Development of a Comprehensive Habitat Map for the Mission Aransas NERR Using the NERRS Habitat Classification Scheme: Matagorda Island, Texas

Tami G. Beyer, Mike Rasser, and Sally Morehead

Mission-Aransas National Estuarine Research Reserve
750 Channel View Drive
Port Aransas, Texas 78373

August 2007

INTRODUCTION

The National Estuarine Research Reserve System (NERRS) developed a new hierarchical classification scheme to standardize mapping techniques and terminology throughout all its reserves. The Mission-Aransas National Estuarine Research Reserve (NERR) obtained habitat information from various sources and reclassifed habitats according to the NERRS scheme using a geographic information system (GIS). Mapping the Mission-Aransas NERR manually at a high spatial resolution was desired, but proved challenging because of its considerable size (185,708 acres) and limited accessibility to privately-owned land areas. Existing digital habitat information was identified and obtained from partner agencies in an effort to create a comprehensive habitat map of the Mission-Aransas Estuary and the adjacent watersheds.

Geospatial habitat information available within the Mission-Aransas Estuary and the adjacent watersheds were identified and assessed for appropriateness of this project by the following attributes: scale, resolution, habitats identified, location, accuracy, accessibility, and temporal relevance.

The University of Texas at Austin Bureau of Economic Geology (UT BEG) had a high–resolution habitat dataset of the wetlands on Texas barrier islands. A portion of this data on Matagorda Island is within the Mission-Aransas NERR boundary and was used as a case study for reclassifying data to the NERRS classification scheme. The Matagorda Island data were provided to the Mission-Aransas NERR in vector (polygon) format, and this document outlines the procedures used to reclassify this type of data. However, vector data is not the only type of data available, and an additional method of reclassification using a raster format was also explored. This document demonstrates the process of vector and raster data reclassification for geospatial habitat information.

The Matagorda Island wetlands data were originally classified using the Cowardin classification scheme, which implemented codes describing specific habitats to the *modifier* level (Cowardin *et al.*1979). Reclassification of this data from a Cowardin scheme to the NERRS scheme required the data be organized into a hierarchical database structure. A look-up table was created to compare the two classification schemes. Reclassification of the vector data required the application of the join-relationship tool supplied within the GIS environment. Reclassification of the raster data required the application of the reclassification tool supplied within the GIS environment.

One of the major differences in the NERR coding system to the Cowardin classification is that upland habitat is described in great detail. Since the Matagorda Island data only contained wetland habitat information, several NERR codes were not correlated to this dataset.

This report documents the methods, challenges, and recommendations of reclassifying existing data to the NERRS classification scheme. It represents the first phase in the creation of a comprehensive high resolution habitat map. Future work will incorporate additional datasets for complete coverage of the Mission- Aransas NERR habitat areas.

IMPLEMENTATION PROCESS

This project followed protocol guidelines outlined in the *Recommended Guidelines for Adoption and Implementation of the NERRS Comprehensive Habitat and Land Use Classification System* (Walker and Garfield 2005). The reclassification of existing data followed the NERRS classification implementation process (Figure 1), but was modified to the reclassification process.

1. Purpose

The purpose of this project was to provide baseline mapping resources at the reserve level by reclassifying existing data sources utilizing the NERR classification scheme. The approach used for this project was to obtain digital data resources from within the reserve, reclassify them according to the NERRS scheme, and compile the data into a single comprehensive habitat map of the Mission-Aransas NERR. This report documents the reclassification process for one dataset and provides analyses of the process.

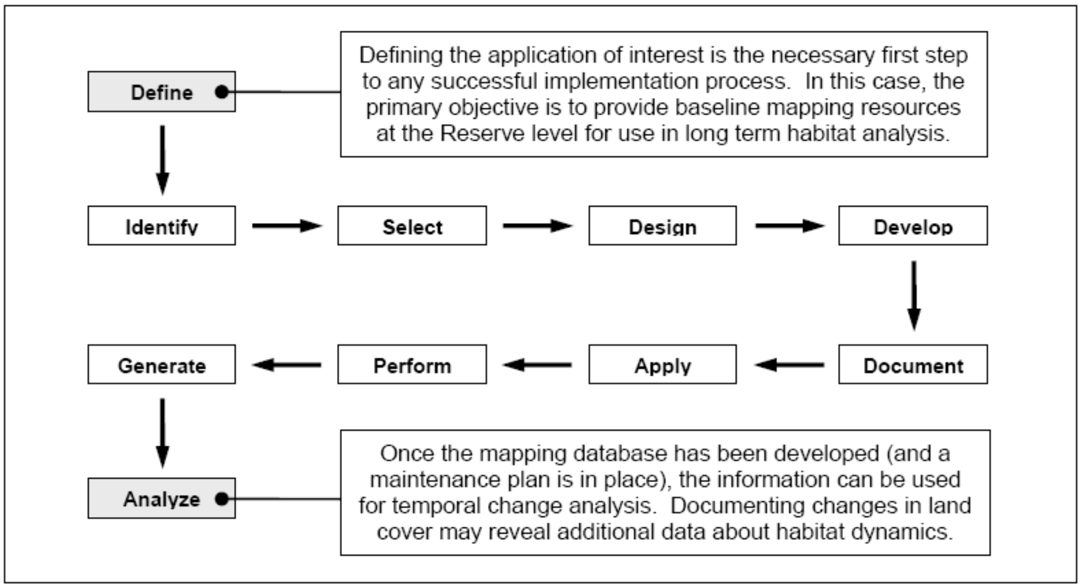

Figure 1. Flow diagram of NERRS Implementation Process (Walker and Garfield 2005).

2. Identify Existing Map Resources

Several classification projects relevant to the Mission-Aransas NERR were in progress at the start of this project (Appendix A). The University of Texas at Austin Bureau of Economic Geology (UT BEG) mapped Matagorda Island, Texas, wetland habitats using high-resolution mapping techniques in vector format. The National Oceanic and Atmospheric Administration Coastal Change Analysis Program (NOAA C-CAP) provided a classified land cover dataset of the Mission-Aransas NERR using 30-meter Landsat imagery. These data and future datasets will be incorporated into a GIS using ESRI's ArcGIS 9.2 software.

3. Select Mapping Scale

Map scale was variable among available data. The NERRS recommends that for aerial photography a mapping scale should be between 1:24,000 and 1:3,000. The NERRS also recommends that if using "heads-up" (i.e., on-screen) digitizing techniques are used to maintain a consistent on-screen viewing scale (e.g., 1:3000 to 1:5:000) and use a minimum mapping unit (e.g., 0.25 acre) to ensure database integrity. The wetland habitats for Matagorda Island from UT BEG were chosen as an appropriate dataset to reclassify because aerial imagery was shot at a mapping scale of 1:8,000 with an accuracy of +/- 40 ft, (White *et al.* 2002). This dataset also had a minimum mapping unit of approximately 0.055 acres (Tom Tremblay, personal communication).

4. Design and Document GIS database structure

The goal of the NERRS classification scheme was to classify both habitat and land use cover types simultaneously creating a seamless classification. The NERRS Classification Scheme consists of a merger and expansion of two well-accepted and utilized classification schemes: Cowardin et *al.* 1979 and Anderson et *al.* (1976). There are eight total *systems* within the NERRS classification (Table 1): five (5) wetland and deepwater habitat *systems* adopted directly from Cowardin *et al.* 1979, one (1) cultural land use *system,* one (1) snow-and-ice habitat *system* (adopted directly from Anderson *et al.* 1976), and one (1) upland habitat *system* expanded from Cowardin *et al.* 1979 (Walker and Garfield, 2005).

Table 1. NERRS classification structure based on Cowardin *et al.* 1979 and Anderson et *al.* 1976 (modified from Walker and Garfield 2005). Asterisks indicate subsystems that were added by NERRS and incorporated with Cowardin *et al.* 1979.

Source Classification System	NERRS *System* and *Subsystem*
Cowardin *et al.*1979	1000. Marine Habitats
	1100. Subtidal
	1200. Intertidal
	2000. Estuarine Habitats
	2100. Subtidal Haline
	2200. Intertidal Haline
	2300. Supratidal Haline*
	2400. Subtidal Fresh*
	2500. Intertidal Fresh*
	3000. Riverine Habitats*
	3100. Lower Perennial
	3200. Upper Perennial
	3300. Intermittent
	4000. Lacustrine Habitats
	4100. Limnetic
	4200. Littoral
	5000. Palustrine Habitats
	5100. Palustrine Open Water*
Cowardin *et al.* 1979 (expanded)	5200. Terrestrial Wetland*
	6000. Upland Habitats
	6100. Supratidal Upland
Anderson *et al.*1976	6200. Inland Upland
	7000. Perennial Snow And Ice Habitats
	7100. Perennial Snowfields
	7200. Glaciers
	8000. Cultural Land Uses
	8100. Urban or Built-up Land
	8200. Agricultural Land

Each system becomes increasingly detailed as part of a five-level, nested hierarchical structure that allows data to be collapsed or expanded to the level of detail desired by the user (Figure 2). Each level represents a useful and logical break in some parameter of the community, becoming increasingly detailed as more levels are integrated.

The Mission-Aransas NERR GIS database design accommodates all of these classification levels in a single attribute table to meet the hierarchical requirements. The application of a numeric heading system enhances the utility of the structure within the GIS to allow for efficient sorting and querying. Additional attributes can be added to the table as more detail is needed (such as concatenated value, modifiers, notes, dates, and/or hyperlinks to further information.)

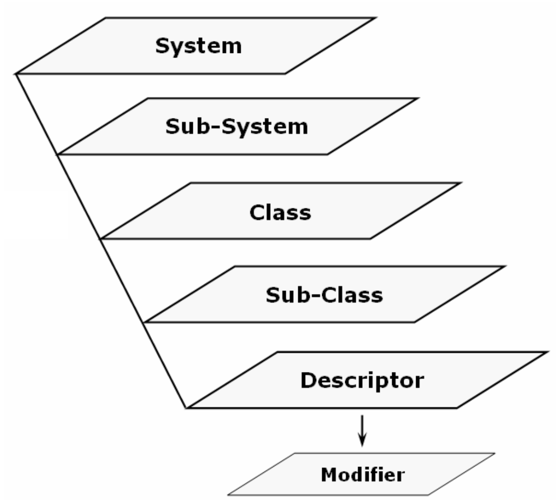

Figure 3. NERRS hierarchical classification levels (modified from Walker and Garfield 2005).

The attributes used for the reclassification of the UT BEG wetland habitat dataset on Matagorda Island included 20 fields (Table 2).

Table 2. Attributes used for the reclassification of the UT BEG wetland habitat dataset on Matagorda Island.

