

# SEAMAP Fall 2008 Shrimp/Groundfish Survey Cruise Report

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## Introduction

SEAMAP Fall Shrimp/Groundfish cruises are conducted to provide fishery-independent monitoring and assessment information essential to management of Texas Gulf of Mexico fisheries resources in a coordinated and cost-efficient program. Fishery-independent information is that collected without direct reliance on statistics reported by commercial or recreational fishermen.

## Objectives

1. Conduct a fall trawl survey to collect information on shrimp and groundfish abundance and distribution with standard TPWD 20-ft trawls.
2. Select 80 stations for random sampling. All species are identified, measured, weighed, and counted, and selected species are sexed with their maturity stage recorded according to the Texas SEAMAP Operations Manual.
3. Collect information on environmental parameters (salinity, temperature, dissolved oxygen, wind speed, wind direction, barometric pressure, wave height, water color, and cloud cover) in conjunction with trawl sampling.
4. Code all data according to approved Texas SEAMAP Operations Manual guidelines, and enter data on the Texas SEAMAP data entry system.
5. Submit data to the Gulf States Marine Fisheries Commission.

## Methods

Vessels that participated in the Texas Summer Shrimp/Groundfish Survey were: R.J. Kemp (31), Matagorda Bay (32), Sabine (40), Nueces Bay (67), and San Jacinto (69). All Texas Territorial Seas was sectioned into 1-minute latitude by 1-minute longitude grids. Grids at least 1/3 of which is within the territorial sea equal to or greater than 1.8 m (1 fm) deep and at least 1/3 of which is free from known obstructions, were selected at random by computer programs. Sampling was conducted in 16 grids from each of the five gulf areas (Sabine Pass, Bolivar Pass, Matagorda Pass, Aransas Pass, and Brazos Santiago Pass). Eight trawls samples were collected in each gulf area between the 1<sup>st</sup> and 15<sup>th</sup> of the month and 8 between the 16<sup>th</sup> and the last day of the month. A 20 ft trawl with 1.5 inch stretched mesh was lowered into position at the selected site and towline was set at

a 5:1 cable length water depth ratio. Trawl towing was conducted at or near 3 mph for 10 minutes after lockdown and towed parallel to fathom curve. Direction of first tow was randomly selected. Subsequent tows alternated tow direction. Sample workup and data processing was conducted in accordance with the Texas SEAMAP Operations Manual guidelines.

Environmental data were collected in conjunction with each trawl. Temperature and dissolved oxygen values were measured with either a YSI 6600 meter (Aransas Pass) or a YSI 85 meter (all others) at each trawl station. Three water bottles samples (surface, mid, and bottom) were collected at each station for in lab salinity measurements using a YSI 610DM.

### **Results**

Texas vessels collected 80 Summer Shrimp/Groundfish survey samples in Texas Territorial Seas (between latitudes  $25^{\circ} 59'$  and  $29^{\circ} 41'$  and longitudes  $-93^{\circ} 34'$  and  $-97^{\circ} 10'$ ) (Table 1). Samples were collected between November 3, 2008 and November 20, 2008 (Table 1).

### **Deviations**

There were no significant deviations.

### **Cruise participants:**

Texas Parks and Wildlife Department staff collected samples, processed catch and entered information on data sheets. Cruise report summary completed by Fernando Martinez-Andrade.

Submitted By:

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*Fernando Martinez-Andrade*  
SEAMAP Coordinator

