

Job Report

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Population Studies of the Blue Crabs of the Lower Laguna Madre

Abstract: Megalops larvae were very abundant in the Gulf surf in the fall of 1961. Spawning probably occurred offshore during this period. An average of 50 juvenile crabs per 15-minute trawl was taken in November 1961, compared to an average of 11 crabs per trawl for the entire study period. This peak of juvenile crabs resulted from the larvae in the Gulf surf entering the bay and molting.

Mating occurred in the bay in July and August 1962 and spawning occurred during the same months in the Gulf. Larval crabs were not found in the Gulf surf in 1962 and juvenile crabs were only one-tenth as abundant in the bay in 1962 as in 1961. The reason for this lack of larval and juvenile crabs in 1962 is not known.

Objectives: To sample blue crab populations of the lower Laguna Madre and to determine seasonal abundance and movements of crabs as related to environmental conditions.

Procedures: Figure 1 shows the location of all crab sampling done in the lower Laguna Madre. A small net of about one-millimeter mesh was used in the Gulf surf to sample larval crabs. Juvenile crabs were sampled twice monthly at three regular stations adjacent to the Intracoastal Waterway, with a 10-foot trawl of 1 1/4-inch stretch mesh, with a one-fourth of an inch inner liner. All trawl samples were multiplied by a factor to convert to 15 minutes if the actual sampling time was less than this. All data collected were averaged monthly. Adult crabs were sampled monthly at 4 stations with a 1200-foot trammel net of 12-inch stretch mesh outside and 3-inch stretch mesh inside. The net was not pulled. Data collected were averaged monthly. Female crabs were sampled inside Port Mansfield jetties with a 100-foot minnow seine of three-fourth of an inch stretch mesh. Crab traps, 18 inches tall and 2 feet square, constructed of heavy chicken wire, with 2 openings for crabs to enter were used at various locations in the lower Laguna Madre (Figure 1).

Findings: In October 1961, about 2000 megalops larvae were collected in the Gulf surf opposite Port Mansfield (Figure 1). By November, about half this number appeared to be present. By December 1961, the number of larvae per sample was down to less than 20. These large numbers of larvae were not found in the fall of 1962, or at any other time during the study period, even though intensive sampling was done in the surf. About 100 of the megalops larvae collected in October 1961, were taken back to the laboratory and reared. Five of these grew to a size large enough to be identified as the blue crab, Callinectes sapidus Rathbun.

The average numbers of juvenile crabs (less than 50 millimeters in carapace width) per trawl are shown in Figure 2. Although adults were collected in these samples, their occurrence was too sporadic to warrant consideration. In September 1961, an average of 25 juvenile crabs per trawl was found. In October 1961, the average number of crabs per trawl was three. In November 1961, the highest average number per trawl, 50 was taken. In January 1962, nine crabs per trawl were collected. From February to September, 1962, the average number of crabs per trawl decreased steadily from 17 to 0. The average number per trawl increased to seven in November 1962.

The average numbers of adult crabs (greater than 50 millimeters in carapace width) are shown in Figure 2. Wide variations in numbers occurred. The average number caught per sample ranged from 1 in December 1961 to 19 in August 1962. Generally, the average number per sample increased steadily from 4 in October 1961 to 6 in June 1962. The average number for this period was 6 per sample. The average number increased to 17 in July and then to 19 in August 1961. In September, October, and November 1962, the average numbers of crabs per sample were 5, 14, and 6 respectively. From May to October 1962, 60 per cent of the crabs were males. Most of the crabs collected during this period were either large males or immature females. Many of the crabs were clasping pairs.

The numbers of female crabs inside the Port Mansfield jetties along with the percentages of sponge females are shown in Figure 2. The number of female crabs per sample ranged from 58 in July to 109 in August 1962. Although no sample was taken in June, observations in the area indicated that female crabs were nearly as abundant in July as in August 1962. Observations showed female crabs were also present in the Gulf surf and around the jetties from June to August 1962. From September to December 1962, female crabs were practically absent from the areas around the pass.

Crab traps were used at the locations indicated in Figure 1. No useful data were obtained from these samples. Data were sometimes contradictory to data from other sampling methods and from observations. Catch per unit effort was impossible to standardize.

Discussion: The large number of megalops larvae in the Gulf surf in October and November 1961 indicates a large spawn immediately prior to this time. Since no sponge crabs were taken in the surf in the fall or winter of 1961, it is assumed that spawning occurred offshore in 1961. The occurrence of these larvae correlates very well with the increased abundance of juvenile blue crabs in the bay from October to November 1961. Apparently, the large numbers of larvae entered the bay and molted, resulting in the increased numbers of juvenile crabs in the bay.

