

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

Cruise Report

Date Submitted:

Platform:

Cruise Number:

Project Title:

Cruise Dates: -

Submitted by:
Field Party Chief

Date:

Approved by:
Division Director

Date:

Approved by:
Director, SEFSC

Date:

CRUISE RESULTS

NOAA Ship Oregon II, Cruise R2-22-04 (346)

INTRODUCTION

NOAA Ship Oregon II departed Pascagoula, MS on October 22, 2022 for the Fall Groundfish survey conducted under the auspices of the Southeast Area Monitoring and Assessment Program (SEAMAP). SEAMAP is a state-federal-university program for the collection, management and dissemination of fishery independent data. The primary objectives of this survey were to monitor the relative abundance, spatial distribution, and size composition of penaeid shrimp stocks and other demersal organisms across the northern Gulf of Mexico (GOM) in water depths from 5 to 60 fm.

NOAA Ship Oregon II was extremely late coming out of the shipyard this year, and this affected the number of scheduled days at sea (DAS) as well as the timeframe for this survey. The schedule was shifted to later in October to accommodate the bottom longline survey. In order to help mitigate the lost sea days from *NOAA Ship Oregon II*, outside funding was obtained to give extra sea days to the SEAMAP state partners and *R/V Tommy Munro*. The survey was scheduled for 32 days at sea (DAS) (October 21-November 23, 2022), with one scheduled port call in Galveston, TX to exchange scientific personnel. One DAS was lost while waiting for the new Chief Bosun to arrive upon completion of a survey aboard *NOAA Ship Pisces*. *NOAA Ship Oregon II* left the dock on October 22, 2022, but a hydraulic leak from the crane on the stern was found and was unable to be repaired by the engineers at sea. The crew had maxed out their working hours for that day, so the ship had to wait until the following day to return to the dock for repairs. The ship left again October 25 for a loss of two DAS for the mechanical issue. We began working stations in stat zone 11 in order to ensure the trawl winch was in good working order post shipyard, and because the weather in and on the way to Brownsville was not conducive to safe transit or working. Once the weather in stat zone 11 became unworkable the morning of October 26, the sea state looked settled enough to begin safely transiting south. There were numerous weather delays throughout the first leg adding up to roughly two days lost. Eventually the forecast looked too bad to safely stay offshore and continue working so the CO made the call to head into port in Galveston two days early on November 4. The second leg of the survey departed Galveston November 9 as scheduled. During the second leg of the survey, multiple cold fronts passed through the sampling area resulting in a little over 3.5 days lost to weather. Eventually, a string of progressively larger fronts was predicted to arrive over the entire remaining sampling area, so the CO made the call to return to Pascagoula six days early on November 17. A total of 32 DAS was scheduled for this survey with one DAS lost for ship's personnel, two DAS lost for a mechanical issue, about 5.5 days lost for weather while offshore, and eight DAS lost for coming in early for weather. A Fall Groundfish Impact Statement (Appendix I) was prepared and sent to the directorate.

SUMMARY OF OBJECTIVES

1. Sample the northern GOM with SEAMAP standard trawl sampling gear to determine the abundance and distribution of benthic fauna.
2. Collect size measurements to determine population size structures.
3. Record profiles through the water column of temperature, salinity, fluorescence, dissolved oxygen, and turbidity using a Conductivity/Temperature/Depth (CTD) unit at SEAMAP stations and transmit to NOAA National Center for Environmental Information (NCEI).
4. Collect water samples weekly at max depth using the handheld Orion 3 star Portable Dissolved Oxygen (DO) Meter to monitor the accuracy of the CTD DO measurement.
5. Use the NOTUS Trawlmaster Gear System to monitor the trawl's performance during the tow in real-time.
6. Attach cameras to the CTD unit to assess bottom habitat type.
7. Conduct additional trawl sampling if time permits.
8. Conduct additional CTD casts when the data are questionable after a tow.

SURVEY DESIGN

The sampling gear consisted of a 12 m (42 ft) shrimp net with 2 m by 1 m chain bracketed wooden doors towed with 54 m bridles and a single warp. A standard free tickler chain cut 106 cm shorter than the footrope was used to stimulate organisms out of the substrate and into the path of the oncoming net. Sample sites (300) were randomly selected between 5 and 60 fm within Gulf Coast shrimp statistical reporting zones 2-21. Bathymetric data were obtained from NOAA's Environmental Satellite, Data, and Information Service (NESDIS) website. Sampling sites were proportionally allocated according to surface area of statistical zones and two depth allocation units, 5-20 and 21-60 fm. Tow durations were 30 min at a targeted speed of 2.5 kt with tow direction left to the discretion of the bridge watch.

