Field Trip Report

Bee and Refugio Counties, 8/23-24/93

Personnal: Rose Sullivan, Sybil Vosler, USFWS; Dan Moulton, Wildlife Biologist, TPWD; Sam Norris, Botanist.

Purpose: To investigate Edroy depressional soils for hydric characteristics and relate on ground conditions to aerial photo signatures.

Conclusions:
- Most Edroy depressional soils are wet: PI's should follow soil survey.
- There are no oaks in these Edroy depressions; vegetation is generally either emergent or shrubs.
- Most shrubby depressions have a temporary water regime.
- Sesbania is found in the wetter depressions.

Checksites:

ED1 - PEM1A. Goliad 1:100,000. Bee Co. 1 mi. sw of Monteola. soil sample: 2.5Y, 2/0. Depression, compact clay, heavily grazed.

*Spiny aster	Aster spinosa	FACW-
*Bermuda grass	Cynodon dactylon	FACU+
sedges	Cyperus sp.	
spikerush	Eleocharis sp.	
Burrhead	Echinodorus sp.	OBL
water fern	Marsilea sp.	OBL

ED2 - PSS1C. Goliad 1:100,000. Bee Co. 1.5 mi SW of Monteola.
soil sample: 2.5Y 2/0. Moist in depression, lots of deep cow tracks

*Rattlebox	Sesbania drummondii	FACW
water fern	Marsilea sp	OBL

ED3 - PEM1A. Beeville SW 1:100,000, Beeville E. Quad. Bee Co. 3.5 mi. NE of Beeville. 1.5 mi. W of Medio Creek, app. 1 mi. N of rte. 59 on west side of road right after bend.
Soil sample: 2.5Y 2/0.
circular depression west side of road:

*Bermuda grass		
*huisache (small)	Acacia smallii	FACU
sedges	Cyperus sp.	
spiny aster	Aster spinosa	FACW-
east side of road:		
huisache	Acacia smallii	FACU
rattlebox	Sesbania drummondii	FACW

ED4 - Upland. Beeville SW 1:100,000, Beeville E. Quad. On rte. 59 E. of Beeville 1/3 mi. west of Medio Creek. Landowner said some areas boggy annually but we couldn't see signature. There were some small, unvegetated hog wallows but no hydrophytes. Hydrology may have been impacted by road since soil survey was done.

*huisache(tall)	Acacia smallii	FACU
*mesquite	Prosopis julifora	FACU-

ED5 - PEM1C/A. Beeville SW 1:100,000. S. off rte. 202 on rte. 2441 near Neddy Creek, on west side of Blanconia Oil Field road. Deep cow tracks, soil to hard to take soil sample.

*least spikerush	Eleocharis acicularis	OBL
rattlebox	Sesbania drummondii	FACW
water fern	Marsilea sp.	OBL
sedges		
rushes	Juncus sp.	

ED6 - PEM1A. Beeville SW 1:100,000. Refugio Co. Approximately 1 mi. west of Woodsboro on rte. 2441, south side. View across fence.

huisache/mesquite savannah

*goldenrod	Euthamia sp.	
*rushes	Juncus sp.	
*sedges	Cyperus sp.	
*beak rush	Rhynchospora sp.	
*spikerush	Eleocharis sp.	
long tom	Paspalum lividum	OBL

ED7 - PSS1A. Beeville SW 1:100,000, Beeville W. Quad. Bee Co. App. .5 mi. SE of the intersection (northside) of rte. 351 and rte. 516, just n. of Beeville, NE edge of an apartment complex. Water marks 6-8" on trees, animal tracks 6" deep. Depression surrounded by thick upland brush.

