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Management Data Series Number 122
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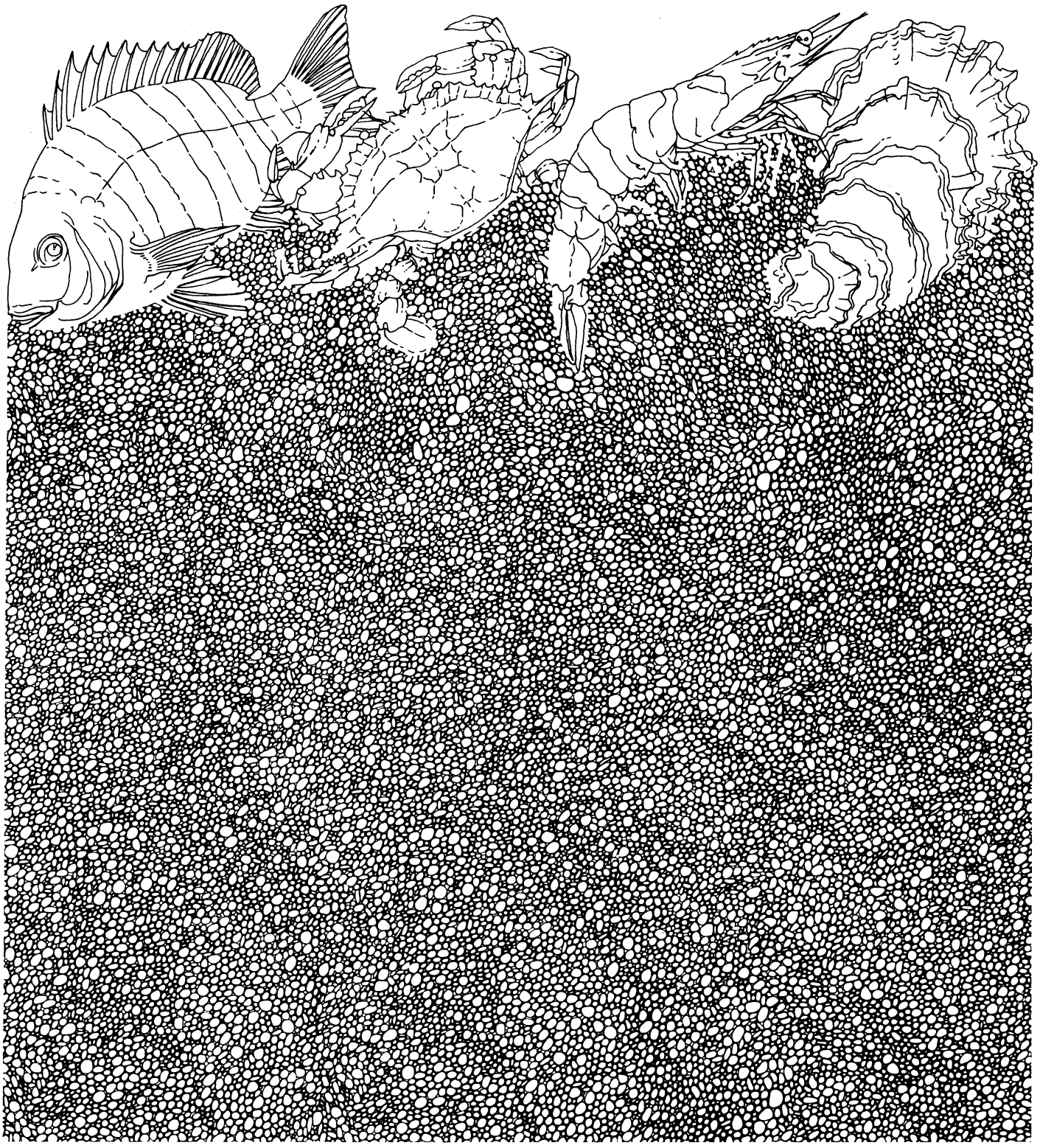

# COMPARISON OF OFFSHORE AND ONSHORE GILL NET CATCHES IN CORPUS CHRISTI BAY

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Texas Parks and Wildlife Department
Coastal Fisheries Branch
4200 Smith School Road
Austin, Texas 78744

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## ABSTRACT

Texas Parks and Wildlife Department conducts a routine fishery-independent monitoring program using gill nets set perpendicularly to and at the shoreline of every bay system. Areas beyond the length of these nets (183 m) are not routinely sampled; catches along shore may not reflect abundance of fishes in offshore areas.

Catch rates of finfish from eight offshore (> 183 m from the shoreline) and eight onshore (one end on a shoreline) gill net samples in the Corpus Christi Bay system during January and February 1981 were compared using one-way analyses of variance. No significant differences in catch rates were found between set types for any species in any mesh size.