**Table 1. TPWD SEAMAP 2008 Fall Shrimp/Groundfish cruise report summary.**

| STA#             | DATE       | TIME | LAT     | LONG     | STAT | MAX   | DO  |     | SALINITY |      |      | TEMPERATURE |      |      | FIN  | CRUS  | OTHER  | MIN   | BIO    | LENGTH |       |
|------------------|------------|------|---------|----------|------|-------|-----|-----|----------|------|------|-------------|------|------|------|-------|--------|-------|--------|--------|-------|
|                  |            |      |         |          | ZONE | DEPTH | SUR | MID | MAX      | SUR  | MID  | MAX         | SUR  | MID  | MAX  | CATCH | CATCH  | CATCH | FISHED | COUNT  | COUNT |
| 31 R.J. KEMP     |            |      |         |          |      |       |     |     |          |      |      |             |      |      |      |       |        |       |        |        |       |
| 31001            | 11/03/2008 | 747  | 2612.37 | -9706.48 | 21   | 17.4  | 6.4 | 6.5 | 5.1      | 30.4 | 30.5 | 32.7        | 24.3 | 24.4 | 25.1 | 0.000 | 0.085  | 0.198 | 10     | 4      | 14    |
| 31002            | 11/03/2008 | 827  | 2615.40 | -9704.68 | 21   | 19.8  | 6.3 | 6.5 | 5.2      | 30.0 | 30.0 | 32.8        | 24.0 | 24.1 | 25.6 | 0.049 | 0.585  | 0.752 | 10     | 7      | 33    |
| 31003            | 11/03/2008 | 910  | 2618.23 | -9701.43 | 21   | 26.5  | 6.6 | 6.6 | 4.6      | 30.2 | 30.1 | 32.8        | 24.2 | 24.2 | 25.4 | 0.098 | 0.042  | 2.412 | 10     | 13     | 100   |
| 31004            | 11/03/2008 | 996  | 2621.82 | -9704.55 | 21   | 20.4  | 6.4 | 6.5 | 5.5      | 30.2 | 30.2 | 32.0        | 24.3 | 24.3 | 24.7 | 0.000 | 0.117  | 1.256 | 10     | 12     | 43    |
| 31005            | 11/03/2008 | 1025 | 2621.27 | -9705.50 | 21   | 19.2  | 6.5 | 6.4 | 5.6      | 31.2 | 30.2 | 32.2        | 24.3 | 24.3 | 24.8 | 0.000 | 0.000  | 1.012 | 10     | 6      | 25    |
| 31006            | 11/03/2008 | 1107 | 2619.77 | -9709.53 | 21   | 16.2  | 6.4 | 6.3 | 5.3      | 30.1 | 30.7 | 32.1        | 24.5 | 24.5 | 24.9 | 0.004 | 0.001  | 0.000 | 10     | 2      | 3     |
| 31007            | 11/03/2008 | 1138 | 2618.37 | -9710.57 | 21   | 12.8  | 6.3 | 5.6 | 5.3      | 30.3 | 31.9 | 32.0        | 24.9 | 25.0 | 24.9 | 0.000 | 0.055  | 2.026 | 10     | 9      | 36    |
| 31008            | 11/03/2008 | 1218 | 2616.73 | -9707.52 | 21   | 16.8  | 6.9 | 6.1 | 5.5      | 30.5 | 30.5 | 32.3        | 24.8 | 24.5 | 25.0 | 0.013 | 0.007  | 0.680 | 10     | 7      | 32    |
