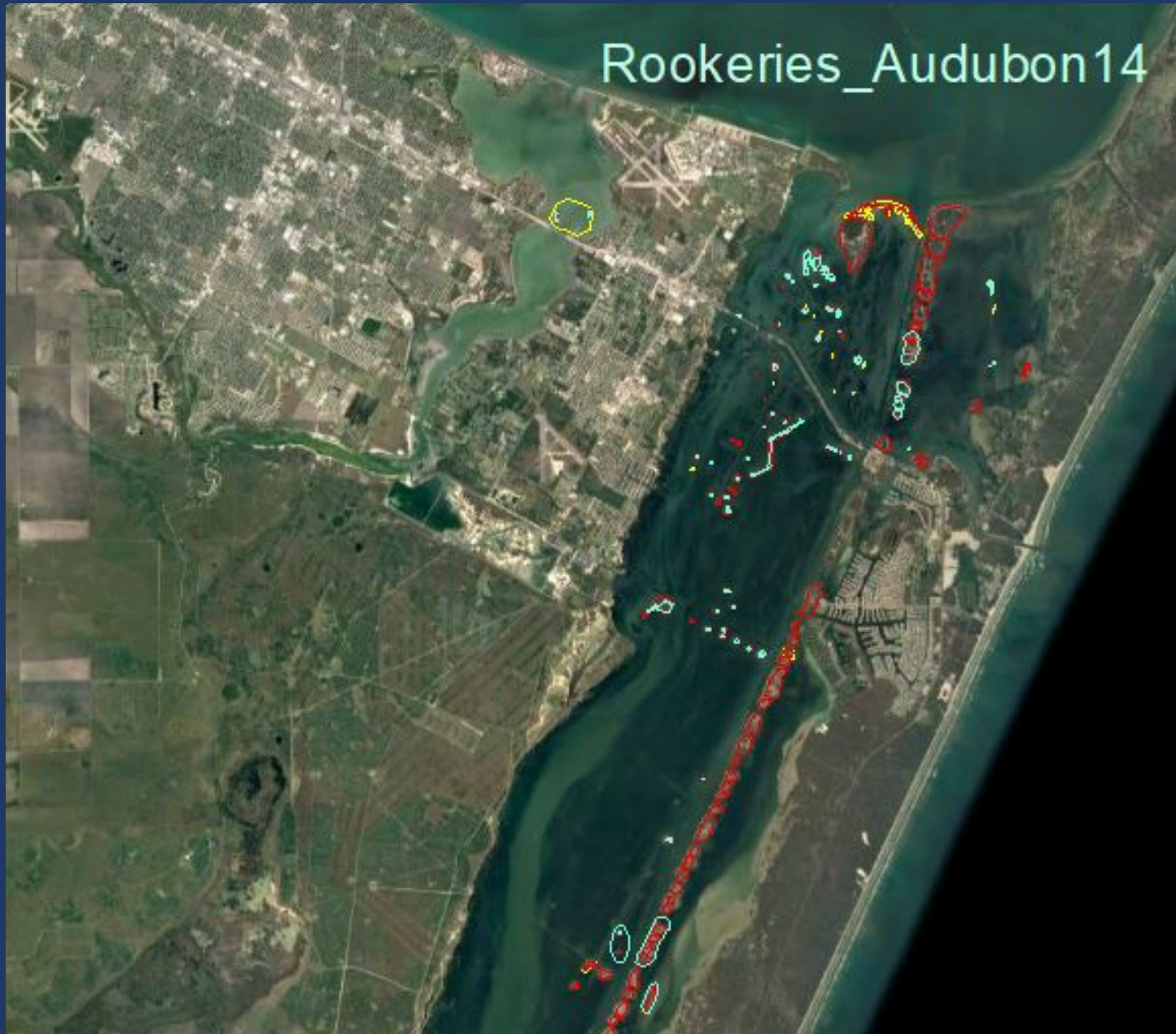


Overview of Rookery Mapping Efforts (continued)