## INTRODUCTION

Finfish in Texas bays are an important part of the commercial and recreational fishing industries. Commercial fishermen landed 1.1 million kg of finfish from Texas bays in 1981 (Hamilton and Saul 1984). Recreational finfish landings by weekend sport-boat fishermen in 1980-81 totaled nearly 0.5 million kg (Osburn and Ferguson 1985).

Management of finfish populations within the concept of optimum yield requires estimates of finfish abundance. Indices of relative abundance (catch per unit effort or catch rate) derived from fishery-independent sampling programs are necessary to reduce the biases in optimum yield projections based solely on fishery-dependent sampling methods (McEachron and Green in press). Fishery-independent sampling methods, however, may also be subject to serious biases if the resultant catch rate is not correlated with stock abundance. Changes in the relationship between catch rate and stock size can occur with variations in migration, distribution and behavior of the fish populations (Gulland 1977). Inherent assumptions when comparing indices of relative stock abundance derived from sampling programs are that the unit stock can be delineated for management purposes (Lackey and Hubert 1978) and that the sampled portion of the stock is representative of the targeted unit stock (Cochran 1977).

Texas Parks and Wildlife Department (TPWD) initiated a standardized fishery-independent monitoring program in November 1975 using 183-m gill nets to assess the relative abundance of finfish in Texas bays (McEachron and Green 1985). Current program procedures dictate that all gill nets be set with one end on a shoreline. Catch rate data from these "onshore" sets may not adequately reflect the relative abundance of finfish occurring in bay waters >183 m from a shoreline ("offshore"). Limited data have been collected from offshore gill net samples in Texas bays and have not been compared statistically (Matlock et al. 1978).

The purpose of this study was to compare catch rates of finfish species between gill nets fished simultaneously onshore and offshore in the Corpus Christi Bay system during winter (January-February) to determine if onshore catches adequately reflect offshore finfish abundance.

## MATERIALS AND METHODS

Gill nets were set in the Corpus Christi Bay system during January and February 1981. Gill nets were 183-m long and 1.2-m deep

with separate 46-m sections of 7.6-, 10.2-, 12.7- and 15.2-cm stretched monofilament meshes. Further details of net construction and sampling procedures can be found in Hegen (1982). One overnight onshore (perpendicular to shore with the smallest mesh end on the shore) set was made at four different sites each month. Sample sites were randomly selected from a list of 80 sites (Appendices A and B). One offshore sample was made simultaneously with each onshore sample. The offshore gill net was also set perpendicular to shore with its shoreward end no less than 183 m and no more than 366 m directly offshore from the seaward end of the onshore gill net.

For each gill net set the total fishing time (nearest 0.1 h) was recorded. Each fish landed was identified to species (Hoese and Moore 1977) and capture mesh size. Shallow and deep water depth, water temperature, salinity, turbidity and dissolved oxygen were measured at the time each gill net was set and retrieved as described in Hegen (1982).

The catch rate (number per gill net hour) of each species landed by mesh size was calculated for each gill net sample. One-way analysis of variance ($P = 0.05$)(Sokal and Rohlf 1981) was used to test for differences in catch rates between gill net set types (offshore and onshore) for each species and mesh size (where at least 5 individuals of a species were caught in a mesh size in at least one of the set types). Inequality of variances was detected among samples and was corrected prior to analyses by transforming each catch rate to common logarithms ($\log_{10}(X + 1)$).

## RESULTS

Mean onshore catch rates were similar to mean offshore catch rates. These catch rates were generally less than 0.2 fish/hour (Table 1). No significant differences ($P > 0.05$) in catch rates were found between offshore and onshore gill net sets for any species in any mesh size (Table 2). Gizzard shad was the most abundant species caught in both set types (Appendix C). Ten species were caught in both offshore and onshore gill nets whereas each set type had catches of three species not caught in the other set type.

The deep water depth where each gill net was fished represented virtually the only major hydrographic parameter to vary widely between the offshore and onshore sets (Table 3). Offshore gill net samples were always fished at deeper water depths over some portion of their length.

## DISCUSSION

Within the scope of this study, onshore gill net catch rates appear to adequately reflect offshore finfish abundance. Matlock (1984) found significantly higher mean catches in trammel nets of red drum, black drum, southern flounder and striped mullet but lower catches of gulf menhaden at shoreline versus open-water stations in Texas bays. Although not statistically analyzed, gill net catch rates of fishes have been reported as higher in nearshore areas ( < 190 m from the shore) than in open-water areas (1.2-1.8-m deep) during November through March (Matlock et al. 1978). Onshore gill net catch rates are generally lowest during the winter months (Hegen et al. 1983). This apparently greater abundance of fishes in the peripheral boundaries than in the central deep portions of the bays could be modified during the coldest months (January and February) when some fishes may move to the deeper regions of the bays. However, their availability to capture in gill nets may not be increased due to a temperature-related reduction in swimming activity.