In 1962 the increase in number of adult crabs from July to August, and the fact that most of the crabs were either large males or immature females, and many of them were clasping pairs, indicates that mating occurred during this period. This correlates well with the occurrence of sponge females near Port Mansfield Pass and in the Gulf surf from July to August 1962. Apparently, most of the spawning took place from July to August 1962 in the Gulf. By September 1962, spawning was apparently completed.

The reason for the absence of larvae in the Gulf surf in the summer of 1962 and the small numbers of juveniles in the bay in the fall and winter of 1962 is unknown but a poor spawn or poor survival of larvae is indicated.

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Figure 1

Location of Blue Crab sampling points
in the lower Laguna Madre

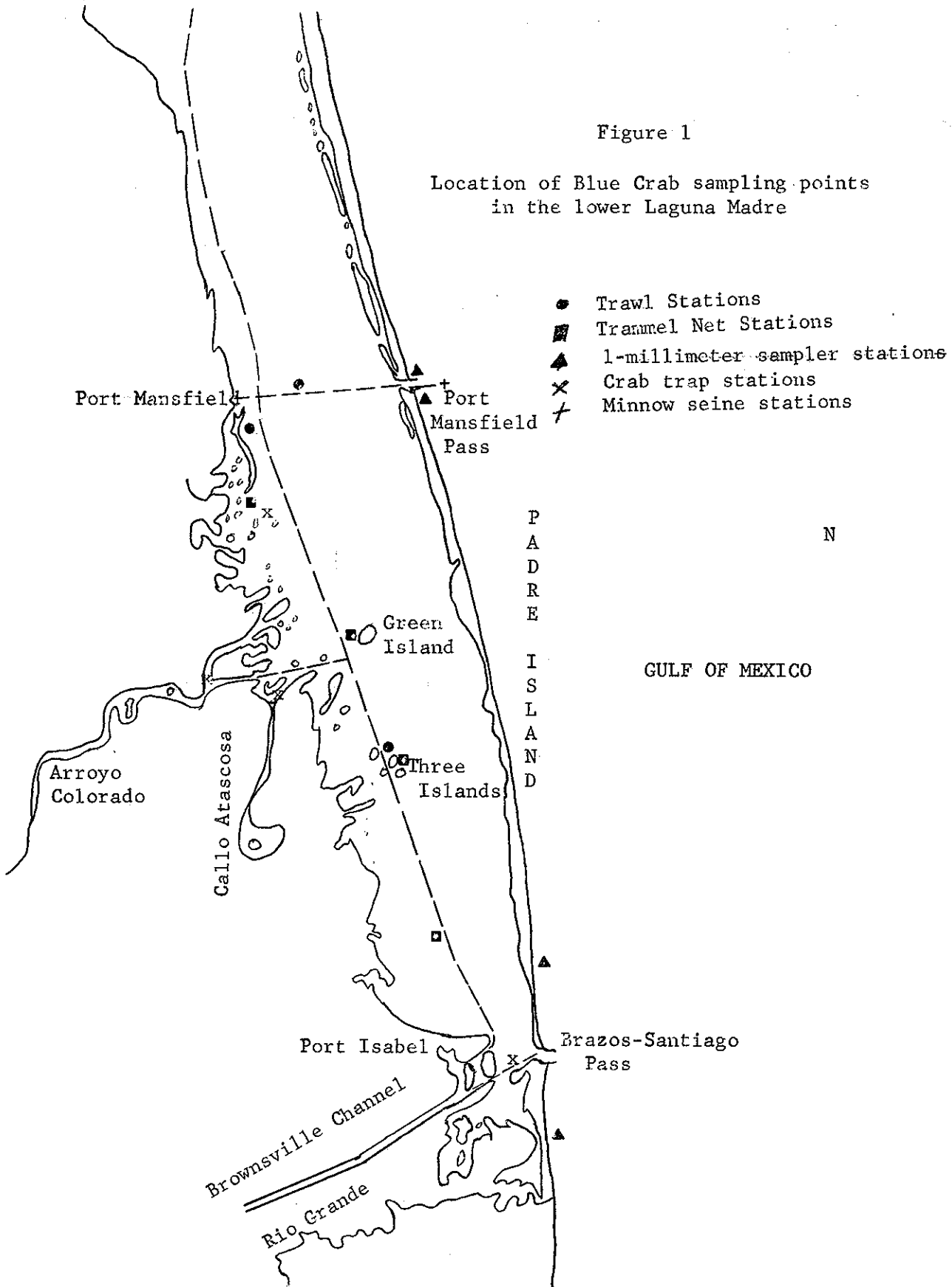


Figure 2
Numbers of Larval, Juvenile and Adult Blue Crabs
by Month in the Lower Laguna Madre

