

JOB REPORT

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Project No. M-9-D-3 . Date August 5, 1959

Project Name: A Developmental Survey of the Commercial Oyster Population of the Port Isabel Area.

Period Covered: June 1, 1958 to May 31, 1959 . Job No. G-1

Experimental Rehabilitation of the Commercial Oyster in the Project Area, Especially in the Port Isabel Area

Objectives: To determine whether the commercial production of oysters in the Port Isabel area of the work project area can be increased.

Procedures: Check the growth, condition, spawning time and rate, spatfall, predators, and survival rate of oysters on the six experimental oyster reefs and compare with the conditions of the existing oysters of the area and of other areas; and to determine the feasibility of promoting or encouraging the building of public and/or private reefs, both for the commercial production of oysters and for the improvement of sports fishing in the area.

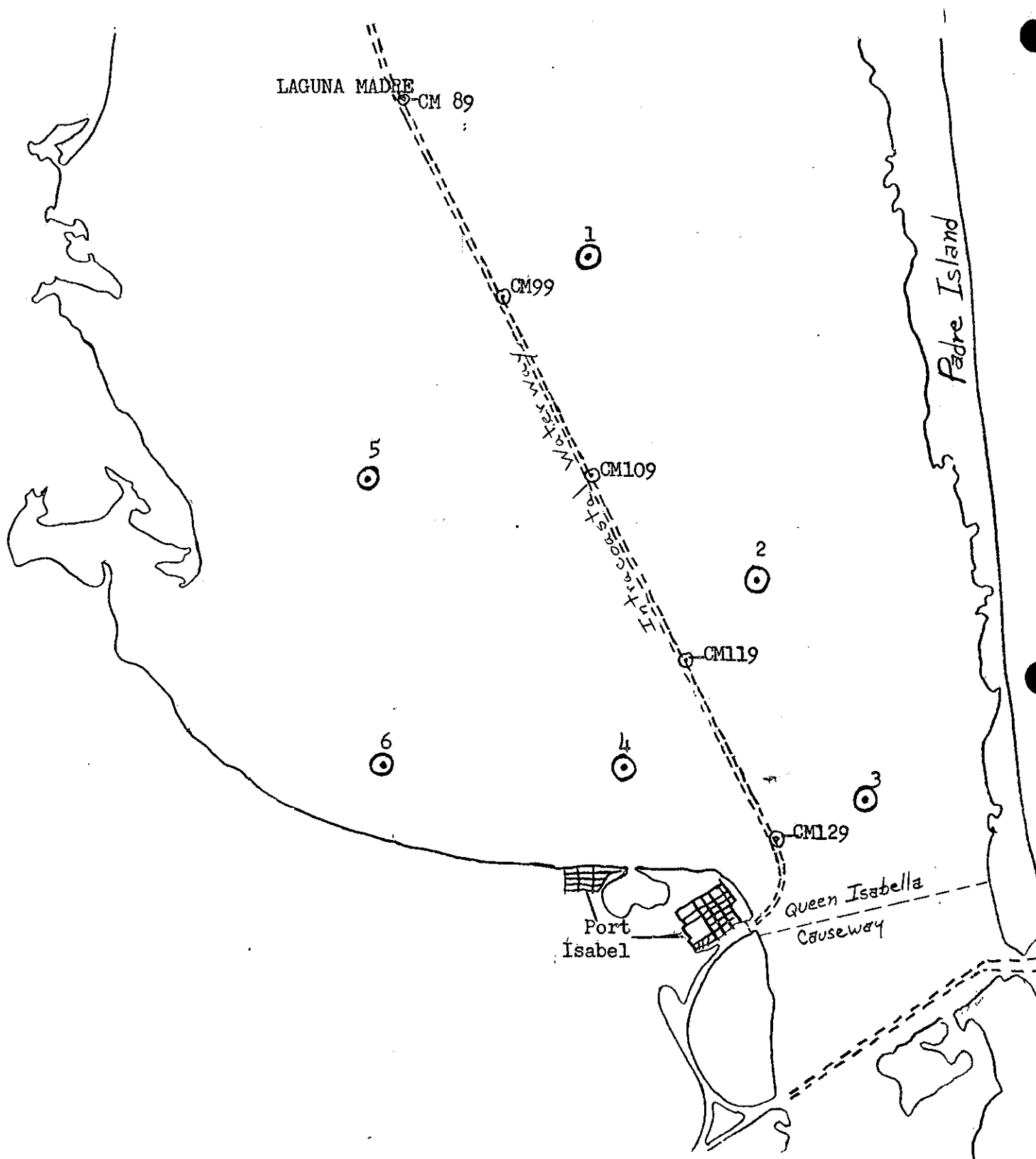
Findings: At the beginning of this period, the six experimental oyster reefs in Port Isabel Bay had been in operation approximately two months. Each reef was composed of a six inch layer of clean mud shell spread over an area of one-quarter acre. The locations of each reef is as follows:

- Reef 1 - One (1) mile due east of Intracoastal Canal buoy #97.
- Reef 2 - One (1) mile due east of Intracoastal Canal buoy #115.
- Reef 3 - One-quarter ($\frac{1}{4}$) mile northeast of marker #129.
- Reef 4 - One-half ($\frac{1}{2}$) mile due west of Intracoastal Canal buoy #125.
- Reef 5 - One and three-quarter ($1 \frac{3}{4}$) miles southwest of #101.
- Reef 6 - Three and one-quarter ($3 \frac{1}{4}$) miles due west of marker #125.

