

Florida SEAMAP Summer 2012 Survey Cruise Report (6/6/12 – 6/20/12 & 6/28/12 – 7/5/12)
Cruise Number 171203 using the R/V Tommy Munro

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Introduction

Florida shrimp and groundfish trawl surveys are conducted to provide fisheries-independent data on the distribution and abundance of fishes and macroinvertebrates in the eastern Gulf of Mexico as part of the coordinated and cost-efficient SEAMAP program. Fisheries-independent data, which are collected without the direct reliance on information provided by commercial and recreational fishers, are essential to the assessment and management of fisheries resources in Florida and the nearshore Gulf of Mexico. Data collected by these surveys will be used to improve existing single-species assessments for managed species as well as further develop an ecosystem-based approach to managing fisheries resources in the eastern Gulf of Mexico.

The long-term goal of the Florida SEAMAP trawl program is to collect a full complement of seasonal trawl samples in the eastern Gulf of Mexico encompassing NMFS statistical zones 3 – 10. Before fully implementing the Florida SEAMAP trawl program in 2010, two years of exploratory surveys were conducted to validate the feasibility of sampling these zones as well as the most appropriate season (summer or fall) within which to conduct trawl surveys. Based on a preliminary examination of data collected in 2008 and 2009, it was decided that from 2010 onward the Florida SEAMAP trawl survey will occur in summer. Although trawling in fall was logistically feasible, overall catch and species diversity was greatest in summer, and so summer surveys will likely provide the most comprehensive data set. Fall catch rates were higher for select taxa (i.e., red snapper), and so the implementation of a recurring fall Florida SEAMAP trawl survey is recommended should additional funds become available.

Objectives

1. Conduct a trawl survey to collect information on shrimp and groundfish abundance/distribution with standard SEAMAP 42-ft trawls.
2. Select sampling stations from NMFS-generated universe of known bathymetric data.
3. Identify, weigh, count and measure all species according to protocols outlined in the NMFS SEAMAP Operations Manual.

4. Collect information on environmental parameters (salinity, temperature, dissolved oxygen, wind speed and direction, wave height, precipitation) in conjunction with trawl sampling.
5. Code all data according to approved NMFS SEAMAP Operations Manual guidelines, and enter data on the NMFS SEAMAP data entry system.
6. Submit data to the Gulf States Marine Fisheries Commission/NMFS Data Manager.

Methods

Beginning in 2010, a new survey design was implemented for the Gulf-wide SEAMAP trawl survey. Overall sampling effort was allocated proportionally among NMFS statistical reporting zones based on proportional availability of sampling habitat (5 – 60 fathoms). Within each NMFS zone, specific sampling sites were chosen following a simple random survey design.

At each sampling station, trawl samples were collected using standard 42-foot SEAMAP trawls (1.58 inch stretched mesh towed at a 5:1 cable length to water depth ratio). At sites where the bottom composition was unknown, an exploratory survey of the bottom using the fathometer on the R/V Tommy Munro was conducted prior to deploying the trawl. Trawls were towed at a speed of 3 knots for a standard duration of 30 minutes. Sample workup and data processing were conducted in accordance with the SEAMAP Operational Manual guidelines. In addition, specimens were retained to validate field identifications and provide biological material for various life-history studies (i.e., age and growth, reproduction, diet, mercury concentration). Environmental data (temperature, salinity, pH, and dissolved oxygen) were measured in association with each trawl event using a CTD or YSI.

Results

During the summer 2012 survey, Florida sampled a total of 162 stations, which included 156 stations with reportable catch and 6 stations with zero catch due to gear damage. Total catch weight for the trip was 9,533 kg. Individual trawl catch weights ranged from 0.1 kg to 616 kg. Over 75,000 animals were collected, including 1,646 pink shrimp, 6 brown shrimp, 25 red snapper, and 29 red lionfish. The three most abundant species collected were pinfish (n=1,543; 41% occurrence), tomtates (n=5,009; 73% occurrence), and arrow squid (n=4,139; 78% occurrence). In addition to following standard SEAMAP sampling protocols, we collected ancillary material for various life history studies (to be processed at the Fish and Wildlife Research Institute). Otoliths were removed from 806 managed fishes for ageing analyses, including 165 lutjanids and 88 serranids. In addition, 433 spines were removed from managed fishes for alternative aging techniques. Gonads were removed from 55 fish for reproductive staging and 113 fin clip or tissue samples were taken for genetic analysis. Tissue samples were collected from 1,738 fish for mercury analyses and 1,803 stomachs were removed for dietary analyses from a wide variety of managed and non-managed species. In addition to the various samples for

researchers at FWRI, 200 samples were collected for cooperative research requests from various federal and state institutions. These samples included whole fish and otoliths for the National Marine Fisheries Service Panama City Lab, fin clip and tissue samples for the Gulf Coast Research Lab, fin clips for Texas A&M and NOAA, and tissue samples for the Florida Department of Agriculture and Consumer Services.

