

## **Florida SEAMAP Summer 2019 Survey Cruise Report (6/7/19 – 6/23/19)**

*Cruise Number 171902 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 2 – 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. Because long-term SEAMAP funding was not sufficient to support Florida's participation in both the summer and fall trawl survey, a decision was made to only support one seasonal survey. Based on a preliminary examination of data collected in 2008 and 2009, it was decided that from 2010 onward the Florida SEAMAP trawl survey would 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 was recommended as additional funds become available. NMFS field party chief, Taniya Wallace, joined us for a cross training during leg one of the summer survey.

## Objectives

1. Conduct a trawl survey to collect information on shrimp and groundfish abundance/distribution with standard SEAMAP 42 ft semi-balloon trawls.
2. Select sampling stations from NMFS-generated universe of known bathymetric data.
3. Conduct acoustic work to determine net geometry in less than 100 ft in depth.
4. Identify, weigh, count and measure all species according to protocols outlined in the NMFS SEAMAP Operations Manual.
5. Collect information on environmental parameters (salinity, temperature, dissolved oxygen, wind speed and direction, wave height, precipitation) in conjunction with trawl sampling.
6. Code all data according to approved NMFS SEAMAP Operations Manual guidelines and enter data in the NMFS SEAMAP data entry system.
7. 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 trawling sites were chosen following a simple random survey design.

At each trawl station, samples were collected using a standard 42 ft semi-balloon 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 Operation Manual guidelines. In addition, specimens were retained to validate field identifications and provide biological material for various life-history studies (e.g., 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. Trawl sensors were used during select stations in less the 100 ft of water to look at net geometry.

## Results

During the summer 2019 survey, Florida sampled a total of 108 stations, 98 with reportable catch (Table 1). Total catch weight from all trawls was 9,333.82 kg. Individual reportable trawl catch weights ranged from 0.27 kg to 878.62 kg. There were 44,644 animals collected, including 894 Pink Shrimp (*Farfantepenaeus duorarum*), 10 Red Snapper (*Lutjanus campechanus*), and 190 Lionfish (*Pterois* spp.), which occurred in 42 of the 98 stations (43% occurrence). The three most abundant species collected were Dusky Flounder (*Syacium papillosum*, n=5,809; 80% occurrence), squid of the genus *Doryteuthis* (n=3,386; 76% occurrence), and Lane Snapper (*Lutjanus synagris*, n=2,924; 58% occurrence).

In addition to following standard SEAMAP sampling protocols, we collected ancillary material for various life history studies. Otoliths were removed from 675 fishes for aging analyses, including 508 Lutjanids, 26 Serranids and 76 lionfish. In addition, 13 spines were removed from managed fishes for alternative aging techniques. Gonads were removed from two fish for reproductive staging and 51 fin clip or tissue samples were taken for genetic analysis. Tissue samples were collected from 673 fish for mercury analyses and 779 stomachs were removed for dietary analyses from a wide variety of managed and non-managed species. A total of 213 fish were processed for parasites by FWRI's Aquatic Health Group. Seventy samples were also collected for cooperative research requests from various federal and state institutions including: FWRI, University of Florida, University of Southern Mississippi, and NMFS. In addition, FWRI's ISM section collected specimens for tissue samples and vouchers. We collected acoustic data from 35 stations for net geometry analysis.

### **Quality Control**

A total of 3,176 animals were frozen or preserved and brought back to FWRI. Of those animals, 1,379 fishes were kept as representative samples and an additional 503 fishes were brought back to be further identified in the lab. In addition to fishes, 1,294 invertebrates were brought back for confirmation or identification.

### **Deviations**

Seven trawl stations were labeled as not representative due to improper gear setup (n=1) or excessive bycatch (n=6), but catch was reported. Ten trawl stations had no reportable catch due to gear damage (n=5), gear loss (n=3), or excessive bycatch causing safety concerns (n=2). Twelve trawl stations have no CTD cast data due to faulty CTD power switch.

