

Florida SEAMAP Fall 2019 Survey Cruise Report (10/14/19 – 10/30/19)

Cruise Number 171904 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. Due to the availability of carryover funding from the previous fiscal year, Florida was able to participate in the fall 2019 SEAMAP trawl survey.

Objectives

1. Conduct a trawl survey to collect information on shrimp and groundfish abundance/distribution with standard SEAMAP 42-foot 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-foot SEAMAP 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 put on during some stations in less the 100 ft of water to look at net geometry.

Results

During the fall 2019 survey, Florida sampled a total of 85 stations. Four trawl stations were labeled as not representative due to gear damage resulting in loss of catch. Total catch weight from all trawls was 6,705.05 kg. Individual trawl catch weights ranged from 0.24 kg to 580.64 kg. There were 45,718 animals collected, including 1,411 Pink Shrimp (*Farfantepenaeus duorarum*), 32 Red Snapper (*Lutjanus campechanus*), and 105 Lionfish (*Pterois* spp.), which occurred in 30 of the 85 stations (35% occurrence). The three most abundant species collected were Dusky Flounder (*Syacium papillosum*, n=7,722; 92% occurrence), Longspine Swimming Crab (*Achelous spinicarpus*, n=2,555; 46% occurrence), and Lane Snapper (*Lutjanus synagris*, n=2,135; 46% occurrence).

In addition to following standard SEAMAP sampling protocols, we collected ancillary material for various life history studies. Otoliths were removed from 392 fishes for aging analyses, including 261 Lutjanids, 35 Serranids, and 43 Lionfish. In addition, 18 spines were removed from Grey Triggerfish (*Balistes capriscus*) for alternative aging techniques. Gonads were removed from 15 fish for reproductive staging and 16 fin clips or tissue samples were taken for genetic analysis. Tissue samples were collected from 424 fish for mercury analyses and 495 stomachs were removed for dietary analyses from a wide variety of managed and non-managed species. Twenty-three samples were also collected for cooperative research requests from various federal and state institutions including: FWRI, University of Florida, and NMFS. In addition, FWRI's ISM section collected 22 specimens for tissue samples and vouchers. We collected acoustic data from 16 stations for net geometry analysis.

Quality Control

A total of 3,505 animals were frozen or preserved and brought back to FWRI. Of those animals, 1,753 fishes and select invertebrates were kept as representative samples and an additional 445 fishes were brought back to be further identified in the lab. In addition to fishes, 1,307 invertebrates were brought back for identification.

Deviations

Four trawl stations were sampled and aborted due to gear damage resulting in loss of catch. A total of 27 trawl stations were skipped due to a loss of 3 sea days from tropical storm Nestor. Due to a computer input error, Pascagoula station number 57 was skipped on purpose to avoid potential station duplication. Therefore station 56 was followed by station 58. All stations sampled were completed according to the NMFS SEAMAP protocol.

Cruise participants

Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute. Sample summary and data entry were completed by Chris Hessell and Julia Goodman.

Submitted By:

Ted Switzer

SEAMAP Coordinator

Table 1. Florida SEAMAP Fall 2019 Shrimp/Groundfish Completed Stations.

SEAMAP SEQUENCE NUMBER	SEAMAP STATION NUMBER	START TIME (GMT)	START LAT	START LONG	START DEPTH (F)	END DEPTH (F)	SPEED (knts)	TOW TIME (min)	CATCH TOTAL (kg)
SMP171904001	E0813	10/16/2019 6:58:09	2844.72	08500.53	33.10	32.50	2.85	30.02	12.53
SMP171904002	E0624	10/16/2019 9:26:01	2843.74	08453.40	27.30	27.00	2.88	30.02	13.57
SMP171904003	E0623	10/16/2019 11:30:59	2846.62	08446.28	27.00	25.20	2.98	30.03	73.25
SMP171904004	E0629	10/16/2019 15:10:28	2831.91	08457.41	45.20	45.00	2.88	30.02	27.23
SMP171904005	E0627	10/16/2019 18:34:01	2820.82	08443.66	35.00	36.60	2.78	30.03	52.62
SMP171904006	E0626	10/16/2019 21:02:34	2824.49	08439.73	34.20	34.40	2.73	30.02	22.92
SMP171904007	E0625	10/17/2019 0:32:24	2816.25	08416.15	27.20	25.80	2.95	30.02	35.38
SMP171904008	E0620	10/17/2019 3:18:58	2810.95	08357.67	22.20	22.00	2.91	30.02	329.44
SMP171904009	E0622	10/17/2019 5:46:18	2805.78	08403.92	24.00	24.30	2.98	30.00	49.71
SMP171904010	E0628	10/17/2019 9:25:29	2805.49	08427.31	38.50	38.30	3.01	30.03	45.44
SMP171904011	E0524	10/17/2019 13:08:30	2740.46	08426.75	58.50	60.00	2.88	30.00	32.83
SMP171904012	E0521	10/17/2019 15:34:10	2747.35	08421.70	42.70	42.40	2.91	30.02	35.80

