

Job Report

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Project No. M-7-R-1 Date August 30, 1961
Project Name: Biological Survey of Area M-7
Period Covered: September 1, 1960 to August 15, 1961 Job No. E-2

Hydrographic and Climatological Survey of Area M-7

Abstract: Information obtained on hydrographic and climatological conditions in Area M-7 reveals that there was a close correlation between rainfall and salinity. Two main peaks of rainfall occurred during the study period. One was in October with 10.66 inches, and the other one was in December with 7.89 inches. These peaks in rainfall during October and December caused salinities to drop suddenly at several stations in the area. The sudden decrease in salinity was severe enough to cause several oyster reefs in Area M-7 to suffer total mortality.

Nueces Bay and the west shore of Corpus Christi Bay exhibited the lowest salinities during periods of heavy runoff.

There was a close correlation between average air and average water temperature by month. Temperature averages reached their lowest point in January and their highest in July.

Objectives: To obtain information concerning the climate and hydrography as an aid in evaluating ecological conditions in Area M-7.

Procedure: Information on hydrographic and climatological conditions was obtained by various instruments and by direct observation. Two new stations were added to the twelve that were sampled last year. These new stations were added to obtain hydrographic data from Oso and Nueces Bays. Air temperatures and precipitation records were obtained from the local U. S. Weather Bureau.

Findings: Salinities averaged 33 ppt. at the beginning of this work period in September, 1960. During the middle part of October, salinities averaged about 34 ppt., but local heavy rains during the last part of the month caused a sharp drop at several of the stations in the area. This brought the average for November down to 22 ppt. Salinities continued to drop steadily through December, and by January had dropped to a low of 18.42, which was the lowest monthly average for this work period. Salinities remained low through February, then gradually increased to an average of 32 ppt. by August. During periods of heavy runoff in October and December, there were times when the whole upper end of Nueces Bay was fresh and the lower end had very low salinities. The west side of Corpus Christi Bay also exhibited very low salinities at this time. Salinities dropped fast enough and low enough in some areas to cause several oyster reefs in the area to suffer total mortality. Figure 1 shows average salinities by month.

Monthly precipitation records are shown in Figure 2. Two main peaks of rainfall occurred during the study period. One was in October with 10.66 inches, while the other one was in December with 7.89 inches. The lowest amount of precipitation was in May with only a trace being recorded.

Figure 1
Average Salinity in 0/00 (Does not include Nueces and Oso Bays)