Field Name	Description	Data Type
FID	Unique Identifier produced from software	Integer
MATAG2_	Matagorda Identifier - BEG	Integer
MATAG2_ID	Matagorda Identifier 2- BEG	Integer
HAB01	Cowardin Classification Code - BEG	Text
NERRCODE	NERR Classification Code	Integer
DESCRIPT	Full description of habitat code	Text
SYS_NUM	Level 1 classification using numeric codes.	Integer
SYSTEM	Level 1 classification using nominal description.	Text
SUBSYS_NUM	Level 2 classification using numeric codes.	Integer
SUBSYSTEM	Level 2 classification using nominal description.	Text
CLS_NUM	Level 3 classification using numeric codes.	Integer
CLASS	Level 3 classification using nominal description.	Text
SUBCLS_NUM	Level 4 classification using numeric codes.	Integer
SUBCLASS	Level 4 classification using nominal description.	Text
DSC_NUM	Level 5 classification using numeric codes.	Float
DESCRIPTOR	Level 5 classification using nominal description.	Text
MOD_REGIME	Modifier for water regime	Text
AREA_AC	Area of polygon in acres	Float
AREA_HA	Area of polygon in hectares	Float
DATE_	Date of data acquisition	Date
SOURCE	Source of habitat data	Text

5. Develop a Flow diagram for the Implementation Process

The process used to reclassify data using the NERRS scheme is dependent on data format (Figure 4). Raster and vector files are the two common formats used in a GIS. Vector files are made up of mathematical descriptions of objects such as points, polygons, lines, and text. Raster files are made up of pixels and have an associated resolution (ESRI, 2006). Advantages of working with vector data are they require less disk space and geometric computations take less time. Raster files use a matrix to store their data (cell-based) and can assign numeric values to continuous, thematic data to represent this data more realistically. The Mission-Aransas NERR assessed a subset of Matagorda Island data in its original vector format, and additionally converted the file to raster format to demonstrate how both raster and vector data can be reclassified. The detailed steps involved in this reclassification of both types of data are documented in Appendix B.

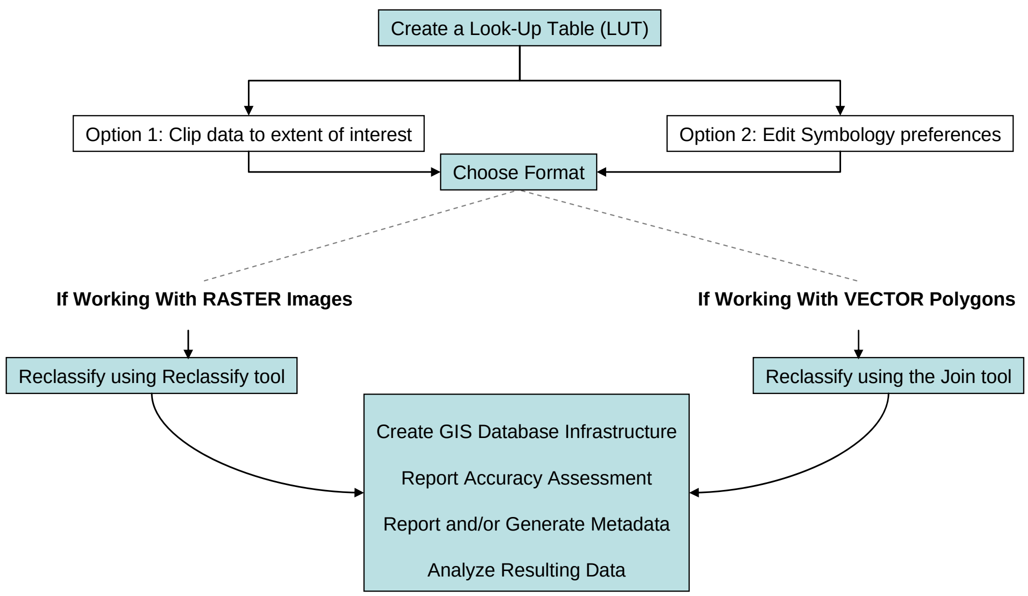

Figure 4. Flow diagram depicting application process of NERRS classification codes

6. Document Key Habitats

The Mission-Aransas NERR is home to a variety of key habitats such as seagrass, mangroves, marsh, oak mottes, oyster reef, mud tidal flats, and riparian corridors.

Matagorda Island is a barrier island that spans several counties along the south-central Texas coast and the southern-most portion of this island encompasses 17,583 acres within the northeastern Reserve boundary (Figure 5). Matagorda Island has many key habitats including valuable wetlands with key marsh and mud tidal flat habitat. This data is part of a much larger project to perform a change analysis in comparison with the National Wetland Inventory imagery collected in 1991-1992 along the Texas coast. The more recent wetland habitats were identified by UT BEG using the Cowardin classification scheme (Cowardin *et al.* 1979), and were provided to the Mission-Aransas NERR for integration into the NERRS habitat classification database.

The Matagorda Island data was selected as a case study for this project for the following reasons:

- It was the most recent account of wetland habitats for Matagorda Island as of June 2007.
- The purpose of this dataset was to compare mud tidal flats and marsh habitats in 2001 to the USGS NWI dataset of 1992-93, so a long-term change analysis has already been established.

- Accurate ground-truthing was completed.
- The area of Matagorda Island that resides within the Mission-Aransas NERR boundary is relatively small (17,583 acres); therefore, the data associated with this region was very detailed, but not entirely cumbersome to manipulate within the GIS environment.
- UT BEG is completing additional mapping of wetlands within the Mission-Aransas NERR area. Therefore, the reclassification techniques defined for Matagorda Island will be the same techniques required to reclassify the more comprehensive data that will be available in March 2008.

In the future additional data that may be incorporated into the Mission-Aransas NERR include the NOAA C-CAP and a benthic habitat mapping project by Texas A&M University Corpus Christi and NOAA Coastal Services Center, as well as an invasive species dataset from the Aransas National Wildlife Refuge (Appendix A).

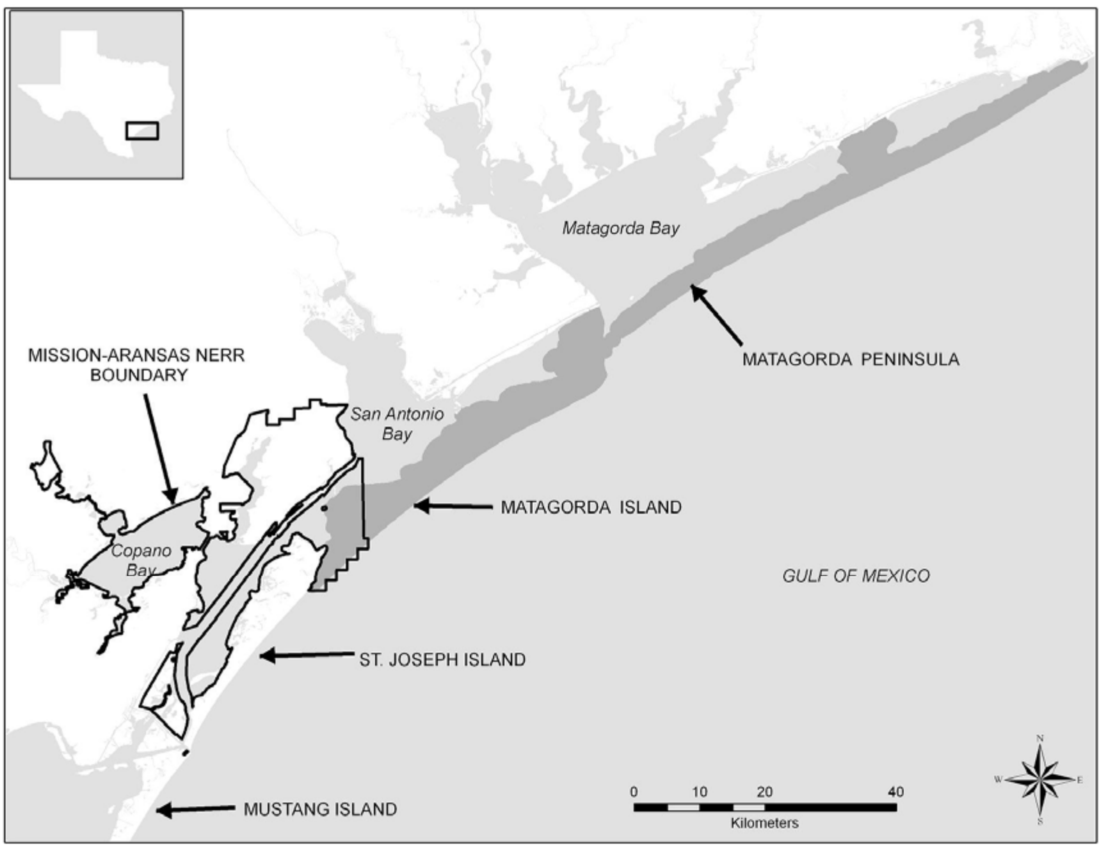

Figure 5. Matagorda Island proximity to Mission-Aransas NERR boundary.

7. Apply NERRS Classification Codes

Four major steps are required when reclassifying from an existing classification to the NERRS scheme and entering it into the GIS database. First, a look-up table is created to "map" the existing code to the new NERR code (Appendix B). This is manually intensive, but using spreadsheet software such as Microsoft Excel is an excellent way to manipulate the data.

Second, determining the best format to process the data is required to establish classifying with the best spatial resolution, in a feasible amount of time. Larger datasets may require reclassification at a lower accuracy to decrease the process time. However, an automated raster reclassification method may be used to process a broad area fairly quickly. If high spatial resolution is required, a more discrete data format such as vector may be best when assessing extremely defined boundaries or very small spatial extents.

Once the data format is selected, the reclassification process can take place using the appropriate tools. A raster data file can utilize the *Reclassify* tool located within the ArcToolbox extension within the ArcGIS environment. This tool is automated, but still requires significant manual data entry within the reclassification box.

A vector data file can be reclassified in two ways: 1) converting the vector to raster or 2) using a join relationship to link the tables. Both methods were assessed (Appendix B) and while the raster file displayed the reclassification more quickly, there was some reduced accuracy since the raster-based structure converts the discrete polygon line to a jagged edge. Conversely, the join tool retains the original boundary lines, but may require more manually intensive data entry if the dataset is very large.

The establishment of an Excel look-up table (LUT) identifies and links the old coding system to the new NERRS codes. A LUT is essential for large reclassifications regardless of file type, because it is more easily manipulated. The LUT is valuable as both an external GIS reference resource for quick searches and drill-downs, but also as an internal GIS dataset that can be used to create join relationships within the GIS and help expedite data entry (Appendix C). Reclassifying data is beneficial in one sense because it can make data more understandable to the map reader; however, the detriment is that original values are lost during the reclassification process.

8. Perform a Standard Map Accuracy Assessment

As data is entered into a GIS, it is common to perform an accuracy check for errors and discrepancies at this level. A standard map accuracy assessment is not required in this method since existing data sources are being used to generate the comprehensive habitat model.

9. Generate Metadata

Metadata should be documented in conjunction with data entry for efficiency and accurate process tracking. Creating metadata "after the fact" can contribute to data loss and inaccuracies when post-processing in the GIS environment. All data for this project was generated using and the Federal Geographic Data Clearinghouse (FGDC) standard template within the ArcCatalog interface (Appendix D). This provides a user-friendly format in which to modify text. Careful review of the metadata should be performed prior to distribution as in some instances; the metadata can be overwritten if not experienced with the application tool.

10. Analyze Data and Process

The Matagorda Island data provided by the UT BEG was reclassified using the NERRS scheme using two very different methods. The first method required using a join relationship to link the look-up table (LUT) to the original dataset to assign the proper habitat codes to the appropriate polygon. As part of the reclassification process, each hierarchical level was assigned a unique, concatenated code that was included as part of each row (each polygon) attributes.