*huisache	Acacia smallii	FACU
*long tom	Paspalum lividum	OBL
hackberry	Celtis sp.	
spikerush	Eleocharis sp.	
water fern	Marsilea sp.	OBL
spiny aster	Aster spinosa	FACW-

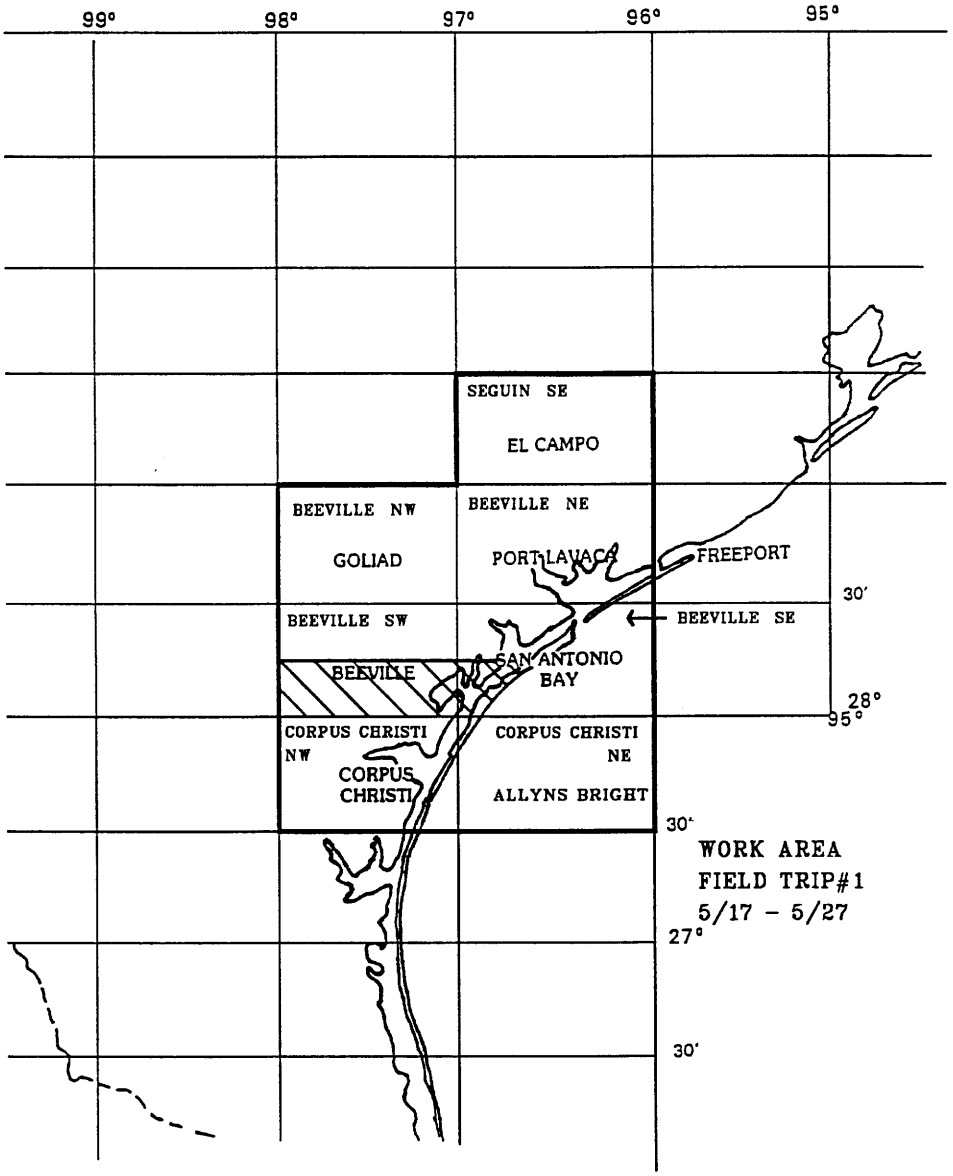
ED8 - PSS1A. Beeville SW 1:100,000. Beeville W. Quad. Bee Co. Photo 6179. 3 mi. NW of Beeville, e. side of road that runs n. off rte. 2824 at 2nd rt-angle curve west of rte. 516. Deep cracks in soil, deep cow tracks.

*huisache	Acacia smallii	FACU
spikerush	Eleocharis sp.	
water fern	Marsilea sp.	OBL
grasses		
mesquite	Prosopis julifolia	FACU-

ED9 - PEM1C. Goliad 1:100,000. .5 mi. west of Normanna just east of Medio Creek.