The NOTUS Trawlmaster Gear System was used at every station to monitor the trawl gear performance. The NOTUS system assessed in real-time the accuracy of the trawl's deployment, as it is being towed, and during its retrieval. With sensors attached to the doors and footrope, the system calculated how far the doors were spread and monitored the trawl's position in reference to the sea floor using an inclinometer. The sensors and hydrophone communicates to a command center that collects and displays all of the appropriate data.

Catch data were electronically recorded at-sea with the newly launched Trawl Resources input Program (TRiP), version 22.02.0.1.0, developed by NOAA's National Marine Fisheries Service Southeast Fisheries Science Center Mississippi Lab's Shipboard Support. The TRiP was used in conjunction with the Southeast Advanced Logger (SEAL, version 4.0.1) which recorded position, depth, date, time, and meteorological data. Catches were either processed in their entirety or subsampled, depending on the total catch weight. If catches exceeded 22.7 kg (50 lb), then at least 10% was taken as a subsample. Catches (or subsamples) were sorted to the lowest taxonomic level possible then enumerated and weighed. Taxa that were not identified to species level were returned to the laboratory for additional taxonomic resolution.

Weights were collected using Marel motion compensating M1100 scales. Large capacity scales (30 kg max, 10 gm resolution) were used to obtain total catch weights and small capacity scales (6 kg max, 1 gm resolution) for individual species weights. Lengths were recorded using Ichthystick 3.0 electronic measuring boards. A maximum of 20 individuals per species of red

snapper, grouper, lionfish and elasmobranchs per station were selected for individual size measurements, weight, and sex. For all other species, a maximum of 20 individuals were selected per station for size measurements and every fifth individual collected weight and sex in that series of 20.

Vertical profiles of temperature, conductivity, dissolved oxygen, percent light transmission and fluorometer values were recorded with a Seabird SBE 911. Water color and percent cloud cover observations were also taken during daylight hours. To better characterize bottom habitat, a Sony action camera and a LED light system were attached to the carousel of the CTD profiler to illuminate bottom substrate at every station. When the CTD cast was complete, the camera was removed and downloaded. CTD profiles were transmitted to a FTP website hosted by the NCEI.

RESULTS

One hundred and thirty-eight stations were planned for *NOAA Ship Oregon II* to complete. Of the 138 stations, 61 stations were dropped for weather. A total of 73 SEAMAP stations were completed successfully and 4 were given an operational code for gear problems (e.g. torn net, broken tickler chain, etc.). One station was given an opcode and then successfully retowed after the doors failed to spread on the initial attempt.

The CTD camera system was used at seventy-seven stations where a trawl was conducted to characterize the bottom habitat type. In addition to the CTD camera system, the NOTUS Trawlmaster Gear System was also deployed for every tow.

The total catch weight was 3,408.66 kg. There were approximately 15,479 measurements, 4,825 individual weights, and 4,084 sex determinations recorded from 254 taxa.

For summary purposes, *NOAA Ship Oregon II* operated in three geographic areas; East Delta (81°00' - 89°15' W Long), West Delta (89°15' - 94°00' W Long) and Texas (94°00' - 98°00' W Long). The West Delta and Texas regions were grouped together for this data summary due to similar species composition.

The three most abundant species by weight that accounted for at least 1% of the total catch from the West Delta and Texas included Atlantic croaker, *Micropogonias undulatus* (n=32,853), moon jelly, *Aurelia* (n=1505), and spot, *Leiostomus xanthurus* (n=1,968). These three species represent 56.3% of the 82,071 total specimens caught in that region (Table 1).

In the East Delta, the three most abundant species by weight that accounted for at least 1 % of the total catch included Atlantic croaker, *Micropogonias undulatus* (n=2642), spot, *Leiostomus xanthurus* (n=494), and longspine porgy, *Stenotomus caprinus* (n=309). These three species comprised 68% of the 5,255 total specimens caught in that region (Table 2).