The reclassification consolidated 15 classes within the Cowardin system, to 11 classes in which 1 indicated that no data was available (Table 3 and Figure 6). Estuarine Subtidal Unconsolidated Bottom dominated the region of interest covering 5393.1 acres. Estuarine Intertidal Emergent Wetland (Persistent) was the second most common habitat at 2,909.8 acres. Palustrine Perennial was the least dominant with a total of about 16 acres in the region.

Table 3. NERR reclassification habitat summary.

NERR Code	Description	Total Area (Acres)	Total Area (Hectares)
1120	Marine Subtidal Unconsolidated Bottom	2710.1	1096.7
1240	Marine Intertidal Unconsolidated Shore	247.6	100.2
2120	Estuarine Subtidal Unconsolidated Bottom	5393.1	2182.4
2130	Estuarine Subtidal Aquatic Bed	112.0	45.3
2250	Estuarine Intertidal Unconsolidated Shore	591.2	239.2
2261	Estuarine Intertidal Emergent Wetland Persistent	2909.8	1177.6
5120	Palustrine Perennial Water Unconsolidated	13.8	5.6
5140	Palustrine Perennial Water Emergent Wetland	2.7	1.1
5231	Palustrine Intermittent or Saturated Emergent	163.7	66.2
6000	Upland	5387.6	2180.3
NoData	No data available	51.7	20.9

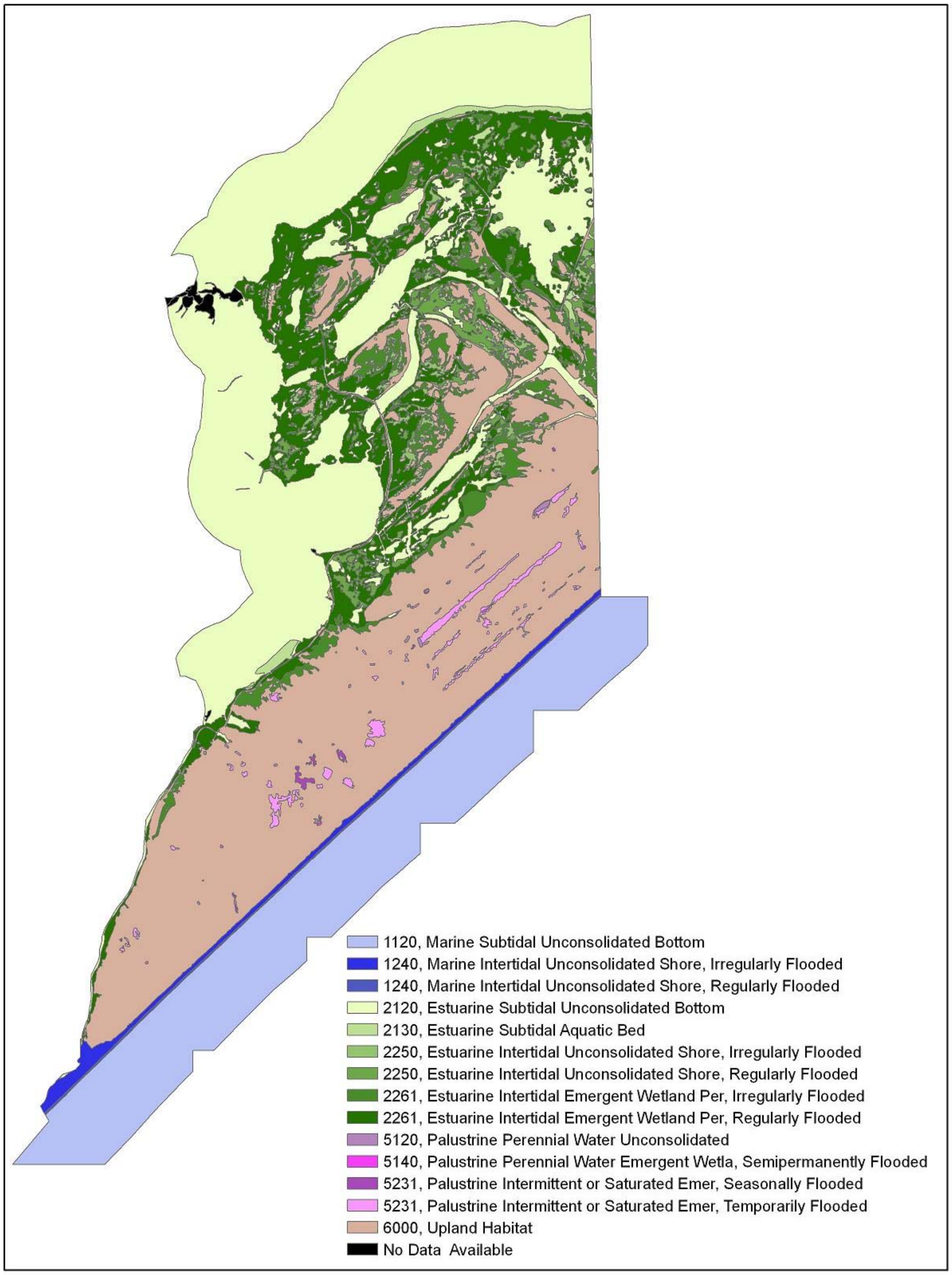

Figure 6. Wetland habitat map for Matagorda Island using NERRS classification scheme (modifier).

RECOMMENDATIONS

The NERRS new classification structure provides a new way to link aquatic habitats with uplands. While the new structure follows several old classification systems, it is sometimes difficult to manage and doesn't appear to be set up for relational database purposes, unless a composite key will be used. The current protocol doesn't appear to remove redundancies

One of the first issues encountered using a raster reclassification is that Cowardin codes can be descriptive to the *modifier* level. The Matagorda Island dataset has some features that were classified with Water Regime information. However, since the new NERR coding system does not specifically account for this level of detail, it was necessary to truncate the original Cowardin codes that contained these modifiers, and move the information to a separate, more descriptive column. Once this was done, the reclassification grouped like-habitats by System, Subsystem, Class and Subclass.

One suggested database format would be to have one large look-up table with all the necessary NERRS codes mapped to reflect the hierarchical structure. This look-up table would need to be maintained by a central office, with a single database team updating and revising the central system to house smaller reserve data. This would minimize the amount of maintenance required at each of the smaller reserves who would only be responsible for entering a single five–level code and a single modifier field custom to that region.

REFERENCES

Anderson, James R., Hardy, Ernest E., Roach, John T., and Richard E. Witmer, 1979. A land-use and land-cover classification system for use with remote-sensor data: U.S. Geol, Survey Professional Paper No. 964, 36 p.

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/1998/classwet/classwet.htm. (Version 04DEC98).

Environmental Systems Research Institute, 2006. www.esri.com *Accessed August 3, 2007.* GIS data dictionary.

Kutcher, Thomas E., Garfield, Nina H., and Kenneth B. Raposa, 2005. A Recommmendation for a Comprehesive Habitat and Land Use Classification System for the National Estuarine Research Reserve System (*June 2005 Draft).*

Walker, Samuel P. and Nina H. Garfield, 2005. Recommended Guidelines for Adoption and Implementation of the NERRS Comprehensive Habitat and Land Use Classification System. *Companion document to: A Recommendation for a Comprehensive habitat and land Use Classification System for the National Estuarine Research Reserve System (NERRS).*

White, William A., Trembaly, Thomas A., Waldinger, Rachel L., and Thomas R. Calnan, 2002. Status and trends of wetland and aquatic habitats on Texas barrier islands, Matagorda Bay to San Antonio Bay. Final report prepared for the Texas General Land Office and National Oceanic and Atmospheric Association, GLO Contract No. 01-241-R, 66 p.

APPENDIX A

Sources of GIS Information: Current and Proposed Projects in the MANERR

<u>General Coverage</u>

Hydroglop (GLO)

Hydrographic features of the coastal counties of Texas, including streams, bayous, canals, ditches, lakes, reservoirs, marshes, tidal flats, bays, estuaries and the nearshore Gulf of Mexico. The arcs and polygons were extracted from a number of sources by Texas General Land Office (GLO) personnel, including U.S. Geological Survey and U.S. Fish and Wildlife Service National Wetlands Inventory digital line graphs (DLGs) and U.S. Geological Survey hardcopy maps digitized by the GLO, Jefferson County Appraisal District and other entities. Time period of content is 1980-95.
Contact Person: David Bezanson
Texas General Land Office GIS Analyst
512-463-8797, david.bezanson@glo.state.tx.us

National Wetlands Inventory Data (GLO)

GLO has converted wetland/ land cover data mapped by the U.S. Fish and Wildlife Service (USFWS). Wetland areas mapped by the U.S. Fish and Wildlife Service's National Wetlands Inventory based on 1992-93 photography within the areas of certain U.S. Geological Survey 1:24,000 quads in coastal counties of Texas. Digital line graph files containing these quad areas were converted to ARC/INFO and appended into a single coverage by Texas General Land Office.

National Wetland Inventory (UT BEG)

UT BEG has completed a National Wetlands Inventory (NWI) of Matagorda Island and San Jose. This inventory was completed with color IR imagery of 1:8000 with ground truthing. Matagorda Island was completed in 2002 and San Jose was completed in 2004. UT BEG will soon begin a NWI of the MANERR area with the exception of the ANWR. This project is scheduled for completion in 2007 and is funded by GLO and CBBEP.
Contact Person: Tom Tremblay
University of Texas, Bureau of Economic Geology
512-475-9537, tom.tremblay@beg.utexas.edu

<u>Terrestrial</u>

Low resolution Land Use / Land Cover (CSC)

The NOAA Coastal Change Analysis Program (C-CAP) is a nationally standardized database of land cover and change information, developed using remotely sensed imagery, for the coastal regions of the U.S. C-CAP land cover 1996, 2001, and 2005.
Contact: Nate Herold
C-CAP Project Manager, Coastal Remote Sensing
Nate.Herold@noaa.gov

High resolution Land Use / Land Cover (CSC)

The NOAA C-CAP is looking to do a demonstration project of high resolution (1-meter with DigitalGlobe's QuickBird satellite) land use analysis. If MANERR is a pilot project, it will not occur until 2007.
Contact: Nate Herold
C-CAP Project Manager, Coastal Remote Sensing
Nate.Herold@noaa.gov

Social Dimension (CSC, MANERR)

Community characterization with maps of socioeconomic characteristics of the area surrounding the MANERR.
Contact: Sally Morehead, sallym@utmsi.utexas.edu

Habitats in Detail

Copano Bay Oyster Reef Mapping (TPWD and TAMUG)

FY2005 Gulf of Mexico Program EPA (Project # 46 CBB.37). Oyster reef mapping of Copano Bay using side scan sonar. Surveys will start Winter 2007.
Contact: Jim Simons, James.Simons@tpwd.state.tx.us

Benthic Mapping (CSC, TPWD, TAMUCC)

Existing digital camera (ADS 40) imagery, originally collected for the National Agriculture Imagery Program, is being used to create benthic habitat maps. The mapping process will use reprocessed NAIP imagery flown in November 2004 and semi-automated methods and will be completed by private industry. The seagrass monitoring program in Texas will use these benthic maps to help locate, monitor, and protect seagrass beds. The first phase of this project covers Corpus Christi Bay, Redfish Bay, Upper Laguna Madre, Baffin Bay, and Aransas and Copano Bays (which include the newest National Estuarine Research Reserve) and is expected to be complete in late 2006.
Contact: Bill Stevenson, NOAA CSC, Bill.Stevenson@noaa.gov
John Wood, TAMUCC, john.wood@tamucc.edu

Sea Grass (TPWD, UT BEG; Pulich, Blair, White) CBBEP - 20

Distribution of seagrass beds for the northern CBBEP region were based on field mapping surveys and photointerpretation of true color, aerial photography (1:24,000 scale) taken in November 1994. Beds were classified according to morphological type as either continuous or patchy, i.e. extensive, lush underwater meadows vs. fragmented ones, containing numerous open bare patches. Species composition of all grassbeds was determined by extensive ground truthing surveys during 1995/1996 using GPS to mark locations and verify the photography. Additional historical aerial photography at similar scale was analyzed for selected areas in order to quantitate historical changes and trends, both spatially (geographic locations) and numerically (net seagrass acreage lost or gained). Seagrass distributions for the entire Corpus Christi/Redfish/Nueces Bays system were thus compared from the 1956/58, 1975, and 1994 time periods using Geographic Information System techniques. The 1994 data can be downloaded on the GLO website.

