W00594

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey:	Habitat Mapping
Registry Number:	W00594

LOCALITY

State(s):	Texas
General Locality:	Copano Bay
Sub-locality:	Egery Island to Newcomb Point

2014

CHIEF OF PARTY
Emma Clarkson

LIBRARY & ARCHIVES

Date:

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

W00594

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s):	**Texas**
General Locality:	**Copano Bay**
Sub-Locality:	**Egery Island to Newcomb Point**
Scale:	**10000**
Dates of Survey:	**09/04/2013 to 02/25/2014**
Instructions Dated:	**08/02/2021**
Project Number:	**ESD-PHB-21**
Field Unit:	**Texas Parks and Wildlife**
Chief of Party:	**Emma Clarkson**
Soundings by:	**Biosonics DT-X (SBES)**
Imagery by:	**N/A**
Verification by:	**Pacific Hydrographic Branch**
Soundings Acquired in:	**meters at Mean Lower Low Water**

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via https://www.ncei.noaa.gov/. Products created during office processing were generated in NAD83 UTM 14N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

DESCRIPTIVE REPORT MEMO

October 07, 2021

MEMORANDUM FOR: Pacific Hydrographic Branch

FROM: Report prepared by PHB on behalf of field unit
Colin Stewart
Physical Scientist, Pacific Hydrographic Branch

SUBJECT: Submission of Survey W00594

The Texas Parks and Wildlife Department coupled two acoustic technologies (sidescan sonar and echosounder) to map habitats within Copano Bay, a 181-km2 shallow water embayment along the mid-Texas coast. Data were collected during 17 days from September 2013 to February 2014 and resulted in 159 km2 of sidescan imagery and 375 km of single beam echosounder data.

The data provided was the Biosonics DT-X single beam echosounder data in .CSV format and from that a 4m SBES surface was created in Caris during prioritization.

All soundings were reduced to Mean Lower Low Water using Discrete Zoning. The horizontal datum for this project is North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 14.

Depth Corrected to MLLW using 1-hour intervals from nearest tide station, Rockport, Texas - 8774770.

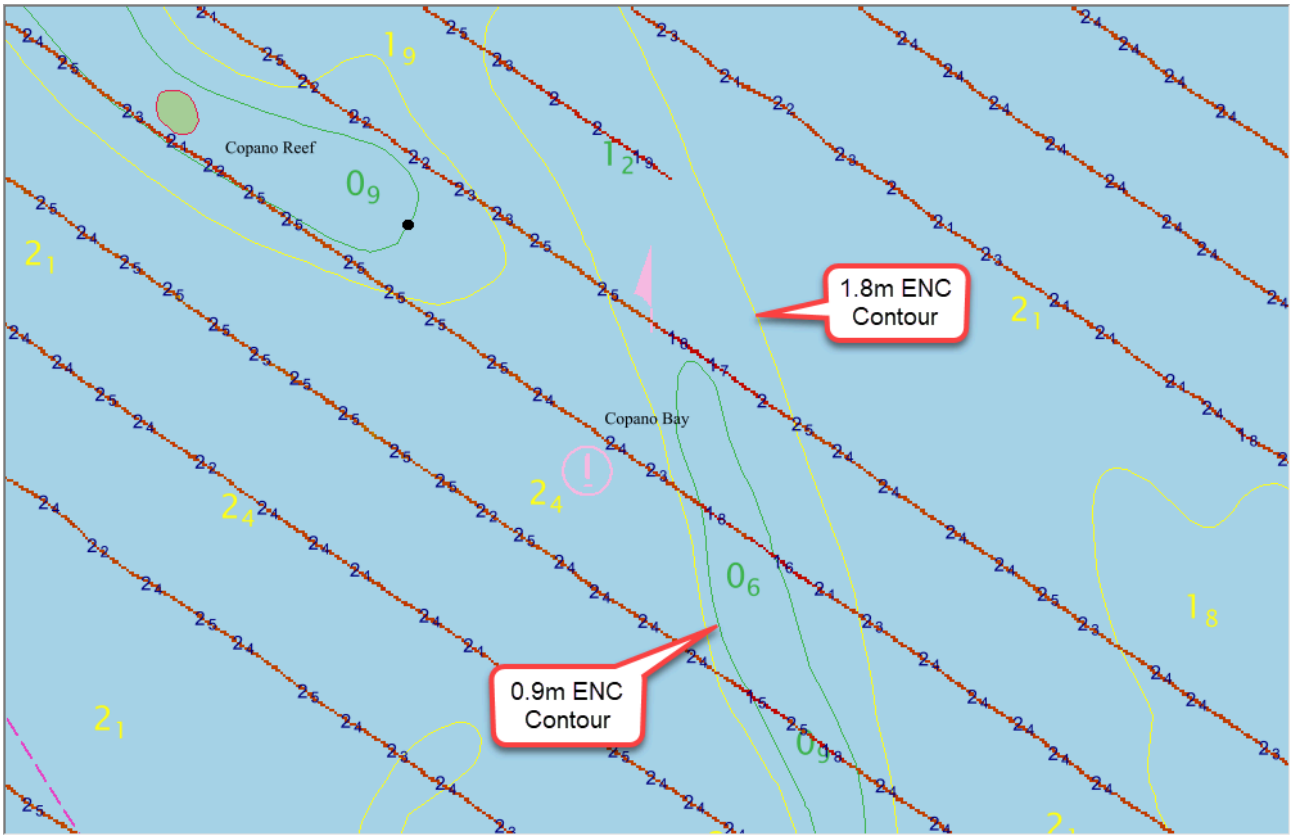
All survey systems and methods utilized during this survey were as described in the Metadata document "Metadata - Copano.pdf" provided by Texas Parks and Wildlife which is appended to this report.

