

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:

INTRODUCTION

The NOAA Ship *Pisces* departed from Morehead City, NC, on 6 July 2021 for a Southeast Fishery-Independent Survey (SEFIS) research cruise in continental shelf and shelf-break waters off North and South Carolina. SEFIS was created by the National Marine Fisheries Service in 2010 and operates out of the NOAA-Beaufort Laboratory. This survey was created to conduct applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. Leg 1 was scheduled to occur from 4–16 July, 2021, and leg 2 was scheduled to occur from 18–31, 2021, but due to personnel issues, cruise dates changed to 6–16 July 2021 for leg 1 and 17–31 July 2021 for leg 2 (so only 1 day at-sea was lost in total). During this survey, chevron trap catches and associated underwater video recordings were collected from hardbottom habitats from Cape Hatteras, North Carolina to approximately Georgetown, SC. A total of 394 stations were sampled with camera-trap arrays over 26 sea days, at depths ranging from 18 to 109 m, along with 69 CTD casts.

OBJECTIVES

1. Fishery-independent sampling of randomly selected stations in North and South Carolina. Baited chevron traps, with two mounted high-definition video cameras were utilized for (a) hardbottom reef fish community assessments, (b) collection of reef fish for biological samples (i.e., otoliths and gonads), and (c) comparative gear sampling (cameras versus traps).
2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.
3. Use a conductivity, temperature, depth (CTD) instrument package to collect environmental data (temperature, salinity, dissolved oxygen, turbidity) at camera-trap sampling locations.

MATERIALS AND METHODS

Camera-Trap Sampling

Camera-trap gear consisted of two high definition video cameras mounted to a chevron fish trap. Additionally, one of the six traps in a group included an attached stereo-video camera for future fish length measurements. Chevron traps were composed of plastic-coated wire mesh. GoPro cameras (model HD Hero[®] H4) were attached above the mouth and nose of the trap (Figure 1). Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at least 200 m apart on suspected or known hardbottom habitats, and soak time was targeted for approximately 90 min. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted while traps were soaking. Fish catches were processed after trap retrieval. All fish were enumerated, weighed, and measured to the nearest millimeter. Individuals of some species (mostly species found in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on digital media storage devices. Biological samples and video files were brought to the Beaufort Laboratory for further processing and analysis.

Environmental Data Collection

Environmental data were collected with a Seabird CTD instrument package (model SBE 9) and Scientific Computer System (SCS) software. CTD casts were conducted near the middle of the camera-trap soak period; instruments were lowered to within 2 m of the bottom. Numerous water profile measurements were taken, including temperature (°C), salinity, dissolved oxygen (mg/L), average sound velocity (m/s), fluorescence (mg/m³), and beam transmission (%). CTD data were archived for further processing at the Beaufort Laboratory. SCS 4.0 was used to collect specific information for each fishing and CTD event, including soak

time/cast duration as well as start and end latitude, longitude, and depth (m).

RESULTS AND DISCUSSION

Camera-Trap Sampling

A total of 394 stations were sampled with camera-trap gear (Table 1). From these traps, fish were collected and worked up for length frequency data. Various reef fish species were further processed for otolith, gonad, and DNA tissue.

Environmental Data Collection

A total of 69 CTD casts (Table 1) were conducted during the cruise. CTD data will be processed with Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS-Beaufort Laboratory for future analysis.

Time Lost

The cruise was delayed by two days due to crew staffing issues, but one of those days was made up for by starting leg 2 one day earlier than planned (resulting in a total of only 1 day at-sea lost on this cruise, for which we are very thankful).

Acknowledgments

We thank the NOAA Ship *Pisces* officers and ship's company for their hard work during our cruise. The cruise came off with no major mechanical problems or loss of days-at-sea.

Table 1. Summary of station coordinates (DD), depth (m), date, and time (UTC) for each fishing event (camera-trap, Gear=324) and CTD cast (Gear=298) conducted on the PC-21-03 survey.

Collection	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
213679	324	7/6/2021	19:33	34.43142	-76.61147	22
213680	324	7/6/2021	19:39	34.42550	-76.60776	22
213681	324	7/6/2021	19:45	34.41846	-76.60600	22
213682	298	7/6/2021	19:59	34.41262	-76.60479	22
213683	324	7/7/2021	10:59	34.45596	-76.62523	18
213684	324	7/7/2021	11:01	34.45407	-76.62637	18
213685	324	7/7/2021	11:05	34.45015	-76.62611	18
213686	324	7/7/2021	11:08	34.44785	-76.62420	18
213687	324	7/7/2021	11:11	34.44526	-76.62394	18
213688	324	7/7/2021	11:14	34.44313	-76.62212	18
213689	298	7/7/2021	11:26	34.44151	-76.61874	18
213690	324	7/7/2021	14:36	34.42356	-76.70978	24
213691	324	7/7/2021	14:39	34.42061	-76.71203	24
213692	324	7/7/2021	14:45	34.41274	-76.70488	24
213693	324	7/7/2021	14:48	34.40875	-76.70151	26
213694	324	7/7/2021	14:54	34.40552	-76.70352	24
213695	324	7/7/2021	14:57	34.40792	-76.70638	26
213696	298	7/7/2021	15:06	34.41186	-76.70904	27