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Table 1. Mean number per hour (± 1SE) of finfish caught in 8 offshore (off) and 8 onshore (on) gill net samples by mesh size in the Corpus Christi Bay system during January and February 1981. Total hours fished: offshore = 125.1 h, onshore = 116.8 h.

| Species | No./h | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 7.6-cm | | 10.2-cm | | 12.7-cm | | 15.2-cm | | All meshes | |
| | Off | On | Off | On | Off | On | Off | On | Off | On |
| **Red drum** (Sciaenops ocellatus) | <.1 ± <.1 | 0.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.1 ± <.1 | 0.1 ± <.1 |
| **Black drum** (Pogonias cromis) | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.1 ± <.1 | 0.1 ± <.1 |
| **Spotted seatrout** (Cynoscion nebulosus) | 0.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.1 ± <.1 | 0.1 ± <.1 |
| **Sand seatrout** (Cynoscion arenarius) | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.0 | <.1 ± <.1 | <.1 ± <.1 | 0.0 | <.1 ± <.1 | 0.1 ± 0.1 |
| **Sheepshead** (Archosargus probatocephalus) | 0.0 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.1 ± 0.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.1 ± 0.1 | 0.1 ± <.1 |
| **Southern flounder** (Paralichthys lethostigma) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 | <.1 ± <.1 | 0.0 | <.1 ± <.1 |
| **Atlantic croaker** (Micropogonias undulatus) | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 |
| **Striped mullet** (Mugil cephalus) | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | <.1 ± <.1 |
| **Finescale menhaden** (Brevoortia gunteri) | 0.1 ± <.1 | 0.0 | <.1 ± <.1 | 0.1 ± <.1 | 0.0 | <.1 ± <.1 | 0.0 | <.1 ± <.1 | 0.1 ± <.1 | 0.1 ± <.1 |
| **Gulf menhaden** (Brevoortia patronus) | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 |
| **Silver perch** (Bairdiella chrysoura) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 |
| **Gizzard shad** (Dorosoma cepedianum) | <.1 ± <.1 | 0.1 ± 0.1 | 0.1 ± <.1 | 0.1 ± 0.1 | <.1 ± <.1 | <.1 ± <.1 | 0.0 | <.1 ± <.1 | 0.1 ± 0.1 | 0.1 ± 0.1 |
| **Pigfish** (Orthopristis chrysoptera) | <.1 ± <.1 | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | <.1 ± <.1 |
| **Pinfish** (Lagodon rhomboides) | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 | 0.0 | <.1 ± <.1 | <.1 ± <.1 |
| **Southern kingfish** (Menticirrhus americanus) | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 |
| **Hardhead catfish** (Arius felis) | 0.0 | 0.0 | 0.0 | <.1 ± <.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | <.1 ± <.1 |
| **All Species** | 0.3 ± <.1 | 0.2 ± 0.1 | 0.1 ± 0.1 | 0.2 ± 0.1 | 0.1 ± 0.1 | 0.4 ± 0.2 | 0.1 ± <.1 | 0.1 ± <.1 | 0.4 ± 0.1 | 0.5 ± 0.1 |

Table 2. Summary of one-way analysis of variance of catch rates ($\log_{10}(X + 1)$) of selected species caught in 8 offshore and 8 onshore gill net samples in the Corpus Christi Bay system during January and February 1981.

| Species | Mesh size (cm) | Source of variation | Mean square (Degrees of freedom) | F |
|---|---|---|---|---|
| **Red drum** | 7.6 | Total | 0.0026 (15) | |
| | | Set type | 0.0017 (1) | 0.63 |
| | | Error | 0.0027 (14) | |
| | 10.2 | Total | 0.0014 (15) | |
| | | Set type | 0.0019 (1) | 1.33 |
| | | Error | 0.0014 (14) | |
| | 12.7 | Total | 0.0018 (15) | |
| | | Set type | 0.0046 (1) | 2.86 |
| | | Error | 0.0016 (14) | |
| | 15.2 | Total | 0.0008 (15) | |
| | | Set type | 0.0008 (1) | 0.99 |
| | | Error | 0.0008 (14) | |
| | All Meshes | Total | 0.0086 (15) | |
| | | Set type | 0.0233 (1) | 3.10 |
| | | Error | 0.0075 (14) | |
| **Black drum** | 7.6 | Total | 0.0024 (15) | |
| | | Set type | 0.0011 (1) | 0.44 |
| | | Error | 0.0025 (14) | |
| | 10.2 | Total | 0.0006 (15) | |
| | | Set type | 0.0008 (1) | 1.42 |
| | | Error | 0.0006 (14) | |