Sea Grass (TPWD; Pulich)

Sea grass coverage of selected sites in northern redfish bay, harbor island , mud island and San Jose shoreline. Color aerial photography at 1:9600 was used to delineate seagrass habitat features at these selected sites.

Proposed Projects

Digital Aerial Photography of the Texas Coast (GLO)

CIAP nomination number 94, proposal number 36

Measurement and Characterization of Bay Shoreline Changes (UT BEG)

CIAP nomination number 180, proposal number 59

Sand sources investigations along the Texas Coast (GLO)

CIAP nomination number 202, proposal number 69

Shoreline change and beach/dune morphodynamics along the Gulf Coast (UT BEG)

CIAP nomination number 270, proposal number 92

Digital rectification of historical photographs to extract past shoreline positions, airborne topographic lidar surveys for acquiring new and future shoreline data, selection of ground topographic transects, and establishment of Global Positioning System (GPS) reference points to support the monitoring.
Contact: Jim Gibeaut at jim.gibeaut@beg.utexas.edu

Texas digital aerial photography archive (TxDAPA) (TWDB)
CIAP nomination number 300, proposal number 99

Topographic LIDAR surveys of select Gulf of Mexico Segments (GLO)
CIAP nomination number 316, proposal number 16

Historical LU/LC patterns in MANERR watershed (ECSC)
This project will generate information about watershed land use/landcover trends that have occurred since European colonization in the MANERR watershed. Specifically, this project will synthesize and evaluate available land use/land cover information, develop a historic land use/land cover GIS database, compile a heritage database of cultural colonization, ownership, and socio-cultural conversions, and provide map-based estimates of land use/land cover information for future planning.
Contact: Liz Smith at liz.smith@tamucc.edu

Preliminary Land Use Planning on Live Oak Peninsula (CBBEP, TAMUCC)
This project will provide information to conduct a preliminary land use plan on Live Oak Peninsula. The project involves three phases. The first phase is procurement of new digital aerial imagery to use as a base map for future assessment and planning. The second phase includes synthesis of available GIS layers from various sources (Aransas County, City of Rockport/Fulton, Center for Coastal Studies TAMUCC, CBBEP, etc...). The third phase is the creation of working groups to identify strategies to maintain ecological health and economic growth. Funding agency: Coastal Bend Bay and Estuaries Program (CBBEP), Principal Investigator: TAMUCC, Center for Coastal Studies: Dr. Elizabeth Smith, Project End Date: August 31, 2007
Contact: Linda Price-May at Linda.Price-May@tamucc.edu

APPENDIX B

Reclassification Procedure

<u>Process: Create a Look-up Table</u>
The first step is to reclassify this dataset is to create a lookup table (LUT). Fortunately for this particular dataset, there are only 15 or fewer classes to define. However, as more detailed classifications are implemented into this database, the process may become more complex. Therefore, establishing a LUT to assist with the process is important for efficient and quality data entry.

1. CREATE A LUT
   1.1. Create LUT (Manual reclassification)
      1.1.1. Insert old classification codes into a new Excel table and assign new NERR codes to their similar counterparts (Figure 1).
      1.1.2. Use separate headers for each field and identify the original code, the new code, and its descriptive information with as many attribute fields as you wish.
      1.1.3. Concatenate any field to help identify Cowardin items.
      1.1.4. Save the file as a .csv or .dbf file for insertion to the GIS.

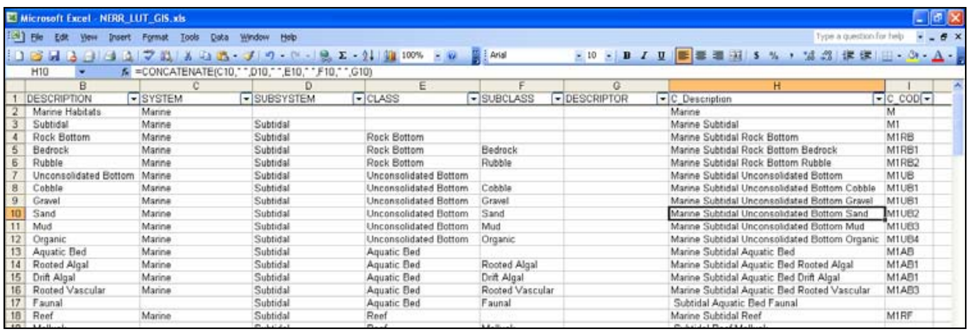

Figure 1. Screenshot of Look-up Table which displays concatenated features to the subclass level.

2. VECTOR RECLASSIFICATION (JOIN)
   2.1. Reclassify the Polygon using a Join Relationship (Method 2)
      2.1.1. Add the MI polygon layer to the GIS
      2.1.2. Add the LUT file to the GIS.
      2.1.3. Right-click on the MI polygon layer
         2.1.3.1. Select JOINS AND RELATES>JOIN… (Figure 2).

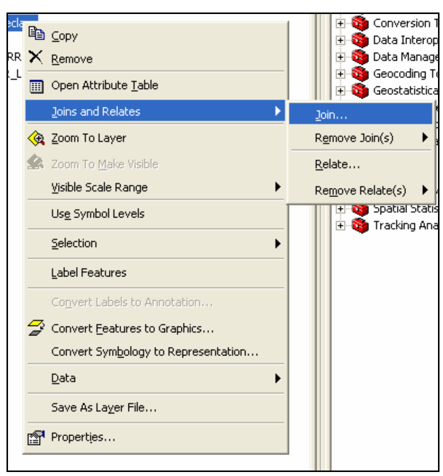

Figure 2. Graphical user interface of join function location.

2.1.3.2. Select JOIN ATTRIBUTES FROM A TABLE (Figure 3)
2.1.3.2.1. Choose the MI Layer field HAB01_
2.1.3.2.2. Choose the LUT file
2.1.3.2.3. Choose the C-CODE field
2.1.3.2.4. Click OK

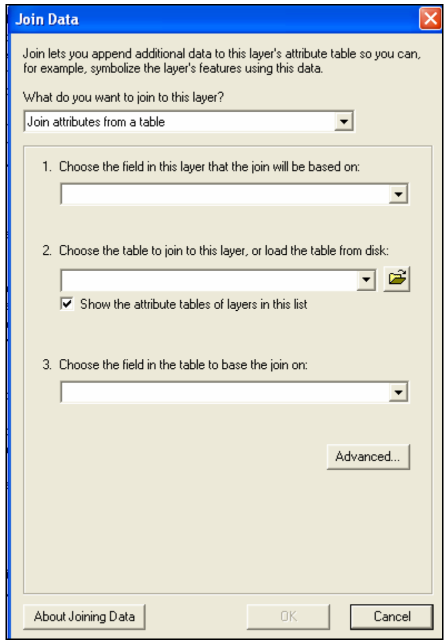

Figure 3. Graphical user interface of join function.

Once this function runs, right-click the layer and click OPEN ATTRIBUTE TABLE. The table will display numerous columns that may or may not be relevant to the analysis (Figure 4). Clean up of the data is performed by renaming some columns and hiding others to make a more intuitive database.

Attributes of MatagordaIsland_NERR_reclass

HAB01	NERRCODE	C_DESCRIPT	SYS_NUM	SYSTEM	SUBSYS_NUM	SUBSYSTEM	CLS_NUM	CLASS	SUBCLS_NUM	SUBCLASS	DSC_NUM	DESCRIPTOR	MOD_REGIME
E1UB	2120	Estuarine Subtidal Unconsolidated Bottom	2000	Estuarine	2100	Subtidal	2120	Unconsolidated Bottom	0		0		
M1UB	1120	Marine Subtidal Unconsolidated Bottom	1000	Marine	1100	Subtidal	1120	Unconsolidated Bottom	0		0		
M2US	1240	Marine Intertidal Unconsolidated Shore	1000	Marine	1200	Intertidal	1240	Unconsolidated Shore	0		0		Regularly Flooded
U	6000	All Uplands	6000	Upland	0		0		0		0		
M2US	1240	Marine Intertidal Unconsolidated Shore	1000	Marine	1200	Intertidal	1240	Unconsolidated Shore	0		0		Irregularly Flooded
E1AB	2130	Estuarine Subtidal Aquatic Bed	2000	Estuarine	2100	Subtidal	2130	Aquatic Bed	0		0		
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Regularly Flooded
U	6000	All Uplands	6000	Upland	0		0		0		0		
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Regularly Flooded
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E1UB	2120	Estuarine Subtidal Unconsolidated Bottom	2000	Estuarine	2100	Subtidal	2120	Unconsolidated Bottom	0		0		
E1AB	2130	Estuarine Subtidal Aquatic Bed	2000	Estuarine	2100	Subtidal	2130	Aquatic Bed	0		0		
U	6000	All Uplands	6000	Upland	0		0		0		0		
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Regularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Irregularly Flooded
E1AB	2130	Estuarine Subtidal Aquatic Bed	2000	Estuarine	2100	Subtidal	2130	Aquatic Bed	0		0		
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E1AB	2130	Estuarine Subtidal Aquatic Bed	2000	Estuarine	2100	Subtidal	2130	Aquatic Bed	0		0		
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E1UB	2120	Estuarine Subtidal Unconsolidated Bottom	2000	Estuarine	2100	Subtidal	2120	Unconsolidated Bottom	0		0		
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded
E2EM1	2261	Estuarine Intertidal Emergent Wetland Per	2000	Estuarine	2200	Intertidal	2260	Emergent Wetland	2261	Persistent	0		Irregularly Flooded
E1UB	2120	Estuarine Subtidal Unconsolidated Bottom	2000	Estuarine	2100	Subtidal	2120	Unconsolidated Bottom	0		0		
U	6000	All Uplands	6000	Upland	0		0		0		0		
E2US	2250	Estuarine Intertidal Unconsolidated Shore	2000	Estuarine	2200	Intertidal	2250	Unconsolidated Shore	0		0		Regularly Flooded

Figure 4. Matagorda Island final GIS shapefile showing hierarchical structure as requested by NERRS.

3. RASTER RECLASSIFICATION

3.1. Reclassify the Raster

3.1.1. Open ArcToolbox

3.1.2. Spatial Analyst Tools> Reclass>Reclassify

3.1.3. Input Features> *(the dataset to be classified)*

3.1.4. Select the Reclass field you wish to change, in this case it is HAB01_.

3.1.5. Perform a supervised classification by:

A) Manually entering in the NERR codes in the New values column that match the Cowardin Codes (Old values). Use the LUT for reference.