SAMPLE REQUESTS

Various fish and invertebrate samples were collected for outside partners and graduate studies and were frozen and returned to requestors at NOAA Fisheries Pascagoula, MS, NOAA Fisheries Panama City, FL, Texas A&M University, and the Florida Fish and Wildlife Conservation Commission.

QUALITY CONTROL

As part of a study to determine accuracy of our identifications, five specimens of each species from both day and night watches from each stat zone were identified, saved and frozen. Specimens were a representation from each newly encountered species within each Shrimp Statistical Zone. These samples were brought back to NOAA Fisheries in Pascagoula, MS to verify for accuracy.

CRUISE PARTICIPANTS

Leg I (22 October – 4 November, 2022)

Name (Last, First)	Title	Affiliation
Stepongzi, Chrissy	FPC	ERT, Pascagoula, MS
Wallace, Taniya	Watch Leader	ERT, Pascagoula, MS
Hamilton, Alonzo	Watch Leader	NMFS, Pascagoula, MS
Hopkins, Nick	FMES	NMFS, Pascagoula, MS
Grace, Mark	Watch Stander	NMFS, Pascagoula, MS
Patterson, James	Watch Stander	NMFS, Daytona, FL
Bear, Phil	Camera Observer	Contractor, Galveston, TX
Smith, Derrick	Volunteer	FWC
Oster, Jacob	Volunteer	Texas A&M Corpus Christi

Leg II (9 November – 17 November, 2022)

Name (Last, First)	Title	Affiliation
Stepongzi, Chrissy	FPC	ERT, Pascagoula, MS
Hamilton, Alonzo	Watch Leader	NMFS, Pascagoula, MS
Millett, Andy	Watch Leader	ERT, Pascagoula, MS
Hopkins, Nick	FMES	NMFS Pascagoula, MS
Morales, Sindy	Camera Observer	Contractor, Galveston, TX
Mcfadyen, John	Camera Observer	Contractor, Galveston, TX
Debose, Andre	Watch Stander	NMFS, Pascagoula, MS
Goodman, Julia	Volunteer	FWC
Faggard, Allison	Volunteer	Pascagoula, MS

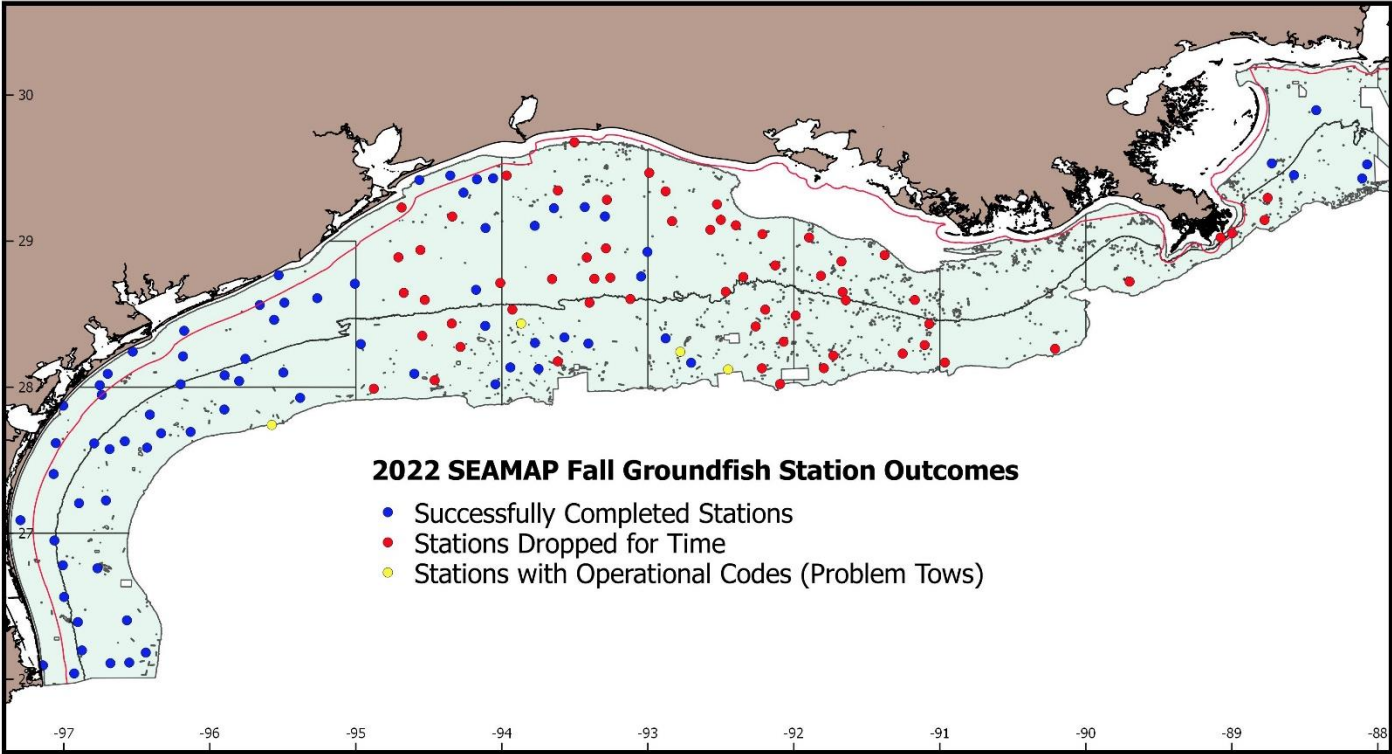
Table 1: The most abundant species by weight caught at 73 stations in the West Delta and Texas, which accounted for 1% of the total catch on *NOAA Ship Oregon II* R2-22-04 (346).