All data were reviewed for DTONs and none were identified in this survey.

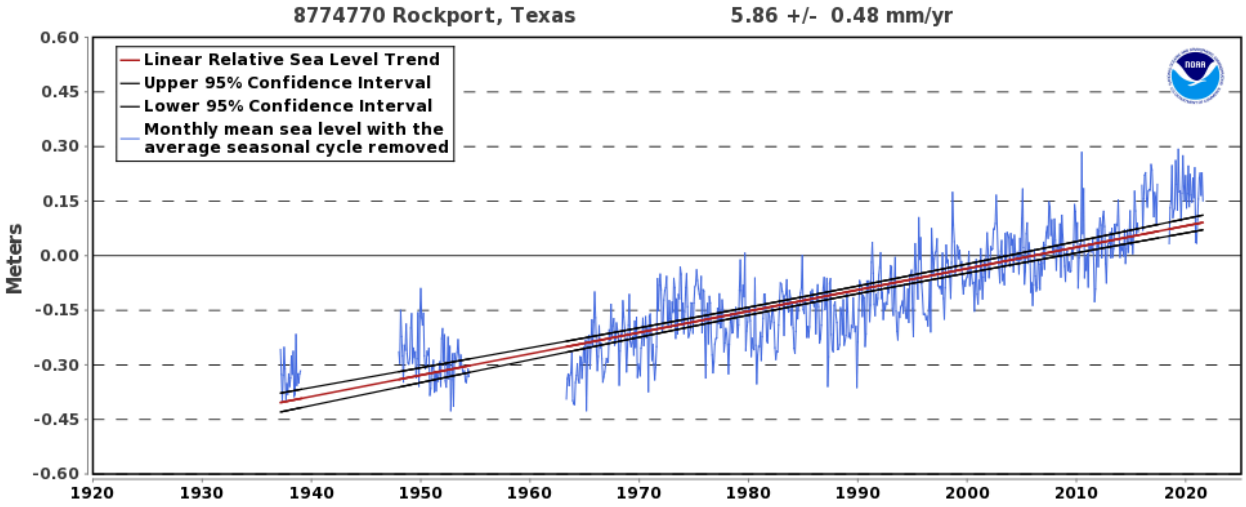
Texas Parks and Wildlife Habitat Assessment Team acquired the data outlined in this report. Data are available at https://tpwd.texas.gov/landwater/water/habitats/coastal-fisheries-habitat-assessment-team/. Additional documentation from the data provider may be attached to this report.

The soundings were compared to charted depths and investigated for discrepancies in accuracy along segments of equal correction intervals, none of which were found. Additionally, a comparison of their methods and overlapping NOAA Lidar was conducted for another Texas Parks and Wildlife survey (W00597) in which the same tide correction method was applied. Based on this we have

confidence in their methods within allowable vertical uncertainty. Review of the processed data confirms a CATZOC B categorization recommendation as recommended during prioritization for accuracy which supersedes the currently charted sounding data (CATZOC C, survey dates from 1930 - 1939) on ENC US5TX25M. W00594 SBES soundings are largely somewhat deeper than the soundings from ENC US5TX25M. The mean difference is 0.54m with W00594 soundings being deeper than the ENC soundings. There are several charted shoals less than 1m deep which are approximately 0.5 to 1.0 meters deeper in the W00594 soundings. The nearby Rockport, TX Tide Station was investigated and the Relative Sea Level Trend model indicates an overall sea level rise from 1935 to 2014 of approximately 50cm which is in correlation with the difference in the W00594 survey soundings and the charted ENC US5TX25M soundings (circa 1935). Please see images below.