B) Using the Reclassify by Table tool.

C) Joining the LUT to the raster file.

3.1.6. Rename output file

3.1.7. Click OK

Since the Matagorda Island dataset has some features that were classified with Water Regime information (modifier), applying the new classification scheme grouped these attributes into a single category at the Subclass level, and therefore does not allow us to differentiate the modifiers within the Subclass. To resolve this issue, it was necessary to truncate the original Cowardin data codes that contained these modifiers, and move the information to a separate, more descriptive column. Modifying the original polygon file (or some duplicate of the original data) is the most efficient way to manipulate the data into the needed format. A query was run for each code that contained a modifier and updated to reflect the modifier's meaning (Figure 5). In addition, the habitat "original" code was revised to reflect only to the Subclass level in the NERRS hierarchy (Figure 6).

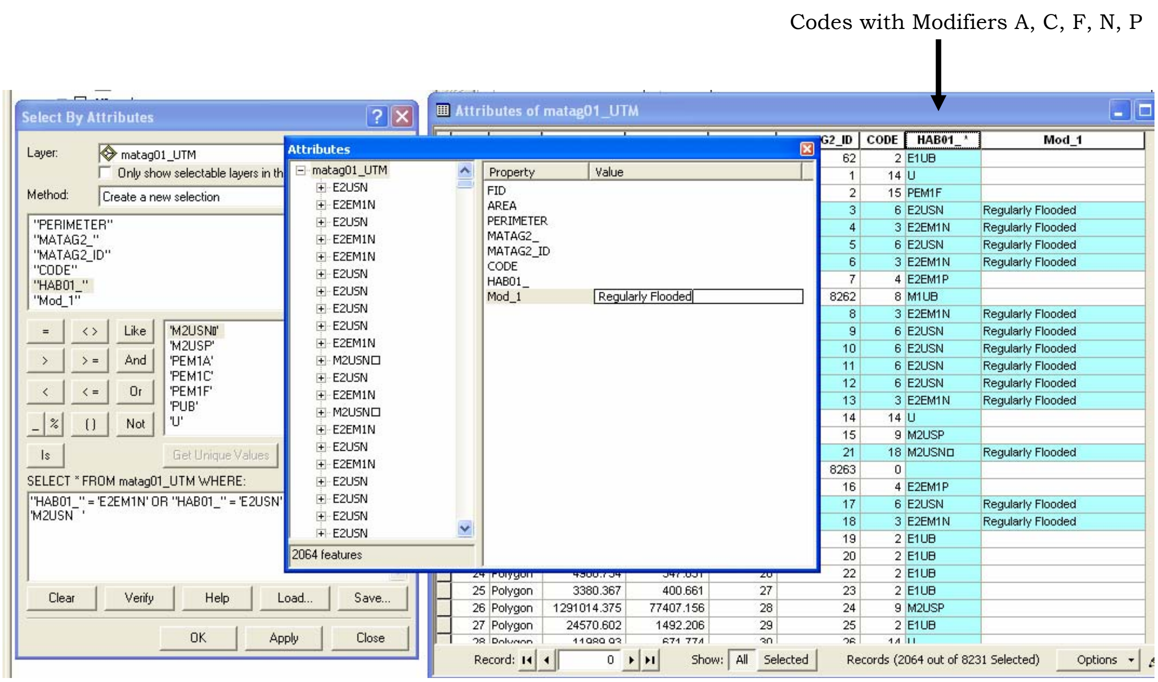

Figure 5. Screenshot showing query process for manually updating the modifier data in the Matagorda Island dataset.

Codes without modifiers – now indicated in MOD_REGIME column.

FID	Shape *	AREA	PERIMETER	MATAG2_	MATAG2_ID	CODE	HAB01	MOD_REGIME
0	Polygon	186486624	817658.375	824	8264	2	E1UB	
1	Polygon	71348656	140411.734	3189	8268	8	M1UB	
2	Polygon	1263433.25	120254.734	3725	3721	18	M2US	Regularly Flooded
3	Polygon	85816592	599992.813	4245	4241	14	U	
4	Polygon	3157910.25	102257	4624	4619	9	M2US	Irregularly Flooded
5	Polygon	294246.844	8994.718	6446	6441	1	E1AB	
6	Polygon	2350177.75	65877.453	6455	6450	3	E2EM1	Regularly Flooded
7	Polygon	11660.992	1235.694	6461	6456	14	U	
8	Polygon	271088.125	9646.259	6462	6457	3	E2EM1	Regularly Flooded
9	Polygon	21974.5	1001.995	6471	6466	4	E2EM1	Irregularly Flooded
10	Polygon	1138.883	147.723	6472	6467	7	E2US	Irregularly Flooded
11	Polygon	5438.359	512.924	6476	6471	7	E2US	Irregularly Flooded
12	Polygon	5342.781	608.617	6477	6472	4	E2EM1	Irregularly Flooded
13	Polygon	4368	502.421	6481	6476	7	E2US	Irregularly Flooded
14	Polygon	1512.047	212.175	6482	6477	7	E2US	Irregularly Flooded
15	Polygon	2419.609	293.754	6487	6482	7	E2US	Irregularly Flooded
16	Polygon	1793.391	170.287	6489	6484	6	E2US	Regularly Flooded
17	Polygon	9569.523	418.023	6496	6491	4	E2EM1	Irregularly Flooded
18	Polygon	2980.539	256.714	6500	6495	6	E2US	Regularly Flooded
19	Polygon	21737.18	1409.478	6508	6503	6	E2US	Regularly Flooded
20	Polygon	4513.828	553.337	6509	6504	7	E2US	Irregularly Flooded
21	Polygon	1203.273	173.483	6510	6505	7	E2US	Irregularly Flooded
22	Polygon	4034.039	289.35	6511	6506	7	E2US	Irregularly Flooded
23	Polygon	1862.344	224.241	6514	6509	6	E2US	Regularly Flooded
24	Polygon	3920.492	244.672	6516	6511	2	E1UB	

Figure 6. Screenshot of updated Matagorda Island GIS database using the Subclass and modifier fields.

APPENDIX C

NERR Classification – Cowardin Look-Up-Table for UT BEG Matagorda Island Wetland Habitats

NERR Code	Description	Cowardin Code
NoData	No data available	
1000	Marine	M
1100	Marine Subtidal	M1
1110	Marine Subtidal Rock Bottom	M1RB
1111	Marine Subtidal Rock Bottom Bedrock	M1RB1
1112	Marine Subtidal Rock Bottom Rubble	M1RB2
1120	Marine Subtidal Unconsolidated Bottom	M1UB
1121	Marine Subtidal Unconsolidated Bottom Cobble	M1UB1
1122	Marine Subtidal Unconsolidated Bottom Gravel	M1UB1
1123	Marine Subtidal Unconsolidated Bottom Sand	M1UB2
1124	Marine Subtidal Unconsolidated Bottom Mud	M1UB3
1125	Marine Subtidal Unconsolidated Bottom Organic	M1UB4
1130	Marine Subtidal Aquatic Bed	M1AB
1131	Marine Subtidal Aquatic Bed Rooted Algal	M1AB1
1132	Marine Subtidal Aquatic Bed Drift Algal	M1AB1
1133	Marine Subtidal Aquatic Bed Rooted Vascular	M1AB3
1134	Marine Subtidal Aquatic Bed Faunal	M1AB4
1140	Marine Subtidal Reef	M1RF
1141	Marine Subtidal Reef Mollusk	M1RF2
1142	Marine Subtidal Reef Coral	M1RF1
1143	Marine Subtidal Reef Worm	M1RF3
1144	Marine Subtidal Reef Artificial	M1RF4
1200	Marine Intertidal	M2
1210	Marine Intertidal Aquatic Bed	M2AB
1211	Marine Intertidal Aquatic Bed Rooted Algal	M2AB1
1212	Marine Intertidal Aquatic Bed Drift Algal	M2AB1
1213	Marine Intertidal Aquatic Bed Rooted Vascular	M2AB3
1220	Marine Intertidal Reef	M2RF
1221	Marine Intertidal Reef Coral	M2RF1
1222	Marine Intertidal Reef Worm	M2RF3
1230	Marine Intertidal Rocky Shore	M2RS
1231	Marine Intertidal Rocky Shore Bedrock	M2RS1
1232	Marine Intertidal Rocky Shore Rubble	M2RS2
1240	Marine Intertidal Unconsolidated Shore	M2US
1241	Marine Intertidal Unconsolidated Shore Cobble	M2US1
1242	Marine Intertidal Unconsolidated Shore Gravel	M2US1
1243	Marine Intertidal Unconsolidated Shore Sand	M2US2
1244	Marine Intertidal Unconsolidated Shore Mud	M2US3

1245	Marine Intertidal Unconsolidated Shore Organic	M2US4
2000	Estuarine	E
2100	Estuarine Subtidal	E1
2110	Estuarine Subtidal Rock Bottom	E1RB
2111	Estuarine Subtidal Rock Bottom Bedrock	E1RB1
2112	Estuarine Subtidal Rock Bottom Rubble	E1RB2
2120	Estuarine Subtidal Unconsolidated Bottom	E1UB
2121	Estuarine Subtidal Unconsolidated Bottom Cobble	E1UB1
2122	Estuarine Subtidal Unconsolidated Bottom Gravel	E1UB1
2123	Estuarine Subtidal Unconsolidated Bottom Sand	E1UB2
2124	Estuarine Subtidal Unconsolidated Bottom Mud	E1UB3
2125	Estuarine Subtidal Unconsolidated Bottom Organic	E1UB4
2130	Estuarine Subtidal Aquatic Bed	E1AB
2131	Estuarine Subtidal Aquatic Bed Rooted Algal	E1AB1
2132	Estuarine Subtidal Aquatic Bed Drift Algal	E1AB1
2133	Estuarine Subtidal Aquatic Bed Rooted Vascular	E1AB3
2134	Estuarine Subtidal Aquatic Bed Floating Vascular	E1AB4
2135	Estuarine Subtidal Aquatic Bed Faunal	E1AB5
2140	Estuarine Subtidal Reef	E1RF
2141	Estuarine Subtidal Reef Mollusk	E1RF1
2142	Estuarine Subtidal Reef Worm	E1RF2
2143	Estuarine Subtidal Reef Artificial r	E1RF3r
2200	Estuarine Intertidal	E2
2210	Estuarine Intertidal Aquatic Bed	E2AB
2211	Estuarine Intertidal Aquatic Bed Rooted Algal	E2AB1
2212	Estuarine Intertidal Aquatic Bed Drift Algal	E2AB1
2213	Estuarine Intertidal Aquatic Bed Rooted Vascular	E2AB3
2214	Estuarine Intertidal Aquatic Bed Floating Vascular	E2AB4
2220	Estuarine Intertidal Reef	E2RF
2221	Estuarine Intertidal Reef Mollusk	E2RF1
2222	Estuarine Intertidal Reef Worm	E2RF3
2230	Estuarine Intertidal Streambed	E2SB
2231	Estuarine Intertidal Streambed Bedrock	E2SB1
2232	Estuarine Intertidal Streambed Rubble	E2SB2
2233	Estuarine Intertidal Streambed Cobble	E2SB3
2234	Estuarine Intertidal Streambed Gravel	E2SB4
2235	Estuarine Intertidal Streambed Sand	E2SB5
2236	Estuarine Intertidal Streambed Mud	E2SB6
2337	Estuarine Intertidal Streambed Organic	E2SB7
2240	Estuarine Intertidal Rocky Shore	E2RS
2241	Estuarine Intertidal Rocky Shore Bedrock	E2RS1
2242	Estuarine Intertidal Rocky Shore Rubble	E2RS2
2250	Estuarine Intertidal Unconsolidated Shore	E2US
2251	Estuarine Intertidal Unconsolidated Shore Cobble	E2US1
2252	Estuarine Intertidal Unconsolidated Shore Gravel	E2US1

