Florida SEAMAP Summer 2009 Survey Cruise Report (7/10/09 – 7/30/09)
Cruise Number 0904 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 compliment of seasonal trawl samples (23 depth strata x 2 diurnal time periods) in three sampling areas in the Gulf of Mexico: the Florida Panhandle (NMFS statistical zones 8 – 10), the Big Bend (NMFS statistical zones 6 and 7), and mid-Peninsula Florida (NMFS statistical zones 4 and 5). Before implementing the Florida SEAMAP trawl program, two years of exploratory surveys will be conducted to validate the feasibility of sampling these three areas as well as the most appropriate season (summer or fall) within which to conduct trawl surveys. The goal of the 2008 summer and fall trawl surveys is to explore the feasibility of trawling along the west Florida shelf; the 2008 surveys will be conducted at a reduced sampling effort, and so the Charlotte Harbor area will be excluded from these surveys. In 2009 the full compliment of sampling effort is planned for both summer and fall; data from these trawl surveys will then be analyzed to determine which season (summer or fall) will provide the most useful data in support of the assessment and management of fisheries resources in Florida.

Objectives

1. Conduct a summer trawl survey to collect information on shrimp and groundfish abundance and distribution with standard SEAMAP 40-ft trawls.
2. Select sampling stations from FWC-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

Sampling areas of the Gulf coast of Florida were defined by aggregating NMFS statistical shrimp zones. For the summer 2009 survey, sampling effort was assigned to three aggregated areas: mid-Peninsula Florida (statistical zones 4 and 5), the Big Bend (statistical zones 6 and 7), and the Florida Panhandle (statistical zones 8-10). Within each area, bathymetry data (3 second x 3 second resolution) were downloaded from the NOAA National Geophysical Data Center and assigned to the appropriate SEAMAP depth strata (5 – 60 fathoms). Specific sampling sites within each area and depth strata were then randomly selected from all available sites using ArcGIS and the Hawth's Analysis Tools extension. A full compliment of 138 sampling sites was selected (3 areas x 23 depth strata x 2 diel periods).

At each sampling station, trawl samples were collected using standard 40-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; tow directions varied, and were chosen to assure that 30 minutes of trawling occurred within the pre-selected depth stratum. 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.

Results

During the summer 2009 survey a total of 142 stations were sampled, 134 stations with reportable catches and 8 stations with zero catches due to net damage. This includes 77 daytime and 65 nighttime stations. Total catch weight for the trip was 7,481 kg. Individual trawl catch weights ranged from 2 kg to 397 kg. Over 91,000 animals were collected, including 1,697 pink shrimp and 55 red snapper. In addition to following standard SEAMAP sampling protocols, we collected ancillary material for various life history studies at no additional cost to SEAMAP. Otoliths were removed from 844 managed fishes for ageing analyses, including 568 lutjanids and 143 serranids. Sections of gonad tissue were also taken from a wide variety of managed and non-managed species, totaling 639 histological samples. Of those 280 were from managed species.

Tissue samples were collected from 2,454 fish for mercury analyses and approximately 750 stomachs were removed for dietary analyses. Additional specimens were retained for validation of field identifications. All samples will be processed at the Fish and Wildlife Research Institute at no additional cost to SEAMAP.

In addition to the standard summer SEAMAP trawl survey, a three-day exploratory survey was conducted (7/14/2009 – 7/16/2009) on the Florida Institute of Oceanography R/V Weatherbird II to explore the feasibility of using this newly-acquired vessel to collect SEAMAP trawl samples. During this three-day cruise, eight stations ranging from 6 to 50 fathoms were sampled; all stations were also sampled as part of the Florida summer SEAMAP trawl survey. For three of these stations, repeated tows were conducted during both the Florida summer SEAMAP trawl survey (these repeated tows are not included in this summary report) and the three-day exploratory survey. Data from these collections will be analyzed to (1) examine vessel-specific catch rates within a given sampling location, and (2) compare differences in catch rates between vessels.

Deviations

There were no deviations from the original sampling schedule; all stations were sampled according to SEAMAP procedure.

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 Jenna Tortorelli.