US5TX25M charted soundings and contours (Green, Yellow) vs. W00594 soundings (Blue)



Tide Station Rockport, TX - 8774770 Relative Sea Level Trend

This survey does meet charting specifications and is adequate to supersede prior data. The entire dataset qualifies for a CATZOC B categorization for accuracy which supercedes the currently charted sounding data (CATZOC C, survey dates from 1930 - 1939) on ENC US5TX25M.

Products available for this survey area

- Sidescan sonar imagery (GeoTIFF)
- Bathymetric point data from Singlebeam Echosounder (ArcGIS Shapefile and CSV)
- SV data from Singlebeam Echosounder (ArcGIS Shapefile and CSV)
- Classified thematic habitat map of submerged habitats (ArcGIS shapefile)
- Interpolated DEM from bathymetric point data (Raster)
    - Data has some noise/streaking, so use in automated analyses is not suggested
- Peer reviewed journal publication
    - Legare, B. and C. Mace. 2016. Mapping and classifying eastern oyster habitat in Copano Bay, Texas, by coupling acoustic technologies. Journal of Coastal Research.

Field Data Collection

- Data were collected from 4 September 2013 to 25 February 2014
- Sidescan = Teledyne Benthos C3D
    - Bow-mounted
    - 200 kHz frequency
    - Range of 100 meters
    - 12% Overlap between transect
    - Transect spacing of 185 meters
    - Data collected in WGS 84
    - Projected to UTM 14N
    - Location Data: Ashtec dGPS receiver with Communication System International MBX-3 Differential
- Singlebeam = Biosonics DTX
    - 120 kHz frequency
    - Collected in Visual Acquisition
    - Beam width = 8.1^{o}
    - Pulse rate = 5
    - Pulse duration = 0.1
    - Power Reduction = -9.2
    - Transducer depth = 0.61 m
    - Location Data = Garmin GA 29 GPS
- Survey planning in Hypack

Data Post Processing

- Sidescan
    - Chesapeake SonarWiz V6
    - Bottom track
    - Empirical Gain Normalization
    - Mosaic and output as 8-bit GeoTiff with 0.5 m-resolution
    - WGS84 UTM 14N
- Singlebeam
    - Processed in EchoView
    - Bottom Line Selection
        - Min SV for pick = -9

        - Backstep @ -15 discrimination level
        - Peak threshold = -13
    - Bottom Classification (to pull features)
        - Distance between intervals = 5 m
        - Background noise = -999
        - Bottom echo threshold @ 1 m = ranges from -60 to -40
    - Depth Corrected to MLLW using 1-hour intervals from nearest tide station = Rockport, 8774770 = field = "Corrected_D"

DEM Creation (can be re-created from point data using different interpolation techniques)

- Empirical Bayesian kriging
    - Output cell size 50
    - Logempirical transformation
    - Exponential semivariogram
    - 500 points in each local model
    - Local model overlap 3
    - 50 simulated semivariograms
    - Standard circular search pattern
        - Radius of 100 m
        - Maximum neighbors = 500
        - Minimum neighbors = 100
        - Angle 45
        - Sector Type - 4

Habitat Classification

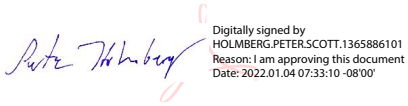
- Manual interpretation based on sidescan imagery and singlebeam SV values
- Accuracy assessment using poling
- 150 ground-truthing samples
    - User's accuracy
        - Mud = 100%
        - Oyster = 90%
        - Sand = 63%
        - Shell = 69%
    - Producer's accuracy
        - Mud = 93%
        - Oyster = 89%
        - Shell = 83%
        - Sand = 78%
    - Overall accuracy = 89.6%

APPROVAL PAGE

W00594

The survey data meet or exceed the current requirements of the Office of Coast Survey hydrographic data review process and may be used to update NOAA products. The following survey products will be archived at the National Centers for Environmental Information:

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Geospatial PDF of survey products

Approved: 

_____

Peter Holmberg
Acting Chief, Pacific Hydrographic Branch