2253	Estuarine Intertidal Unconsolidated Shore Sand	E2US2
2254	Estuarine Intertidal Unconsolidated Shore Mud	E2US3
2255	Estuarine Intertidal Unconsolidated Shore Organic	E2US4
2260	Estuarine Intertidal Emergent Wetland	E2EM
2261	Estuarine Intertidal Emergent Wetland Persistent	E2EM1
2262	Estuarine Intertidal Emergent Wetland Nonpersistent	E2EM2
2270	Estuarine Intertidal Scrub-Shrub Wetland	E2SS
2271	Estuarine Intertidal Scrub-Shrub Wetland BLD	E2SS1
2272	Estuarine Intertidal Scrub-Shrub Wetland NLD	E2SS2
2273	Estuarine Intertidal Scrub-Shrub Wetland BLE	E2SS3
2274	Estuarine Intertidal Scrub-Shrub Wetland NLE	E2SS4
2275	Estuarine Intertidal Scrub-Shrub Wetland Dead	E2SS5
2280	Estuarine Intertidal Forested Wetland	E2FO
2281	Estuarine Intertidal Forested Wetland BLD	E2FO1
2282	Estuarine Intertidal Forested Wetland NLD	E2FO2
2283	Estuarine Intertidal Forested Wetland BLE	E2FO3
2284	Estuarine Intertidal Forested Wetland NLE	E2FO4
2285	Estuarine Intertidal Forested Wetland Mixed	E2FO6
2286	Estuarine Intertidal Forested Wetland Dead	E2FO5
2300	Estuarine Supratidal Haline	E5
2310	Estuarine Supratidal Haline Rock Bottom	E5RB
2311	Estuarine Supratidal Haline Rock Bottom Bedrock	E5RB
2312	Estuarine Supratidal Haline Rock Bottom Rubble	E5RB
2320	Estuarine Supratidal Haline Unconsolidated Bottom	E5UB
2321	Estuarine Supratidal Haline Unconsolidated Bottom Cobble	E5UB
2322	Estuarine Supratidal Haline Unconsolidated Bottom Gravel	E5UB
2323	Estuarine Supratidal Haline Unconsolidated Bottom Sand	E5UB
2324	Estuarine Supratidal Haline Unconsolidated Bottom Mud	E5UB
2325	Estuarine Supratidal Haline Unconsolidated Bottom Organic	E5UB
2330	Estuarine Supratidal Haline Aquatic Bed	E5AB
2331	Estuarine Supratidal Haline Aquatic Bed Rooted Algal	E5AB
2332	Estuarine Supratidal Haline Aquatic Bed Drift Algal	E5AB
2333	Estuarine Supratidal Haline Aquatic Bed Rooted Vascular	E5AB
2334	Estuarine Supratidal Haline Aquatic Bed Floating Vascular	E5AB
2340	Estuarine Supratidal Haline Emergent Wetland	E5EM
2341	Estuarine Supratidal Haline Emergent Wetland Persistent	E5EM

2342	Estuarine Supratidal Haline Emergent Wetland Nonpersistent	E5EM
2350	Estuarine Supratidal Haline Scrub-Shrub Wetland	E5SS
2351	Estuarine Supratidal Haline Scrub-Shrub Wetland BLD	E5SS
2352	Estuarine Supratidal Haline Scrub-Shrub Wetland NLD	E5SS
2353	Estuarine Supratidal Haline Scrub-Shrub Wetland BLE	E5SS
2354	Estuarine Supratidal Haline Scrub-Shrub Wetland NLE	E5SS
2355	Estuarine Supratidal Haline Scrub-Shrub Wetland Dead	E5SS
2360	Estuarine Supratidal Haline Forested Wetland	E5FO
2361	Estuarine Supratidal Haline Forested Wetland BLD	E5FO
2362	Estuarine Supratidal Haline Forested Wetland NLD	E5FO
2363	Estuarine Supratidal Haline Forested Wetland BLE	E5FO
2364	Estuarine Supratidal Haline Forested Wetland NLE	E5FO
2365	Estuarine Supratidal Haline Forested Wetland Mixed	E5FO
2366	Estuarine Supratidal Haline Forested Wetland Dead	E5FO
2400	Estuarine Subtidal Fresh	E4
2410	Estuarine Subtidal Fresh Rock Bottom	E4RB
2411	Estuarine Subtidal Fresh Rock Bottom Bedrock	E4RB
2412	Estuarine Subtidal Fresh Rock Bottom Rubble	E4RB
2420	Estuarine Subtidal Fresh Unconsolidated Bottom	E4UB
2421	Estuarine Subtidal Fresh Unconsolidated Bottom Cobble	E4UB
2422	Estuarine Subtidal Fresh Unconsolidated Bottom Gravel	E4UB
2423	Estuarine Subtidal Fresh Unconsolidated Bottom Sand	E4UB
2424	Estuarine Subtidal Fresh Unconsolidated Bottom Mud	E4UB
2425	Estuarine Subtidal Fresh Unconsolidated Bottom Organic	E4UB
2430	Estuarine Subtidal Fresh Aquatic Bed	E4AB
2431	Estuarine Subtidal Fresh Aquatic Bed Rooted Algal	E4AB
2432	Estuarine Subtidal Fresh Aquatic Bed Drift Algal	E4AB
2433	Estuarine Subtidal Fresh Aquatic Bed Rooted Vascular	E4AB
2434	Estuarine Subtidal Fresh Aquatic Bed Floating Vascular	E4AB
2435	Estuarine Subtidal Fresh Aquatic Bed Aquatic Moss	E4AB
2440	Estuarine Subtidal Fresh Reef	E4RF
2441	Estuarine Subtidal Fresh Reef Mollusk	E4RF
2500	Estuarine Intertidal Fresh	E3
2510	Estuarine Intertidal Fresh Aquatic Bed	E3AB
2511	Estuarine Intertidal Fresh Aquatic Bed Rooted Algal	E3AB1
2512	Estuarine Intertidal Fresh Aquatic Bed Drift Algal	E3AB2

2513	Estuarine Intertidal Fresh Aquatic Bed Rooted Vascular	E3AB3
2514	Estuarine Intertidal Fresh Aquatic Bed Floating Vascular	E3AB4
2515	Estuarine Intertidal Fresh Aquatic Bed Aquatic Moss	E3AB5
2520	Estuarine Intertidal Fresh Streambed	E3SB
2521	Estuarine Intertidal Fresh Streambed Bedrock	E3SB
2522	Estuarine Intertidal Fresh Streambed Rubble	E3SB
2523	Estuarine Intertidal Fresh Streambed Cobble	E3SB
2524	Estuarine Intertidal Fresh Streambed Gravel	E3SB
2525	Estuarine Intertidal Fresh Streambed Sand	E3SB
2526	Estuarine Intertidal Fresh Streambed Mud	E3SB
2527	Estuarine Intertidal Fresh Streambed Organic	E3SB
2530	Estuarine Intertidal Fresh Rocky Shore	E3RS
2531	Estuarine Intertidal Fresh Rocky Shore Bedrock	E3RS
2532	Estuarine Intertidal Fresh Rocky Shore Rubble	E3RS
2540	Estuarine Intertidal Fresh Unconsolidated Shore	E3US
2541	Estuarine Intertidal Fresh Unconsolidated Shore Cobble	E3US
2542	Estuarine Intertidal Fresh Unconsolidated Shore Gravel	E3US
2543	Estuarine Intertidal Fresh Unconsolidated Shore Sand	E3US
2544	Estuarine Intertidal Fresh Unconsolidated Shore Mud	E3US
2545	Estuarine Intertidal Fresh Unconsolidated Shore Organic	E3US
2550	Estuarine Intertidal Fresh Emergent Wetland	E3EM
2551	Estuarine Intertidal Fresh Emergent Wetland Persistent	E3EM
2552	Estuarine Intertidal Fresh Emergent Wetland Nonpersistent	E3EM
2560	Estuarine Intertidal Fresh Scrub-Shrub Wetland	E3SS
2561	Estuarine Intertidal Fresh Scrub-Shrub Wetland BLD	E3SS
2562	Estuarine Intertidal Fresh Scrub-Shrub Wetland NLD	E3SS
2563	Estuarine Intertidal Fresh Scrub-Shrub Wetland BLE	E3SS
2564	Estuarine Intertidal Fresh Scrub-Shrub Wetland NLE	E3SS
2565	Estuarine Intertidal Fresh Scrub-Shrub Wetland Mixed	E3SS
2570	Estuarine Intertidal Fresh Forested Wetland Dead	E3FO
2571	Estuarine Intertidal Fresh Forested Wetland BLD	E3FO
2572	Estuarine Intertidal Fresh Forested Wetland NLD	E3FO
2573	Estuarine Intertidal Fresh Forested Wetland BLE	E3FO
2574	Estuarine Intertidal Fresh Forested Wetland NLE	E3FO
2575	Estuarine Intertidal Fresh Forested Wetland Mixed	E3FO

2575	Estuarine Intertidal Fresh Forested Wetland Dead	E3FO
3000	Riverine	R
3100	Riverine Lower Perennial	R2
3110	Riverine Lower Perennial Unconsolidated Bottom	R2UB
3111	Riverine Lower Perennial Unconsolidated Bottom Gravel	R2UB1
3112	Riverine Lower Perennial Unconsolidated Bottom Sand	R2UB2
3113	Riverine Lower Perennial Unconsolidated Bottom Mud	R2UB3
3114	Riverine Lower Perennial Unconsolidated Bottom Organic	R2UB4
3120	Riverine Lower Perennial Aquatic Bed	R2AB
3121	Riverine Lower Perennial Aquatic Bed Aquatic Moss	R2AB2
3122	Riverine Lower Perennial Aquatic Bed Rooted Vascular	R2AB3
3123	Riverine Lower Perennial Aquatic Bed Floating Vascular	R2AB4
3130	Riverine Lower Perennial Rocky Shore	R2RS
3131	Riverine Lower Perennial Rocky Shore Bedrock	R2RS1
3132	Riverine Lower Perennial Rocky Shore Rubble	R2RS2
3140	Riverine Lower Perennial Unconsolidated Shore	R2US
3141	Riverine Lower Perennial Unconsolidated Shore Cobble	R2US1
3142	Riverine Lower Perennial Unconsolidated Shore Gravel	R2US1
3143	Riverine Lower Perennial Unconsolidated Shore Sand	R2US2
3144	Riverine Lower Perennial Unconsolidated Shore Mud	R2US3
3145	Riverine Lower Perennial Unconsolidated Shore Organic	R2US4
3150	Riverine Lower Perennial Emergent Wetland	R2EM
3151	Riverine Lower Perennial Emergent Wetland Nonpersistent	R2EM2
3200	Riverine Upper Perennial Emergent Wetland	R3
3210	Riverine Upper Perennial Rock Bottom	R3RB
3211	Riverine Upper Perennial Rock Bottom Bedrock	R3RB1
3212	Riverine Upper Perennial Rock Bottom Rubble	R3RB2
3220	Riverine Upper Perennial Unconsolidated Bottom	R3UB
3221	Riverine Upper Perennial Unconsolidated Bottom Cobble	R3UB1
3222	Riverine Upper Perennial Unconsolidated Bottom Gravel	R3UB1
3223	Riverine Upper Perennial Unconsolidated Bottom Sand	R3UB2

