

JOB REPORT

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Project No. M-4-R-1 Date July 23, 1959.

Project Name: General Ecological Survey of the Matagorda Bay Area.

Period Covered: June 3, 1958 - June 15, 1959. Job No. F-2

Chemical and Physical Analysis of Water

Objective: To correlate salinity, water, and air temperatures with fish and invertebrate movements.

Procedure: Samples will be taken with a hydrometer kit for water temperatures and salinity. Air temperature will be obtained from the Climatological Data. Collections will be made in conjunction with Jobs No. A-2, B-2, and C-2.

Findings: Monthly precipitation, average monthly air and water temperatures and average monthly salinity are shown in Figures I through IV. Precipitation and air temperature information was obtained from the United States Department of Commerce publication "Climatological Data". The recording station is the Civil Aeronautics Administration located at the Palacios Airport. Salinity and water temperatures were recorded by the author at 40 check stations located throughout Area M-4.

Salinity change does not seem to have a great effect on the movements of vertebrate populations in this area. One white shrimp population moved from the mouth of the Tres Palacios River on September 26, 1958 due to a freshet that changed the upper part (mouth of river to Baptist encampment pier) of Tres Palacios Bay from 20 parts per thousand to 5 parts per thousand. The white shrimp stayed at the point of the meeting of the fresh water and salt water block for two days and then moved back to the river mouth on September 29 where the water was 7.1 parts per thousand. Since other environmental conditions remained relatively stable, the movement of this population of white shrimp appears to have been caused by the rapid change of salinity. (White shrimp held by bait dealers in the upper Tres Palacios Bay died during this rapid change.) Slow salinity changes do not seem to cause a movement or form a major block for vertebrate or invertebrate populations in this area.

The major cause of movement for vertebrate and invertebrate populations in this area seems to be the rise or fall of the water temperature. A complete record during this year's work was not obtained because the boat, Snook, needed major repairs several times (August 27 through September 25 and March 1 through April 30).

The period of greatest abundance of vertebrate and invertebrate species in this area occurred during the months of high temperature and high salinity (June, July and August). The period of low temperature and high salinity was the time of the least total number and number of species (December, January and February). The relative abundance of vertebrate species started to decline from October 1958 as water temperature declined through December 1958. The smallest number of species (18) present in trawl samples was in January 1959 when the water temperature averaged 12° C. February's water temperature