| 31009            | 11/18/2008 | 792  | 2601.10 | -9708.48 | 21   | 7.6   | 6.7 | 6.8 | 6.8      | 30.5 | 30.4 | 30.4        | 20.6 | 20.6 | 20.5 | 0.000 | 3.560  | 0.060 | 10     | 6      | 6     |
| 31010            | 11/18/2008 | 820  | 2559.72 | -9708.47 | 21   | 7.6   | 6.7 | 6.6 | 6.5      | 30.7 | 30.7 | 30.8        | 20.9 | 20.9 | 20.9 | 0.224 | 0.964  | 0.048 | 10     | 6      | 7     |
| 31011            | 11/18/2008 | 927  | 2603.27 | -9659.48 | 21   | 26.6  | 6.4 | 6.2 | 5.6      | 31.4 | 31.4 | 32.2        | 22.9 | 22.9 | 23.7 | 0.034 | 0.016  | 1.711 | 10     | 12     | 59    |
| 31012            | 11/18/2008 | 1006 | 2605.75 | -9701.45 | 21   | 23.8  | 6.2 | 6.3 | 5.1      | 31.4 | 31.4 | 32.8        | 22.8 | 22.8 | 23.7 | 0.153 | 0.311  | 0.614 | 10     | 10     | 33    |
| 31013            | 11/18/2008 | 1093 | 2606.22 | -9706.50 | 21   | 17.7  | 6.4 | 6.6 | 6.3      | 31.2 | 31.2 | 31.4        | 22.3 | 22.3 | 22.4 | 0.000 | 0.071  | 0.196 | 10     | 6      | 22    |
| 31014            | 11/18/2008 | 1191 | 2612.72 | -9709.47 | 21   | 11.9  | 6.9 | 6.7 | 6.2      | 30.4 | 30.3 | 31.7        | 21.6 | 21.6 | 22.0 | 0.000 | 0.578  | 0.000 | 10     | 4      | 4     |
| 31015            | 11/18/2008 | 1242 | 2606.17 | -9708.40 | 21   | 13.7  | 6.7 | 6.9 | 6.5      | 30.8 | 30.9 | 30.6        | 21.9 | 21.9 | 22.1 | 0.000 | 1.597  | 0.007 | 10     | 7      | 8     |
| 31016            | 11/18/2008 | 1305 | 2605.68 | -9708.47 | 21   | 10.4  | 6.9 | 6.9 | 6.9      | 30.6 | 30.8 | 30.8        | 21.8 | 21.8 | 21.8 | 0.009 | 0.180  | 0.117 | 10     | 8      | 20    |
| 32 MATAGORDA BAY |            |      |         |          |      |       |     |     |          |      |      |             |      |      |      |       |        |       |        |        |       |
| 32001            | 11/03/2008 | 936  | 2825.47 | -9616.57 | 19   | 9.4   | 6.7 | 6.8 | 5.5      | 27.9 | 27.6 | 30.0        | 22.8 | 22.8 | 23.3 | 0.001 | 0.015  | 0.305 | 10     | 7      | 22    |
| 32002            | 11/03/2008 | 1016 | 2823.40 | -9615.50 | 19   | 13.7  | 6.5 | 5.6 | 5.9      | 28.8 | 30.6 | 31.3        | 22.6 | 23.0 | 23.4 | 0.002 | 0.454  | 1.796 | 10     | 14     | 85    |
| 32003            | 11/03/2008 | 1108 | 2824.60 | -9611.60 | 19   | 14.6  | 6.1 | 6.4 | 6.3      | 30.9 | 31.2 | 31.4        | 23.1 | 23.1 | 23.0 | 0.082 | 0.220  | 1.977 | 10     | 17     | 75    |
| 32004            | 11/03/2008 | 1190 | 2825.50 | -9609.52 | 19   | 14.3  | 6.7 | 6.3 | 6.1      | 31.0 | 31.2 | 31.3        | 22.9 | 23.0 | 23.0 | 0.021 | 0.542  | 2.463 | 10     | 15     | 71    |