*spiny aster	Aster spinosa	FACW-
sedges	Cyperus sp.	
sedges	Carex sp.	
water plantain	Alisma subcordatum	OBL
dock	Rumex sp.	

* dominant species


99°
98°
97°
96°
95°
SEGUIN SE
EL CAMPO
BEEVILLE NW
GOLIAD
BEEVILLE NE
PORT LAVACA
FREEPORT
30'
BEEVILLE SW
BEEVILLE SE
BEEVILLE
SAN ANTONIO BAY
28°
95°
CORPUS CHRISTI NW
CORPUS CHRISTI
CORPUS CHRISTI NE
ALLYNS BRIGHT
30'
WORK AREA
FIELD TRIP#1
5/17 - 5/27
27°
30'

Coastal Texas Field Trip I

I. Purpose:

- establish correlations between the aerial photography and wetlands communities on the ground
- establish the classification of specific wetlands in the field and determine the wetland boundaries
- gather information from local personnel about hydrologic cycles, refuge management and farming practices, burns, presence and function of dams and weirs, occurrence of storm events and other information that would assist in the correct interpretation of the aerial photography
- identify and record plant species found in the field

II. Dates

May 17-26, 1993

III. Participants

Warren Hagenbuck, USFWS, Albuquerque, NM
Dan Moulton, TPWD/USFWS, Austin, TX
Rose Sullivan, USFWS, Austin, TX
Sybil Vosler, USFWS, Austin, TX
Barbara Johnson, Geonex Inc., St. Petersburg, FL
Dean Element, Geonex Inc., St. Petersburg, FL
Renata Goodrich, Geonex Inc., St. Petersburg, FL
Dorothy Rainey, Geonex Inc., St. Petersburg, FL
Sam Norris, Botanist (volunteer), Austin, TX
Dennis Brown, TPWD (5/20)
Cindy Jenkins, TPWD (5/20)
Rudy Mesa, TPWD (5/20)
Mickey Harris, Aransas NWR (5/21)
R. D. Henson, Cliburn Ranch, Seadrift, TX (5/21)

IV. Area Covered

All or portions of the following 1:100K maps were covered:

Baycity NW (Freeport)
Beeville NE (Port Lavaca)
Beeville SE (San Antonio Bay)
Beeville NW (Goliad)
Corpus Christi NE (Allyns Bight)
Corpus Christi NW (Corpus Christi)
Seguin SE (El Campo)

V. Climatic Conditions

Water levels were generally higher than normal because of heavy rains prior and during the trip.

VI. Aerial Photography

Type: Color Infrared
Scale: 1:65,000
Source: NASA
Dates: 11-29-92
12-02-92
12-10-92

Coverage: See Illustration

Climatic Data at Time of Photography:

Problems with Photography: Some of the photography proved to be rather dark and red especially in Corpus Christi NW and Seguin SE. The Seguin SE 1:100K photography also had some cloud cover. Warren Hagenbuck is addressing the problem with NASA and the problem is expected to be resolved.

VII. Photo-interpretation Problem Areas

Wetlands behind dunes on Mustang and Padre Islands.

On Mustang and Padre Islands there are many grassy, emergent wetlands found behind the dunes. These have no direct hydrologic connection to the Gulf and receive water from rainstorms and sea spray and overwash during infrequent Gulf storms. The dominant vegetation is **Spartina patens** (marsh hay cordgrass), **Schizachyrium scoparium** (seacoast bluestem), and **Baptisia leucophaea** (plains wild indigo). Many small wetlands dot the landscape and some are extensive (several acres), often containing small islands of upland. To avoid an overly complex map, some of the uplands may be included in the wetland designations. The classification for these wetlands will be PEM1A.

Tidal or non-tidal freshwater/tidal saltwater interface.