### **Cruise participants**

Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, NOAA (Pascagoula, MS) and University of Florida personnel collected all samples. Sample summary and data entry were completed by Steven Warner and Scott Stahl.

Submitted By:

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*Ted Switzer*

SEAMAP Coordinator

**Table 1. Florida SEAMAP Summer 2019 Shrimp/Groundfish Completed Stations.**

SEAMAP SEQUENCE NUMBER	SEAMAP STATION NUMBER	START TIME (GMT)	START LATITUDE	START LONGITUDE	START DEPTH (F)	END DEPTH (F)	SPEED (knts)	TOW TIME (min)	CATCH TOTAL (kg)
SMP171902001	E0815	06/07/2019 12:39:12	2845.55	8510.90	59.0	58.1	3.1124	30.18	0.27
SMP171902002	E0630	06/07/2019 17:00:44	2822.94	8448.84	35.5	34.5	3.1611	30.017	25.98
SMP171902003	E0631	06/07/2019 19:18:11	2820.01	8455.54	56.2	54.9	3.0314	30.017	0.00
SMP171902004	E0525	06/07/2019 23:34:01	2800.54	8434.46	46.0	44.0	3.1483	30.017	23.91
SMP171902005	E0628	06/08/2019 1:45:44	2806.44	8425.27	36.3	36.4	3.0331	30.017	31.65
SMP171902006	E0623	06/08/2019 5:13:56	2803.04	8400.35	24.1	23.5	2.9344	30.017	47.80
SMP171902007	E0517	06/08/2019 7:37:03	2756.97	8404.93	27.1	25.9	2.9368	30.033	25.21
SMP171902008	E0521	06/08/2019 10:04:52	2749.30	8409.99	31.2	31.7	2.8947	30.017	6.31
SMP171902009	E0523	06/08/2019 12:28:53	2752.45	8422.77	42.6	42.1	2.9906	30.017	19.47
SMP171902010	E0526	06/08/2019 15:20:21	2739.41	8424.29	55.7	53.8	3.0028	30.017	15.50
SMP171902011	E0524	06/08/2019 20:36:33	2720.66	8411.05	44.3	43.9	3.3424	30.017	22.27
SMP171902012	E0519	06/08/2019 23:48:49	2723.27	8344.91	27.5	27.2	3.3003	30	12.16
SMP171902013	E0518	06/09/2019 1:48:50	2716.67	8340.22	27.5	26.9	3.2497	30.033	269.14

SEAMAP SEQUENCE NUMBER	SEAMAP STATION NUMBER	START TIME (GMT)	START LATITUDE	START LONGITUDE	START DEPTH (F)	END DEPTH (F)	SPEED (knts)	TOW TIME (min)	CATCH TOTAL (kg)
SMP171902014	E0520	06/09/2019 4:21:58	2709.87	8346.36	28.8	29.1	3.0506	30.017	9.62
SMP171902015	E0522	06/09/2019 6:13:38	2705.79	8350.73	36.2	34.8	2.9053	30.017	21.20
SMP171902016	E0430	06/09/2019 9:13:15	2700.15	8406.54	54.4	52.7	2.9339	30.017	14.18
SMP171902017	E0422	06/09/2019 13:46:40	2658.93	8333.98	30.0	29.3	3.0067	30.017	79.39
SMP171902018	E0418	06/09/2019 17:03:27	2649.07	8316.73	25.7	24.3	2.9639	30.017	66.22
SMP171902019	E0420	06/09/2019 20:28:28	2629.59	8316.40	26.7	26.6	3.1967	30.017	8.21
SMP171902020	E0427	06/10/2019 1:08:34	2633.11	8346.94	42.6	42.3	3.065	30	57.20
SMP171902021	E0428	06/10/2019 4:26:36	2615.20	8348.01	52.1	50.9	3.0053	30.017	22.19
SMP171902022	E0429	06/10/2019 6:31:23	2606.90	8349.54	53.0	52.8	3.0014	30.017	41.20
SMP171902023	E0426	06/10/2019 9:13:11	2616.50	8342.02	39.0	37.0	2.9511	30.017	46.87
SMP171902024	E0424	06/10/2019 11:30:41	2613.95	8330.54	33.9	33.4	2.9025	30.017	263.30
SMP171902025	E0504	06/12/2019 20:48:58	2736.51	8254.86	6.7	7.7	3.0644	30.017	0.00
SMP171902026	E0507	06/12/2019 23:23:17	2725.59	8301.80	11.4	13.1	3.1192	30	58.72
SMP171902027	E0503	06/13/2019 3:13:10	2711.41	8238.47	6.9	6.6	3.1239	30.017	121.31