| 32005            | 11/03/2008 | 1221 | 2826.55 | -9610.60 | 19   | 13.1  | 6.5 | 6.6 | 6.5      | 30.9 | 31.0 | 31.3        | 23.0 | 22.9 | 23.0 | 0.002 | 0.513  | 0.337 | 10     | 9      | 39    |
| 32006            | 11/03/2008 | 1310 | 2830.55 | -9608.43 | 19   | 8.2   | 6.9 | 6.7 | 5.9      | 27.6 | 28.8 | 29.5        | 23.1 | 23.0 | 23.2 | 0.000 | 27.088 | 1.121 | 10     | 11     | 77    |
| 32007            | 11/03/2008 | 1433 | 2824.52 | -9604.70 | 19   | 17.9  | 6.6 | 6.6 | 6.5      | 30.8 | 31.0 | 31.1        | 23.1 | 22.9 | 22.9 | 0.112 | 0.291  | 5.618 | 10     | 20     | 149   |
| 32008            | 11/03/2008 | 1539 | 2820.55 | -9611.50 | 19   | 18.5  | 6.3 | 6.4 | 5.6      | 31.9 | 33.6 | 33.8        | 23.6 | 23.8 | 23.8 | 0.078 | 0.758  | 6.225 | 10     | 17     | 91    |
| 32009            | 11/20/2008 | 713  | 2820.38 | -9620.42 | 19   | 12.1  | 7.3 | 6.6 | 5.2      | 30.3 | 31.0 | 33.2        | 20.1 | 20.3 | 21.4 | 0.062 | 2.896  | 0.713 | 10     | 24     | 102   |
| 32010            | 11/20/2008 | 803  | 2818.52 | -9626.33 | 19   | 5.1   | 7.3 | 7.3 | 6.3      | 30.2 | 30.2 | 31.0        | 19.9 | 19.8 | 20.5 | 0.163 | 1.140  | 0.368 | 10     | 16     | 68    |
| 32011            | 11/20/2008 | 892  | 2813.43 | -9626.57 | 19   | 16.4  | 7.1 | 6.1 | 5.5      | 30.9 | 33.2 | 34.1        | 20.7 | 21.5 | 22.0 | 0.008 | 0.227  | 1.409 | 10     | 14     | 98    |
| 32012            | 11/20/2008 | 936  | 2812.33 | -9622.30 | 19   | 21.3  | 7.3 | 6.7 | 5.9      | 30.7 | 33.0 | 34.6        | 20.5 | 21.2 | 22.3 | 0.001 | 0.323  | 4.778 | 10     | 15     | 92    |
| 32013            | 11/20/2008 | 1020 | 2813.35 | -9619.48 | 19   | 21.6  | 7.3 | 6.9 | 6.2      | 30.7 | 32.7 | 34.1        | 20.5 | 21.1 | 22.2 | 0.032 | 0.049  | 0.602 | 10     | 15     | 75    |
| 32014            | 11/20/2008 | 1103 | 2816.57 | -9617.33 | 19   | 19.8  | 7.1 | 6.3 | 5.9      | 30.5 | 33.5 | 34.5        | 20.5 | 21.5 | 22.0 | 0.030 | 1.054  | 0.361 | 10     | 13     | 44    |
| 32015            | 11/20/2008 | 1139 | 2817.47 | -9619.67 | 19   | 17.9  | 7.5 | 6.2 | 5.7      | 30.5 | 33.0 | 34.0        | 20.7 | 21.7 | 21.8 | 0.024 | 0.123  | 0.348 | 10     | 17     | 66    |
| 32016            | 11/20/2008 | 1231 | 2819.58 | -9613.42 | 19   | 18.5  | 7.3 | 6.2 | 5.5      | 30.7 | 32.8 | 34.1        | 20.4 | 21.4 | 21.8 | 0.015 | 1.731  | 0.325 | 10     | 14     | 64    |