Table 2. (Cont'd.).

| Species | Mesh size (cm) | Source of variation | Mean square (Degrees of freedom) | F |
|---|---|---|---|---|
| **Black drum** (Cont'd.). | 12.7 | Total | 0.0022 (15) | |
| | | Set type | 0.0014 (1) | 0.62 |
| | | Error | 0.0022 (14) | |
| | 15.2 | Total | 0.0033 (15) | |
| | | Set type | .0001 (1) | .01 |
| | | Error | 0.0036 (14) | |
| | All Meshes | Total | 0.0138 (15) | |
| | | Set type | 0.0021 (1) | 0.14 |
| | | Error | 0.0146 (14) | |
| **Spotted seatrout** | 7.6 | Total | 0.0085 (15) | |
| | | Set type | 0.0015 (1) | 0.16 |
| | | Error | 0.0090 (14) | |
| | 10.2 | Total | 0.0011 (15) | |
| | | Set type | .0001 (1) | .01 |
| | | Error | 0.0012 (14) | |
| | All Meshes | Total | 0.0124 (15) | |
| | | Set type | 0.0014 (1) | 0.11 |
| | | Error | 0.0132 (14) | |
| **Sand seatrout** | 7.6 | Total | 0.0048 (15) | |
| | | Set type | 0.0065 (1) | 1.38 |
| | | Error | 0.0047 (14) | |

Table 2. (Cont'd.).

| Species | Mesh size (cm) | Source of variation | Mean square (Degrees of freedom) | F |
|---|---|---|---|---|
| **Sand seatrout** (Cont'd.). | 10.2 | Total | 0.0024 (15) | |
| | | Set type | 0.0030 (1) | 1.29 |
| | | Error | 0.0024 (14) | |
| | 12.7 | Total | 0.0062 (15) | |
| | | Set type | 0.0062 (1) | 1.00 |
| | | Error | 0.0062 (14) | |
| | All Meshes | Total | 0.0148 (15) | |
| | | Set type | 0.0008 (1) | 0.05 |
| | | Error | 0.0158 (14) | |
| **Sheepshead** | 10.2 | Total | 0.0056 (15) | |
| | | Set type | 0.0029 (1) | 0.51 |
| | | Error | 0.0058 (14) | |
| | 12.7 | Total | 0.0123 (15) | |
| | | Set type | 0.0005 (1) | 0.04 |
| | | Error | 0.0131 (14) | |
| | 15.2 | Total | 0.0035 (15) | |
| | | Set type | 0.0016 (1) | 0.44 |
| | | Error | 0.0036 (14) | |
| | All Meshes | Total | 0.0274 (15) | |
| | | Set type | 0.0002 (1) | 0.01 |
| | | Error | 0.0294 (14) | |

Table 2. (Cont'd.).

| Species | Mesh size (cm) | Source of variation | Mean square (Degrees of freedom) | F |
|---|---|---|---|---|
| **Finescale menhaden** | 7.6 | Total | 0.0058 (15) | |
| | | Set type | 0.0158 (1) | 3.09 |
| | | Error | 0.0051 (14) | |
| | 10.2 | Total | 0.0053 (15) | |
| | | Set type | 0.0058 (1) | 1.11 |
| | | Error | 0.0053 (14) | |
| | All Meshes | Total | 0.0097 (15) | |
| | | Set type | 0.0010 (1) | 0.10 |
| | | Error | 0.0103 (14) | |
| **Gizzard shad** | 7.6 | Total | 0.0235 (15) | |
| | | Set type | 0.0026 (1) | 0.11 |
| | | Error | 0.0249 (14) | |
| | 10.2 | Total | 0.0265 (15) | |
| | | Set type | 0.0009 (1) | 0.03 |
| | | Error | 0.0283 (14) | |
| | All Meshes | Total | 0.0545 (15) | |
| | | Set type | 0.0016 (1) | 0.03 |
| | | Error | 0.0583 (14) | |
| **Striped mullet** | All Meshes | Total | 0.0006 (15) | |
| | | Set type | 0.0010 (1) | 1.81 |
| | | Error | 0.0005 (14) | |

Table 2. (Cont'd.).