FIGURE I - Average Monthly Salinities in Area M-4

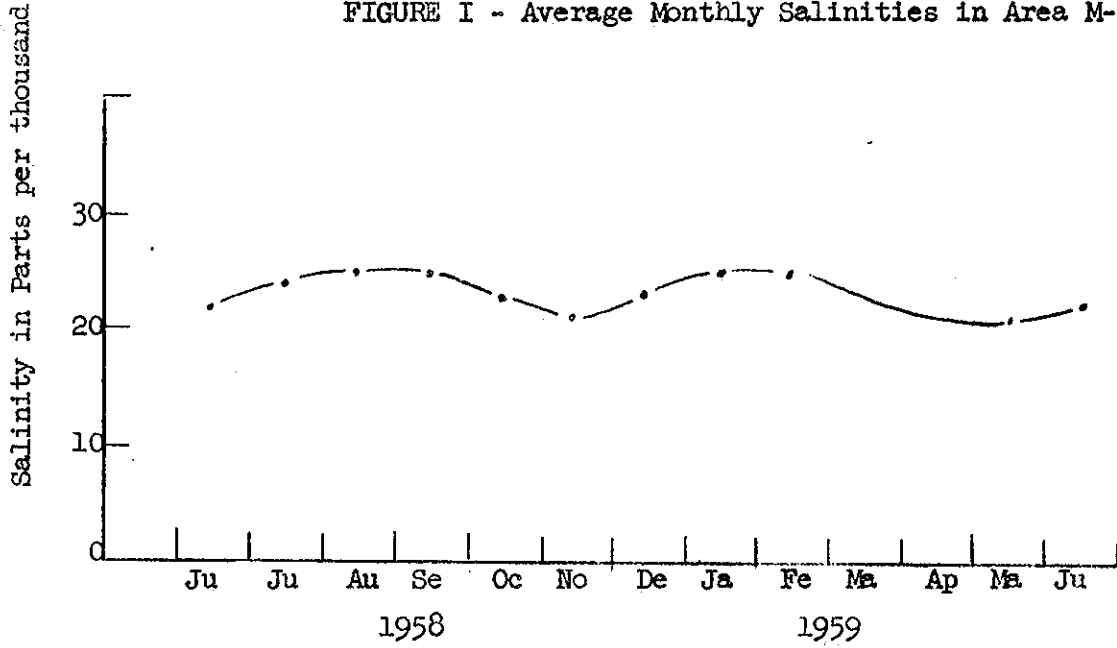
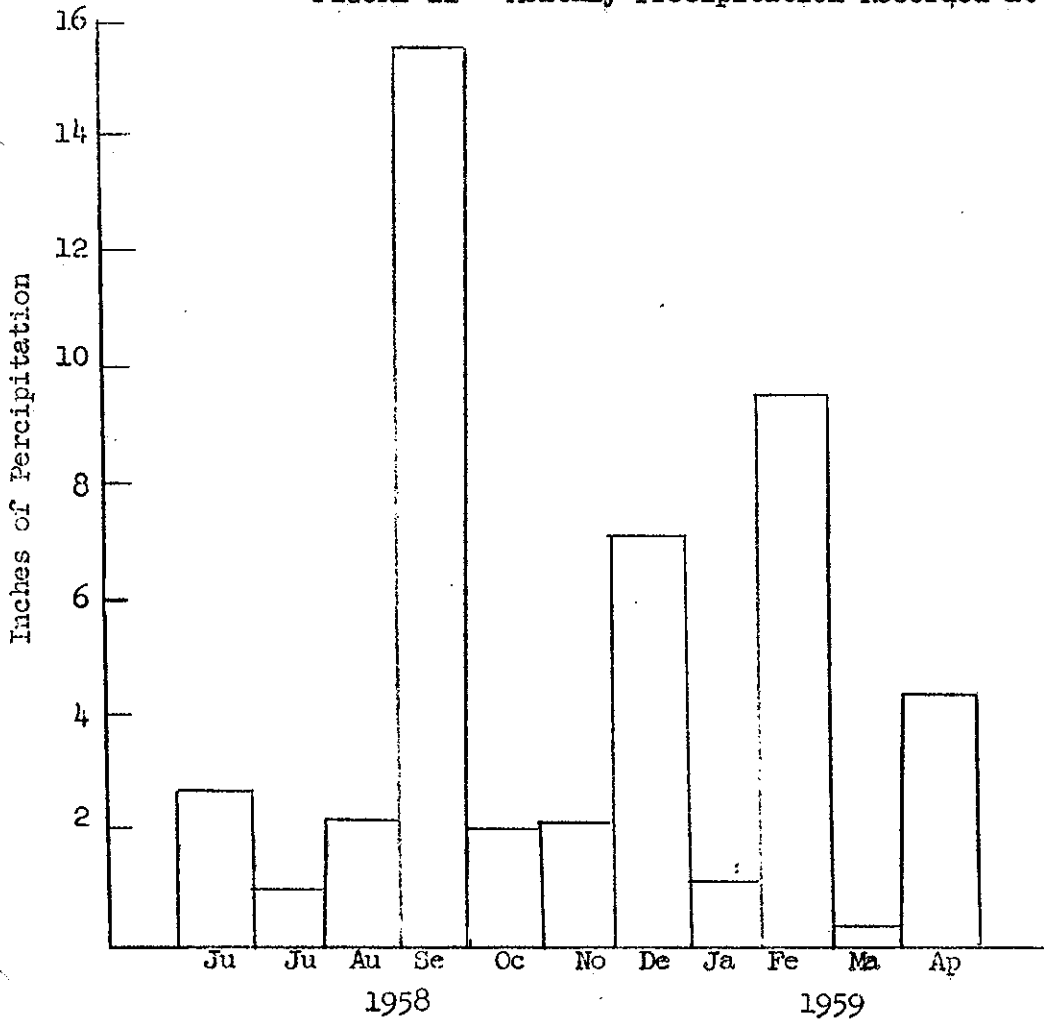