The decision was made not to classify short freshwater tidal segments (R1UBV) on deeply cut rivers and creeks with no floodplain. Since the tidal range is very small in comparison to the gradient of these streams, the consequent tidal

influence would be limited. Moreover, the freshwater/brackish water interface can change daily depending on climatic conditions (i.e. rainfall) and therefore the designation of this interface on the map is inherently arbitrary. It was felt that although the freshwater tidal segments (R1UBV) existed they would fall within the arbitrary range of the freshwater/brackish water interface and therefore could not be accurately classified.

Seasonal and temporary wetlands near mouth of the Nueces R.

Checksite #5 was a level, possibly disturbed area cut off from flooding from the river. The soil was a tight, low chroma (1) clay and despite recent rains the surface was dry. A long slough apparently permanently filled with water crossed the area at right angle to the river. The dominant vegetation was **Iva annua**, marsh elder, which occurs facultatively in wetlands. This was determined to be a temporary emergent wetland (PEM1A).

Another unusual area was found in Hazel Bazemore County Park at checksite #6. At this site there was a broad level or slightly depressed area separated from the river by a park road and dominated by **Borrichia frutescens**. There appeared to be no tidal influence in the river and a salinity reading taken downstream measured 2 ppt. According to the Nueces Co. soil survey, the soil was Trinity Clay, capability unit V-w. This area was classified as a palustrine seasonally-flooded emergent wetland (PEM1C).

Freshwater marsh/oak motte association on Aransas NWR.

This is a complex Ridge-and-Swale community with freshwater grasses and sedges in the depressions and live oaks, laurel oaks and red bays on upland hummocks and ridges. Water remains at or near the surface of the grasslands for long periods of time and these areas were classified as seasonally-flooded emergent wetlands (PEM1C). Because of the complexity of the area and limitations of scale, some uplands may be included in the PEM1C polygons.

Salicornia emergent areas in Welder Flats, Calhoun Co.

On the aerial photographs, interiors of these areas appeared to be barren mud or salt flats with little vegetation (Checksite #21B) except on the margins adjacent to the open water (Checksite #21A). At the time of our visit, however, both of these areas were completely vegetated with emergents. The dominant species at Checksite #21B was **Salicornia biglovii** which is an annual and probably not growing at the time of the aerial photography. Since this appears to be the normal vegetation during the growing season, these areas were classified as estuarine emergent irregularly-flooded (E2EM1P).

Oval wetland depressions in rice and pastures.

On the nearly level regions of the Gulf Coast Prairie in Colorado, Goliad, Jackson, Lavaca, Matagorda and Victoria counties were found soil complexes, Nada-Cieno and Morales-Cieno, containing oval depressions a few feet to 100 feet across. These depressions contain Cieno soils, a poorly drained sandy clay loam with a capability unit of IV-w on the National Hydric Soils list. In the field many of these depressions contained hydrophilic vegetation such as **Saggitaria** sp, **Cyperus** sp. and **Sesbania** sp. as well as standing water. Many of these depressions have been incorporated in rice fields, while others have been drained. Where they occur in rice fields , they will be delineated as PEMf (palustrine emergent farmed). In pastures and natural prairies, they will be called temporarily flooded emergent wetlands (PEM1A).

Seagrasses.

Extensive areas of seagrasses were observed in Corpus Christi Bay, San Antonio Bay and Spiritu Santo Bay. Matagorda Bay was not visited. The presence of seagrasses in these areas was also evident on the aerial photography. However, seagrasses are particularly difficult to discern on color infra-red photography and high tides, turbidity and surface glare can obscure their presence and hence their accurate delineation.