**Table 1. (cont.)**

| STA#      | DATE       | TIME | LAT     | LONG     | STAT | MAX   | DO  |     |     | SALINITY |      |      | TEMPERATURE |      |      | FIN   | CRUS   | OTHER | MIN    | BIO   | LENGTH |
|-----------|------------|------|---------|----------|------|-------|-----|-----|-----|----------|------|------|-------------|------|------|-------|--------|-------|--------|-------|--------|
|           |            |      |         |          | ZONE | DEPTH | SUR | MID | MAX | SUR      | MID  | MAX  | SUR         | MID  | MAX  | CATCH | CATCH  | CATCH | FISHED | COUNT | COUNT  |
| 40 SABINE |            |      |         |          |      |       |     |     |     |          |      |      |             |      |      |       |        |       |        |       |        |
| 40001     | 11/13/2008 | 801  | 2936.37 | -9346.12 | 17   | 9.4   | 6.7 | 6.6 | 6.4 | 28.1     | 28.7 | 29.5 | 20.2        | 20.5 | 20.7 | 0.280 | 0.636  | 0.916 | 10     | 16    | 128    |
| 40002     | 11/13/2008 | 849  | 2932.38 | -9349.80 | 17   | 11.6  | 6.3 | 6.3 | 5.9 | 29.5     | 29.6 | 29.9 | 20.7        | 20.8 | 21.1 | 0.131 | 10.080 | 0.982 | 10     | 8     | 43     |
| 40003     | 11/13/2008 | 990  | 2936.37 | -9352.27 | 17   | 6.1   | 6.8 | 6.4 | 6.2 | 24.5     | 25.3 | 26.3 | 20.0        | 20.2 | 20.2 | 0.780 | 0.287  | 0.714 | 10     | 18    | 147    |
| 40004     | 11/13/2008 | 1035 | 2937.35 | -9355.72 | 17   | 5.5   | 6.2 | 6.1 | 5.6 | 26.7     | 26.7 | 27.3 | 20.1        | 20.2 | 20.4 | 0.864 | 1.861  | 1.424 | 10     | 15    | 150    |
| 40005     | 11/13/2008 | 1125 | 2939.45 | -9358.08 | 17   | 4.6   | 6.3 | 6.2 | 6.1 | 27.1     | 27.2 | 27.1 | 20.2        | 20.3 | 20.3 | 0.229 | 0.437  | 0.081 | 10     | 9     | 45     |
| 40006     | 11/13/2008 | 1206 | 2936.62 | -9358.83 | 17   | 6.7   | 6.5 | 6.4 | 6.2 | 26.6     | 26.6 | 26.6 | 20.1        | 20.1 | 20.2 | 0.430 | 15.460 | 0.467 | 10     | 11    | 76     |
| 40007     | 11/13/2008 | 1246 | 2936.63 | -9401.07 | 17   | 7.3   | 6.3 | 6.2 | 6.2 | 26.7     | 26.7 | 26.6 | 20.1        | 20.1 | 20.1 | 1.288 | 10.150 | 0.195 | 10     | 12    | 108    |
| 40008     | 11/13/2008 | 1324 | 2937.48 | -9402.80 | 17   | 7.0   | 6.6 | 6.4 | 6.3 | 26.5     | 26.5 | 26.5 | 20.0        | 20.0 | 20.1 | 0.709 | 16.991 | 0.141 | 10     | 10    | 86     |