Submitted By:

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Robert McMichael
SEAMAP Coordinator

Table 1. *Florida SEAMAP Summer 2009 Shrimp/Groundfish Cruise Summary*

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD001	07/10/2009 12:48:15	3014.40	08733.83	5	30.13	104.585	104.132	0.003	0.450
FD002	07/10/2009 14:20:53	3011.65	08731.28	8.8	30.3	14.900	11.306	1.314	2.280
FD003	07/10/2009 17:02:49	3008.78	08747.78	7.6	31.37	14.450	13.708	0.026	0.716
FD004	07/10/2009 20:09:54	3008.88	08744.40	7.2	30.35	18.656	18.128	0.012	0.516
FD005	07/10/2009 22:41:04	3001.28	08735.44	15	29.23	19.890	19.704	0.000	0.186
FD006	07/11/2009 0:34:25	3001.56	08731.23	16	29.97	14.308	7.600	0.000	6.708
FN001	07/11/2009 2:35:16	3007.40	08741.37	7.1	30.33	24.920	18.761	0.757	5.402
FN003	07/11/2009 7:08:31	3002.74	08723.54	15	30.18	13.428	9.548	0.466	3.414
FN004	07/11/2009 9:06:02	3001.59	08718.65	16	30.12	59.334	58.168	0.466	0.700
FD007	07/11/2009 12:33:55	3008.89	08657.32	18	30.07	7.536	5.600	0.016	1.920
FD008	07/11/2009 14:46:35	3020.95	08655.45	9.9	29.4	4.738	2.212	0.000	2.526
FD009	07/11/2009 17:33:22	3020.48	08635.31	14	30.25	12.959	8.480	9.900	4.380
FD010	07/11/2009 20:01:08	3006.74	08634.54	22	30.15	7.748	2.466	0.002	5.280
FD011	07/11/2009 22:18:11	3017.13	08626.28	10.8	30.05	6.233	2.664	0.001	3.568
FD012	07/11/2009 23:53:44	3022.37	08626.16	8.9	30.02	8.948	5.164	0.628	3.156
FN005	07/12/2009 3:52:27	3011.08	08556.67	12	29.92	95.755	53.910	1.741	40.105
FD013	07/12/2009 11:38:44	2936.47	08533.79	13	30.33	7.706	4.167	0.001	3.538

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD014	07/12/2009 14:15:13	2948.12	08547.13	17	29.67	13.644	11.938	0.000	1.706
FD015	07/12/2009 15:47:50	2954.92	08547.18	16	30.67	21.731	19.877	0.004	1.850
FD016	07/12/2009 18:06:41	2947.63	08532.92	11	30	10.498	3.924	0.006	6.568
FN006	07/12/2009 7:32:07	2953.13	08551.94	18	30.17	34.305	29.560	0.176	4.570
FD017	07/12/2009 21:49:39	2933.31	08512.01	6.3	30.17	49.146	48.182	0.000	0.964
FD018	07/12/2009 23:05:48	2934.02	08509.40	4.8	29.97	25.168	24.984	0.000	0.184
FN007	07/13/2009 1:19:24	2934.70	08522.09	6.5	30.08	282.400	278.626	3.774	0.000
FN008	07/13/2009 3:56:48	2929.98	08529.86	7.4	30.17	23.546	19.142	2.658	1.746
FN009	07/13/2009 5:36:55	2926.89	08526.50	14	30.4	25.176	21.318	3.337	0.522
FN010	07/13/2009 8:22:17	2924.89	08504.62	11	29.78	28.524	14.327	10.409	3.788
FD019	07/13/2009 11:43:31	2909.68	08454.74	16	30.12	5.900	2.698	0.028	3.174
FD020	07/13/2009 13:24:11	2903.41	08454.23	20	30.23	5.561	4.162	0.013	1.386
FD021	07/13/2009 15:37:21	2906.18	08505.42	18	30.27	4.138	2.974	0.002	1.162
FD022	07/13/2009 18:20:22	2916.24	08453.27	15	30.02	4.129	3.418	0.027	0.684
FD023	07/13/2009 20:53:57	2919.45	08433.32	16	30.1	46.688	35.620	0.734	10.334
FN011	07/14/2009 0:49:31	2942.54	08439.52	6.1	29.8	14.791	11.224	0.260	3.307
FN012	07/14/2009 5:08:13	2947.13	08401.58	4.9	30.07	397.822	183.609	0.145	214.067
FN013	07/14/2009 7:34:27	2940.77	08356.90	7.7	30.05	81.821	66.488	0.081	15.252
FN014	07/14/2009 10:12:40	2925.07	08355.79	10.2	30.13	16.638	12.593	0.405	3.640
FD024	07/14/2009 12:49:50	2939.18	08346.29	6.3	29.83	25.826	22.782	9.000	3.035