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SMP171902028	E0501	06/13/2019 5:20:19	2707.82	8231.30	5.4	5.8	2.9859	30.017	66.48
SMP171902029	E0505	06/13/2019 7:05:34	2705.84	8236.77	7.4	7.1	2.995	30.017	0.00
SMP171902030	E0403	06/13/2019 9:07:29	2700.01	8234.84	8.1	7.0	2.9281	30.017	0.00
SMP171902031	E0408	06/13/2019 11:32:13	2653.45	8244.97	13.7	13.2	2.9814	30.07	210.88
SMP171902032	E0401	06/13/2019 15:13:16	2648.15	8218.68	5.0	4.7	3.0392	30.017	27.10
SMP171902033	E0402	06/13/2019 16:49:10	2643.60	8221.22	6.2	6.0	3.0031	30.033	15.79
SMP171902034	E0404	06/13/2019 18:26:19	2639.72	8226.58	9.3	9.7	3.0583	30.017	19.86
SMP171902035	E0406	06/13/2019 20:02:39	2633.03	8232.80	10.5	10.8	3.0147	30	43.56
SMP171902036	E0405	06/13/2019 22:41:41	2617.72	8221.62	8.3	8.3	2.9853	30.033	40.08
SMP171902037	E0407	06/14/2019 0:58:44	2603.80	8224.44	13.0	12.3	3.0058	30	0.00
SMP171902038	E0409	06/14/2019 3:15:21	2602.44	8232.44	14.8	15.3	3.0603	30	99.52
SMP171902039	E0411	06/14/2019 4:42:42	2559.86	8238.82	18.0	18.3	3.0236	30.033	167.93
SMP171902040	E0419	06/14/2019 8:07:21	2604.54	8303.10	25.3	25.3	3.0069	30.017	54.01
SMP171902041	E0421	06/14/2019 10:49:38	2603.60	8308.93	27.8	27.5	2.898	30	28.13

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SMP171902042	E0425	06/14/2019 14:01:24	2602.29	8329.08	34.2	34.2	3.0503	30.017	13.98
SMP171902043	E0423	06/14/2019 16:19:22	2606.89	8314.44	29.6	29.0	2.9531	30.033	42.07
SMP171902044	E0417	06/14/2019 18:56:06	2617.02	8301.45	22.6	22.5	3.0303	30.05	0.00
SMP171902045	E0415	06/14/2019 21:06:06	2626.41	8256.49	19.9	20.4	3.0444	30.017	0.00
SMP171902046	E0416	06/14/2019 23:27:04	2633.93	8304.95	22.6	22.4	3.0242	30.033	193.85
SMP171902047	E0410	06/15/2019 2:01:18	2640.63	8252.15	17.2	16.9	3.135	30.017	156.27
SMP171902048	E0414	06/15/2019 4:29:11	2648.08	8304.52	21.0	21.5	3.1286	30.017	65.55
SMP171902049	E0510	06/15/2019 7:09:58	2705.12	8306.87	19.3	19.4	3.015	30.017	58.94
SMP171902050	E0511	06/15/2019 9:42:46	2718.88	8316.86	20.2	20.5	2.9272	30	100.42
SMP171902051	E0515	06/15/2019 11:36:25	2720.72	8325.63	23.7	24.1	2.9864	30	215.33
SMP171902052	E0512	06/15/2019 13:46:10	2729.58	8323.80	20.7	21.4	2.9475	30.017	33.12
SMP171902053	E0514	06/15/2019 15:34:40	2731.10	8335.11	23.6	23.6	3.0411	30.033	89.72
SMP171902054	E0412	06/17/2019 6:41:06	2650.39	8258.35	18.4	18.9	3.0025	30.033	48.78
SMP171902055	E0413	06/17/2019 10:45:46	2626.40	8254.47	19.3	20.2	2.9789	30	289.56