Zone	Taxon	Frequency	Total Number	Total Weight (kg)	Percent Number (%)	Percent Weight (%)	Percent Occurrence (%)
WEST	MICROPOGONIAS UNDULATUS	59	32853	1254.14	40.03	39.59	80.82
WEST	AURELIA	16	1505	354.2	1.83	11.18	21.92
WEST	LEIOSTOMUS XANTHURUS	42	1968	174.77	2.40	5.52	57.53
WEST	PENAEUS AZTECUS	61	6641	149.94	8.09	4.73	83.56
WEST	EUVOLA MARENSIS	33	10170	114.7	12.39	3.62	45.21
WEST	SYNODUS FOETENS	55	980	103.31	1.19	3.26	75.34
WEST	LUTJANUS CAMPECHANUS	56	935	96.84	1.14	3.06	76.71
WEST	STENOTOMUS CAPRINUS	52	2458	89.79	3.00	2.83	71.23
WEST	PITAR CORDATUS	26	2082	48.7	2.54	1.54	35.62
WEST	SYACIUM GUNTERI	55	2649	48.24	3.23	1.52	75.34
WEST	UPENEUS PARVUS	36	1256	43.9	1.53	1.39	49.32
WEST	PENAEUS SETIFERUS	18	1109	41.53	1.35	1.31	24.66

Table 2: The most abundant species by weight caught at 5 stations in the East Delta, which accounted for 1% of the total catch on *NOAA Ship Oregon II* R2-22-04 (346).

Zone	Taxon	Frequency	Total Number	Total Weight (kg)	Percent Number (%)	Percent Weight (%)	Percent Occurrence (%)
EAST	MICROPOGONIAS UNDULATUS	4	2642	107.14	50.28	44.55	80
EAST	LEIOSTOMUS XANTHURUS	3	494	40.31	9.40	16.76	60
EAST	STENOTOMUS CAPRINUS	3	309	16.07	5.88	6.68	60
EAST	SYACIUM PAPILLOSUM	2	231	12.34	4.40	5.13	40
EAST	PENAEUS AZTECUS	5	532	11.39	10.12	4.74	100
EAST	PRIONOTUS RUBIO	3	59	4.33	1.12	1.80	60
EAST	CHLOROSCOMBRUS CHRYSURUS	3	72	3.14	1.37	1.30	60

Figure 1: Outcomes of the trawl stations assigned to *NOAA Ship Oregon II* R2-22-04 (346).



