

Florida SEAMAP Fall 2020 Survey Cruise Report (10/13/2020 – 10/24/2020)

Cruise Number 172002 using the R/V Tommy Munro

Prepared by:

Ted Switzer

Florida Fish and Wildlife Conservation Commission

Fish and Wildlife Research Institute

100 8th Avenue SE

St. Petersburg, FL 33701

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 funding, Florida was able to participate in the fall 2020 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. 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 in 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 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.

Results

During the fall 2020 survey, Florida sampled a total of 76 stations. Five trawl stations were labeled as not representative due to gear damage or gear fishing error but had reportable catch. Total catch weight from all 76 trawls was 10,083.2 kg. Individual trawl catch weights ranged from 0.11 kg to 1,015.94 kg. There were 45,665 animals collected, including 453 Pink Shrimp (*Farfantepenaeus duorarum*), 14 Red Snapper (*Lutjanus campechanus*), and 131 Lionfish (*Pterois* spp.), which occurred in 23 of the 76 stations (35% occurrence). The three most abundant species collected were Dusky Flounder (*Syacium papillosum*, n=5,171; 88% occurrence), Longspine Swimming Crab (*Achelous spinicarpus*, n=3,744; 37% occurrence), and deep-bodied mojarras (*Eucinostomus argenteus/gula*, n=2,950; 15% occurrence).

In addition to following standard SEAMAP sampling protocols, we collected ancillary material for various life history studies. Otoliths were removed from 428 fishes for aging

analyses, including 281 Lutjanids, 27 Serranids, and 53 Lionfish. In addition, five spines were removed from Grey Triggerfish (*Balistes capriscus*) for alternative aging techniques. A total of 30 fin clips or tissue samples were taken for genetic analysis. Tissue samples were collected from 459 fish for mercury analyses and 531 stomachs were removed for dietary analyses from a wide variety of managed and non-managed species. Four hundred and thirty-nine samples were also collected for cooperative research requests from various federal and state institutions including: FWRI, University of Florida, Texas A&M, Georgia Tech, and NMFS.

Quality Control

A total of 2,454 animals were frozen or preserved and brought back to FWRI. Of those animals, 1,142 fishes and select invertebrates were kept as representative samples and an additional 320 fishes were brought back to be further identified in the lab. In addition to fishes, 992 invertebrates were brought back for identification.

Deviations

Three trawl stations were deemed not representative due to gear damage. Two additional trawl stations were deemed not representative due to crossed doors upon retrieval resulting in gear fishing errors. The gear fishing errors were believed to have been caused by rough seas (2m) and strong current. All five of these non-representative trawls contained reportable catch and were processed accordingly. A total of 17 trawl stations were skipped due to rough seas. Two trawl stations had no CTD cast data due to unknown complications, and one CTD cast was compromised due to rough seas, causing the CTD to get wrapped around a stabilizer. 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 Julia Goodman.

Submitted By:

Ted Switzer

SEAMAP Coordinator

Table 1. Florida SEAMAP Fall 2020 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)
SMP172002001	E0522	10/14/2020 11:57:40	2732.65	08418.08	45.0	43.2	3.05	30.00	33.99
SMP172002002	E0519	10/14/2020 14:38:59	2733.96	08409.58	36.0	37.4	3.00	30.02	34.14
SMP172002003	E0520	10/14/2020 16:29:35	2732.47	08404.55	36.8	38.0	3.08	30.02	12.05
SMP172002004	E0514	10/14/2020 18:52:18	2738.43	08356.10	29.0	28.6	2.99	30.02	72.54
SMP172002005	E0518	10/14/2020 21:10:20	2729.97	08354.29	31.0	30.0	2.97	30.02	18.44
SMP172002006	E0512	10/14/2020 23:36:43	2737.84	08341.39	25.0	24.1	2.98	30.02	89.03
SMP172002007	E0511	10/15/2020 2:34:31	2731.21	08338.45	24.1	24.1	2.80	30.03	250.95
SMP172002008	E0515	10/15/2020 5:32:31	2726.07	08348.27	30.0	28.1	2.89	30.03	67.34
SMP172002009	E0513	10/15/2020 8:07:38	2722.83	08335.53	25.0	25.2	2.92	30.02	292.34
SMP172002010	E0517	10/15/2020 10:25:03	2718.85	08347.88	30.0	29.2	2.95	30.00	24.76
SMP172002011	E0516	10/15/2020 14:10:54	2709.89	08343.86	29.0	29.2	3.03	30.02	14.99
SMP172002012	E0509	10/15/2020 17:28:58	2710.10	08320.50	23.3	23.7	3.06	30.02	272.48