| Species | Mesh size (cm) | Source of variation | Mean square (Degrees of freedom) | F |
|---|---|---|---|---|
| **Pigfish** | 7.6 | Total | 0.0018 (15) | |
| | | Set type | 0.0017 (1) | 1.00 |
| | | Error | 0.0018 (14) | |
| | All Meshes | Total | 0.0018 (15) | |
| | | Set type | 0.0017 (1) | 1.00 |
| | | Error | 0.0018 (14) | |
| **All species** | 7.6 | Total | 0.0324 (15) | |
| | | Set type | 0.0434 (1) | 1.37 |
| | | Error | 0.0316 (14) | |
| | 10.2 | Total | 0.0283 (15) | |
| | | Set type | 0.0239 (1) | 0.84 |
| | | Error | 0.0286 (14) | |
| | 12.7 | Total | 0.2388 (15) | |
| | | Set type | 0.3401 (1) | 1.47 |
| | | Error | 0.2315 (14) | |
| | 15.2 | Total | 0.0068 (15) | |
| | | Set type | 0.0043 (1) | 0.62 |
| | | Error | 0.0070 (14) | |
| | All Meshes | Total | 0.0536 (15) | |
| | | Set type | 0.0058 (1) | 0.10 |
| | | Error | 0.0571 (14) | |

Table 3. Range of major hydrographic parameters recorded with 8 offshore and 8 onshore gill net samples in the Corpus Christi Bay system during January and February 1981.

| Sample | Shallow Water depth (m) | Deep Water depth (m) | Water temperature (C) | Salinity (ppt) | Turbidity (JTU) | Dissolved oxygen (ppm) |
|---|---|---|---|---|---|---|
| **Initial** | | | | | | |
| Offshore | 0.4- 3.0 | 0.5- 3.0 | 11.5-21.0 | 24.0-32.0 | 24-110 | 5.0-10.0 |
| Onshore | 0.0-0.0 | 0.6-1.8 | 11.5-21.0 | 24.0-32.0 | 24-110 | 5.0-10.0 |
| **Final** | | | | | | |
| Offshore | 0.3- 3.0 | 0.4- 3.0 | 9.5-18.0 | 24.0-32.0 | 24-55 | 5.0-11.0 |
| Onshore | 0.0-0.3 | 0.4-1.8 | 10.0-18.0 | 24.0-32.0 | 24-55 | 5.0-11.0 |

Appendix A: Description of available Corpus Christi Bay system gill net sample sites during January and February 1981.

Table A.1. Description of available Corpus Christi Bay system gill net sample sites during January and February 1981.

| Bay system | Bay | Station number | Latitude | Longitude | Station identification |
|---|---|---|---|---|---|
| Corpus Christi | Nueces | 1 | 27°49'12" | 97°27'45" | 2 miles W of westerly powerlines on S shore |
| | Nueces | 2 | 27°52'52" | 97°20'11" | 2 miles NE of clay pits |
| | Nueces | 3 | 27°52'09" | 97°20'30" | 0.2 mile NW of old Ramada Inn |
| | Nueces | 4 | 27°52'50" | 97°21'28" | 1 mile E of clay pits |
| | Nueces | 5 | 27°52'15" | 97°26'27" | 1 mile W of westerly powerlines on N shore |
| | Nueces | 6 | 27°52'12" | 97°25'05" | 0.5 mile E of westerly powerlines on N shore |
| | Corpus Christi | 7 | 27°51'24" | 97°20'42" | 0.8 mile N of Indian Point pier |
| | Nueces | 8 | 27°53'00" | 97°29'39" | 0.5 mile NW of shallow cove on N shore |
| | Nueces | 9 | 27°51'47" | 97°27'52" | On E shore of first cove to the E of White Point |
| | Nueces | 10 | 27°52'30" | 97°30'40" | 3 miles W and N of river cut |
| | Nueces | 11 | 27°51'10" | 97°30'00" | 0.5 mile W of river cut on S shore |
| | Nueces | 12 | 27°52'00" | 97°29'00" | On W shore of White Point |
| | Nueces | 13[a] | 27°52'28" | 97°22'38" | Just W of clay pits |
| | Nueces | 14 | 27°52'29" | 97°23'38" | 0.2 mile W of easterly powerlines on N shore |
| | Nueces | 15 | 27°50'14" | 97°23'15" | Just SW of the W.R.I.P. canal |
| | Nueces | 16[a] | 27°50'15" | 97°29'23" | Due S of island at Nueces River mouth |
| | Nueces | 17 | 27°49'36" | 97°25'38" | 0.5 mile W of westerly powerlines on S shore |
| | Corpus Christi | 18 | 27°41'34" | 97°11'26" | 0.2 mile S of water exchange pass (W.E.P.) |
| | Corpus Christi | 19 | 27°46'00" | 97°09'53" | Just S of tanks on NE end at Shamrock Island |
| | Corpus Christi | 20 | 27°45'05" | 97°08'49" | 0.2 mile S of sportsmen club cabin |
| | Corpus Christi | 21 | 27°46'35" | 97°07'54" | 0.2 mile NE of Sinclair Cut |
| | Corpus Christi | 22 | 27°45'11" | 97°10'20" | Extreme southern tip of Shamrock Island |