Appendix I. Fall Groundfish Impact Statement

MEMORANDUM FOR: Janet Coit
Assistant Administrator for Fisheries

THROUGH: Cisco Werner, Ph.D.
Director of Scientific Programs and Chief Science Advisor

FROM: Clay Porch, Ph.D.
Science Director, Southeast Fisheries Science Center

CC: Evan Howell, Ph.D.
Director of NOAA Fisheries Office of Science and Technology

SUBJECT: Impacts to the FY23 SEAMAP Fall Groundfish Survey

DATE: 2_ November 2022

Background: The NOAA Fisheries Southeast Fisheries Science Center, Population and Ecosystem Monitoring Division, Trawl and Plankton Branch has conducted standardized fall groundfish surveys in the northern Gulf of Mexico (GOM) since 1972. In 1985, the fall survey was brought under the Southeast Area Monitoring and Assessment Program (SEAMAP) and adopted the summer trawl protocol in 1987. SEAMAP is a collaborative effort between federal, state and university programs, designed to collect, manage and distribute fishery independent data throughout the region. Working with our state partners, the primary objective of this trawl survey is to collect data on the abundance and distribution of demersal organisms in the northern GOM. This survey provides an important source of fisheries-independent information on many commercially and recreationally important species. Specifically, this survey has provided abundance indices, length and age composition, and other biological information for stock assessments of eleven species in GOM. In addition, hydrographic data collected at each station is shared with external partners and incorporated into oceanographic models.

Current Issue: The current issues are twofold. In a typical year, the SEAMAP Fall Groundfish Survey is allocated approximately 41 days at sea (DAS) to conduct trawling operations. However, due to funding issues in FY23, the DAS were reduced to 38, which was near the minimum amount of time required to complete the standard sampling design. Furthermore, due to extended dry dock repairs required on NOAA Ship *Oregon II*, the Red Snapper Bottom Longline Survey (a high-priority survey) was delayed 19 days. This required a shift in *Oregon II* schedule that caused the longline survey to extend into FY23, reducing the amount of DAS for the SEAMAP Fall Groundfish Survey from 38 to 32. In addition, the state of Florida, a partner on the survey, was also facing reduced DAS (8 compared to 11 in previous years). Due to the overall reduction of DAS between NOAA Fisheries and our state partners, the total number of planned survey stations was going to be reduced to 250 from the normal 325.

The second issue stems from the loss of DAS due to unfavorable sea conditions aboard the *Oregon II*, particularly during Leg 2, which was nominally scheduled for November 9-23. Using several available forecasts for November 15-22, it was deemed by the acting Commanding Officer, in consultation with the Chief Scientist, there would be no workable days (seas 6 ft or less, winds 25 knots or less) for the remainder of the survey period; therefore a decision was made to come in six days ahead of schedule. The *Oregon II* arrived at the dock in Pascagoula on November 17.

Mitigation: To address the first issue involving the reduction of DAS, funding (\$93,285 or 9 DAS) was provided to the Gulf State Marine Fishery Commission for our state partners to conduct additional trawl operations. This funding, in

conjunction with the combining of survey efforts between Florida, Mississippi, and Alabama, allowed for a total sampling effort of 22 DAS. This effort, in addition to the sampling by the state of Louisiana, was able to bring the total survey effort back to 300 stations.

No mitigation is possible for the second issue as by the time assets could possibly be mobilized on a charter vessel (or even the *Oregon II*), we would be outside the historic time frame of sampling.

Impacts: Due to the decrease in the number of DAS, the total number of stations sampled was initially dropped to 250, but was later able to be raised to 300 with the addition of DAS by our state partners. With a decrease in the number of stations sampled, there is a likelihood that the coefficients of variation (CVs) for the abundance indices for assessed species will increase, leading to a higher degree of uncertainty when those indices are incorporated into stock assessment models.

When the two issues above are combined, it has led to only 77 of the 138 assigned stations for NOAA Fisheries to be sampled (Figure 1). Unfortunately, this loss of 61 stations (Figure 2) was not able to be spread evenly across the western GOM and statistical zone 11 (just east of the Mississippi River), which could have helped from an index perspective. Instead, we are left with large gaps in the spatial coverage that may preclude the 2022 fall data from being utilized in stock assessments for species in the western GOM, such as red snapper, gray triggerfish, spanish mackerel, king mackerel and white shrimp. Unfortunately, these gaps in spatial coverage occur in areas of high abundance for these species.