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SMP171902056	E0315	06/17/2019 17:09:38	2547.26	8237.09	18.7	19.2	3.0417	30.017	13.40
SMP171902057	E0311	06/17/2019 19:27:01	2552.37	8223.82	14.6	14.0	3.1569	30.017	40.35
SMP171902058	E0306	06/17/2019 23:27:58	2540.57	8200.27	9.0	9.1	3.1781	30.133	19.79
SMP171902059	E0309	06/18/2019 1:37:10	2536.40	8212.62	13.3	13.1	3.0231	30	38.71
SMP171902060	E0313	06/18/2019 4:36:42	2537.84	8232.76	17.1	17.3	3.1108	30.033	462.02
SMP171902061	E0316	06/18/2019 7:28:25	2527.60	8241.53	19.2	19.6	2.9964	30.017	393.42
SMP171902062	E0318	06/18/2019 10:35:25	2515.66	8236.90	21.0	19.8	2.985	30.033	21.04
SMP171902063	E0314	06/18/2019 12:45:27	2513.13	8225.99	17.6	17.3	2.9019	30.017	29.36
SMP171902064	E0312	06/18/2019 14:12:30	2517.45	8221.48	15.3	15.0	2.9562	30.083	227.00
SMP171902065	E0308	06/18/2019 16:27:18	2518.81	8208.46	12.4	12.2	2.9878	30.017	130.64
SMP171902066	E0305	06/18/2019 18:45:41	2516.48	8157.63	9.4	9.3	3.1347	30	34.54
SMP171902067	E0304	06/18/2019 20:39:25	2522.30	8152.86	8.0	8.4	3.226	30.017	65.34
SMP171902068	E0301	06/18/2019 23:22:20	2521.54	8139.47	5.8	6.0	3.1753	30.017	113.02
SMP171902069	E0302	06/19/2019 2:17:10	2504.91	8136.37	5.4	6.0	3.0861	30.017	222.75



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SMP171902070	E0303	06/19/2019 4:12:25	2505.29	8145.71	8.0	8.4	3.2654	30.033	210.86
SMP171902071	E0307	06/19/2019 6:40:08	2501.74	8200.18	10.9	11.0	3.0347	30.017	212.98
SMP171902072	E0310	06/19/2019 9:09:33	2502.67	8216.98	14.2	14.9	2.9675	30.033	24.55
SMP171902073	E0202	06/19/2019 11:15:54	2456.98	8212.11	12.9	13.1	3.0142	30.017	42.79
SMP171902074	E0201	06/19/2019 13:44:42	2445.23	8211.79	11.5	12.0	2.9414	30.017	13.27
SMP171902075	E0203	06/19/2019 16:07:19	2448.25	8227.17	15.1	15.5	3.1056	30.017	0.29
SMP171902076	E0205	06/19/2019 18:03:37	2458.48	8232.61	17.9	18.8	3.1717	30.033	9.67
SMP171902077	E0317	06/19/2019 19:40:55	2504.05	8235.60	20.1	19.9	3.2211	30.017	28.72
SMP171902078	E0321	06/19/2019 22:06:10	2505.05	8246.39	22.7	23.1	3.1756	30.033	26.34
SMP171902079	E0206	06/20/2019 0:09:19	2455.92	8247.49	22.2	22.4	3.0467	30.017	14.81
SMP171902080	E0207	06/20/2019 2:22:53	2448.81	8257.98	25.1	25.4	3.2731	30	8.20
SMP171902081	E0204	06/20/2019 5:49:20	2431.22	8300.94	17.0	16.6	3.0738	6.65	0.00
SMP171902082	E0210	06/20/2019 8:11:13	2433.32	8312.44	33.5	34.0	2.9078	30.017	22.91
SMP171902083	E0208	06/20/2019 10:23:20	2444.75	8310.74	30.9	31.9	3.0078	30.017	62.55