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SMP171904013	E0522	10/17/2019 19:33:16	2731.79	08421.33	53.30	53.00	2.78	30.00	15.83
SMP171904014	E0520	10/17/2019 21:47:13	2735.99	08416.50	42.20	41.40	2.98	30.02	20.85
SMP171904015	E0517	10/18/2019 0:23:22	2734.71	08403.42	34.60	35.10	2.75	30.02	60.66
SMP171904016	E0516	10/18/2019 3:50:32	2753.40	08405.95	28.80	29.10	2.80	30.00	77.01
SMP171904017	E0514	10/18/2019 6:25:10	2748.50	08352.13	25.70	26.50	2.95	30.02	68.70
SMP171904018	E0515	10/18/2019 9:05:51	2734.59	08342.04	25.40	26.00	3.19	30.00	19.02
SMP171904019	E0519	10/18/2019 12:23:17	2722.07	08401.92	37.30	38.00	2.85	30.02	35.12
SMP171904020	E0322	10/20/2019 22:14:01	2545.79	08310.35	30.00	30.10	2.79	30.02	11.74
SMP171904021	E0328	10/21/2019 1:55:52	2542.41	08333.15	38.70	38.40	2.90	30.02	72.23
SMP171904022	E0322	10/21/2019 5:17:08	2530.32	08346.97	55.60	56.70	2.99	30.02	33.62
SMP171904023	E0327	10/21/2019 8:51:20	2521.21	08330.04	38.10	39.00	3.01	30.02	106.76
SMP171904024	E0326	10/21/2019 11:07:48	2516.81	08323.78	36.00	36.30	2.95	30.02	114.66
SMP171904025	E0325	10/21/2019 13:30:34	2508.14	08321.35	34.80	35.10	2.98	30.00	8.45

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SMP171904026	E0329	10/21/2019 16:07:30	2506.61	08337.21	39.30	39.00	2.92	30.02	72.47
SMP171904027	E0330	10/21/2019 18:01:20	2509.54	08343.14	46.50	45.00	2.77	30.13	14.05
SMP171904028	E0333	10/21/2019 20:20:39	2505.40	08348.64	59.00	57.00	2.95	30.00	4.72
SMP171904029	E0212	10/21/2019 22:28:41	2456.97	08344.73	47.00	46.00	3.00	30.02	16.30
SMP171904030	E0211	10/22/2019 0:48:28	2456.01	08333.37	38.60	38.70	2.78	30.02	17.07
SMP171904031	E0210	10/22/2019 3:24:59	2454.14	08320.07	34.60	35.00	2.93	30.02	47.04
SMP171904032	E0209	10/22/2019 5:28:55	2446.88	08316.51	34.10	34.60	2.97	30.02	55.84
SMP171904033	E0208	10/22/2019 7:54:07	2458.85	08312.90	33.20	33.60	3.05	30.02	266.38
SMP171904034	E0324	10/22/2019 10:13:03	2505.17	08311.13	32.50	32.50	3.03	30.02	163.68
SMP171904035	E0207	10/22/2019 13:22:48	2456.72	08255.74	25.40	25.70	3.04	30.00	57.78
SMP171904036	E0317	10/22/2019 15:20:55	2503.75	08251.52	24.50	25.00	3.12	30.02	71.64
SMP171904037	E0206	10/22/2019 18:02:12	2458.92	08237.45	19.50	19.60	2.72	30.03	55.37
SMP171904038	E0205	10/22/2019 20:05:49	2449.20	08236.06	17.10	17.20	2.79	30.02	14.22

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SMP171904039	E0204	10/22/2019 21:48:35	2454.78	08228.95	16.50	16.70	2.74	30.02	26.51
SMP171904040	E0203	10/23/2019 0:07:22	2454.39	08214.47	13.70	13.60	2.68	30.03	58.11
SMP171904041	E0201	10/23/2019 1:55:29	2455.92	08204.70	12.20	12.20	3.02	30.03	22.08
SMP171904042	E0308	10/23/2019 3:54:04	2504.13	08206.01	12.30	11.70	2.87	30.02	51.09
SMP171904043	E0503	10/25/2019 2:57:12	2719.97	08248.38	7.30	7.70	2.88	30.02	45.70
SMP171904044	E0504	10/25/2019 5:29:34	2708.20	08258.32	14.50	15.00	3.09	30.08	121.59
SMP171904045	E0511	10/25/2019 7:39:01	2705.46	08310.07	20.60	20.00	3.05	30.02	95.83
SMP171904046	E0505	10/25/2019 11:00:43	2702.28	08252.58	14.20	15.50	2.86	30.02	457.88
SMP171904047	E0411	10/25/2019 14:57:04	2641.77	08259.78	19.60	20.70	2.96	30.02	119.25
SMP171904048	E0407	10/25/2019 17:30:26	2643.69	08248.90	15.60	17.00	2.73	30.03	0.00
SMP171904049	E0409	10/25/2019 19:53:56	2634.41	08252.68	17.70	18.20	3.16	30.02	10.90
SMP171904050	E0410	10/25/2019 23:39:19	2613.57	08243.93	17.50	18.20	2.71	30.02	34.00