VI. Check Sites

Coastal Texas Field Trip Sites May 1993

#	NWI	Location	Plant Species[1]	Soils and Hydrology
1	E2USP	Nueces Co. Oso Creek NW Quad Oso Creek south side of S. Staples Road.	*Batis maritima *Borrichia frutescens *Rumex sp. *Suaeda linearis *Prosopis glandulosa *Distichlis spicata *Commelina erecta *Rumex crispus *Salicornia virginica Salicornia bigelovii Teucrium canadense Lycium carolinianum Heliotropium curassavicum Scirpus maritimus	Lamalta Clay and Gully Land Saline-hydric soils
2a	PEM1Fh	Nueces Co. Oso Creek NW Quad 0.25 mi. SE of Site 1 on south side of rd.	*Monanthochloe littoralis *Spartina spartinae *Distichlis spicata *Typha domingensis *Phragmites communis Limonium nashii Scirpus maritimus Lemna minor Cyperus sp. Borrichia frutescens	
2b	E2EM1P	Nueces Co. Oso Creek NW Quad North side of road from Site 2a.	*Scirpus californicus *Typha domingensis *Phragmites communis *Spartina spartinae Tamarix sp. Rumex crispus	

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
3	R2UBH	Nueces County Petronila NE Quad N. Oso Creek	Unvegetated open water	Salinity reading = 5 ppt, Gully land soil. No floodplain developed.
4	PEM1C	San Patricio Co. Odem Quad N. of Nueces R., N side of RT 77 square area near roadside park.	*Typha domingensis *Parkinsonia aculeata *Polygonum sp. *Lemna sp. *Eleocharis macrostachya *Eleocharis montevidensis Cyperus articulatus Echinodorus sp.	
5	PEM1A	San Patricio Co. Odum/Edroy USGS quad. Off RT77 between hiway and RRXing	*Iva annua Setaria sp. Cyperus sp.	Soils 1-12 inches= 10YR 5/1
6A	PEM1C	Nueces Co. Robbstown Quad 0.25 mi. south of Nueces R. East side of western rd in Hazel Berzemore Park	*Borrichia frutescens(99%) Parkinsonia aculeata Sesuvium portulacastrum Distichlis spicata	Trinity Clay

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
6 B	PEM1C	Nueces Co. Robbstown Quad West side of rd from site 6a	*Typha domingensis *Scirpus maritimus *Borrichia frutescens Iva annua Carex sp. Rumex sp. Marsilea sp. Parkinsonia aculeata Salix nigra Eleocharis sp. Lycium carolinianum Cyperus articulatus Cyperus sp. Carex crus-corvi Andropogon sp. Bacopa monnieri	Trinity Clay
7	PEM1C	Kleberg Co. Crane Island SW USGS Quad Interdunal area just south of Nueces into Kleburg Co	*Schizachyrium scoparium *Eleocharis cellulosa *Eleocharis montevidensis *Spartina patens *Scirpus americanus Juncus acuminatus Xyris sp. Centella asiatica	Standing water in small interdunal depress-ions.
8	PEM1A	Kleberg Co. Crane Islands SW Quad Approx 1 mi. east of Rt 22 (Padre Island Rd.)and 2.5 mi S of Nueces -Kleberg Co line.	*Baptisia leucophaea *Schizachyrium scoparium *Spartina patens Oenothera drummondii Spiranthes vernalis Juncus marginatus Hydrocotyle bonariensis Juncus scirpoides	

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
9A	E2USP	Nueces Co. Crane Islands NW Quad East side of Rt 22, south end of Mustang I., just south of Newport Pass	Less than 30% vegetated *Batis maritima Salicornia virginica Limonium nashii Suaeda linearis Salicornia biglovii Monanthocloe littoralis	High water mark on phone pole about 1 ft. higher than [water level] was at field visit.
9B	E2EM1P	Adjacent to 9A.	More than 30% vegetated -same species as #9a. Some of this class will be incorporated into the E2USP class because of minimum mapping unit limitations.	
9C	E2USN	Seaward of 9A.	Unvegetated	Tidal flat regularly flooded.
10	U	Nueces Co., Crane Island NW Quad Mustang Island S.P., west of park road 22.	*Spartina patens *Heterotheca sp. *grass sp. *Schizachyrium scoparium *Panicum sp. Opuntia lindheimeri Andropogon gomeratus Ambrosia sp. Oenothera drummondii Dichanthium annulatum Rudbeckia sp. Lepidium sp.	
11A	PEM1A	Aransas Co. Tivoli SE Quad Aransas NWR, 0.25 mi. south of Tomas Pond on west side of road.	*Dichromena sp. *Andropogon glomeratus *Eupatorium betonicifolium Hydrocotyle bonariensis Baccharis halimifolia	