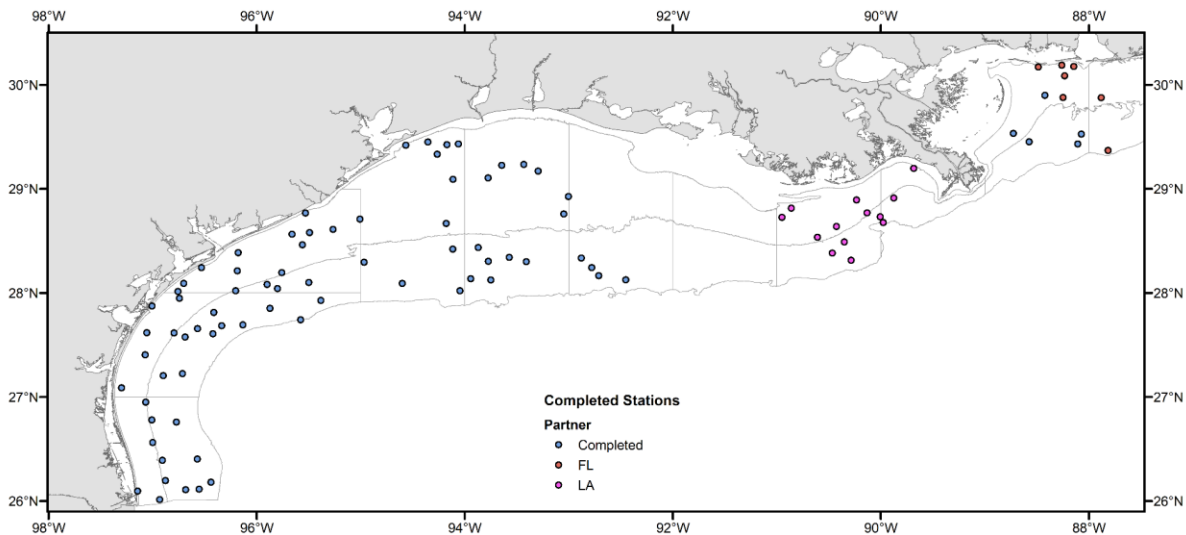


Figure 1. Stations completed by all SEAMAP partners for the 2022 SEAMAP Fall Groundfish Survey.

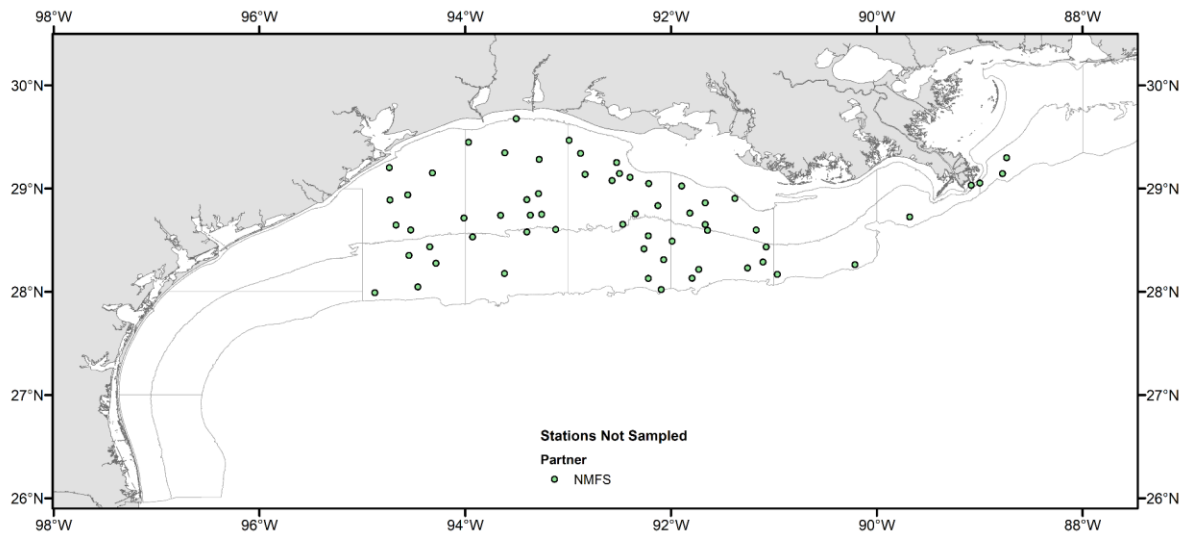


Figure 2. Stations that were unable to be sampled by NOAA Fisheries during the 2022 SEAMAP Fall Groundfish Survey.