

Job Report

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Project No. M-6-R-3 Date February 1, 1961
Project Name: Fisheries Investigations in the Aransas-Copano Bay System
Period Covered: January 1, 1960 to December 31, 1960 Job No. C-2

A Survey of the Macro-vegetation Present in Aransas, Copano,
Redfish, Port and St. Charles Bays

Objectives: To determine the types of vegetation present, its seasonal aspects and its distribution and relationship with animals found in these bays.

Procedure: Sampling of vegetation was conducted with the otter trawl and by hand. Specimens collected were preserved in a solution of 5 per cent formaldehyde until identification could be made. All collections were made in conjunction with Jobs A-2, B-2, and E-2.

Findings: Most of the algae recorded from this area was collected prior to 1941. The only immediate available report on these collections is W. R. Taylor's (1941) paper in which he presents, in the form of a checklist, all of the algal species, collectors, and areas from which they were collected, for the entire Texas Coast. This paper was used extensively to fill in the gaps in this collection and checklist for Area M-6.

Some of the species included in this paper were taken from a herbarium located at the Marine Laboratory, Rockport, Texas.

Discussion: Marine vegetation in Area M-6 is greatly diversified. This variation extends from the high salinity tolerant forms found near the passes to the Gulf, to the low salinity forms found near the river mouths in the secondary and tertiary bays.

Redfish Bay (Figure 1) is a shallow high salinity lagoon from one to three feet deep. Its vegetation is not as diversified as a tropical lagoon, and has a generally continuous pattern of vegetation throughout. Thalassia testudinum Konig and Sims is the dominant flowering plant in the southern portion of the bay while Ruppia maritima Linnaeus is dominant in the northern end. Laurencia poeiti (Lamouroux) Howe, dominates the algal species found.

Other algae found are Digenia simplex (Wulfen) C. Agardh and Dictyota dichotoma (Hudson) Lamouroux.

Certain portions of this bay feel the influence of Gulf waters (Figure 1) through Big Bayou (line 1, figure 1), Corpus Christi Bayou (line 2), Aransas Pass Channel (line 3), and Lydia Ann Channel (line 4). The water from the Gulf enters Redfish Bay and maintains fairly high salinities all year, keeping a rather stable environment.

Aransas Bay has no particular dominant species of vegetation. On the south and southwestern shores vegetation patterns are similar to those found in Redfish Bay. However, L. poeiti is not as prevalent.

Ruppia begins to make an appearance in a narrow margin next to shore. Syringodium filiforme Kutzing, mistakenly called Cymadocea manatorum Ascherson Dawson (1956), is found scattered among frequent beds of Thalassia. Diplanthera wrightii (Ascherson)

Ascherson becomes evident on shallow wave-washed bars on the western side of the bay. Mud Island, to the east, has a similar pattern of vegetation with Diplanthera the dominant plant species in the shallow areas and Thalassia forming a margin around the south flats in waters of two to six feet.

In the northern portion of Aransas Bay, Ruppia is dominant and only scattered strands of Diplanthera are present.

St. Charles, Copano, and Port Bays are dominated by large beds of Ruppia along shore out to depths of three to four feet. The deeper portions of these bays are often without vegetation, but Gracilaria folifera (Forsk.) Borgesen, Gracilaria blodgettii Harvey, and Gelidium crinale (Turner) Lamouroux are sometimes found on oyster reefs and attached to scattered shells.

The distribution of plants in a typically moderate to high salinity bay in Area M-6 has a characteristic pattern (Figure 5). A diagrammatic reproduction of bisect studies made in lower Aransas Bay is shown in this figure. Any portion of a bay with the same salinity and temperature characteristics should have the same distribution of plants sometime during the year. Figure 2 is a picture of plant distribution in a low salinity bay, 0-20 ppt. Copano, St. Charles and Port Bays fall into this category.

Seasonal periodicity is prevalent for many marine plants in Area M-6. All of the flowering plants are perennials and show declines in growth in the winter and maximum growth in the spring and early summer.

Some algal species experience a periodicity with seasons and some with salinity changes. Gelidium crinale, Cladophora gracilis (Griffiths ex Harvey) Kutzing, and Rhizoclonium riparium (Roth) Harvey are seasonal. G. gracilis and R. riparium are found in the summer months, while G. crinale is the most common in the late winter and spring.

That plants affect the life of animals inhabiting the bays is common knowledge, but few studies of the ecological relationships that exist have been made. The rapid growth of Ruppia in the spring corresponds with the development of the juvenile brown shrimp which use these grass beds as nursery areas. White shrimp, on the other hand, are found in these grass beds but are commonly found, in the juvenile stages, with a preference for mud and silt, where plants of the higher order are lacking.