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
11B	E2EM1P	Aransas Co. Tivoli SE Quad downstream from 11A.	*Typha domingensis *Cladium jamaicense *Scirpus maritimus *Distichlis spicata *Eleocharis albida Baccharis halimifolia Scirpus americanus Hydrocotyle bonariensis	
12	PEM1F	Aransas Co. Tivoli SE Quad Aransas NWR, 0.5 mi. S. of Aransas/ Calhoun county line, west side of road.	*Scirpus americanus *Cephalanthus occidentalis *Eleocharis montevidensis Hydrocotyle bonariensis Bacopa sp. Paspalum sp. Phyla cuneifolis Dichromena sp. Panicum virgatum	Galveston-Mustang complex
13	PEM1A	Aransas Co. Tivoli SE Quad Aransas NWR, west side of road, 1/16 mi. S. of Jones Lake.	*Juncus spp. Solidago sp. Quercus virginianus	Soils saturated to 1" of surface. Organic layer top 4".
14	PEM1A	Calhoun Co. Pass Cavallo SW Quad Matagorda Island State Park, south side of road.	*Borrichia frutescens *Spartina spartinae *Coreopsis tinctoria *Baccharis halimifolia *Iva angustifolia *Monanthochloe littoralis Fimbristylis castanea Sabatia sp. Eupatorium betonicifolium Dichromena sp. Phyla cuneifolia Eleocharis sp.	

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
15A	E2EM1N	Calhoun Co. Long Island Quad Matagorda Island. On the southern end of Pringle Lake.	*Spartina alterniflora	Brackish lake tidal link to Espiritu Santo Bay.
15B	E2USN	South of 15A. (More inland).	*Batis maritima *Salicornia virginica *Salicornia biglovii	
15C	E2EM1P	South of 15B. (More inland).	*Monanthocloe littoralis *Borrichia frutescens *Spartina spartinae Limonium nashii Lycium carolinianum Batis maritima Sabatia sp. Eleocharis sp. Coreopsis sp. Heliotropium curassavicum	
16	PEM1A	Calhoun Co. Port Lavaca East quad Whitmire Unit of Aransas NWR, 0.25 mi. W of SW shore of Foster Lake.	*Spartina spartinae *Monanthocloe littoralis	highly over-grazed Veston soil (non-hydr-ic)
17	U	Calhoun Co. Port Lavaca East Quad Whitmire Unit of Aransas NWR. Just N of #16.	*Iva angustifolia Spartina spartinae Setaria sp. Juncus scirpoides Juncus marginatus Juncus dichotomus Plantago aristata Polypogon monspeliensis	9 in. sand then clay

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
18	PEM1A	Calhoun Co. Port Lavaca East Quad Whitmire Unit of Aransas NWR, 1 mi. S of the SW shore of Foster Lake.	*Iva angustifolia *Eleocharis acicularis *Eleocharis macrostachya *Juncus dichotomus Juncus marginatus Fimbristylis castanea	
19	E2EM1P	Calhoun Co., Port Lavaca East Quad Whitmire Unit of Aransas NWR, near N. edge of Powderhorn Lake & Indianola Isl.	*Batis maritima *Salicornia virginica *Salicornia biglovii *Distichlis spicata Spartina alterniflora Monanthocloe littoralis Limonium nashii	
20	PSS3A	Calhoun Co. Port Lavaca NE Quad Whitmire Unit of Aransas NWR.	*Baccharis halimifolia *Spartina spartinae Rubus trivialis Borrichia frutescens Tamarix sp. Fimbristylis castanea	Placedo Clay (cap. unit VIIW),mottled sand to clay.
21A	E2-EM1P	Calhoun Co. Mosquito Point Quad Cliburn Ranch, Approx. 4 mi. SE of Seadrift Welder Flats.	*Borrichia frutescens *Batis maritima *Salicornia virginica *Monanthocloe littoralis Lycium carolinianum Limonium nashii	Mud flats at water's edge
21B	E2-EM1P	Calhoun Co. Mosquito Point Quad Cliburn Ranch, Approx. 4 mi. SE of Seadrift Welder Flats.	Batis maritima *Salicornia biglovii Limonium nashii	Interior parts of mud flats