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD025	07/14/2009 15:45:36	2922.30	08331.11	5	30.62	26.069	12.283	0.016	13.770
FD026	07/14/2009 17:29:56	2923.14	08338.13	6.5	29.45	103.671	5.068	0.025	98.577
FD027	07/14/2009 20:02:00	2922.69	08355.13	10.1	30.37	22.352	13.731	0.011	8.610
FD028	07/14/2009 23:40:18	2859.15	08347.43	12	29.88	10.250	9.656	0.000	0.594
FN018	07/15/2009 8:24:22	2859.08	08419.59	16	30.12	58.470	28.559	0.291	29.620
FN015	07/15/2009 2:03:57	2910.14	08347.73	10.8	30.12	35.204	22.915	1.963	10.326
FN016	07/15/2009 3:43:50	2912.37	08358.75	12	30.68	61.062	37.129	0.527	23.405
FN019	07/15/2009 10:21:51	2848.47	08417.59	19	30.13	58.673	33.332	0.003	25.338
FN017	07/15/2009 5:48:37	2910.23	08410.97	14	30.15	27.514	22.427	0.904	4.183
FD029	07/15/2009 11:40:32	2846.57	08417.91	19	30.17	15.876	12.854	0.000	3.022
FD030	07/15/2009 14:28:24	2836.37	08400.30	18	30.98	2.965	1.940	0.003	1.022
FD031	07/15/2009 15:57:49	2832.60	08354.14	17	29.03	34.133	11.635	0.005	22.493
FD032	07/15/2009 17:56:33	2842.22	08346.81	14	30.13	126.605	20.142	0.003	106.460
FD033	07/15/2009 20:06:09	2847.97	08334.89	11	30.1	91.493	9.736	4.099	81.716
FD034	07/15/2009 21:46:56	2856.02	08327.85	9.4	30.08	20.172	16.100	0.072	4.000
FN020	07/16/2009 2:43:50	2818.86	08334.94	15	29.9	39.965	35.065	1.070	3.830
FN021	07/16/2009 4:18:11	2819.42	08331.03	13	30	14.337	9.092	2.185	3.060
FN022	07/16/2009 7:20:29	2831.65	08314.10	7.7	30.08	44.339	9.134	0.050	35.155
FN023	07/16/2009 9:25:38	2821.20	08310.01	9.4	30.55	30.950	27.926	0.000	3.024
FD035	07/16/2009 11:28:14	2816.48	08305.99	7.8	30.37	0.000	0.000	0.000	0.000

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD035	07/16/2009 13:09:54	2820.56	08308.08	8.7	9.62	0.000	0.000	0.000	0.000
FD074	07/16/2009 15:28:01	2809.69	08322.49	13	30.4	36.472	30.862	0.007	5.603
FD036	07/16/2009 18:23:49	2757.61	08338.72	19	30.07	29.963	27.740	7.099	2.152
FD037	07/16/2009 20:31:53	2755.30	08350.26	23	30	64.859	33.353	0.220	31.286
FD038	07/17/2009 0:22:59	2736.76	08346.27	25	30.5	81.278	39.658	1.124	40.497
FN024	07/17/2009 4:13:02	2759.86	08359.76	25	30.13	60.697	40.419	7.646	12.631
FN025	07/17/2009 6:22:43	2803.43	08351.82	22	30.12	340.475	39.426	7.290	293.759
FN026	07/17/2009 9:19:05	2804.65	08336.71	17	30.17	59.474	54.321	1.329	3.824
FD039	07/17/2009 11:43:44	2756.56	08328.31	17	30.68	55.484	53.549	0.111	1.824
FD040	07/17/2009 17:13:35	2731.53	08300.40	8.6	30.13	26.969	24.032	0.007	2.930
FD041	07/17/2009 18:48:26	2737.13	08255.03	6.9	30.2	234.850	230.349	0.050	4.450
FD042	07/17/2009 21:35:38	2722.16	08252.66	7.7	30.08	36.850	33.340	0.268	3.242
FD043	07/17/2009 22:45:33	2721.75	08250.32	7.1	30.67	58.584	55.866	0.108	2.610
FN027	07/18/2009 2:07:33	2743.73	08256.86	5.6	29.02	101.085	93.904	1.561	5.620
FN028	07/18/2009 3:58:31	2753.38	08258.61	5.5	29.95	150.297	136.469	0.477	13.350
FN029	07/18/2009 7:16:57	2748.55	08322.24	16	30.03	36.585	34.009	1.011	1.565
FN030	07/18/2009 10:05:35	2732.83	08315.91	17	30.15	88.113	86.104	0.123	1.887
FD044	07/18/2009 12:17:00	2743.07	08315.21	14	30.1	26.800	14.584	5.903	6.313
FD045	07/18/2009 18:23:27	2711.88	08233.18	5.2	29.7	108.146	98.672	0.000	9.473
FD046	07/18/2009 20:41:28	2707.94	08247.51	11	29.95	64.064	44.381	0.041	19.642