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SMP171902084	E0209	06/20/2019 12:05:47	2451.39	8311.55	32.5	32.7	2.8928	30.017	76.37
SMP171902085	E0212	06/20/2019 14:28:15	2455.22	8326.27	36.6	37.3	2.9536	30.017	11.89
SMP171902086	E0211	06/20/2019 16:29:59	2451.63	8335.20	36.2	37.0	2.9383	30.017	1.32
SMP171902087	E0334	06/20/2019 18:50:45	2503.21	8342.02	44.2	46.4	3.22	30.017	4.89
SMP171902088	E0336	06/20/2019 21:07:40	2515.29	8347.46	56.1	56.7	3.2003	30.033	16.25
SMP171902089	E0335	06/21/2019 0:00:11	2529.11	8341.40	43.9	44.2	3.1769	30.017	25.53
SMP171902090	E0333	06/21/2019 3:06:52	2509.71	8332.80	39.2	39.8	3.1322	30.017	48.13
SMP171902091	E0332	06/21/2019 5:20:59	2512.29	8324.27	36.3	36.8	2.9019	30.017	66.75
SMP171902092	E0330	06/21/2019 7:27:28	2521.01	8321.18	34.5	35.1	2.93	30.033	201.24
SMP171902093	E0329	06/21/2019 9:16:34	2525.51	8316.01	33.4	33.3	2.9833	30.017	25.34
SMP171902094	E0326	06/21/2019 11:47:51	2519.14	8304.55	30.2	30.8	2.9322	30.017	62.71
SMP171902095	E0322	06/21/2019 14:46:36	2530.25	8251.88	25.5	25.8	2.9642	30.017	336.72
SMP171902096	E0325	06/21/2019 16:50:58	2536.82	8303.13	28.9	29.2	3.1156	30.017	2.03
SMP171902097	E0327	06/21/2019 18:37:35	2538.01	8313.45	32.3	32.6	3.0828	30.017	41.26

SEAMAP SEQUENCE NUMBER	SEAMAP STATION NUMBER	START TIME (GMT)	START LATITUDE	START LONGITUDE	START DEPTH (F)	END DEPTH (F)	SPEED (knts)	TOW TIME (min)	CATCH TOTAL (kg)
SMP171902098	E0328	06/21/2019 20:15:37	2542.83	8318.89	32.7	32.9	3.0256	17.6	0.00
SMP171902099	E0331	06/22/2019 0:52:01	2547.52	8326.44	35.2	36.2	2.9958	30.017	88.57
SMP171902100	E0323	06/22/2019 5:22:03	2548.27	8300.46	26.6	26.7	2.9239	30.017	288.51
SMP171902101	E0319	06/22/2019 8:19:16	2547.70	8246.86	21.6	22.3	2.9642	30.017	878.62
SMP171902102	E0320	06/22/2019 11:02:30	2551.66	8251.63	23.1	23.6	2.9103	30.033	531.36
SMP171902103	E0324	06/22/2019 14:19:52	2558.48	8309.38	28.8	28.9	2.9489	30.017	48.15
SMP171902104	E0516	06/23/2019 3:28:37	2739.88	8343.80	24.4	24.7	3.1417	30.017	335.52
SMP171902105	E0513	06/23/2019 6:13:23	2749.36	8336.84	20.4	20.9	3.0292	30.033	74.84
SMP171902106	E0508	06/23/2019 10:24:10	2744.17	8314.19	13.6	14.4	2.9519	30.017	170.23
SMP171902107	E0509	06/23/2019 13:05:19	2749.73	8314.83	13.8	14.2	2.9731	30.017	118.03
SMP171902108	E0506	06/23/2019 16:11:31	2755.11	8304.40	8.4	7.9	3.0455	1.8	0.00