Reefs 2, 5, and 6 were seeded, each with 200 bushels of seed oysters taken from the shallow waters off Port Isabel.

By mid-July, it was noted that the survival of seed oysters on reefs 2, 5, and 6 ranged from 50 to 90%. Spat had appeared on all reefs. Heaviest spat was located on Reef 3 which was found to be principally O. equestris. The average size of spat on Reef 3 by early August was 10.6 mm with an average of 7.2 spat per cultch shell. Reef 2, a seeded reef, averaged 1.5 spat per cultch shell and 13.7 mm average size per spat. While the set was much lighter on this reef than on #1, most of this spat was C. virginica, and the more rapid rate of growth of C. virginica accounted for the larger average size. Reef 1 was void of spat, while Reef 4 was not located. Spatfall on Reef 5 was very light in spite of seeding, with only 1 spat per 50 cultch shells. Reef 6 reacted in a

Locations of Six Experimental Reefs in Lower Laguna Madre



similar manner to Reef 2, with an average spat size of 13.5 and an average of 1.2 spat per cultch shell. Most of these spat were C. virginica. Salinity average on these reefs on August 4 was 39.0 o/oo.

During October and November, the flood waters of the Rio Grande entered the Port Isabel area, and water salinities dropped to 15 o/oo. This influx of fresh water had its effects on the experimental reefs. By late November, over 95% of the spat on Reef 3 were dead, but those remaining were all C. virginica. The live spat ranged from 5 to 23 mm in size. On Reef 2, while all O. equestris had died, a fair set of C. virginica remained ranging in size from 3 to 45 mm. Reef 1 was still void of spat, and Reef 4 was not located. Spatfall on Reef 5 was still very light with no mortality and spat sizes ranging from 5 to 28 mm. Reef 6 had a spat mortality of 50% with a size range of surviving spat of 5 to 24 mm.

In general, the influx of fresh water killed some seed oysters as well as some C. virginica but affected a heavy kill of O. equestris. By late January, 1959, Reef 3 contained another pure set of O. equestris including a few surviving O. equestris spat from the previous summer. Reef 2 contained almost all C. virginica spat ranging from 8 to 38 mm in length. Seed oysters showed growth of 5 to 15 mm from time of planting. Reef 3 showed the first sign of spat set, O. equestris, in small numbers ranging from 6 to 10 mm. Reef 4 was still not located. Reef 5 contained a small set of live C. virginica of 5 to 7 mm in length. All O. equestris spat was dead. Seed oysters showed growth of 10 to 18 mm since time of planting. Reef 6 contained a fair set of C. virginica ranging from 6 to 35 mm and no live equestris.

By April 17, 1959, Reef 3 contained only one commercial oyster spat of 26 mm and a light set of new O. equestris. Reef 2, showing the effects of seeding, contained a good set of commercial oyster spat ranging from 19 to 39 mm in length. No live O. equestris was found, and most of the seed oysters had died. Reef 4 was finally located and found to contain only O. equestris spat, dead and alive. Reef 5 showed a very light set of C. virginica ranging in size from 8 to 23 mm. All O. equestris and a moderate set of C. virginica ranging from 11 to 43 mm.

The last examination of the reefs during the period was made on May 29, 1959. Reef 3 contained half horse and half commercial oysters. O. equestris ranged from 9 to 30 mm and C. virginica from 9 to 17 mm. On Reef 2, 90% of the oyster spat were C. virginica, ranging in size from 6 to 40 mm. Set was heavy. Reef 1 contained 80% O. equestris ranging from 9 to 15 mm. Reef 4 contained half O. equestris from 13 to 33 mm, and half C. virginica of 11 to 43 mm. Reef 5, a seeded reef, was a pure commercial set of two distinct size ranges, 6 to 14 mm and 36 to 61 mm. Reef 6 contained one-third O. equestris of 13 to 18 mm, and the remaining two-thirds were C. virginica of two size ranges, 7 to 18 mm and 39 to 41.

Comments: It is obvious that the unusual heavy influx of fresh water during October and November 1958 had a pronounced effect on the reefs. Some of the effects, such as the killing off of most of the horse oyster spat, may have been desirable, but the conditions were unusual, so that

positive and final conclusions regarding the success or failure of the reefs cannot be made at this time.

It is believed, however, that some definite statements can be made now about the reefs. The principal spawning of O. equestris occurs in March and April, with the heaviest sets nearest to the Queen Isabella Causeway. The heaviest spawn of C. virginica appears to be in May and June, with another set in the early fall. Seeded reefs contain a much higher percentage of C. virginica than unseeded reefs. Spat of C. virginica can grow to at least 60 mm in the first year, perhaps much larger under more favorable conditions than those which occurred during the period. It is hoped that more normal weather conditions will prevail during the next 12 months so that much of the doubt which now exists as to the degree of success or failure of the experiment can be removed.

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Date Approved

14 Sept. 1959