Quality Control

A total of 4,828 animals were frozen or preserved and brought back to FWRI. Of those animals 1,348 fishes were kept as representative samples and an additional 1,227 fishes were brought back to be further identified in the lab. In addition to fishes, 2,253 invertebrates were brought back for confirmation of identification.

Deviations

Four stations were not sampled due to inclement weather, bad bottom, or gear damage. All stations sampled were completed according to the NMFS SEAMAP protocol.

Cruise participants

Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute Personnel collected all samples. Sample summary and data entry were completed by Chris Stafford.

Submitted By:

Robert McMichael
SEAMAP Coordinator

Table 1. Florida SEAMAP Summer 2012 Shrimp/Groundfish Cruise Summary

| SEAMAP Station Number | Date & Time (GMT) | Latitude (DD MM.SS) | Longitude (DD MM.SS) | Depth (Ftms) | Tow Time (Mins) | Total Catch Weight (Kgs) | Fish (Kgs) | Crustaceans (Kgs) | Other (Kgs) |
|----------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E1004 | 06/07/2012 14:42:57 | 2957.86 | 08703.04 | 32 | 29.98 | 10.240 | 9.918 | 0.162 | 0.160 |
| E0905 | 06/07/2012 18:28:25 | 3001.00 | 08636.54 | 31 | 30.32 | 19.611 | 17.649 | 0.072 | 1.890 |
| E0907 | 06/07/2012 21:16:17 | 2956.88 | 08622.81 | 36 | 30.42 | 16.453 | 15.745 | 0.004 | 0.704 |
| E0908 | 06/08/2012 00:04:41 | 2949.62 | 08608.90 | 23 | 30.02 | 7.187 | 4.514 | 0.367 | 2.306 |
| E0911 | 06/08/2012 2:55:09 | 2932.60 | 08609.29 | 46 | 30.00 | 0.000 | 0.000 | 0.000 | 0.000 |
| E0802 | 06/08/2012 5:53:06 | 2934.65 | 08558.01 | 22 | 30.43 | 20.756 | 17.384 | 1.362 | 2.010 |
| E0805 | 06/08/2012 8:22:47 | 2925.47 | 08557.14 | 28 | 30.35 | 18.400 | 17.088 | 0.038 | 1.274 |
| E0804 | 06/08/2012 10:57:49 | 2926.85 | 08543.01 | 18 | 29.98 | 1.906 | 1.528 | 0.000 | 0.378 |
| E0808 | 06/08/2012 13:16:17 | 2917.56 | 08539.54 | 31 | 30.02 | 28.172 | 27.776 | 0.006 | 0.390 |
| E0807 | 06/08/2012 15:27:46 | 2919.96 | 08527.67 | 20 | 30.02 | 11.228 | 8.506 | 0.018 | 2.704 |
| E0811 | 06/08/2012 17:30:46 | 2911.81 | 08521.86 | 22 | 30.35 | 1.672 | 1.213 | 0.264 | 0.195 |
| E0812 | 06/08/2012 20:10:07 | 2910.88 | 08518.87 | 19 | 30.42 | 1.614 | 1.296 | 0.002 | 0.316 |
| E0810 | 06/08/2012 23:06:12 | 2912.06 | 08501.57 | 16 | 29.97 | 7.488 | 7.032 | 0.000 | 0.456 |
| E0814 | 06/09/2012 1:38:23 | 2858.10 | 08504.82 | 26 | 30.08 | 18.326 | 17.570 | 0.306 | 0.450 |
| E0815 | 06/09/2012 3:23:33 | 2856.04 | 08513.35 | 35 | 30.03 | 19.156 | 17.295 | 1.667 | 0.194 |
| E0606 | 06/09/2012 7:54:40 | 2851.05 | 08440.72 | 23 | 30.63 | 24.550 | 14.327 | 1.849 | 8.374 |
| E0604 | 06/09/2012 10:38:33 | 2851.36 | 08425.06 | 19 | 30.13 | 85.009 | 5.289 | 0.388 | 79.332 |
| E0409 | 06/10/2012 22:54:25 | 2642.60 | 08340.14 | 34 | 30.05 | 1.892 | 1.252 | 0.001 | 0.639 |
| E0415 | 06/11/2012 2:20:43 | 2631.55 | 08323.03 | 28 | 30.03 | 12.657 | 11.507 | 0.393 | 0.757 |
| E0412 | 06/11/2012 4:13:13 | 2635.65 | 08316.59 | 25 | 30.00 | 18.933 | 17.294 | 0.925 | 0.714 |
| E0414 | 06/11/2012 5:43:55 | 2633.45 | 08314.38 | 25 | 30.08 | 25.418 | 20.638 | 1.197 | 3.583 |
| E0417 | 06/11/2012 7:38:53 | 2629.86 | 08308.09 | 24 | 30.35 | 29.808 | 26.313 | 0.882 | 2.613 |

