Texas Parks & Wildlife Department

Habitat Assessment Team

November 2019

Historical Galveston Bay Analysis, 2019

Field Methods

Project goal was to synthesize nearly 10 years of historic bottom imagery of Galveston Bay. Texas Parks and Wildlife collected this data between 2008 – 2016, with several spot scans as recent as 2019.

* Data were collected from 2008 to 2016, with restoration sites spot-scanned as recently as 2019
* 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 = 8.1o
  + 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
* Metadata provided for each day of scanning in attached “Metadata Attributes” shapefiles. The attribute fields in the shapefile are as follows:
  + Grids = CF sampling grid (for internal TPWD use)
  + Scan\_Number = unique ID that corresponds with TPWD metadata database (for internal TPWD use)
  + Scan date = date on which the area was surveyed. If the area was surveyed more than once, the most recent imagery was used in the final mosaic
  + Minor\_Bay = the TPWD Minor Bay code (for internal use)
  + Range = Sidescan range (m)
  + DTX (Y/N) = Indicates if DTX (singlebeam echosounder) data were collected on that date
  + GT (Y/N) = Indicates if ground-truthing was completed for the grid.

Data Processing

* Sidescan data processed in Chesapeake SonarWiz
* Singlebeam echosounder processed in EchoView

Oyster Habitat Delineation

* Delineations were based on sidescan imagery only and not SBE data.
* Manual delineation in ArcGIS
* map scale of 1:5,000
* MMU of 1 acre (but occasionally, features smaller than the MMU were delineated when image clarity allowed)
* Features were organized into six main classes: Patchy Sparse (0%-30%), Patchy Moderate (31%-60%), Patchy Dense (61%-100%), Continuous Sparse (0%-30%), Continuous Moderate (31%-60%), and Continuous Dense (61%-100%). “Patchy” or “Continuous” served to describe general habitat form while descriptors of “sparse”, “moderate”, or “dense” related to approximate feature density.

Accuracy Assessment

* Map product has 71.6% overall accuracy.