Juvenile fish and especially the speckled trout are found in association with Ruppia beds. Shallow coves and bays which are heavy with growths of this plant are the preferred spawning sites for adult trout.

The following is a list of the species of algae and flowering plants known to occur in Area M-6. All species distinguished by asterisks were taken during this survey and all the species not marked were reported by the indicated investigators.

Thallophyta
Algae

Chlorophyceae

* <u>Enteromorpha flexuosa</u> (Wulfen) J. Agardh	Mesquite Bay, Aransas Bay
<u>Enteromorpha linguata</u> J. Agardh	T. R. Leary, Aransas Bay. Herbarium, Rockport
<u>Enteromorpha calathrata</u> (Roth) J. Agardh	Hoesse, H.D., 1958, Mesquite Bay
<u>Ulva fasciata</u> DeLille	Hoesse, H.D., 1958, Mesquite Bay
* <u>Ulva lactuca</u> Linnaeus	Mesquite Bay

<u>Chaetomorpha brachygon</u> Harvey	Smith, B.S., 1938, Rockport
<u>Chaetomorpha geniculata</u> Montagne	Smith, B.S., 1938, Fulton
* <u>Rhizalonium riparium</u> (Roth) Harvey	Mesquite, Aransas, Copano, Port, and St. Charles Bays
* <u>Cladophora fascicularis</u> (Mertens) Kutzing	Mesquite, Aransas, and Copano Bays
* <u>Cladophora gracilis</u> (Griffith ex Harvey) Kutzing	Aransas Bay
* <u>Acetabularia crenulata</u> Lamouroux	Port, Copano, Aransas, and Redfish Bays
* <u>Batophora oerstedii</u> J. Agardh	Copano Bay
Phaeophyceae	
* <u>Padina vickersiae</u> Hoyt	Aransas and Redfish Bays
* <u>Dictyota dichotoma</u> (Hudson) Lamouroux	Aransas, Mesquite, and Redfish Bays
* <u>Sargassum filipendula</u> C. Agardh	Aransas Bay
* <u>Sargassum fluitans</u> Bergesen	Aransas Bay
* <u>Sargassum natans</u> (Linnaeus) J. Meyen	Aransas Bay
Rhodophyceae	
<u>Gelidium corneum</u> (Hudson) Lamouroux	Hoese, H.D., 1958, Mesquite Bay
* <u>Gelidium crinale</u> (Turner) Lamouroux	Copano, Aransas, and Mesquite Bays
* <u>Agardhiella tenera</u> (J. Agardh) Schmitz	Aransas and Mesquite Bays
* <u>Hypnea cervicornis</u> J. Agardh	Aransas, Mesquite, and Redfish Bays
* <u>Hypnea musciformis</u> (Wulfen) Lamouroux	Aransas, Mesquite, and Redfish Bays
* <u>Hypnea cornuta</u> (Lamouroux) J. Agardh	Aransas, Mesquite, and Redfish Bays
* <u>Gracilaria blodgettii</u> Harvey	Aransas, Copano, St. Charles, and Mesquite Bays
* <u>Gracilaria foliifera</u> (Forsskal) Bergesen	Aransas, Copano, St. Charles, and Mesquite Bays
<u>Gracilaria foliifera</u> var. <u>angustissima</u> , (Harvey) Taylor	Reed, C.T., 1934
<u>Gracilaria ferox</u> J. Agardh	Hoese, H.D., 1958, Mesquite Bay
<u>Gracilaria verrucosa</u> (Hudson) Papenfuss	Hoese, H.D., 1958, Mesquite Bay
* <u>Spiridia filamentosa</u> (Wulfen) Harvey	Aransas Bay
* <u>Centroceras clavulatum</u> (C. Agardh) Montagne	Aransas and Mesquite Bays
<u>Ceramium byssoideum</u> Harvey	Reed, C.T., 1934, Aransas Pass

* <u>Ceramium strictum</u> (Kutzing) Harvey	Aransas and Mesquite Bays
* <u>Digenia simplex</u> (Wulfen) C. Agardh	Aransas, Mesquite, and Redfish Bays
<u>Laurencia gemmifera</u> Harvey	1935, Aransas Pass
<u>Laurencia papillosa</u> (Forsskal) Greville	Smith, B.S., 1937, Rockport; Reed, C.T., 1935, Aransas Pass
* <u>Laurencia poitei</u> (Lamouroux) Howe	Aransas, Redfish, and Mesquite Bays
<u>Lophosiphonia subadunca</u> (Kutzing) Falkenberg	Reed, C.T., 1935, Aransas Pass
<u>Polysiphonia denudata</u> (Dillwyn) Kutzing	Hoese, H. D., 1958, Mesquite Bay
* <u>Polysiphonia ferulacea</u> Suhr	Aransas and Mesquite Bays