<i>Name/Title</i>	<i>Data Type</i>	<i>Publish Year</i>	<i>Creator</i>	<i>Number of Colony</i>	<i>Extent</i>	<i>Source</i>
Central_Coast_Colonies	Shapefile (polygons)	2008	CBBEP	282	Central Coast	CBBEP/TSUSM
TX_Bird_Rookeries_Islands	Feature Class (polygons)	2008	TXNDD	288	Central Coast	TXNC Online Map
Rookeries2008	Feature Class (polygons)	2008	TGLO	332	Coastwide	TGLO
TCWS_Rooks_2012	Shapefile (points)	2012	TCWS/Audubon	412	Coastwide	TCWS/TPWD
4_14sitepoly*	Shapefile (polygons)	2014	Audubon	490	Coastwide	Audubon Texas
TCWS_DB_Sites	Shapefile (points)	2015	TCWS	677	Coastwide	TCWS/HRI



Overview of Rookery Mapping Efforts (continued)



Current Rookeries Mapping Efforts

- Step 1: Mapping rookery polygons based on

(1) GLO 1996

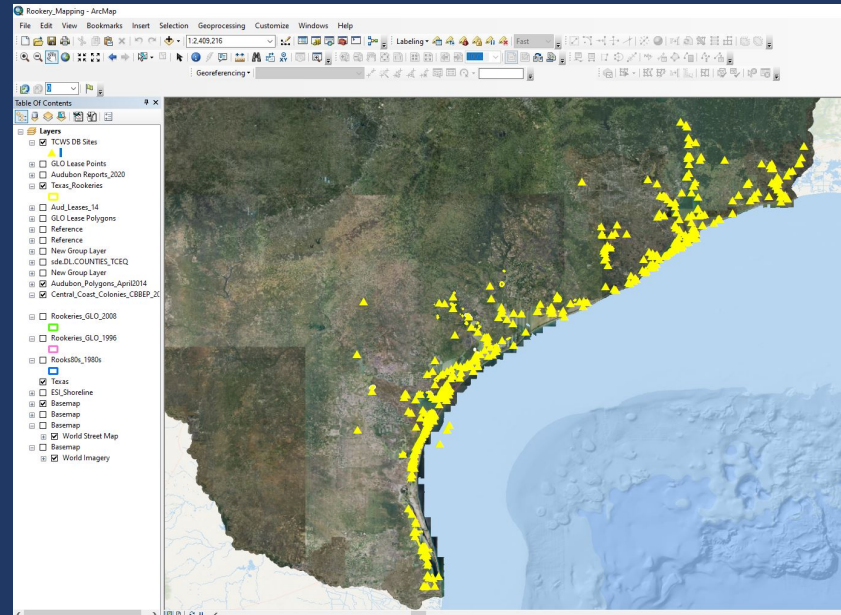
(2) CBBEP 2008

(3) Audubon 2014

(4) TCWS DB 2015

(5) NAIP Imagery (CIR) 2018

(6) USGS Lidar 2018 (Lower Coast) and StratMap Lidar 2018 (Upper Coast)



Current Rookeries Mapping Efforts (continued)

- Step 2: Update attributes with TCWS census data

The screenshot displays a GIS interface for mapping rookeries. On the left, a 'Select to Review' panel offers filters for Colony Name, ID, Region, County, and Status, all currently set to 'None'. A central panel for '2 Ring Island' provides detailed attributes: Status (Active), County (Aransas), Region (Central), Number of Surveys (7), Number of Active (7), First Year Surveyed (2004), and Last Year Surveyed (2013). Below this is a bar chart titled 'Numbers of Survey and Active' showing two bars of height 7. The main map shows 2 Ring Island with a scale bar (0-100m / 0-300ft). On the right, a summary table for 'Texas Colonial Waterbird Nesting Sites' lists 685 total colonies, broken down by status: Active (354), Inactive (214), Submerged (64), and Unknown (53). A descriptive paragraph explains the dataset's purpose in supporting natural resource management and monitoring efforts by the Texas Colonial Waterbird Society (TCWS).