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
22	PEM1C/A	Victoria Co., Fannin Quad. SW side of Rt. 27 approx 5.5 mi. S of Fannin, approx 0.5 mi. SE of the most downstream crossing of Portis Draw.	*Sesbania drummondii *Cyperus virens Eleocharis montevidensis Carex sp. Ludwigia peploides Cyperus sp. Juncus scirpoides Juncus dichotomus Juncus marginatus Coreopsis tinctoria Oenothera speciosa Sagittaria sp. Setaria sp. Marsilea mucronata Polygonum sp.	Nada-Cieno soil, (cap. unit IIIW).
23	PFO1A	Victoria Co., Inez NW Quad, 4 mi. E of Rt. 77 at Garcita Creek	*Fraxinus pennsylvanica *Ulmus americana *Ambrosia trifida *Uniola latifolia *Cornus drummondii Salix nigra Melia azederach Celtis reticulata Ulmus crassifolia Quercus virginiana Sambucus canadensis Rhus toxicodendron Ampeliopsis sp. Quercus nigra Ilex vomitoria Vitis mustangensis Quercus sp. Carya illinoensis	

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
24	PEM1A	Victoria Co., Inez Quad, 0.5 mi. SW of point where Leona Creek becomes intermitent on USGS quad.	*Euthamia leptocephala *Sagittaria sp. *Juncus marginatus *Rhynchospora indianolensis *grass sp. Cyperus sp. Eleocharis quadrangulata Eleocharis acicularis Eleocharis montevidensis Helenium flexuosum	6-9 in. standing water
25	E2USP	Calhoun Co., Olivia Quad, Rt. 35 at Keller Creek, 2.5 mi. W of Rt. 172.	Less than 30% vegetated *Distichlis spicata Scirpus maritimus Suaeda linearis	
26	E2-EM1N	Calhoun Co., Olivia Quad at Keller Bay 0.25 mi. E of Olivia near Rt 172.	*Spartina alterniflora	Brackish area with regular flooding from tidal waters.
27A	E1UBL	Blessing Co. Blessing Quad SW of Bay City on Tres Palacios R.	Primarily non-vegetated brackish open water. Scirpus maritimus.	Subtidal brackish open water. At time of visit salinity was 0 ppt.
27B	PSS1C	Inland from site #27A.	*Baccharis halimifolia *Iva frutescens Hymenocallis sp. Rubus sp. Lonicera japonica Ambrosia sp.	Veston Loam soil.

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
28	PEM1A	Matagorda Co. Palacios NE Quad TPWD Mad Island Refuge Just north of East Br. Mad Island Slough	*Spartina spartinae *Setaria sp Sabatia sp.	
29A	E2USP	Matagorda Co. Palacios NE Quad TPWD Mad Island Refuge Approx 0.3 mi. NE of NE end of Mad Is. Lake. East side of refuge rd.	Unvegetated tidal flat.	Brackish water standing on most of the area. Harris soil.
29B	E2EM1P	Inland from site 29A, east side of rd.	*Spartina patens thick algal mat	
29C	PEM1C	West side of rd. from sites 29A and 29B.	*Spartina patens	Due to the rd. imped-ing water flow the Estuarine/Palustrine break was made at this road.