| SEAMAP Station Number | Date & Time (GMT) | Latitude (DD MM.SS) | Longitude (DD MM.SS) | Depth (Ftms) | Tow Time (Mins) | Total Catch Weight (Kgs) | Fish (Kgs) | Crustaceans (Kgs) | Other (Kgs) |
|----------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E0421 | 06/11/2012 9:24:57 | 2623.36 | 08313.25 | 27 | 30.40 | 35.723 | 34.916 | 0.275 | 0.532 |
| E0424 | 06/11/2012 11:20:25 | 2616.03 | 08311.92 | 27 | 30.00 | 19.541 | 18.782 | 0.005 | 0.754 |
| E0429 | 06/11/2012 13:57:46 | 2604.66 | 08306.46 | 27 | 30.00 | 124.600 | 8.006 | 0.286 | 116.308 |
| E0425 | 06/11/2012 16:21:51 | 2612.77 | 08321.18 | 30 | 30.02 | 3.482 | 3.254 | 0.124 | 0.104 |
| E0427 | 06/11/2012 17:51:19 | 2609.95 | 08322.12 | 30 | 30.32 | 1.012 | 0.898 | 0.002 | 0.112 |
| E0428 | 06/11/2012 19:23:12 | 2608.95 | 08328.60 | 33 | 30.37 | 2.127 | 1.154 | 0.001 | 0.972 |
| E0430 | 06/11/2012 21:29:08 | 2604.51 | 08336.88 | 37 | 30.33 | 2.213 | 0.302 | 0.018 | 1.893 |
| E0304 | 06/12/2012 00:02:24 | 2554.52 | 08339.52 | 39 | 30.10 | 4.575 | 1.800 | 0.012 | 2.763 |
| E0306 | 06/12/2012 1:42:33 | 2553.00 | 08335.90 | 39 | 30.02 | 14.964 | 14.146 | 0.291 | 0.527 |
| E0307 | 06/12/2012 4:48:32 | 2549.97 | 08316.89 | 31 | 30.35 | 212.181 | 19.987 | 2.330 | 189.864 |
| E0320 | 06/12/2012 9:31:21 | 2526.80 | 08342.01 | 46 | 30.38 | 21.100 | 17.174 | 0.634 | 3.292 |
| E0327 | 06/12/2012 11:39:24 | 2518.76 | 08340.28 | 44 | 29.97 | 1.863 | 1.656 | 0.045 | 0.162 |
| E0329 | 06/12/2012 13:36:43 | 2516.92 | 08333.98 | 39 | 30.00 | 0.581 | 0.221 | 0.036 | 0.324 |
| E0330 | 06/12/2012 15:38:10 | 2514.08 | 08343.61 | 49 | 30.00 | 2.288 | 2.060 | 0.022 | 0.206 |
| E0340 | 06/12/2012 18:06:03 | 2459.86 | 08344.20 | 47 | 30.33 | 3.155 | 3.004 | 0.000 | 0.151 |
| E0203 | 06/12/2012 21:25:55 | 2453.60 | 08325.84 | 36 | 30.33 | 1.316 | 1.172 | 0.006 | 0.138 |
| E0209 | 06/12/2012 23:41:31 | 2446.30 | 08335.38 | 36 | 30.02 | 2.308 | 2.012 | 0.014 | 0.282 |
| E0210 | 06/13/2012 1:22:06 | 2441.29 | 08335.95 | 34 | 30.03 | 7.673 | 2.165 | 0.078 | 5.430 |
| E0211 | 06/13/2012 5:01:17 | 2430.80 | 08310.82 | 34 | 29.65 | 12.416 | 11.649 | 0.262 | 0.505 |
| E0208 | 06/13/2012 7:51:44 | 2443.58 | 08313.82 | 32 | 30.25 | 23.695 | 15.143 | 6.360 | 2.192 |
| E0207 | 06/13/2012 9:44:30 | 2447.35 | 08309.30 | 31 | 30.47 | 20.493 | 17.386 | 1.273 | 1.834 |
| E0338 | 06/13/2012 12:10:05 | 2501.44 | 08309.08 | 32 | 30.00 | 5.414 | 3.758 | 0.008 | 1.648 |
| E0202 | 06/13/2012 14:26:02 | 2454.16 | 08256.87 | 25 | 30.02 | 6.534 | 3.354 | 0.016 | 3.164 |
| E0201 | 06/13/2012 15:47:13 | 2454.84 | 08256.54 | 25 | 29.97 | 12.077 | 9.622 | 0.032 | 2.423 |
| E0206 | 06/13/2012 17:39:50 | 2447.45 | 08258.37 | 24 | 30.38 | 32.855 | 28.244 | 0.049 | 4.562 |