| 40009     | 11/17/2008 | 797  | 2937.38 | -9347.70 | 17   | 7.9   | 8.3 | 7.9 | 7.6 | 25.6     | 26.4 | 28.3 | 17.0        | 17.8 | 18.6 | 0.038 | 2.927  | 0.620 | 10     | 20    | 53     |
| 40010     | 11/17/2008 | 839  | 2937.52 | -9346.22 | 17   | 8.5   | 7.7 | 7.2 | 6.8 | 25.8     | 28.1 | 28.6 | 17.4        | 18.9 | 19.0 | 0.136 | 0.316  | 0.390 | 10     | 14    | 45     |
| 40011     | 11/17/2008 | 930  | 2941.55 | -9346.82 | 17   | 4.9   | 7.3 | 6.7 | 6.9 | 26.8     | 27.9 | 26.9 | 17.2        | 18.9 | 19.2 | 0.038 | 0.390  | 0.293 | 10     | 17    | 42     |
| 40012     | 11/17/2008 | 998  | 2941.45 | -9345.10 | 17   | 5.8   | 7.5 | 7.7 | 7.2 | 26.9     | 27.1 | 27.9 | 17.5        | 18.1 | 18.7 | 0.073 | 0.295  | 0.650 | 10     | 14    | 53     |
| 40013     | 11/17/2008 | 1036 | 2941.35 | -9341.78 | 17   | 6.7   | 8.2 | 7.5 | 8.2 | 26.9     | 27.8 | 27.7 | 17.8        | 18.8 | 18.9 | 0.014 | 0.412  | 0.472 | 10     | 11    | 21     |
| 40014     | 11/17/2008 | 1128 | 2940.57 | -9334.20 | 17   | 8.2   | 8.0 | 7.2 | 7.1 | 26.3     | 27.8 | 28.4 | 17.8        | 17.7 | 19.0 | 0.044 | 5.283  | 0.664 | 10     | 15    | 46     |
| 40015     | 11/17/2008 | 1203 | 2939.57 | -9334.80 | 17   | 8.8   | 8.5 | 7.6 | 7.1 | 26.5     | 28.6 | 28.0 | 17.7        | 18.9 | 19.2 | 0.000 | 0.139  | 6.110 | 10     | 10    | 24     |
| 40016     | 11/17/2008 | 1415 | 2936.45 | -9341.15 | 17   | 10.1  | 8.9 | 7.5 | 7.2 | 27.4     | 28.4 | 30.7 | 19.2        | 19.3 | 19.6 | 0.003 | 0.149  | 0.336 | 10     | 12    | 60     |
| 67 NUECES |            |      |         |          |      |       |     |     |     |          |      |      |             |      |      |       |        |       |        |       |        |
| 67001     | 11/08/2008 | 800  | 2750.80 | -9702.05 | 20   | 5.8   | 5.8 | 5.7 | 5.5 | 28.5     | 28.5 | 28.6 | 22.7        | 22.7 | 22.2 | 0.000 | 0.082  | 1.949 | 10     | 11    | 59     |
| 67002     | 11/08/2008 | 915  | 2742.07 | -9707.82 | 20   | 10.1  | 5.7 | 5.8 | 5.7 | 28.5     | 28.7 | 28.8 | 22.8        | 22.8 | 22.9 | 0.000 | 6.706  | 1.010 | 10     | 12    | 60     |
| 67003     | 11/08/2008 | 1003 | 2743.43 | -9704.77 | 20   | 12.8  | 5.7 | 5.9 | 5.6 | 28.3     | 28.3 | 28.7 | 23.0        | 22.9 | 23.0 | 0.018 | 1.139  | 0.931 | 10     | 24    | 134    |
| 67004     | 11/08/2008 | 1038 | 2742.32 | -9703.37 | 20   | 15.5  | 5.6 | 5.8 | 5.6 | 28.5     | 28.6 | 29.1 | 23.2        | 23.2 | 23.3 | 0.035 | 15.450 | 1.302 | 10     | 19    | 67     |