1. * denotes dominance

#	NWI	Location	Plant Species[1]	Soils and Hydrology
30	PEM1A	Jackson Co. Cordele Quad North side of County Rd 283, 2.25 mi east of Navidad R.	*Paspalum plicatulum *Rhynchospora caduca *Rhynchospora corniculata *Rhynchospora globularis Sesbania drummondii Juncus marginatus Spiranthes vernalis Helenium flexuosum Sagittaria graminea Juncus brachycarpus Eleocharis acicularis Euthamia leptocephala Andropogon sp. Neptunia lutea	Saturated soils 1-15 inches 10YR 5/2 with oxidized root zone.
31	PFO1A	Lavaca Co. Cordele Quad 1.5 mi. SW of Rt 530, 0.5 mi. S of Navidad R., and 0.5 mi N of Lavaca /Jackson Co. line. East side of rd.	*Quercus stellata *Quercus nigra *Carex spp. Cyperus spp. Maclura pomifera Ulmus crassifolia Ilex vomitoria Tillandsia usneoides Smilax sp. Juncus marginatus Juncus scirpoides Rhynchospora sp. Euthamia leptocephala Paspalum plicatulum Eleocharis sp.	Inez Loamy Fine Sand (on co. hydric list). 2 inches of standing surface water.

1. *denotes dominance

VII. Plant List

Ambrosia sp.
Ambrosia trifida
Ampelopsis sp.
Andropogon gomeratus
Andropogon sp.
Baccharis halimifolia
Bacopa Monnieri
Bacopa sp.
Baptisia leucophaea
Batis maritima
Borrichia frutescens
Carex crus-corvi
Carex sp.
Carya illinoensis
Celtis reticulata
Centella asiatica
Cephalanthus occidentalis
Cladium jamaicense
Commelina erecta
Coreopsis sp.
Coreopsis tinctoria
Cornus Drummondii
Cyperus articulatus
Cyperus sp.
Cyperus virens
Dichanthium annulatum
Dichromena sp.
Distichlis spicata
Echinodorus sp.
Eleocharis acicularis
Eleocharis albida
Eleocharis cellulosa
Eleocharis macrostachya
Eleocharis montevidensis
Eleocharis quadrangulata
Eleocharis sp.
Eupatorium betonicifolium
Euthamia leptocephala
Fimbristylis castanea
Fraxinus pennsylvanica
Helenium flexuosum
Heliotropium curassavicum
Hydrocotyle bonariensis
Hymenocallis sp.

Ilex vomitoria
Iva angustifolia
Iva annua
Iva frutescens
Juncus acuminatus
Juncus brachycarpus
Juncus dichotomus
Juncus marginatus
Juncus scirpoides
Juncus sp.
Lemna minor
Lemna sp.
Lepidium sp.
Limonium Nashii
Limonium sp.
Lonicera japonica
Ludwigia peploides
Lycium carolinianum
Maclura pomifera
Marsilea mucronata
Marsilea sp.
Melia Azederach
Monanthochloe littoralis
Neptunia lutea
Oenothera Drummondii
Oenothera speciosa
Opuntia Lindheimeri
Panicum sp.
Panicum virgatum
Parkinsonia aculeata
Paspalum plicatulum
Paspalum sp.
Phragmites communis
Phyla cuneifolis
Plantago aristata
Polygonum sp.
Polypogon monspeliensis
Prosopis glandulosa
Quercus nigra
Quercus sp.
Quercus stellata
Quercus virginianus
Rhus toxicodendron
Rhynchospora caduca
Rhynchospora corniculata
Rhynchospora globularis
Rhynchospora indianolensis

Rhynchospora sp.
Rubus sp.
Rubus trivialis
Rudbeckia sp.
Rumex crispus
Rumex sp.
Sabatia sp.
Sagittaria graminea
Sagittaria sp.
Salicornia Bigelovii
Salicornia virginica
Salix nigra
Sambucus canadensis
Schizachyrium scoparium
Scirpus americanus
Scirpus californicus
Scirpus maritimus
Sesbania Drummondii
Sesuvium portulacastrum
Setaria sp.
Smilax sp.
Solidago sp.
Spartina alterniflora
Spartina patens
Spartina spartinae
Spiranthes vernalis
Suaeda linearis
Tamarix sp.
Teucrium canadense
Tillandsia usneoides
Typha domingensis
Ulmus americana
Ulmus crassifolia
Uniola latifolia
Vitis mustangensis
Xyris sp.