3224	Riverine Upper Perennial Unconsolidated Bottom Mud	R3UB3
3230	Riverine Upper Perennial Aquatic Bed	R3AB
3231	Riverine Upper Perennial Aquatic Bed Algal	R3AB1
3232	Riverine Upper Perennial Aquatic Bed Aquatic Moss	R3AB2
3233	Riverine Upper Perennial Aquatic Bed Rooted Vascular	R3AB3
3234	Riverine Upper Perennial Aquatic Bed Floating Vascular	R3AB4
3240	Riverine Upper Perennial Rocky Shore	R3RS
3241	Riverine Upper Perennial Rocky Shore Bedrock	R3RS1
3242	Riverine Upper Perennial Rocky Shore Rubble	R3RS2
3250	Riverine Upper Perennial Unconsolidated Shore	R3US
3251	Riverine Upper Perennial Unconsolidated Shore Cobble	R3US1
3252	Riverine Upper Perennial Unconsolidated Shore Gravel	R3US1
3253	Riverine Upper Perennial Unconsolidated Shore Sand	R3US2
3254	Riverine Upper Perennial Unconsolidated Shore Mud	R3US3
3255	Riverine Upper Perennial Unconsolidated Shore Organic	R3US4
3260	Riverine Upper Perennial Emergent Wetland	R3EM
3261	Riverine Upper Perennial Emergent Wetland Nonpersistent	R3EM2
3300	Riverine Intermittent	R4
3310	Riverine Intermittent Streambed	R4SB
3311	Riverine Intermittent Streambed Bedrock	R4SB1
3312	Riverine Intermittent Streambed Rubble	R4SB2
3313	Riverine Intermittent Streambed Cobble	R4SB3
3314	Riverine Intermittent Streambed Gravel	R4SB3
3315	Riverine Intermittent Streambed Sand	R4SB4
3316	Riverine Intermittent Streambed Mud	R4SB5
3317	Riverine Intermittent Streambed Organic	R4SB6
3318	Riverine Intermittent Streambed Vegetated	R4SB7
4000	Lacustrine	L
4100	Lacustrine Limnetic	L1
4110	Lacustrine Limnetic Rock Bottom	L1RB
4111	Lacustrine Limnetic Rock Bottom Bedrock	L1RB1
4112	Lacustrine Limnetic Rock Bottom Rubble	L1RB2
4120	Lacustrine Limnetic Unconsolidated Bottom	L1UB
4121	Lacustrine Limnetic Unconsolidated Bottom Cobble	L1UB1
4122	Lacustrine Limnetic Unconsolidated Bottom Gravel	L1UB1
4123	Lacustrine Limnetic Unconsolidated Bottom Sand	L1UB2
4124	Lacustrine Limnetic Unconsolidated Bottom Mud	L1UB3

4125	Lacustrine Limnetic Unconsolidated Bottom Organic	L1UB4
4130	Lacustrine Limnetic Aquatic Bed	L1AB
4131	Lacustrine Limnetic Aquatic Bed Algal	L1AB1
4132	Lacustrine Limnetic Aquatic Bed Aquatic Moss	L1AB2
4133	Lacustrine Limnetic Aquatic Bed Rooted Vascular	L1AB3
4134	Lacustrine Limnetic Aquatic Bed Floating Vascular	L1AB4
4200	Lacustrine Littoral	L2
4210	Lacustrine Littoral Rock Bottom	L2RB
4211	Lacustrine Littoral Rock Bottom Bedrock	L2RB1
4212	Lacustrine Littoral Rock Bottom Rubble	L2RB2
4220	Lacustrine Littoral Unconsolidated Bottom	L2UB
4221	Lacustrine Littoral Unconsolidated Bottom Cobble	L2UB1
4222	Lacustrine Littoral Unconsolidated Bottom Gravel	L2UB1
4223	Lacustrine Littoral Unconsolidated Bottom Sand	L2UB2
4224	Lacustrine Littoral Unconsolidated Bottom Mud	L2UB3
4225	Lacustrine Littoral Unconsolidated Bottom Organic	L2UB4
4230	Lacustrine Littoral Aquatic Bed	L2AB
4231	Lacustrine Littoral Aquatic Bed Algal	L2AB1
4232	Lacustrine Littoral Aquatic Bed Aquatic Moss	L2AB2
4233	Lacustrine Littoral Aquatic Bed Rooted Vascular	L2AB3
4234	Lacustrine Littoral Aquatic Bed Floating vascular	L2AB4
4240	Lacustrine Littoral Rocky Shore	L2RS
4241	Lacustrine Littoral Rocky Shore Bedrock	L2RS1
4242	Lacustrine Littoral Rocky Shore Rubble	L2RS2
4250	Lacustrine Littoral Unconsolidated Shore	L2US
4251	Lacustrine Littoral Unconsolidated Shore Cobble	L2US1
4252	Lacustrine Littoral Unconsolidated Shore Gravel	L2US1
4253	Lacustrine Littoral Unconsolidated Shore Sand	L2US2
4254	Lacustrine Littoral Unconsolidated Shore Mud	L2US3
4255	Lacustrine Littoral Unconsolidated Shore Organic	L2US4
4260	Lacustrine Littoral Emergent Wetland	L2EM
4261	Lacustrine Littoral Emergent Wetland Nonpersistent	L2EM2
5000	Palustrine	P
5100	Palustrine Perennial Water	P
5110	Palustrine Perennial Water Rock Bottom	PRB
5111	Palustrine Perennial Water Rock Bottom Bedrock	PRB
5112	Palustrine Perennial Water Rock Bottom Rubble	PRB
5120	Palustrine Perennial Water Unconsolidated Bottom	PUB
5121	Palustrine Perennial Water Unconsolidated Bottom Cobble	PUB
5122	Palustrine Perennial Water Unconsolidated Bottom Gravel	PUB

5123	Palustrine Perennial Water Unconsolidated Bottom Sand	PUB
5124	Palustrine Perennial Water Unconsolidated Bottom Mud	PUB
5125	Palustrine Perennial Water Unconsolidated Bottom Organic	PUB
5130	Palustrine Perennial Water Aquatic Bed	PAB
5131	Palustrine Perennial Water Aquatic Bed Algal	PAB
5132	Palustrine Perennial Water Aquatic Bed Aquatic Moss	PAB
5133	Palustrine Perennial Water Aquatic Bed Rooted Vascular	PAB
5134	Palustrine Perennial Water Aquatic Bed Floating vascular	PAB
5140	Palustrine Perennial Water Emergent Wetland	PEM
5141	Palustrine Perennial Water Emergent Wetland Nonpersistent	PEM
5200	Palustrine Intermittent or Saturated	P
5210	Palustrine Intermittent or Saturated Unconsolidated Shore	PUS
5211	Palustrine Intermittent or Saturated Unconsolidated Shore Cobble	PUS
5212	Palustrine Intermittent or Saturated Unconsolidated Shore Gravel	PUS
5213	Palustrine Intermittent or Saturated Unconsolidated Shore Sand	PUS
5214	Palustrine Intermittent or Saturated Unconsolidated Shore Mud	PUS
5215	Palustrine Intermittent or Saturated Unconsolidated Shore Organic	PUS
5220	Palustrine Intermittent or Saturated Moss-Lichen Wetland Moss-Lichen Wetland	P
5221	Palustrine Intermittent or Saturated Moss-Lichen Wetland Moss	P
5222	Palustrine Intermittent or Saturated Moss-Lichen Wetland Lichen	P
5230	Palustrine Intermittent or Saturated Emergent Wetland	PEM
5231	Palustrine Intermittent or Saturated Emergent Wetland Nonpersistent	PEM1
5232	Palustrine Intermittent or Saturated Emergent Wetland Persistent	PEM2
5240	Palustrine Intermittent or Saturated Scrub-Shrub Wetland	PSS
5241	Palustrine Intermittent or Saturated Scrub-Shrub Wetland BLD	PSS
5242	Palustrine Intermittent or Saturated Scrub-Shrub Wetland NLD	PSS

5243	Palustrine Intermittent or Saturated Scrub-Shrub Wetland BLE	PSS
5244	Palustrine Intermittent or Saturated Scrub-Shrub Wetland NLE	PSS
5245	Palustrine Intermittent or Saturated Scrub-Shrub Wetland Dead	PSS
5250	Palustrine Intermittent or Saturated Forested Wetland	PFO
5251	Palustrine Intermittent or Saturated Forested Wetland BLD	PFO
5252	Palustrine Intermittent or Saturated Forested Wetland NLD	PFO
5253	Palustrine Intermittent or Saturated Forested Wetland BLE	PFO
5254	Palustrine Intermittent or Saturated Forested Wetland NLE	PFO
5255	Palustrine Intermittent or Saturated Forested Wetland Mixed	PFO
5256	Palustrine Intermittent or Saturated Forested Wetland Dead	PFO
	Upland	U

APPENDIX D

Metadata

MatagordaIsland_NERR_reclass

Metadata:

- Identification_Information
- Data_Quality_Information
- Spatial_Data_Organization_Information
- Spatial_Reference_Information
- Entity_and_Attribute_Information
- Distribution_Information
- Metadata_Reference_Information

Identification_Information:

Citation:

Citation_Information:

Originator: White, William, Calnan, Thomas, Tremblay, Thomas, and Waldinger, Rachel

Publication_Date: July 30, 2007

Title:

MatagordaIsland_NERR_reclass

Geospatial_Data_Presentation_Form: vector digital data

Other_Citation_Details:

Based on 2001 CIR aerial photography flown by Andrew Lonnie Sykes, Inc.

Online_Linkage:

\\MANERR1\MANERR\HabitatClassification\RECLASSIFICATION\MatagordaIsland_NERR_reclass.shp

Larger_Work_Citation:

Citation_Information:

Originator: William A. White, Thomas A. Tremblay, Rachel L. Waldinger, and Thomas R. Calnan

Publication_Date: September 2002

Title:

Status and Trends of Wetland and Aquatic Habitats on Texas Barrier Islands, Matagorda Bay to San Antonio Bay

Description:

Abstract:

The National Estuarine Research Reserve System (NERRS) developed a new habitat classification scheme to help identify specific habitats within each of its unique reserves as part of its management initiatives. The goal of the project was to reclassify habitats within each reserve at high-resolution. The Mission-Aransas NERR acquired data from several different sources to help accomplish this mapping feat. This dataset is from the Bureau of Economic Geology and represents the current status of wetlands and associated aquatic habitats along the Matagorda Island Peninsula that resides within the Mission-Aransas NERR boundary.

Purpose:

These data were reclassified as part of a larger project initiative that identifies habitats within the Mission-Aransas NERR using the National Estuarine Research Reserve System (NERRS) classification scheme that was established in 2007.