FIGURE II - Monthly Precipitation Recorded at Palacios



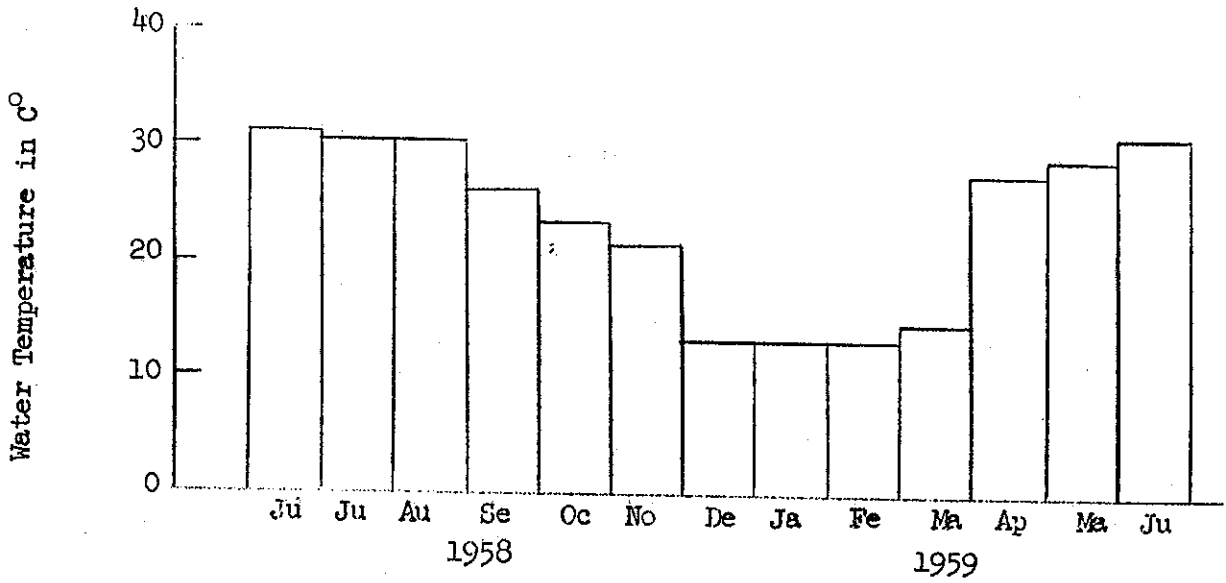


FIGURE III - Average Water Temperature in Area M-4 1958-1959.

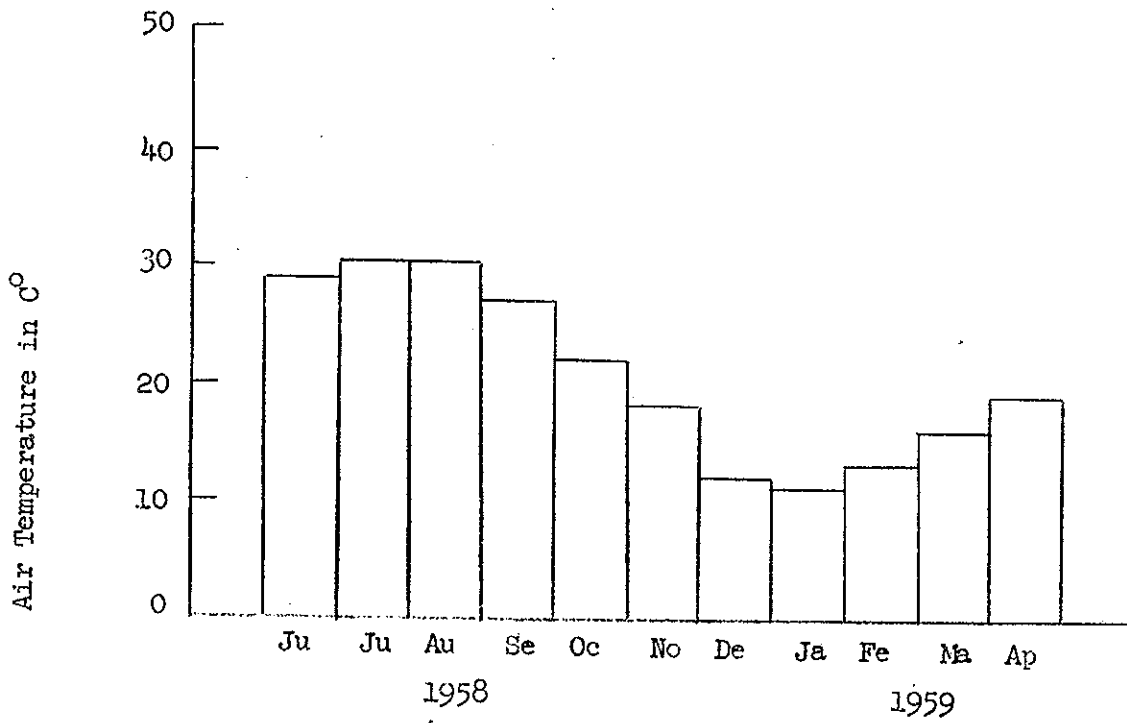


FIGURE IV - Average Air Temperature in Area M-4 1958-1959.