Table A.1. (Cont'd.).

| Bay system | Bay | Station number | Latitude | Longitude | Station identification |
|---|---|---|---|---|---|
| Corpus Christi | Corpus Christi | 23 | 27°50'28" | 97°09'41" | 0.2 mile S of Dagger Point on S shore |
| | Corpus Christi | 24 | 27°43'27" | 97°10'05" | 0.5 mile S of boat cove by Tenneco pumping station |
| | Corpus Christi | 25 | 27°49'53" | 97°10'26" | 0.2 mile N of southern tip of Dagger Island on S shore |
| | Nueces | 26 | 27°51'15" | 97°29'05" | Off N side of spoil island, 0.5 mile N of river cut |
| | Corpus Christi | 27 | 27°42'40" | 97°10'32" | 1 mile N of W.E.P. |
| | Corpus Christi | 28[a] | 27°50'51" | 97°14'09" | Welder Point, just NW of house on bluff |
| | Corpus Christi | 29 | 27°42'22" | 97°17'26" | 0.5 mile NW of N.A.S. bulkheads |
| | Corpus Christi | 30[a] | 27°52'29" | 97°18'14" | 2 miles W of jetties on La Quinta shore |
| | Corpus Christi | 31 | 27°51'58" | 97°19'37" | 2 miles NE of Indian Point Pier |
| | Nueces | 32 | 27°51'30" | 97°21'45" | On spoil area, 0.5 mile NE of Nueces Bay causeway. |
| | Corpus Christi | 33 | 27°49'50" | 97°22'48" | On the beach just SW of Rincon Point |
| | Corpus Christi | 34 | 27°45'54" | 97°22'56" | 1 mile SE of Holiday Inn on Ocean Drive |
| | Corpus Christi | 35 | 27°43'28" | 97°20'40" | 0.8 mile NW of Oso Fishing Pier |
| | Corpus Christi | 36 | 27°52'48" | 97°16'45" | 0.8 mile W of jetties on La Quinta shore |
| | Corpus Christi | 37 | 27°41'42" | 97°14'51" | On N shore of Demit Island |
| | Corpus Christi | 38 | 27°42'51" | 97°19'09" | 0.8 mile SE of Oso Fishing Pier |
| | Corpus Christi | 39 | 27°41'18" | 97°13'17" | N shore of spoil area near ICWW Marker 3 |
| | Corpus Christi | 40 | 27°45'14" | 97°09'29" | 0.2 mile N of Glenn Cove |
| | Corpus Christi | 41 | 27°46'22" | 97°08'49" | 0.5 mile SW at Sinclair Cut, N of tanks |
| | Redfish | 42[a] | 27°50'12" | 97°10'11" | Middle of N shore at Dagger Point |
| | Corpus Christi | 43 | 27°49'40" | 97°10'46" | On S shore of spoil area just SW of Dagger Island |

Table A.1. (Cont'd.).