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SMP171904051	E0412	10/26/2019 1:10:57	2610.59	08248.57	19.60	20.10	2.78	30.02	234.18
SMP171904052	E0408	10/26/2019 3:53:33	2605.61	08237.39	16.10	16.90	2.72	30.00	328.07
SMP171904053	E0406	10/26/2019 7:06:54	2602.07	08225.81	13.10	13.70	2.89	30.02	0.00
SMP171904054	E0312	10/26/2019 9:14:43	2559.24	08226.48	14.60	14.00	2.83	30.03	64.51
SMP171904055	E0405	10/26/2019 12:19:50	2601.68	08209.24	9.40	9.00	2.94	30.02	0.00
SMP171904056	E0302	10/26/2019 15:51:28	2547.87	08156.32	8.20	7.90	3.01	30.02	109.63
SMP171904058	E0305	10/26/2019 17:57:09	2543.28	08202.34	10.20	9.90	2.73	30.03	0.00
SMP171904059	E0304	10/26/2019 21:01:55	2530.78	08157.27	9.00	9.30	2.82	30.02	102.29
SMP171904060	E0310	10/26/2019 23:52:18	2533.46	08214.15	14.20	14.10	2.44	30.02	45.70
SMP171904061	E0309	10/27/2019 2:32:56	2548.91	08222.48	14.50	14.70	2.91	30.02	227.97
SMP171904062	E0314	10/27/2019 5:59:16	2559.89	08242.86	19.10	18.90	2.98	30.02	580.64
SMP171904063	E0415	10/27/2019 9:26:20	2605.31	08305.95	26.40	26.70	2.95	30.05	259.91
SMP171904064	E0418	10/27/2019 11:53:53	2601.81	08318.39	31.50	30.90	2.89	30.03	12.33

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SMP171904065	E0422	10/27/2019 14:04:50	2608.39	08329.42	34.10	33.60	3.05	30.02	13.91
SMP171904066	E0424	10/27/2019 15:53:16	2606.84	08335.86	36.80	36.50	2.89	30.33	20.14
SMP171904067	E0425	10/27/2019 17:36:56	2611.85	08342.75	39.50	39.80	2.75	30.02	3.54
SMP171904068	E0420	10/27/2019 20:17:23	2615.03	08326.38	31.80	32.10	2.78	30.02	85.60
SMP171904069	E0419	10/27/2019 21:48:21	2621.35	08328.78	31.30	31.50	2.89	30.02	121.74
SMP171904070	E0417	10/27/2019 23:45:47	2631.90	08329.06	31.30	31.60	2.86	30.02	62.06
SMP171904071	E0423	10/28/2019 2:16:02	2629.88	08342.08	37.00	37.30	2.92	30.00	69.30
SMP171904072	E0427	10/28/2019 4:43:55	2639.76	08353.23	50.40	45.70	3.01	30.02	321.26
SMP171904073	E0421	10/28/2019 7:39:46	2652.75	08342.44	34.30	34.20	3.20	30.02	0.24
SMP171904074	E0416	10/28/2019 9:46:17	2657.91	08332.30	29.60	29.20	3.10	30.03	38.41
SMP171904075	E0512	10/28/2019 12:58:44	2714.38	08318.80	22.00	22.40	2.98	30.02	40.05
SMP171904076	E0510	10/28/2019 14:33:42	2720.45	08317.81	20.50	21.10	2.98	30.02	50.82
SMP171904077	E0509	10/28/2019 16:05:34	2721.67	08314.74	19.00	20.50	3.12	30.03	25.22

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SMP171904078	E0513	10/28/2019 18:18:04	2722.76	08329.26	23.70	23.90	2.81	30.03	152.32
SMP171904079	E0507	10/28/2019 21:21:44	2738.07	08317.61	15.80	16.90	2.86	30.03	18.40
SMP171904080	E0508	10/28/2019 22:59:34	2740.43	08325.97	18.50	18.50	2.86	30.02	27.61
SMP171904081	E0506	10/29/2019 1:05:13	2752.12	08320.88	15.60	15.80	2.93	30.30	108.87
SMP171904082	E0607	10/29/2019 3:32:34	2807.40	08316.69	12.70	12.20	2.69	30.00	13.05
SMP171904083	E0610	10/29/2019 5:11:46	2803.06	08323.77	14.50	15.20	3.08	30.03	114.01
SMP171904084	E0609	10/29/2019 6:52:07	2807.86	08326.45	14.20	14.70	3.04	30.03	60.25
SMP171904085	E0614	10/29/2019 8:37:38	2801.95	08335.63	17.50	18.10	3.09	30.02	84.52
SMP171904086	E0618	10/29/2019 10:30:38	2807.70	08346.88	20.10	20.50	3.05	30.03	33.61