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|----------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E0205 | 06/13/2012 21:24:06 | 2450.14 | 08232.00 | 16 | 30.35 | 10.984 | 10.196 | 0.065 | 0.723 |
| E0204 | 06/13/2012 23:37:10 | 2451.79 | 08218.08 | 13 | 29.98 | 24.535 | 23.924 | 0.063 | 0.548 |
| E0336 | 06/14/2012 2:12:31 | 2503.53 | 08202.61 | 11 | 29.98 | 64.701 | 63.378 | 0.655 | 0.668 |
| E0337 | 06/14/2012 4:42:41 | 2502.42 | 08145.50 | 8.5 | 30.40 | 148.347 | 143.502 | 0.273 | 4.572 |
| E0332 | 06/14/2012 8:04:54 | 2506.79 | 08212.91 | 13 | 30.53 | 24.238 | 17.924 | 1.526 | 4.788 |
| E0335 | 06/14/2012 9:35:42 | 2503.12 | 08217.51 | 14 | 30.47 | 69.990 | 65.010 | 3.028 | 1.952 |
| E0333 | 06/14/2012 11:45:51 | 2507.49 | 08225.59 | 17 | 29.98 | 30.632 | 27.042 | 0.002 | 3.588 |
| E0334 | 06/14/2012 15:13:07 | 2505.62 | 08245.80 | 23 | 29.97 | 12.818 | 8.848 | 0.000 | 3.970 |
| E0331 | 06/14/2012 16:59:24 | 2511.69 | 08251.90 | 25 | 30.37 | 23.661 | 0.257 | 0.002 | 23.402 |
| E0328 | 06/14/2012 19:50:58 | 2517.98 | 08233.17 | 18 | 30.28 | 12.433 | 12.132 | 0.001 | 0.300 |
| E0325 | 06/14/2012 21:25:56 | 2521.40 | 08233.34 | 17 | 30.38 | 22.245 | 15.846 | 0.004 | 6.395 |
| E0324 | 06/15/2012 00:38:57 | 2522.63 | 08210.00 | 13 | 30.05 | 181.346 | 82.166 | 0.018 | 99.162 |
| E0326 | 06/15/2012 1:58:57 | 2520.78 | 08204.91 | 11 | 30.03 | 114.071 | 67.058 | 0.324 | 46.689 |
| E0322 | 06/15/2012 4:00:24 | 2523.12 | 08153.95 | 8.3 | 30.00 | 299.817 | 93.942 | 0.203 | 205.672 |
| E0319 | 06/15/2012 5:43:38 | 2526.17 | 08149.61 | 7.2 | 30.35 | 119.279 | 110.574 | 0.070 | 8.636 |
| E0317 | 06/15/2012 7:37:20 | 2526.92 | 08140.13 | 5.9 | 30.27 | 58.936 | 58.404 | 0.304 | 0.228 |
| E0323 | 06/15/2012 9:04:11 | 2522.65 | 08135.68 | 5.3 | 30.52 | 57.119 | 56.894 | 0.033 | 0.192 |
| E0316 | 06/15/2012 10:58:55 | 2530.17 | 08137.37 | 5.1 | 30.05 | 149.290 | 90.795 | 0.033 | 58.462 |
| E0315 | 06/15/2012 13:13:08 | 2531.59 | 08149.47 | 6.9 | 30.00 | 94.170 | 93.936 | 0.008 | 0.226 |
| E0313 | 06/15/2012 15:10:22 | 2535.36 | 08159.91 | 10.1 | 30.02 | 246.211 | 56.240 | 0.003 | 189.968 |
| E0314 | 06/15/2012 18:16:49 | 2534.89 | 08221.73 | 15 | 30.27 | 125.621 | 20.368 | 0.003 | 105.250 |
| E0311 | 06/15/2012 20:16:38 | 2538.30 | 08231.06 | 16 | 30.32 | 183.869 | 45.777 | 0.026 | 138.066 |
| E0310 | 06/15/2012 22:14:51 | 2541.23 | 08240.31 | 18 | 30.33 | 17.170 | 13.890 | 0.070 | 3.210 |
| E0301 | 06/16/2012 1:14:20 | 2557.84 | 08247.20 | 20 | 30.08 | 21.969 | 18.798 | 0.402 | 2.769 |