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD047	07/18/2009 22:18:40	2703.38	08242.70	10.3	29.95	248.026	51.752	0.011	196.263
FD048	07/18/2009 23:52:13	2655.80	08242.43	12	30	0.000	0.000	0.000	0.000
FN031	07/19/2009 1:20:22	2653.72	08241.50	12	30.02	100.748	59.667	0.923	40.158
FN032	07/19/2009 3:43:49	2640.25	08240.82	12	30.35	32.516	25.022	1.342	6.152
FN033	07/19/2009 5:18:39	2637.01	08243.41	14	30.13	64.681	47.636	1.188	15.858
FN034	07/19/2009 7:48:05	2639.28	08229.63	9.5	30.18	74.411	63.803	4.295	6.313
FN035	07/19/2009 9:56:26	2626.15	08226.52	10.6	30.07	142.400	128.902	0.773	12.724
FD048	07/19/2009 12:08:50	2629.24	08237.37	12	29.93	20.764	17.246	0.032	3.486
FD049	07/19/2009 14:27:42	2629.75	08251.46	17	29.62	131.870	46.364	0.428	85.078
FD050	07/22/2009 13:13:09	2655.56	08242.82	4.2	30.12	75.778	20.585	50.024	5.169
FN036	07/22/2009 8:09:53	2719.81	08252.51	6.9	30.02	0.000	0.000	0.000	0.000
FN036	07/22/2009 9:00:15	2721.22	08253.30	7.7	30.45	0.000	0.000	0.000	0.000
FD051	07/22/2009 16:23:10	2637.19	08253.31	10.3	30.27	87.484	9.598	0.005	77.881
FN039	07/23/2009 7:25:06	2600.31	08200.50	7.5	30.03	164.000	120.989	0.259	42.753
FD052	07/23/2009 11:57:11	2610.10	08236.53	14	18.37	27.750	16.004	0.018	11.728
FD053	07/23/2009 16:18:04	2628.34	08259.66	21	33.85	35.328	11.030	0.008	24.290
FD054	07/23/2009 19:00:22	2614.45	08249.56	19	31.17	30.138	29.792	6.999	0.276
FN037	07/23/2009 1:36:36	2607.22	08237.52	15	30.03	94.426	50.184	6.917	37.324
FN042	07/24/2009 6:10:57	2621.47	08252.64	19	30.3	52.729	43.213	3.328	6.188
FN043	07/24/2009 8:25:47	2623.44	08301.12	22	30.23	91.793	55.780	2.892	33.122

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD055	07/24/2009 13:04:37	2625.73	08333.64	34	29.77	53.657	6.750	0.108	46.799
FD056	07/24/2009 16:37:05	2615.90	08348.90	53	29.17	20.636	16.760	0.040	3.836
FN044	07/25/2009 2:30:41	2614.16	08336.65	35	30	48.283	34.718	0.280	13.286
FN047	07/25/2009 10:36:19	2636.42	08354.36	51	30	67.185	60.922	0.108	6.156
FD057	07/25/2009 14:15:47	2656.05	08358.87	45	30.17	66.240	33.114	0.054	33.072
FN046	07/25/2009 8:40:28	2639.91	08346.05	41	30.12	40.765	35.252	2.464	3.050
FD058	07/25/2009 20:38:33	2738.82	08419.46	44	30.23	35.264	34.542	0.000	0.721
FN050	07/26/2009 7:32:30	2818.71	08447.82	40	30.25	76.498	27.638	3.946	44.914
FN051	07/26/2009 9:32:02	2819.35	08452.10	47	30.25	39.862	35.172	2.778	1.912
FD060	07/26/2009 11:46:22	2821.70	08452.36	44	30.37	16.282	14.954	0.110	1.218
FD061	07/26/2009 13:52:59	2813.03	08450.15	52	30.38	6.753	3.574	0.014	3.166
FD062	07/26/2009 17:05:08	2806.30	08437.17	41	30.13	52.602	50.422	0.268	1.912
FD063	07/26/2009 19:12:24	2803.92	08424.77	35	30.07	22.238	17.946	0.000	4.292
FD064	07/26/2009 21:11:45	2808.39	08418.74	31	30.32	15.387	9.217	0.036	6.134
FN040	07/24/2009 1:46:15	2607.35	08244.40	18	30	37.018	33.594	2.114	1.310
FN041	07/24/2009 3:30:44	2608.88	08249.75	20	30.03	81.972	44.660	0.965	36.346
FN045	07/25/2009 4:52:59	2624.16	08328.04	31	30.7	44.674	36.756	0.498	7.420
FN049	07/26/2009 5:01:20	2814.81	08433.22	35	30.12	50.057	31.766	8.474	9.818