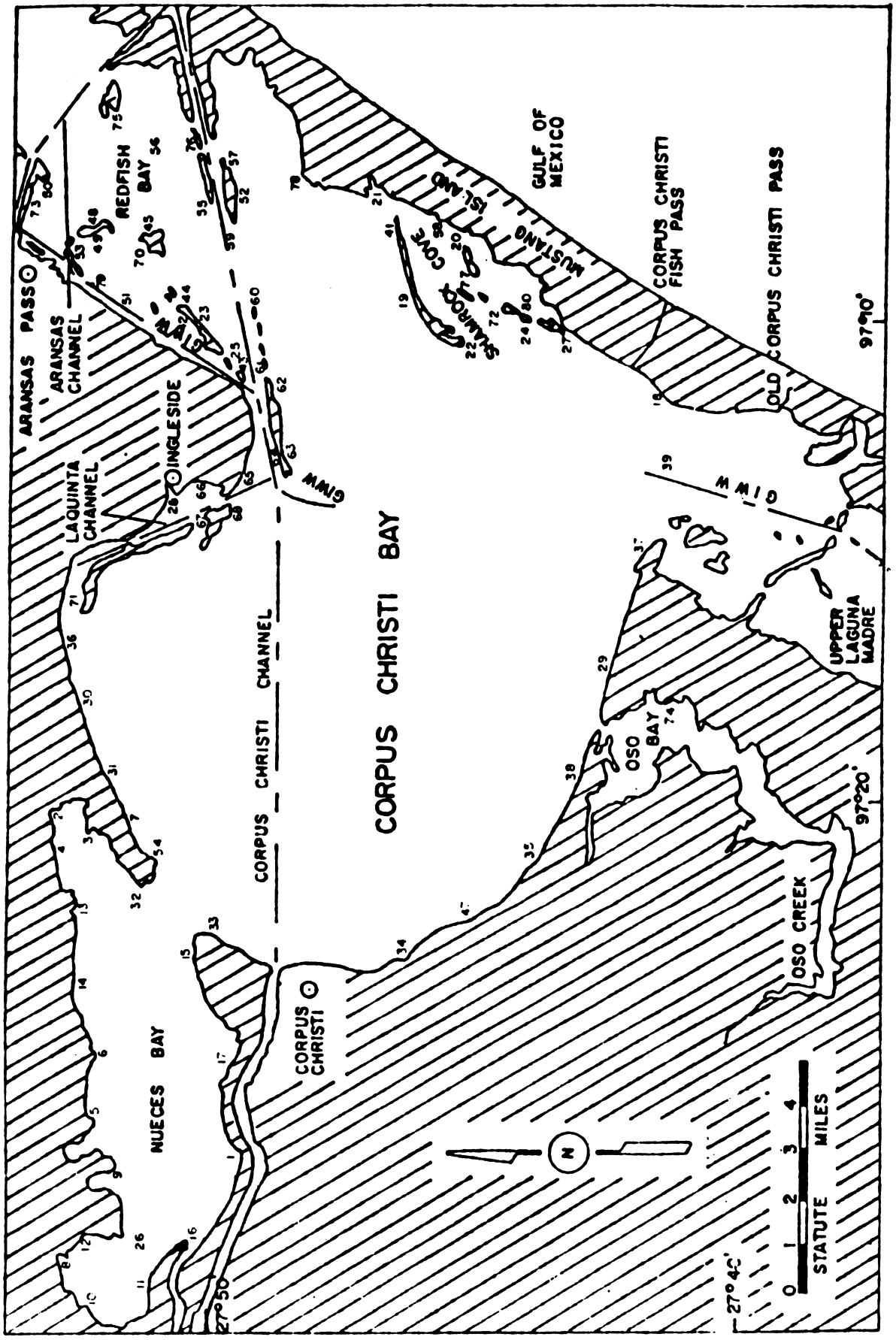
| Bay system | Bay | Station number | Latitude | Longitude | Station identification |
|---|---|---|---|---|---|
| Corpus Christi | Corpus Christi | 44 | 27°50'46" | 97°09'22" | On S shore of spoil area, 0.2 mile NE of Dagger Island |
| | Redfish | 45 | 27°51'03" | 97°08'08" | On SE shore of S. Ransom Island |
| | Corpus Christi | 47 | 27°44'28" | 97°22'06" | 2.25 miles NW of Oso Fishing Pier |
| | Redfish | 48 | 27°52'15" | 97°08'04" | In the middle of E shore of N Ransom Island |
| | Redfish | 49 | 27°52'11" | 97°08'07" | In the middle of W shore of N Ransom Island |
| | Redfish | 50 | 27°53'15" | 97°07'01" | On W shore of Stedman Island |
| | Redfish | 51 | 27°51'25" | 97°09'46" | 0.25 mile E of ICWW Marker 52 on NE side of spoil |
| | Corpus Christi | 52 | 27°49'26" | 97°07'55" | On SW shore of Point of Mustang |
| | Redfish | 53 | 27°52'41" | 97°08'20" | On SW shore of long spoil area just N of N Ransom Island |
| | Corpus Christi | 54 | 27°51'01" | 97°21'34" | 0.25 mile SW of Indian Point Pier |
| | Corpus Christi | 55 | 27°50'08" | 97°07'14" | 0.3 mile NE of CCSC Marker 14 |
| | Redfish | 56 | 27°50'51" | 97°07'21" | 0.8 mile E of S Ransom Island on spil area |
| | Corpus Christi | 57 | 27°49'30" | 97°07'10" | 1 mile E of Pt. of Mustang on S shore |
| | Corpus Christi | 58 | 27°45'21" | 97°08'21" | 0.5 mile SE of green cabin in Shamrock Cove |
| | Corpus Christi | 59 | 27°49'20" | 97°08'56" | 0.2 mile SSW of CCSC Marker 19 on N side of spoil area |
| | Corpus Christi | 60 | 27°49'18" | 97°09'43" | 0.3 mile E of CCSC Marker 25 on N side of spoil area just W of tanks |
| | Corpus Christi | 61 | 27°48'56" | 97°11'15" | On N side of spoil area just S of CCSC Marker 31 |
| | Corpus Christi | 62 | 27°48'45" | 97°11'41" | On S shore, 1.5 miles NE of W tip of chain of CCSC spoil areas |

Table A.1 (Cont'd.).