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|----------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E0432 | 06/16/2012 6:00:51 | 2602.29 | 08209.00 | 9.8 | 30.78 | 307.289 | 91.438 | 0.287 | 215.564 |
| E0302 | 06/16/2012 8:34:59 | 2556.54 | 08156.32 | 6.8 | 30.67 | 124.848 | 123.350 | 0.119 | 1.378 |
| E0431 | 06/16/2012 10:33:58 | 2603.57 | 08154.09 | 5.7 | 30.30 | 137.961 | 132.274 | 0.000 | 5.687 |
| E0423 | 06/16/2012 13:00:15 | 2616.88 | 08156.70 | 5.6 | 29.98 | 47.526 | 46.510 | 0.000 | 1.016 |
| E0419 | 06/16/2012 16:11:05 | 2629.48 | 08218.04 | 6.4 | 29.88 | 62.454 | 60.590 | 0.006 | 1.858 |
| E0420 | 06/16/2012 18:44:51 | 2626.34 | 08236.78 | 13 | 30.18 | 15.391 | 12.727 | 0.008 | 2.656 |
| E0422 | 06/16/2012 20:52:17 | 2618.99 | 08247.98 | 17 | 30.32 | 52.612 | 40.156 | 0.012 | 12.444 |
| E0418 | 06/16/2012 23:48:00 | 2629.63 | 08231.79 | 11 | 30.03 | 9.974 | 7.190 | 0.004 | 2.780 |
| E0411 | 06/17/2012 1:53:01 | 2639.53 | 08223.46 | 7.3 | 30.18 | 18.865 | 14.112 | 0.631 | 4.122 |
| E0405 | 06/17/2012 4:31:10 | 2652.74 | 08235.70 | 10.7 | 29.93 | 16.029 | 14.670 | 0.503 | 0.856 |
| E0510 | 06/18/2012 22:17:11 | 2742.32 | 08255.66 | 6.2 | 30.37 | 18.320 | 16.730 | 0.004 | 1.586 |
| E0518 | 06/19/2012 1:54:22 | 2719.98 | 08242.56 | 6.4 | 30.07 | 47.894 | 47.074 | 0.032 | 0.788 |
| E0522 | 06/19/2012 4:03:45 | 2712.91 | 08235.42 | 5.4 | 30.22 | 59.289 | 58.945 | 0.036 | 0.308 |
| E0519 | 06/19/2012 6:03:47 | 2717.11 | 08247.70 | 7.6 | 30.23 | 24.010 | 23.142 | 0.142 | 0.726 |
| E0517 | 06/19/2012 7:33:51 | 2720.76 | 08246.64 | 7.1 | 30.43 | 33.792 | 32.498 | 0.025 | 1.269 |
| E0516 | 06/19/2012 9:04:07 | 2721.21 | 08255.37 | 10.2 | 30.37 | 19.970 | 18.912 | 0.042 | 1.016 |
| E0529 | 06/19/2012 12:23:18 | 2701.94 | 08307.27 | 19 | 29.95 | 26.244 | 26.039 | 0.004 | 0.201 |
| E0401 | 06/19/2012 13:52:56 | 2659.03 | 08306.59 | 20 | 29.98 | 10.946 | 10.660 | 0.008 | 0.278 |
| E0407 | 06/19/2012 16:31:08 | 2646.33 | 08310.62 | 23 | 29.98 | 7.322 | 7.235 | 0.003 | 0.084 |
| E0408 | 06/19/2012 18:03:29 | 2643.99 | 08311.63 | 23 | 30.30 | 1.826 | 1.104 | 0.000 | 0.722 |
| E0406 | 06/19/2012 19:49:19 | 2649.09 | 08319.97 | 26 | 30.50 | 205.677 | 5.134 | 0.003 | 200.540 |
| E0402 | 06/19/2012 21:41:49 | 2657.64 | 08321.84 | 25 | 30.57 | 7.739 | 3.694 | 0.001 | 4.044 |
| E0530 | 06/19/2012 23:02:24 | 2701.38 | 08324.28 | 25 | 30.03 | 0.682 | 0.108 | 0.014 | 0.560 |
| E0527 | 06/20/2012 00:36:36 | 2704.73 | 08323.81 | 25 | 30.03 | 6.182 | 5.976 | 0.010 | 0.196 |
| E0523 | 06/20/2012 2:18:30 | 2709.96 | 08327.56 | 25 | 30.13 | 5.048 | 4.656 | 0.218 | 0.174 |