Supplemental_Information:

These data were clipped to the extent of the Mission-Aransas National Estuarine Research Reserve (NERR) boundary and reclassified using the new NERRS classification scheme. For further information concerning the habitat classification used in this file, please contact the National Estuarine Research Reserve System (NERRS).

Time_Period_of_Content:
Time_Period_Information:
Multiple_Dates/Times:
Single_Date/Time:
Calendar_Date: November 2001
Single_Date/Time:
Calendar_Date: December 2001
Currentness_Reference:
ground condition
Status:
Progress: Complete
Maintenance_and_Update_Frequency: None planned
Spatial_Domain:
Bounding_Coordinates:
West_Bounding_Coordinate: -96.857080
East_Bounding_Coordinate: -96.762449
North_Bounding_Coordinate: 28.202503
South_Bounding_Coordinate: 28.053980
Keywords:
Theme:
Theme_Keyword: Wetland and Aquatic Habitats
Theme_Keyword: Reclassification
Theme_Keyword: Land Use
Theme_Keyword: Habitats
Place:
Place_Keyword: Matagorda Island, Mission-Aransas National Estuarine Research Reserve
Temporal:
Temporal_Keyword: 2001
Access_Constraints: none
Use_Constraints:
The original data were captured at a scale of 1:8,000 but are meant to complement prior datasets which were compiled at 1:24,000 scale. It is therefore recommended that the data not be used for mapping purposes at a scale larger than 1:24,000.
Point_of_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: William A. White
Contact_Organization: The Bureau of Economic Geology, University of Texas at Austin
Contact_Position: Research Scientist
Contact_Address:
Address_Type: mailing and physical address
Address:
10100 Burnet Rd. Bldg. 130
City: Austin
State_or_Province: Tx
Postal_Code: 78758
Country: USA
Contact_Voice_Telephone: 512-471-0338
Data_Set_Credit:
These data were collected, compiled, and distributed by Tom Tremblay of the University of Texas at Austin Bureau of Economic Geology.
Native_Data_Set_Environment:
Microsoft Windows XP Version 5.1 (Build 2600) Service Pack 2; ESRI ArcCatalog 9.2.0.1324
Cross_Reference:
Citation_Information:
Originator: U.S. Department of Interior, Fish and Wildlife Service

Publication_Date: 1979
Title:
Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T., 1979, Classification of wetlands and deepwater habitats of the United States: U.S. Department of Interior, Fish and Wildlife Service, Washington, D.C., USA 131 p.
Cross_Reference:
Citation_Information:
Originator: THOMAS E. KUTCHER, NINA H. GARFIELD, KENNETH B. RAPOSA
Publication_Date: Unpublished Material
Title:
A Recommendation for a Comprehensive Habitat and Land Use Classification System for the National Estuarine Research Reserve System
Cross_Reference:
Citation_Information:
Originator: Samuel P. Walker, Nina H. Garfield
Publication_Date: Unpublished Material
Title:
Recommended Guidelines for Adoption and Implementation of the NERRS Comprehensive Habitat and Land Use Classification System
Back to Top

Data_Quality_Information:
Positional_Accuracy:
Horizontal_Positional_Accuracy:
Horizontal_Positional_Accuracy_Report:
+ or - 40 ft.
Lineage:
Source_Information:
Source_Scale_Denominator: 1:8,000
Type_of_Source_Media: Georeferenced 2001 CIR aerial photography
Source_Time_Period_of_Content:
Time_Period_Information:
Multiple_Dates/Times:
Single_Date/Time:
Calendar_Date: November 2001
Single_Date/Time:
Calendar_Date: December 2001
Source_Currentness_Reference:
ground condition
Source_Citation_Abbreviation:
CIR photos
Source_Contribution:
Photos flown by Andrew Lonnie Sykes, Inc.
Process_Step:
Process_Description:
Heads up digitizing of wetland boundaries at a scale of 1:8,000 from digital image of 1m pixel CIR aerial photgraphy flown in November and December of 2001.
Process_Date: Spring and Summer 2002
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Thomas A. Tremblay
Contact_Organization: Bureau of Economic Geology, The University of Texas at Austin
Contact_Position: Research Associate
Contact_Address:
Address_Type: mailing and physical address

Address:
10100 Burnet Rd. Bldg. 130
City: Austin
State_or_Province: Tx.
Postal_Code: 78758
Country: USA
Contact_Voice_Telephone: 512-475-9537
Contact_Electronic_Mail_Address: tom.tremblay@beg.utexas.edu
Process_Step:
Process_Description:
Reclassification performed using ArcGIS 9.2 raster reclassify and join relationship tools.
Process_Date: July 27, 2007
Process_Time: 3 days
Process_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Tami G. Beyer
Contact_Organization: University of Texas at Austin - Marine Science Institute
Contact_Position: Research Scientist Assistant
Contact_Address:
Address_Type: mailing and physical address
Address:
750 Channel View Drive
City: Port Aransas
State_or_Province: Texas
Postal_Code: 78373
Country: USA
Contact_Voice_Telephone: 361-749-6782
Contact_Electronic_Mail_Address: beyer@utmsi.utexas.edu
Back to Top

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Vector
Point_and_Vector_Object_Information:
SDTS_Terms_Description:
SDTS_Point_and_Vector_Object_Type: G-polygon
Point_and_Vector_Object_Count: 1158
Back to Top

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Planar:
Grid_Coordinate_System:
Grid_Coordinate_System_Name: Universal Transverse Mercator
Universal_Transverse_Mercator:
UTM_Zone_Number: 14
Transverse_Mercator:
Scale_Factor_at_Central_Meridian: 0.999600
Longitude_of_Central_Meridian: -99.000000
Latitude_of_Projection_Origin: 0.000000
False_Easting: 500000.000000
False_Northing: 0.000000
Planar_Coordinate_Information:
Planar_Coordinate_Encoding_Method: coordinate pair
Coordinate_Representation:
Abscissa_Resolution: 0.000000

Ordinate_Resolution: 0.000000
Planar_Distance_Units: meters
Geodetic_Model:
Horizontal_Datum_Name: North American Datum of 1983
Ellipsoid_Name: Geodetic Reference System 80
Semi-major_Axis: 6378137.000000
Denominator_of_Flattening_Ratio: 298.257222

Back to Top

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: MatagordaIsland_NERR_reclass
Entity_Type_Definition:
Reclassificaiton of the BEG matag01_UTM shapefile provided by BEG.
Entity_Type_Definition_Source:
UTMSI
Attribute:
Attribute_Label: FID
Attribute_Definition:
Internal feature number.
Attribute_Definition_Source:
ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Sequential unique whole numbers that are automatically generated.
Attribute:
Attribute_Label: Shape
Attribute_Definition:
Feature geometry.
Attribute_Definition_Source:
ESRI
Attribute_Domain_Values:
Unrepresentable_Domain:
Coordinates defining the features.
Attribute:
Attribute_Label: MATAG2_
Attribute_Definition:
Unknown ID Number
Attribute_Definition_Source:
BEG
Attribute:
Attribute_Label: MATAG2_ID
Attribute_Definition:
Unique Habitat ID Number
Attribute_Definition_Source:
BEG
Attribute:
Attribute_Label: HAB01
Attribute_Definition:
Habitat Code as defined by Cowardin, 1979.
Attribute_Definition_Source:
BEG
Beginning_Date_of_Attribute_Values: November 2001
Ending_Date_of_Attribute_Values: December 2001
Attribute:

Attribute_Label: NERRCODE
Attribute_Definition:
Concatenated NERRS habitat code.
Attribute_Definition_Source:
NERRS - www.nerrs.noaa.gov
Attribute:
Attribute_Label: DESCRIPT
Attribute_Definition:
Full description of habitat code.
Attribute_Definition_Source:
Attribute:
Attribute_Label: SYS_NUM
Attribute_Definition:
Level 1 numeric code in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: SYSTEM
Attribute_Definition:
Level 1 nominal value in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: SUBSYS_NUM
Attribute_Definition:
Level 2 numeric code in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: SUBSYSTEM
Attribute_Definition:
Level 2 nominal value in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: CLS_NUM
Attribute_Definition:
Level 3 numeric code in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: CLASS
Attribute_Definition:
Level 3 nominal value in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRSAttribute:
Attribute:
Attribute_Label: SUBCLS_NUM
Attribute_Definition:
Level 4 numeric code in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: SUBCLASS
Attribute_Definition:
Level 4 nominal value in the NERRS hierarchical classification.

Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: DSC_NUM
Attribute_Definition:
Level 5 numeric code in the NERRS hierarchical classification.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: DESCRIPTOR
Attribute_Definition:
Level 5 of NERRS classification scheme.
Attribute_Definition_Source:
NERRS
Attribute:
Attribute_Label: MOD_REGIME
Attribute_Definition:
Modifier - Water Regime
Attribute_Definition_Source:
NERRS classification scheme, based on Cowardin.
Attribute:
Attribute_Label: AREA_AC
Attribute_Definition:
Area of habitat polygon in acres.
Attribute_Definition_Source:
UTMSI
Attribute:
Attribute_Label: AREA_HA
Attribute_Definition:
Area of habitat polygon in hectares.
Attribute_Definition_Source:
UTMSI
Overview_Description:
Entity_and_Attribute_Overview:
The CODE value is a numeric code initially assigned to the wetland polygon. A habitat class look up table was later joined to the coverage to assign the abbreviated wetland habitat classification (HAB01) to the wetland polygon using the CODE item.
Entity_and_Attribute_Detail_Citation:
Habitat classification based on Cowardin et *al.* (1979).
Back to Top

Distribution_Information:
Resource_Description: Downloadable Data
Standard_Order_Process:
Digital_Form:
Digital_Transfer_Information:
Transfer_Size: 1.076
Back to Top

Metadata_Reference_Information:
Metadata_Date: 20070814
Metadata_Contact:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Tami G. Beyer
Contact_Organization: University of Texas at Austin Marine Science Institute

Contact_Position: GIS Specialist
Contact_Address:
Address_Type: mailing and physical address
Address:
750 Channel View Drive
City: Port Aransas
State_or_Province: Texas
Postal_Code: 78373
Country: USA
Contact_Voice_Telephone: 361-749-6771
Contact_Electronic_Mail_Address: beyer@utmsi.utexas.edu
Contact_Electronic_Mail_Address: rasser@utmsi.utexas.edu
Contact_Electronic_Mail_Address: sally@utmsi.utexas.edu
Hours_of_Service: 8am - 5pm
Contact Instructions:
Secondary: Mike Rasser, Graduate Research Assistant

Tertiary: Sally Morehead, Assistant Reserve Manager and Stewardship Coordinator
Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
Metadata_Standard_Version: FGDC-STD-001-1998
Metadata_Time_Convention: local time
Metadata_Use_Constraints:
This data is a subset of a larger dataset provided by the University of Texas at Austin - Bureau of Economic Geology. All credit for data acquisition and accuracy should be given to this originator. Credit for reclassification of this dataset should reference the Mission-Aransas National Estuarine Research Reserve.
Metadata_Security_Information:
Metadata_Security_Classification_System: NERRS
Metadata_Security_Classification: Unclassified
Metadata_Extensions:
Online_Linkage: http://www.esri.com/metadata/esriprof80.html
Profile_Name: ESRI Metadata Profile
Metadata_Extensions:
Online_Linkage: http://www.esri.com/metadata/esriprof80.html
Profile_Name: ESRI Metadata Profile