Flowering Plants
Spermatophyta

* <u>Diplanthera wrightii</u> (Ascherson) Ascherson	Mesquite, Aransas, Copano, and Port Bays
* <u>Ruppia maritima</u> Linnaeus	Aransas, Copano, St. Charles, Port, and Mesquite Bays
* <u>Halophila engelmanni</u> Ascherson	Aransas, Redfish, and Mesquite Bays
* <u>Syringodium filiforme</u> Kutzing	Aransas and Redfish Bays
* <u>Spartina alterniflora</u> Lois	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Spartina patens</u> (Ait) Muhl	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Moanthochloe littoralis</u> Engelman	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Distichlis spicata</u> (Linnaeus)	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Salicornia</u> sp.	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Suaeda</u> sp.	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Scirpus robustus</u>	Aransas, Copano, Redfish, St. Charles, and Port Bays
* <u>Thalassia testudinum</u> Korrig and Sims	Redfish and Aransas Bays

Comments: Much work is needed concerning the relationship between plants and animals in our Coastal Bays. Most of the plants found in Area M-6 are considered tropical and subtropical in nature. The distribution of plants in Area M-6 depends largely on salinities and temperatures.

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

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FIGURE I

AREA M-6

General distribution
of major vegetation types

Ruppia maritima 
Thalassia testudinum 
Diplanthera wrighti 

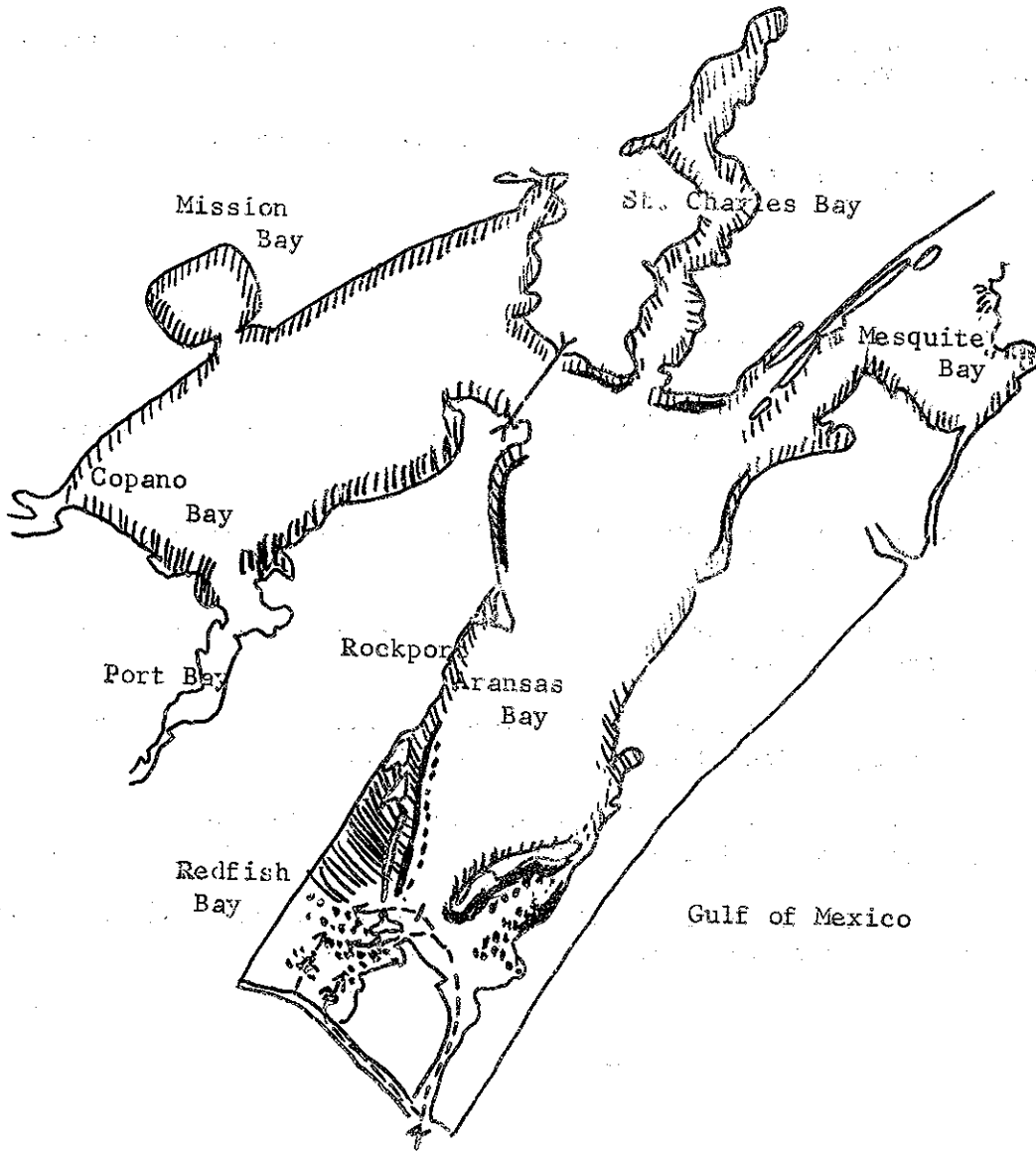


FIGURE 2

Vegetation in a low salinity bay 0 - 20 parts per thousand

1. Copano Bay
2. Port Bay
3. St. Charles Bay
4. Upper Mesquite Bay
5. Upper Aransas Bay

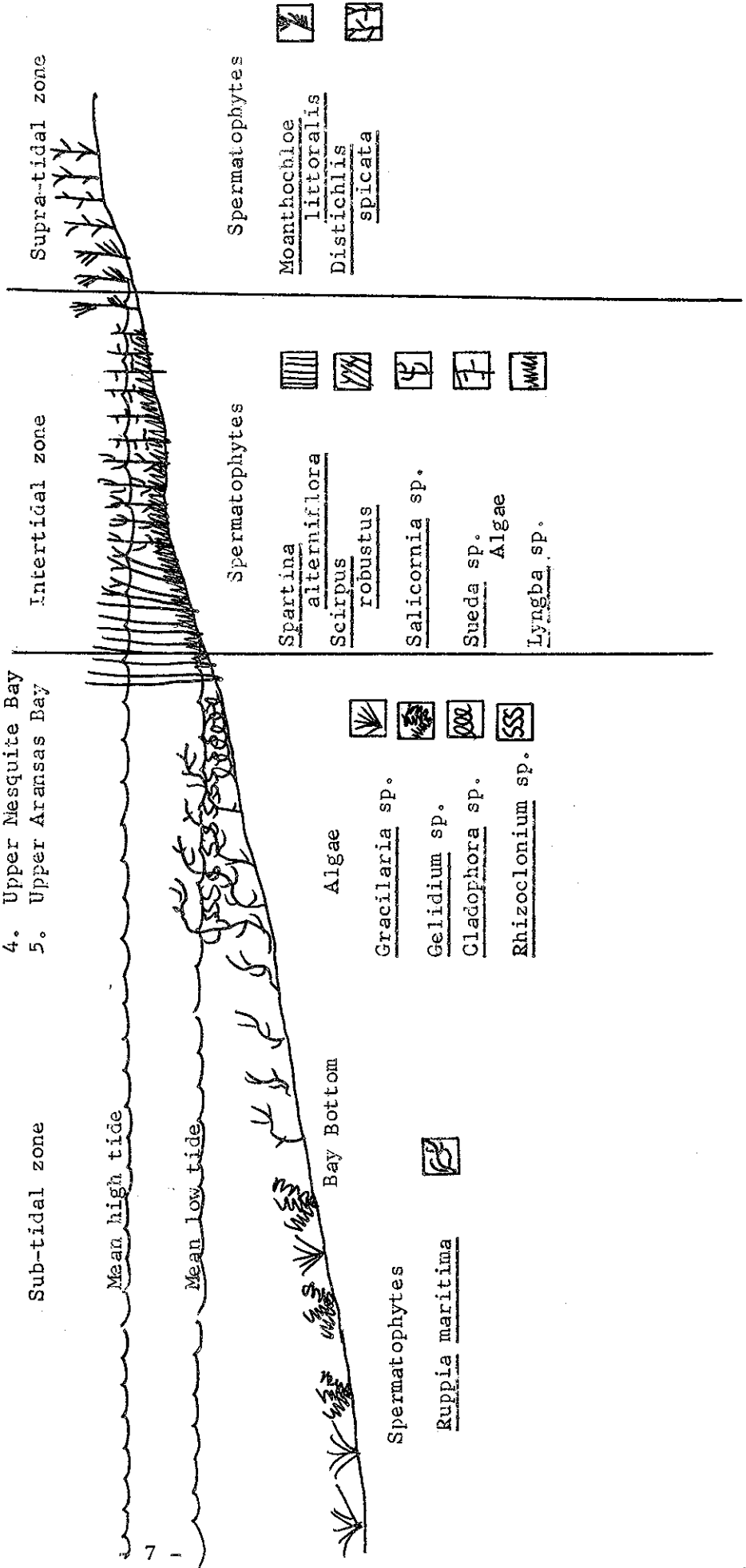


FIGURE 3

Vegetation in a moderate to high salinity bay 20-35 parts per thousand

1. Lower Arkansas Bay
2. Redfish Bay
3. Lower Mesquite Bay