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FN048	07/26/2009 2:26:46	2801.27	08436.90	49	30	20.170	16.926	2.109	1.135
FN053	07/27/2009 9:01:45	2831.87	08354.56	17	30	162.017	51.874	9.995	100.148
FD065	07/27/2009 13:15:03	2821.09	08422.00	24	30.13	50.647	9.040	0.052	41.556
FD066	07/27/2009 16:28:43	2834.87	08431.03	26	29.77	15.714	13.992	0.046	1.676
FN038	07/23/2009 4:32:04	2605.08	08218.34	11	30.42	38.604	33.606	2.958	2.040
FD059	07/25/2009 23:16:45	2748.96	08419.36	38	30	64.526	62.992	0.014	1.520
FN052	07/27/2009 1:45:02	2809.24	08419.04	31	30	64.942	52.621	6.398	5.921
FN054	07/28/2009 1:59:09	2857.11	08504.21	26	30	28.094	22.642	3.298	2.154
FN055	07/28/2009 4:35:53	2903.70	08455.91	19	30	24.510	15.718	8.243	0.548
FD067	07/28/2009 11:56:20	2911.90	08534.93	45	30.03	54.037	41.150	8.212	4.676
FD068	07/28/2009 14:45:45	2918.85	08547.81	31	29.67	9.656	9.052	0.000	0.604
FD069	07/28/2009 16:28:43	2924.11	08541.30	21	29.52	10.220	10.186	0.006	0.028
FD070	07/28/2009 20:37:29	2938.80	08609.76	31	29.92	30.904	27.410	0.020	3.474
FN056	07/29/2009 1:27:21	2946.76	08619.44	45	30	107.748	100.318	6.372	1.058
FN057	07/29/2009 3:27:12	2953.43	08614.39	30	30	103.600	101.360	1.066	1.173
FN058	07/29/2009 6:22:37	2951.06	08630.75	53	30	57.722	54.898	2.030	0.794
FN059	07/29/2009 8:13:24	2956.75	08629.13	40	30	94.948	94.216	0.240	0.492

SEAMAP Stn	Date and Time (GMT)	Latitude	Longitude	Start Depth (ftms)	Tow Time	Total Catch (Kg)	Fish	Crustaceans	Other
FD071	07/29/2009 11:52:55	3004.67	08656.02	50	30	75.824	69.622	0.510	5.692
FD072	07/29/2009 15:10:45	2954.20	08712.06	42	29.95	0.000	0.000	0.000	0.000
FD072	07/29/2009 16:55:27	2952.65	08713.16	41	29.92	2.528	2.412	0.030	0.086
FD073	07/29/2009 20:14:16	2937.62	08733.44	27	30.07	2.146	1.286	0.004	0.856
FN060	07/30/2009 1:24:58	2937.26	08726.49	37	30.88	0.000	0.000	0.000	0.000
FN060	07/30/2009 2:58:11	2935.78	08728.08	38	0.03	0.000	0.000	0.000	0.000
FN061	07/30/2009 5:52:22	2939.09	08756.31	21	30	8.814	7.854	0.762	0.198
FN062	07/30/2009 6:54:17	2941.70	08757.31	21	29.85	13.840	11.496	1.866	0.478
FN063	07/30/2009 8:27:44	2948.60	08800.50	18	30.07	22.532	21.494	0.540	0.498
FN064	07/30/2009 9:44:03	2949.58	08758.64	16	30.2	4.360	2.802	0.228	1.330