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)
SMP172002013	E0510	10/15/2020 19:22:40	2704.01	08316.44	22.9	23.0	2.94	30.02	92.60
SMP172002014	E0417	10/15/2020 21:57:17	2657.79	08331.25	29.0	29.8	3.11	30.00	7.62
SMP172002015	E0422	10/16/2020 1:12:57	2654.71	08353.64	41.7	41.7	2.97	30.00	45.98
SMP172002016	E0425	10/16/2020 3:36:42	2653.92	08403.34	49.7	48.6	2.94	30.00	37.44
SMP172002017	E0424	10/16/2020 6:49:03	2636.36	08350.37	48.0	46.4	2.87	30.02	28.71
SMP172002018	E0416	10/16/2020 10:55:03	2631.90	08321.87	29.0	28.9	2.86	30.00	550.88
SMP172002019	E0423	10/16/2020 14:48:42	2619.76	08344.92	43.0	42.9	3.07	30.00	60.33
SMP172002020	E0421	10/16/2020 16:50:01	2615.77	08334.31	34.8	35.0	3.00	30.02	199.40
SMP172002021	E0420	10/16/2020 18:47:05	2614.16	08328.00	33.0	33.9	3.10	30.02	44.14
SMP172002022	E0419	10/16/2020 20:36:47	2607.62	08324.74	32.5	32.8	2.95	30.00	81.44
SMP172002023	E0418	10/16/2020 22:49:48	2559.75	08317.76	30.9	31.1	3.34	30.02	0.42
SMP172002024	E0415	10/17/2020 1:51:57	2602.07	08301.52	24.5	25.4	3.01	30.02	310.02
SMP172002025	E0323	10/17/2020 3:46:10	2557.32	08306.81	27.8	28.6	2.93	30.02	86.22

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)
SMP172002026	E0328	10/17/2020 7:53:18	2545.66	08337.05	40.0	41.0	2.92	30.02	44.28
SMP172002027	E0331	10/17/2020 10:27:26	2536.35	08347.86	59.0	54.2	3.05	30.03	28.32
SMP172002028	E0330	10/17/2020 12:55:06	2522.79	08345.94	55.0	54.1	3.14	30.02	0.28
SMP172002029	E0329	10/17/2020 15:38:16	2513.91	08334.97	41.0	40.1	3.09	30.02	42.54
SMP172002030	E0211	10/17/2020 19:38:36	2450.00	08354.69	57.0	60.4	2.95	30.02	33.29
SMP172002031	E0209	10/17/2020 23:06:21	2448.26	08335.35	37.0	35.7	2.83	30.03	19.36
SMP172002032	E0210	10/18/2020 1:10:45	2452.15	08333.40	37.3	36.2	3.15	30.02	27.10
SMP172002033	E0208	10/18/2020 5:10:05	2446.65	08308.63	30.0	30.4	3.08	30.02	170.66
SMP172002034	E0207	10/18/2020 8:02:23	2454.74	08303.25	28.3	28.9	3.10	30.02	22.90
SMP172002035	E0206	10/18/2020 10:51:11	2450.51	08253.94	23.0	24.0	3.06	30.02	65.78
SMP172002036	E0203	10/18/2020 17:08:04	2455.42	08218.02	15.0	14.3	2.86	30.02	34.20
SMP172002037	E0202	10/18/2020 18:55:29	2447.73	08214.83	14.0	13.2	3.12	30.02	81.22
SMP172002038	E0201	10/18/2020 21:27:33	2449.19	08204.20	12.0	11.4	3.00	30.02	32.77