Category	Count
Total Colonies	685
Active	354
Inactive	214
Submerged	64
Unknown	53

Maxar | Geospatial Technology Services, Texas General Land Office, in cooperation with other federal and state agencies as well as non-governmental conservation and scientific entities. | E... Powered by Esri

Current Rookeries Mapping Efforts (continued)

- Step 3: Data review by field experts from

(1) *TGLO Coastal Field Operations*

(2) *USFWS*

(3) *TPWD*

(4) *CBBEP*

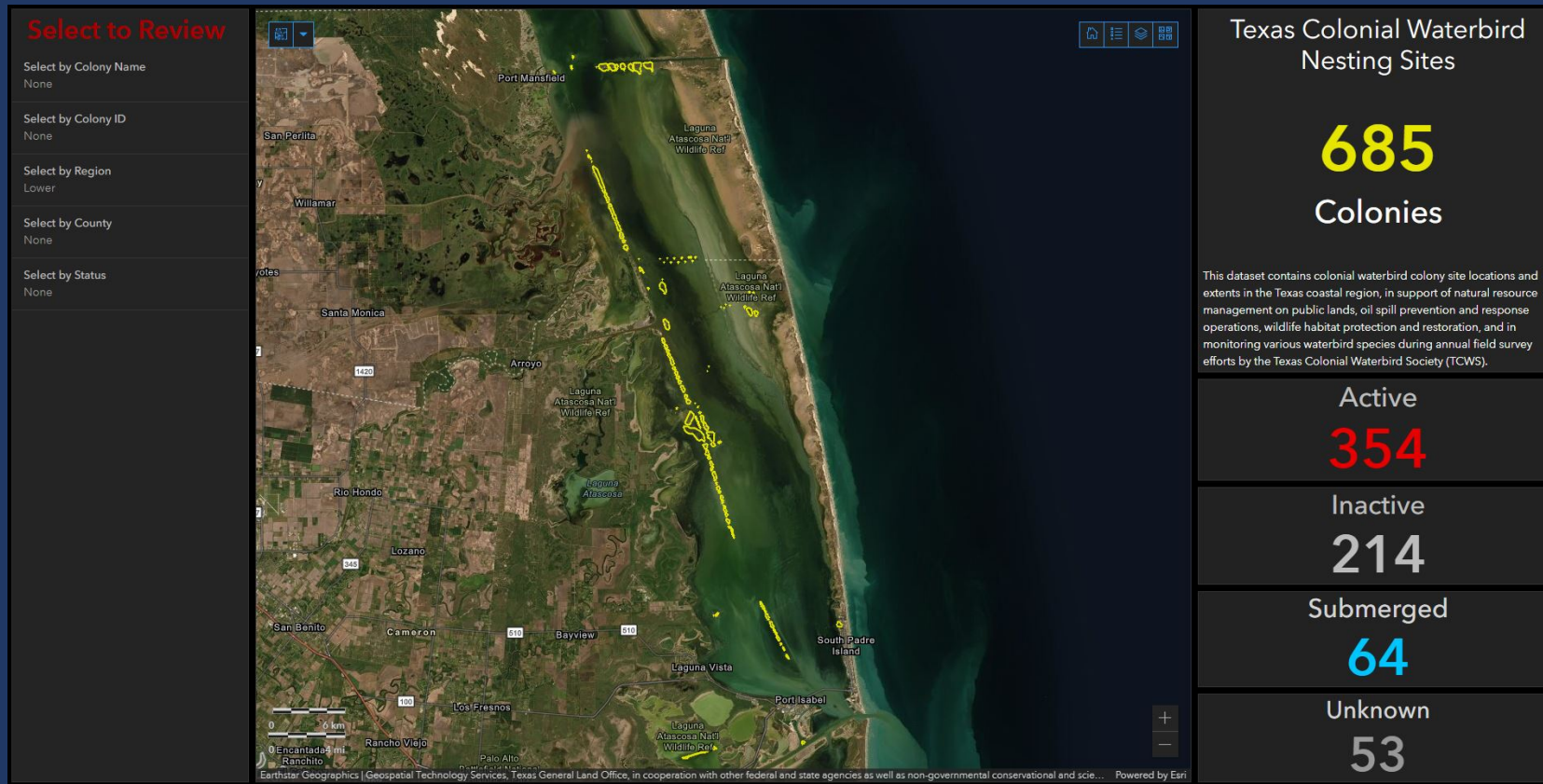


Current Rookeries Mapping Efforts (continued)

- Next Step:

(1) Continued and expanded data review by field experts

(2) Reconcile with the modernized and updated TCWS Database





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Questions?

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