| 67005     | 11/08/2008 | 1121 | 2740.63 | -9702.72 | 20   | 17.4  | 5.7 | 5.9 | 4.3 | 28.6     | 29.1 | 31.2 | 23.0        | 23.2 | 23.7 | 0.110 | 0.427  | 3.419 | 10     | 21    | 100    |
| 67006     | 11/08/2008 | 1223 | 2745.32 | -9659.43 | 20   | 17.1  | 5.8 | 6.0 | 5.5 | 28.4     | 28.5 | 29.6 | 23.1        | 23.0 | 23.3 | 0.002 | 5.771  | 0.850 | 10     | 15    | 46     |
| 67007     | 11/08/2008 | 1312 | 2745.60 | -9655.98 | 20   | 20.4  | 6.0 | 5.7 | 4.8 | 29.0     | 30.0 | 31.3 | 23.1        | 23.2 | 23.7 | 0.040 | 0.415  | 2.301 | 10     | 28    | 115    |
| 67008     | 11/08/2008 | 1393 | 2747.18 | -9655.48 | 20   | 19.8  | 7.3 | 9.2 | 8.8 | 28.9     | 30.3 | 31.2 | 23.1        | 23.2 | 23.6 | 0.010 | 13.257 | 2.862 | 10     | 16    | 93     |
| 67009     | 11/17/2008 | 825  | 2751.13 | -9701.47 | 20   | 9.3   | 5.8 | 6.0 | 5.9 | 29.4     | 29.5 | 29.6 | 20.5        | 20.5 | 20.1 | 0.015 | 14.891 | 0.331 | 10     | 11    | 67     |
| 67010     | 11/17/2008 | 917  | 2754.82 | -9659.03 | 20   | 6.9   | 5.9 | 6.2 | 6.1 | 29.5     | 29.5 | 29.5 | 20.3        | 20.2 | 20.0 | 0.018 | 2.846  | 0.334 | 10     | 12    | 66     |
| 67011     | 11/17/2008 | 945  | 2754.32 | -9658.42 | 20   | 9.8   | 5.9 | 6.1 | 6.0 | 29.5     | 29.5 | 29.5 | 20.2        | 20.2 | 20.1 | 0.000 | 12.926 | 0.250 | 10     | 8     | 43     |
| 67012     | 11/17/2008 | 1026 | 2756.88 | -9656.32 | 20   | 9.8   | 5.9 | 6.1 | 6.1 | 29.4     | 29.4 | 29.4 | 20.4        | 20.3 | 20.2 | 0.000 | 0.232  | 0.328 | 10     | 6     | 46     |
| 67013     | 11/17/2008 | 1102 | 2758.13 | -9655.67 | 20   | 8.7   | 6.0 | 6.2 | 6.1 | 29.4     | 29.4 | 29.4 | 20.5        | 20.3 | 20.2 | 0.000 | 0.413  | 0.259 | 10     | 8     | 48     |
| 67014     | 11/17/2008 | 1130 | 2757.68 | -9654.53 | 20   | 11.1  | 6.1 | 6.1 | 5.6 | 29.4     | 29.4 | 29.3 | 20.4        | 20.3 | 20.6 | 0.008 | 0.289  | 0.591 | 10     | 14    | 36     |
| 67015     | 11/17/2008 | 1222 | 2754.58 | -9652.57 | 20   | 16.2  | 6.1 | 5.9 | 5.5 | 30.1     | 30.6 | 31.6 | 20.8        | 20.6 | 21.2 | 0.000 | 12.931 | 0.250 | 10     | 13    | 64     |
| 67016     | 11/17/2008 | 1310 | 2752.78 | -9657.42 | 20   | 12.0  | 5.7 | 6.0 | 5.7 | 29.6     | 29.8 | 30.4 | 21.2        | 20.5 | 21.0 | 0.000 | 2.767  | 0.043 | 10     | 9     | 25     |