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)
SMP172002039	E0301	10/19/2020 2:33:49	2501.43	08131.28	5.1	5.4	2.99	30.02	261.86
SMP172002040	E0305	10/19/2020 5:13:54	2501.19	08145.77	9.0	8.9	3.06	30.02	203.23
SMP172002041	E0309	10/19/2020 8:30:58	2508.40	08205.33	12.0	11.9	3.23	30.03	103.07
SMP172002042	E0303	10/19/2020 12:52:28	2524.09	08147.83	7.2	7.1	2.94	30.02	613.09
SMP172002043	E0306	10/19/2020 15:01:47	2521.00	08158.69	10.0	9.8	2.96	30.02	148.77
SMP172002044	E0302	10/19/2020 20:13:36	2545.36	08149.49	6.2	7.2	2.98	30.02	128.12
SMP172002045	E0304	10/19/2020 22:01:47	2549.74	08157.71	8.2	8.5	2.99	30.00	61.21
SMP172002046	E0307	10/19/2020 23:36:08	2544.07	08203.95	10.3	10.6	3.01	30.02	113.71
SMP172002047	E0310	10/20/2020 2:17:58	2546.85	08218.79	13.9	14.9	2.90	30.00	688.19
SMP172002048	E0308	10/20/2020 5:09:42	2554.86	08209.81	11.2	12.0	2.90	30.05	201.82
SMP172002049	E0311	10/20/2020 7:30:18	2554.90	08223.76	14.9	14.9	2.98	30.02	522.80
SMP172002050	E0405	10/20/2020 10:35:00	2600.18	08214.07	10.5	11.4	3.07	30.02	202.16

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)
SMP172002051	E0402	10/20/2020 13:28:00	2615.47	08219.87	8.4	9.2	3.00	30.03	208.28
SMP172002052	E0408	10/20/2020 15:43:41	2618.84	08234.29	14.2	14.4	2.95	30.05	287.99
SMP172002053	E0409	10/20/2020 18:23:31	2604.70	08242.87	18.3	18.7	2.96	30.02	107.46
SMP172002054	E0319	10/20/2020 21:19:42	2549.65	08251.52	23.5	24.2	2.98	30.02	1015.94
SMP172002055	E0324	10/20/2020 23:57:05	2544.50	08301.17	28.0	28.0	2.94	30.02	207.80
SMP172002056	E0412	10/21/2020 4:50:10	2614.05	08250.88	19.8	20.1	2.97	30.02	27.89
SMP172002057	E0410	10/21/2020 6:54:50	2616.57	08246.68	18.0	19.2	2.97	30.02	207.91
SMP172002058	E0414	10/21/2020 9:41:03	2616.77	08303.68	23.5	24.1	3.08	30.02	32.79
SMP172002059	E0401	10/21/2020 18:56:46	2639.21	08220.12	7.0	6.8	2.96	30.02	2.05
SMP172002060	E0404	10/21/2020 21:11:10	2631.17	08227.85	10.3	10.3	3.10	30.02	0.32
SMP172002061	E0407	10/21/2020 22:43:23	2630.56	08234.05	12.0	12.2	2.92	30.02	85.66
SMP172002062	E0406	10/22/2020 0:29:12	2637.13	08232.60	11.5	12.0	2.88	30.03	149.02
SMP172002063	E0403	10/22/2020 2:31:55	2641.34	08226.84	10.0	9.6	2.94	30.02	41.06

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)
SMP172002064	E0502	10/22/2020 5:43:22	2701.42	08233.31	7.0	7.9	3.04	30.00	0.11
SMP172002065	E0506	10/22/2020 8:47:23	2702.84	08256.71	17.0	16.1	3.14	30.02	99.12
SMP172002066	E0505	10/22/2020 11:45:03	2719.75	08307.85	17.0	17.3	3.03	30.02	132.94
SMP172002067	E0504	10/22/2020 13:39:34	2724.90	08303.12	12.8	13.5	3.00	30.02	74.01
SMP172002068	E0501	10/22/2020 16:19:13	2733.64	08251.96	7.0	6.5	3.00	30.00	27.79
SMP172002069	E0503	10/22/2020 18:22:20	2741.93	08303.20	10.0	10.2	3.03	30.02	34.14
SMP172002070	E0508	10/22/2020 21:06:30	2734.64	08322.24	19.6	19.5	2.96	30.00	76.51
SMP172002071	E0507	10/22/2020 23:08:50	2740.19	08320.83	17.1	17.9	2.80	30.02	41.64
SMP172002072	E0610	10/23/2020 2:30:43	2801.96	08324.64	14.9	15.1	2.77	30.02	189.64
SMP172002073	E0612	10/23/2020 4:57:03	2811.67	08330.57	15.7	15.7	2.96	30.02	130.50
SMP172002074	E0608	10/23/2020 6:57:19	2814.41	08325.00	14.0	13.7	2.91	30.00	160.97
SMP172002075	E0604	10/23/2020 8:40:27	2818.88	08321.62	13.0	12.7	2.93	30.02	75.57
SMP172002076	E0606	10/23/2020 10:05:46	2820.53	08327.10	13.1	13.7	3.03	30.02	87.13