| <i>SEAMAP Station Number</i> | <i>Date & Time (GMT)</i> | <i>Latitude (DD MM.SS)</i> | <i>Longitude (DD MM.SS)</i> | <i>Depth (Fms)</i> | <i>Tow Time (Mins)</i> | <i>Total Catch Weight (Kgs)</i> | <i>Fish (Kgs)</i> | <i>Crustaceans (Kgs)</i> | <i>Other (Kgs)</i> |
|----------------------------------|----------------------------------|--------------------------------|---------------------------------|------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E0524 | 06/20/2012 3:46:04 | 2707.97 | 08333.24 | 27 | 30.08 | 6.709 | 6.183 | 0.168 | 0.358 |
| E0513 | 06/28/2012 6:31:13 | 2730.02 | 08315.10 | 17 | 30.17 | 23.533 | 22.498 | 0.045 | 0.990 |
| E0511 | 06/28/2012 9:11:32 | 2740.63 | 08327.29 | 19 | 30.40 | 25.731 | 25.081 | 0.340 | 0.310 |
| E0525 | 06/28/2012 13:52:56 | 2707.66 | 08338.34 | 29 | 30.10 | 0.744 | 0.118 | 0.006 | 0.620 |
| E0528 | 06/28/2012 15:26:48 | 2703.42 | 08342.09 | 31 | 29.97 | 3.692 | 2.200 | 0.006 | 1.486 |
| E0404 | 06/28/2012 18:01:59 | 2654.37 | 08354.51 | 41 | 30.37 | 0.103 | 0.008 | 0.001 | 0.094 |
| E0520 | 06/28/2012 21:56:44 | 2716.68 | 08413.26 | 51 | 30.25 | 2.688 | 2.430 | 0.000 | 0.258 |
| E0514 | 06/29/2012 0:25:42 | 2729.17 | 08420.99 | 55 | 30.07 | 1.184 | 0.496 | 0.000 | 0.688 |
| E0512 | 06/29/2012 1:55:35 | 2730.63 | 08419.12 | 49 | 30.12 | 12.472 | 12.411 | 0.011 | 0.050 |
| E0509 | 06/29/2012 4:46:59 | 2743.51 | 08409.10 | 28 | 30.30 | 4.688 | 4.354 | 0.036 | 0.298 |
| E0503 | 06/29/2012 8:37:55 | 2757.95 | 08343.06 | 21 | 30.25 | 21.020 | 19.234 | 0.312 | 1.474 |
| E0504 | 06/29/2012 10:12:41 | 2757.88 | 08339.69 | 19 | 30.43 | 12.970 | 12.718 | 0.026 | 0.226 |
| E0505 | 06/29/2012 11:32:46 | 2755.84 | 08339.06 | 20 | 30.05 | 4.650 | 3.970 | 0.008 | 0.672 |
| E0508 | 06/29/2012 14:22:55 | 2750.38 | 08318.52 | 15 | 30.08 | 61.553 | 58.059 | 0.866 | 2.628 |
| E0507 | 06/29/2012 15:52:03 | 2751.14 | 08313.11 | 13 | 30.27 | 108.725 | 105.605 | 0.274 | 2.846 |
| E0635 | 06/29/2012 17:44:28 | 2800.92 | 08317.62 | 13 | 30.50 | 115.466 | 109.927 | 0.002 | 5.537 |
| E0625 | 06/29/2012 20:26:13 | 2817.81 | 08314.43 | 10.4 | 30.35 | 80.340 | 75.590 | 0.038 | 4.712 |
| E0622 | 06/29/2012 22:03:10 | 2822.96 | 08314.21 | 9.8 | 30.53 | 40.862 | 32.747 | 0.024 | 8.091 |
| E0623 | 06/29/2012 23:21:08 | 2819.97 | 08316.99 | 10.1 | 29.97 | 40.566 | 37.754 | 0.004 | 2.808 |
| E0629 | 06/30/2012 3:18:49 | 2812.32 | 08333.69 | 14 | 30.05 | 43.471 | 38.141 | 4.143 | 1.187 |
| E0621 | 06/30/2012 5:39:38 | 2826.82 | 08337.00 | 14 | 31.00 | 106.717 | 48.254 | 1.066 | 57.397 |
| E0626 | 06/30/2012 7:55:09 | 2817.98 | 08341.14 | 16 | 30.35 | 74.258 | 63.039 | 4.745 | 6.474 |
| E0624 | 06/30/2012 9:46:49 | 2819.82 | 08346.80 | 17 | 30.03 | 47.841 | 44.541 | 1.918 | 1.382 |
| E0627 | 06/30/2012 11:23:53 | 2815.73 | 08347.25 | 18 | 30.03 | 50.391 | 41.447 | 0.028 | 8.916 |
| E0631 | 06/30/2012 13:08:48 | 2808.23 | 08351.21 | 21 | 30.13 | 24.818 | 20.568 | 0.556 | 3.694 |