**Table 1. (cont.)**

| STA#           | DATE       | TIME | LAT     | LONG     | STAT | MAX   | DO  |     | SALINITY |      |      | TEMPERATURE |      |      | FIN  | CRUS  | OTHER  | MIN   | BIO    | LENGTH |       |
|----------------|------------|------|---------|----------|------|-------|-----|-----|----------|------|------|-------------|------|------|------|-------|--------|-------|--------|--------|-------|
|                |            |      |         |          | ZONE | DEPTH | SUR | MID | MAX      | SUR  | MID  | MAX         | SUR  | MID  | MAX  | CATCH | CATCH  | CATCH | FISHED | COUNT  | COUNT |
| 69 SAN JACINTO |            |      |         |          |      |       |     |     |          |      |      |             |      |      |      |       |        |       |        |        |       |
| 69001          | 11/08/2008 | 923  | 2918.65 | -9439.17 | 18   | 11.0  | 6.9 | 6.8 | 6.3      | 27.1 | 27.6 | 28.2        | 21.4 | 21.5 | 21.7 | 0.020 | 0.384  | 1.777 | 10     | 8      | 59    |
| 69002          | 11/08/2008 | 1000 | 2917.10 | -9438.73 | 18   | 11.0  | 6.6 | 6.8 | 6.6      | 28.0 | 28.2 | 28.8        | 21.5 | 21.5 | 21.9 | 0.000 | 38.000 | 0.092 | 10     | 5      | 7     |
| 69003          | 11/08/2008 | 1093 | 2918.73 | -9435.32 | 18   | 13.0  | 6.8 | 6.5 | 6.1      | 28.8 | 29.1 | 29.7        | 21.7 | 21.8 | 22.2 | 0.129 | 0.133  | 2.046 | 10     | 20     | 127   |
| 69004          | 11/08/2008 | 1129 | 2917.20 | -9436.67 | 18   | 14.0  | 6.8 | 6.7 | 6.5      | 28.5 | 29.0 | 29.2        | 21.8 | 21.7 | 21.8 | 0.127 | 0.586  | 1.614 | 10     | 18     | 110   |
| 69005          | 11/08/2008 | 1206 | 2915.78 | -9438.30 | 18   | 13.0  | 6.7 | 6.4 | 5.7      | 28.4 | 28.9 | 30.8        | 21.9 | 21.9 | 22.6 | 0.004 | 0.126  | 0.754 | 10     | 11     | 39    |
| 69006          | 11/08/2008 | 1299 | 2916.42 | -9442.63 | 18   | 9.0   | 7.0 | 6.1 | 6.2      | 26.7 | 27.8 | 28.2        | 22.0 | 21.9 | 21.9 | 0.060 | 0.041  | 0.066 | 10     | 11     | 17    |
| 69007          | 11/08/2008 | 1395 | 2912.78 | -9443.38 | 18   | 13.5  | 7.6 | 6.4 | 5.1      | 27.2 | 28.7 | 31.5        | 22.0 | 21.9 | 22.8 | 0.021 | 0.167  | 0.301 | 10     | 14     | 55    |
| 69008          | 11/08/2008 | 1491 | 2912.43 | -9449.88 | 18   | 11.0  | 7.8 | 6.7 | 6.4      | 26.7 | 27.3 | 27.6        | 22.0 | 21.5 | 21.8 | 0.007 | 0.105  | 0.245 | 10     | 9      | 39    |
| 69009          | 11/19/2008 | 841  | 2920.88 | -9439.28 | 18   | 10.0  | 8.7 | 8.8 | 8.6      | 28.3 | 28.3 | 28.6        | 18.7 | 18.7 | 19.0 | 0.050 | 2.626  | 0.191 | 10     | 14     | 51    |
| 69010          | 11/19/2008 | 914  | 2921.13 | -9437.83 | 18   | 10.0  | 8.9 | 8.8 | 8.1      | 28.3 | 28.3 | 28.8        | 18.7 | 18.8 | 19.4 | 0.037 | 10.022 | 1.608 | 10     | 15     | 60    |
| 69011          | 11/19/2008 | 994  | 2921.68 | -9436.48 | 18   | 10.0  | 8.6 | 8.8 | 8.6      | 28.5 | 28.5 | 28.5        | 18.9 | 18.9 | 19.0 | 0.055 | 10.539 | 1.242 | 10     | 18     | 64    |
| 69012          | 11/19/2008 | 1037 | 2922.15 | -9433.88 | 18   | 11.0  | 8.8 | 8.6 | 6.8      | 28.6 | 28.5 | 30.8        | 19.1 | 19.0 | 20.8 | 0.000 | 9.089  | 2.445 | 10     | 10     | 54    |
| 69013          | 11/19/2008 | 1111 | 2921.82 | -9433.25 | 18   | 11.5  | 8.6 | 8.7 | 6.9      | 28.5 | 28.5 | 30.8        | 19.1 | 19.0 | 20.9 | 0.032 | 2.548  | 1.230 | 10     | 17     | 75    |
| 69014          | 11/19/2008 | 1200 | 2921.10 | -9429.92 | 18   | 12.5  | 8.6 | 8.8 | 8.8      | 29.2 | 29.2 | 29.3        | 19.3 | 18.8 | 19.1 | 0.030 | 0.151  | 0.957 | 10     | 12     | 63    |
| 69015          | 11/19/2008 | 1242 | 2924.98 | -9431.28 | 18   | 10.0  | 8.7 | 8.8 | 8.6      | 29.2 | 29.2 | 29.2        | 19.3 | 19.2 | 19.2 | 0.023 | 0.238  | 1.045 | 10     | 15     | 77    |
| 69016          | 11/19/2008 | 1317 | 2926.37 | -9433.93 | 18   | 8.0   | 8.8 | 8.8 | 8.4      | 28.4 | 28.9 | 28.9        | 19.4 | 19.0 | 19.1 | 0.050 | 0.152  | 0.206 | 10     | 15     | 30    |