| Bay system | Bay | Station number | Latitude | Longitude | Station identification |
|---|---|---|---|---|---|
| Corpus Christi | Corpus Christi | 63[a] | 27°48'26" | 97°13'05" | 0.2 mile SE of W tip of chain of CCSC spoil area |
| | Corpus Christi | 64 | 27°48'47" | 97°12'29" | 0.2 mile SE of CCSC Marker 36 |
| | Corpus Christi | 65 | 27°49'28" | 97°13'10" | Just N of La Quinta Channel Marker 6 in front of houses |
| | Corpus Christi | 66 | 27°50'05" | 97°13'21" | Just SW of Ingleside Cove public ramp |
| | Corpus Christi | 67 | 27°49'59" | 97°13'38" | On N side of island just S of La Quinta Channel Marker 8 |
| | Corpus Christi | 68 | 27°48'38" | 97°14'07" | 0.8 mile SE of Ingleside Point |
| | Redfish | 70 | 27°51'22" | 97°08'48" | Off SW tip of island that is 0.5 mile SW of N Ransom Island |
| | Corpus Christi | 71[a] | 27°52'22" | 97°15'42" | Just SW of La Quinta Channel Marker 19 |
| | Corpus Christi | 72 | 27°44'36" | 97°09'38" | Just SW of Arco plant at bay end of Wilson's Cut |
| | Redfish | 73 | 27°53'33" | 97°07'32" | 0.5 mile SE of Conn Brown Harbor Bridge on S shore of spoil area |
| | Oso | 74 | 27°42'25" | 97°18'30" | On spoil just S of Oso Bridge |
| | Redfish | 75 | 27°52'14" | 97°05'59" | At S end of oil well cut, 1.25 miles SE of Fin and Feather Marina |
| | Corpus Christi | 76 | 27°50'24" | 97°06'06" | On N side of spoil area, 0.2 mile N of CCSC Marker 8 |
| | Corpus Christi | 77 | 27°45'34" | 97°08'57" | Pink Shack Cove |
| | Corpus Christi | 78 | 27°49'00" | 97°07'30" | East Flats |
| | Redfish | 79[a] | 27°52'31" | 97°08'48" | 0.2 mile SE of ICWW Marker 44 on S shore of spoil area |
| | Corpus Christi | 80 | 27°44'04" | 97°09'39" | Boat cove |

[a]Site sampled with offshore and onshore gill net.

Appendix B: Map of available Corpus Christi Bay system gill net sample sites during January and February 1981.


ARANSAS PASS
ARANSAS CHANNEL
REDFISH BAY
INGLESIDE
LAQUINTA CHANNEL
CORPUS CHRISTI CHANNEL
CORPUS CHRISTI BAY
NUECES BAY
CORPUS CHRISTI
MI 9
MI 10
GULF OF MEXICO
MUSTANG ISL.
CORPUS CHRISTI FISH PASS
OLD CORPUS CHRISTI PASS
UPPER LAGUNA MADRE
OSO BAY
OSO CREEK
97°10'
97°20'
27°50'
27°40'
N
0 1 2 3 4
STATUTE MILES

Appendix C: Number of finfish caught in offshore and onshore gill net samples.

Table C.1. Number of finfish caught in 8 offshore (off) and 8 onshore (on) gill net samples by mesh size in the Corpus Christi Bay system during January and February 1981. Total hours fished: offshore = 125.1 h, onshore = 116.8 h.

| | No. caught | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 7.6-cm | | 10.2-cm | | 12.7-cm | | 15.2-cm | | All meshes | |
| Species | Off | On | Off | On | Off | On | Off | On | Off | On |
| Red drum | 11 | 17 | 2 | 9 | 6 | 16 | 2 | 6 | 21 | 48 |
| Black drum | 10 | 3 | 2 | 6 | 6 | 11 | 10 | 9 | 28 | 29 |
| Spotted seatrout | 24 | 13 | 5 | 5 | 1 | 3 | 1 | 0 | 31 | 21 |
| Sand seatrout | 17 | 1 | 1 | 10 | 0 | 15 | 1 | 0 | 19 | 26 |
| Sheepshead | 0 | 1 | 15 | 3 | 24 | 14 | 8 | 14 | 47 | 32 |
| Southern flounder | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| Atlantic croaker | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Striped mullet | 4 | 9 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 10 |
| Finescale menhaden | 23 | 0 | 5 | 18 | 0 | 1 | 0 | 1 | 28 | 20 |
| Gulf menhaden | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Silver perch | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Gizzard shad | 19 | 41 | 29 | 43 | 2 | 3 | 0 | 1 | 50 | 88 |
| Pigfish | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 |
| Pinfish | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 2 |
| Southern kingfish | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Hardhead catfish | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| All species | 126 | 86 | 60 | 96 | 39 | 67 | 22 | 32 | 247 | 281 |

PWD-RP-3400-249-3/87