| SEAMAP Station Number | Date & Time (GMT) | Latitude (DD MM.SS) | Longitude (DD MM.SS) | Depth (Ftms) | Tow Time (Mins) | Total Catch Weight (Kgs) | Fish (Kgs) | Crustaceans (Kgs) | Other (Kgs) |
|----------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E0628 | 06/30/2012 15:22:21 | 2812.44 | 08401.51 | 21 | 30.10 | 5.092 | 4.186 | 0.202 | 0.704 |
| E0634 | 06/30/2012 18:37:49 | 2802.09 | 08421.08 | 34 | 30.42 | 258.874 | 257.244 | 0.018 | 1.612 |
| E0633 | 06/30/2012 21:08:59 | 2804.67 | 08433.91 | 40 | 30.42 | 4.660 | 2.824 | 0.002 | 1.834 |
| E0620 | 07/01/2012 0:51:00 | 2828.64 | 08447.21 | 32 | 30.05 | 31.918 | 27.466 | 0.013 | 4.439 |
| E0618 | 07/01/2012 4:16:42 | 2836.40 | 08421.05 | 19 | 30.08 | 0.000 | 0.000 | 0.000 | 0.000 |
| E0616 | 07/01/2012 6:15:38 | 2839.29 | 08411.48 | 19 | 30.22 | 44.502 | 23.740 | 2.471 | 18.291 |
| E0609 | 07/01/2012 8:33:07 | 2846.37 | 08411.85 | 19 | 30.55 | 134.967 | 21.411 | 3.084 | 110.472 |
| E0615 | 07/01/2012 11:08:08 | 2839.67 | 08355.07 | 16 | 30.05 | 297.174 | 88.202 | 1.610 | 207.362 |
| E0617 | 07/01/2012 12:18:02 | 2837.15 | 08354.03 | 16 | 30.05 | 496.741 | 59.669 | 2.240 | 434.832 |
| E0619 | 07/01/2012 13:56:17 | 2831.52 | 08348.08 | 16 | 30.22 | 22.058 | 10.352 | 0.040 | 11.666 |
| E0614 | 07/01/2012 16:12:01 | 2842.03 | 08342.20 | 13 | 30.10 | 240.174 | 19.548 | 0.448 | 220.178 |
| E0610 | 07/01/2012 17:37:33 | 2844.12 | 08336.90 | 12 | 30.42 | 317.791 | 36.014 | 0.197 | 281.580 |
| E0613 | 07/01/2012 19:20:43 | 2842.29 | 08330.07 | 11 | 30.40 | 0.000 | 0.000 | 0.000 | 0.000 |
| E0608 | 07/01/2012 21:08:40 | 2848.80 | 08332.25 | 10.8 | 30.28 | 0.000 | 0.000 | 0.000 | 0.000 |
| E0602 | 07/01/2012 23:27:22 | 2855.33 | 08318.31 | 6.7 | 30.10 | 0.000 | 0.000 | 0.000 | 0.000 |
| E0721 | 07/02/2012 1:25:29 | 2902.27 | 08328.90 | 7.9 | 30.03 | 19.617 | 9.196 | 1.932 | 8.489 |
| E0711 | 07/02/2012 4:11:43 | 2919.88 | 08335.01 | 7.1 | 30.07 | 73.554 | 32.257 | 0.511 | 40.786 |
| E0710 | 07/02/2012 6:07:15 | 2921.08 | 08342.41 | 8.3 | 30.52 | 0.000 | 0.000 | 0.000 | 0.000 |
| E0709 | 07/02/2012 7:48:56 | 2921.22 | 08347.65 | 9.7 | 30.45 | 53.107 | 48.390 | 0.785 | 3.932 |
| E0713 | 07/02/2012 10:05:22 | 2917.72 | 08359.58 | 11 | 30.63 | 61.046 | 58.624 | 0.548 | 1.874 |
| E0714 | 07/02/2012 11:35:26 | 2914.77 | 08356.88 | 11 | 30.03 | 108.194 | 7.798 | 0.030 | 100.366 |
| E0718 | 07/02/2012 13:01:00 | 2910.79 | 08353.65 | 12 | 29.97 | 233.100 | 31.623 | 0.052 | 201.425 |
| E0716 | 07/02/2012 14:34:27 | 2911.32 | 08359.81 | 12 | 30.02 | 616.336 | 38.270 | 0.504 | 577.562 |
| E0720 | 07/02/2012 16:18:30 | 2906.45 | 08403.11 | 14 | 30.05 | 55.929 | 44.857 | 0.836 | 10.236 |