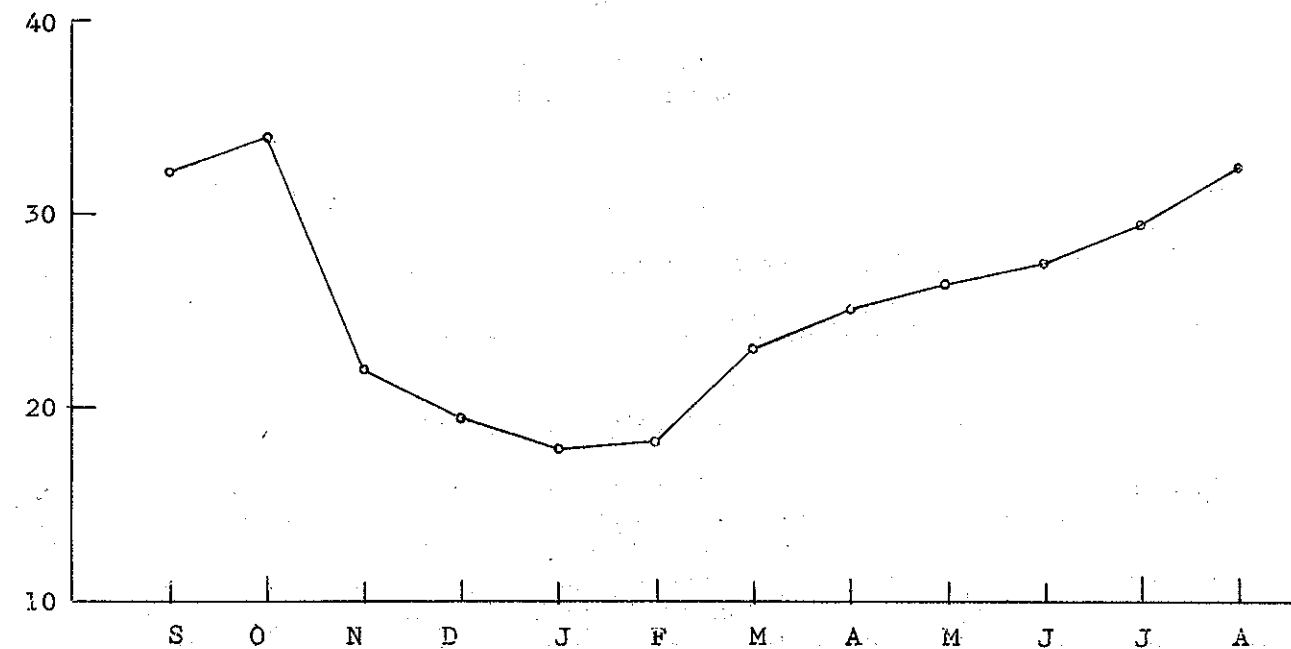


Figure 2
Precipitation Average Per Month

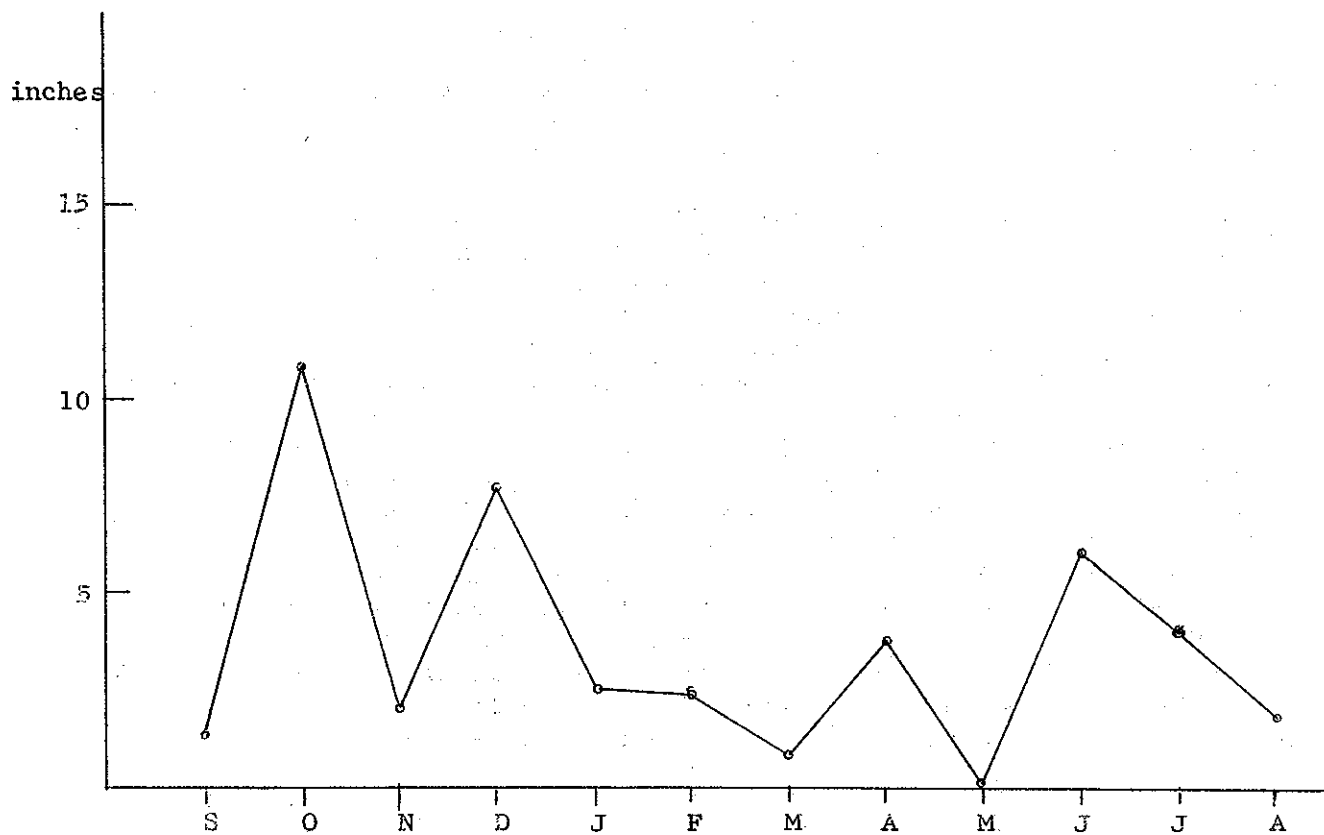


Figure 3

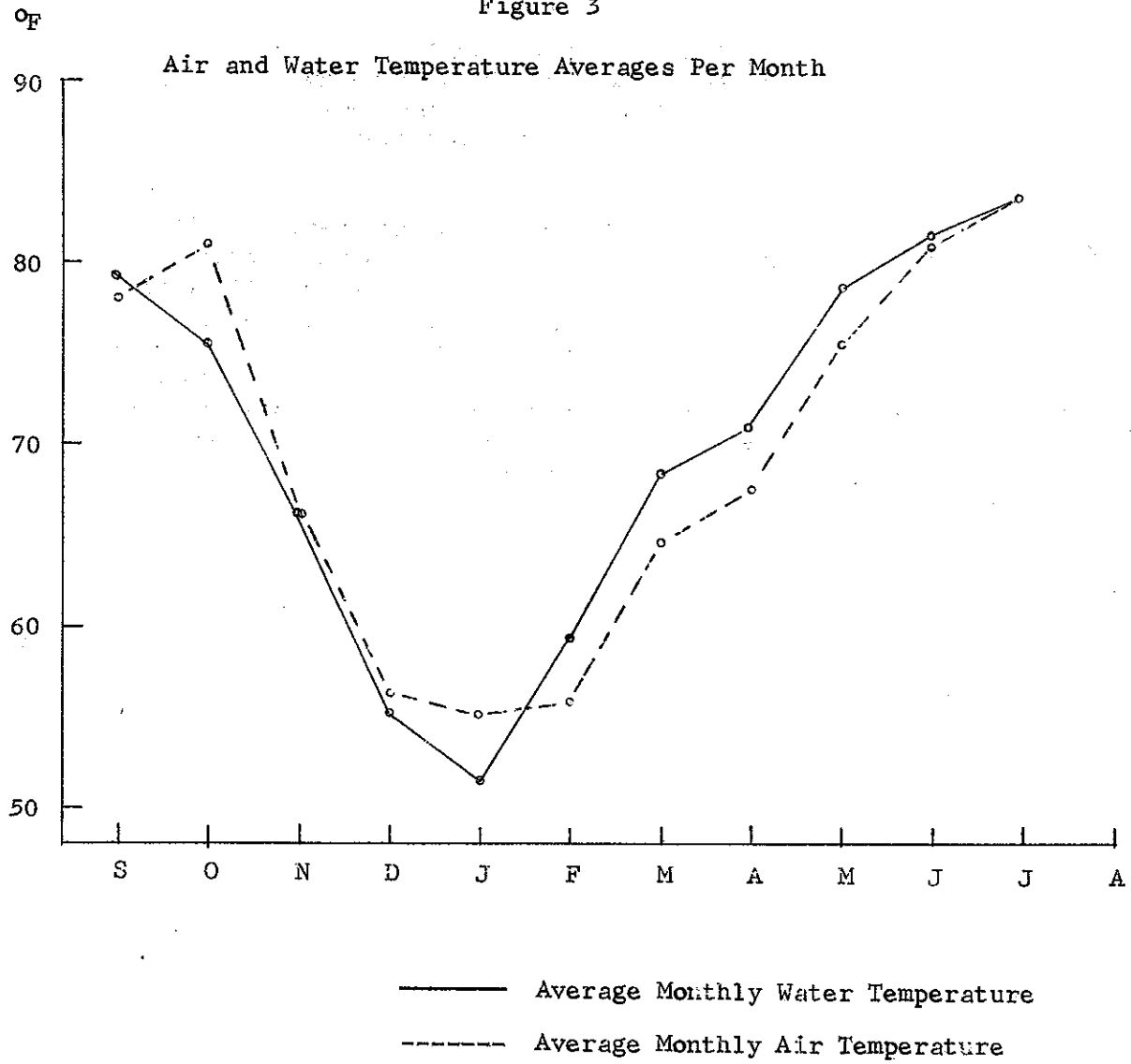


Figure 3 shows the close correlation between average air and average water temperatures by month. The air and water temperatures started to decline in October and continued to do so until January, at which time they reached the lowest point during this study period. Temperatures then started to increase until a peak was attained in July.

Comments: Several factors are expected to bring about changes in the environment of the bays in Area M-7. One of these factors is the construction of a causeway across Nueces Bay which will require a partial sand fill across the area where Corpus Christi and Nueces Bays meet. Also, the main ship channel in Corpus Christi Bay will be widened to a width of 400 feet and will be dredged to a depth of 40 feet. The increased width and depth and the deposition of the spoil from the dredging are factors capable of bringing about changes in the ecology of the area. It is therefore recommended that a continued study of the hydrography and climatological conditions be made as an aid in evaluating ecological conditions in Area M-7.

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Accepted by Terence R. Leary