| SEAMAP Station Number | Date & Time (GMT) | Latitude (DD MM.SS) | Longitude (DD MM.SS) | Depth (Ftms) | Tow Time (Mins) | Total Catch Weight (Kgs) | Fish (Kgs) | Crustaceans (Kgs) | Other (Kgs) |
|----------------------------------|----------------------------------|--------------------------------|---------------------------------|-------------------------|----------------------------|-------------------------------------|-----------------------|------------------------------|------------------------|
| E0601 | 07/02/2012 18:35:44 | 2858.80 | 08415.33 | 15 | 30.43 | 38.466 | 36.934 | 1.360 | 0.172 |
| E0715 | 07/02/2012 21:23:08 | 2913.87 | 08414.24 | 14 | 30.43 | 39.609 | 29.103 | 0.706 | 9.800 |
| E0719 | 07/03/2012 0:50:07 | 2909.05 | 08438.86 | 17 | 30.03 | 92.146 | 38.922 | 2.063 | 51.161 |
| E0712 | 07/03/2012 2:36:43 | 2918.86 | 08441.19 | 16 | 30.10 | 86.501 | 47.935 | 2.750 | 35.816 |
| E0702 | 07/03/2012 7:56:25 | 2943.13 | 08357.12 | 7.3 | 30.30 | 58.038 | 55.138 | 0.022 | 2.878 |
| E0701 | 07/03/2012 10:25:22 | 2944.38 | 08412.34 | 6.5 | 30.55 | 217.713 | 31.913 | 0.066 | 185.734 |
| E0703 | 07/03/2012 13:42:48 | 2939.03 | 08435.19 | 9.9 | 30.03 | 139.577 | 7.572 | 0.014 | 131.991 |
| E0704 | 07/03/2012 14:47:23 | 2938.41 | 08439.13 | 9.1 | 30.17 | 58.404 | 10.556 | 0.012 | 47.836 |
| E0705 | 07/03/2012 16:39:50 | 2934.62 | 08450.62 | 6.6 | 30.40 | 24.614 | 24.260 | 0.000 | 0.354 |
| E0806 | 07/03/2012 19:05:23 | 2921.28 | 08502.72 | 11 | 30.38 | 4.726 | 4.710 | 0.000 | 0.016 |
| E0809 | 07/03/2012 20:30:08 | 2914.15 | 08500.39 | 16 | 30.42 | 2.892 | 2.842 | 0.000 | 0.050 |
| E0803 | 07/04/2012 1:55:02 | 2933.80 | 08542.79 | 17 | 30.03 | 200.072 | 197.463 | 2.520 | 0.089 |
| E0801 | 07/04/2012 4:56:39 | 2950.26 | 08528.16 | 5.8 | 30.38 | 183.316 | 182.979 | 0.170 | 0.168 |
| E0909 | 07/04/2012 9:11:53 | 2949.78 | 08605.57 | 22 | 30.38 | 31.279 | 28.896 | 0.193 | 2.190 |
| E0906 | 07/04/2012 10:59:22 | 2957.85 | 08611.89 | 24 | 29.98 | 5.968 | 5.536 | 0.000 | 0.432 |
| E0904 | 07/04/2012 12:34:47 | 3004.55 | 08616.70 | 20 | 30.08 | 6.462 | 6.446 | 0.000 | 0.016 |
| E0901 | 07/04/2012 14:27:19 | 3010.99 | 08625.28 | 17 | 30.07 | 16.921 | 16.877 | 0.002 | 0.042 |