213697	324	7/7/2021	17:32	34.38799	-76.56982	18
213698	324	7/7/2021	17:36	34.38818	-76.57525	18
213699	324	7/7/2021	17:40	34.38840	-76.57964	18
213700	324	7/7/2021	17:43	34.38682	-76.58313	18
213701	324	7/7/2021	17:46	34.38760	-76.58640	18
213702	324	7/7/2021	17:50	34.38794	-76.59243	20
213703	298	7/7/2021	17:59	34.38889	-76.59607	26
213704	324	7/8/2021	10:59	34.58921	-76.93969	18
213705	324	7/8/2021	11:05	34.58767	-76.94607	18
213706	324	7/8/2021	11:11	34.58658	-76.94923	18
213707	324	7/8/2021	11:14	34.58654	-76.94964	18
213708	324	7/8/2021	11:18	34.58266	-76.94508	18
213709	324	7/8/2021	11:24	34.57731	-76.94644	18
213710	298	7/8/2021	11:30	34.57390	-76.94743	18
213711	324	7/9/2021	11:09	34.44995	-76.90675	25
213712	324	7/9/2021	11:13	34.44601	-76.90669	26
213713	324	7/9/2021	11:17	34.44174	-76.90398	25
213714	324	7/9/2021	11:20	34.43902	-76.90114	25
213715	324	7/9/2021	11:22	34.43682	-76.89785	24
213716	324	7/9/2021	11:31	34.42985	-76.90343	24
213717	298	7/9/2021	11:38	34.42809	-76.90530	26
213718	324	7/9/2021	14:20	34.46458	-76.86390	24
213719	324	7/9/2021	14:23	34.46825	-76.86692	23
213720	324	7/9/2021	14:28	34.46948	-76.87196	23
213721	324	7/9/2021	14:33	34.47206	-76.87772	23
213722	324	7/9/2021	14:38	34.47877	-76.87524	23
213723	324	7/9/2021	14:46	34.48080	-76.88503	23
213724	298	7/9/2021	14:54	34.47857	-76.88973	23
213725	324	7/9/2021	17:28	34.32293	-76.88976	27
213726	324	7/9/2021	17:31	34.31944	-76.88840	27
213727	324	7/9/2021	17:34	34.31676	-76.88732	26
213728	324	7/9/2021	17:43	34.31784	-76.89381	27
213729	324	7/9/2021	17:46	34.31482	-76.89436	27
213730	324	7/9/2021	17:49	34.31115	-76.89426	26
213731	298	7/9/2021	17:56	34.30836	-76.89449	27
213732	324	7/10/2021	10:59	33.98965	-76.65750	41
213733	324	7/10/2021	11:06	33.98701	-76.65419	41
213734	324	7/10/2021	11:10	33.98701	-76.65419	41
213735	324	7/10/2021	11:17	33.97813	-76.65694	41
213736	324	7/10/2021	11:22	33.97565	-76.66306	42
213737	324	7/10/2021	11:28	33.97191	-76.66879	41
213738	298	7/10/2021	11:36	33.96963	-76.67174	42
213739	324	7/10/2021	14:29	33.95460	-76.76588	40

213740	324	7/10/2021	14:35	33.96168	-76.76942	40
213741	324	7/10/2021	14:41	33.96570	-76.77682	39
213742	324	7/10/2021	14:51	33.96811	-76.77716	38
213743	324	7/10/2021	14:54	33.96799	-76.78112	38
213744	324	7/10/2021	14:56	33.96903	-76.78421	37
213745	298	7/10/2021	16:52	33.95714	-76.76353	40
213746	324	7/10/2021	17:03	33.95130	-76.75983	40
213747	324	7/10/2021	17:12	33.94147	-76.75897	41
213748	324	7/10/2021	17:15	33.93741	-76.75784	40
213749	324	7/10/2021	17:17	33.93473	-76.75784	40
213750	324	7/10/2021	17:23	33.92911	-76.75584	41
213751	324	7/10/2021	17:27	33.92515	-76.75495	41
213752	298	7/10/2021	17:33	33.92169	-76.75550	41
213753	324	7/11/2021	10:58	34.10017	-76.82491	35
213754	324	7/11/2021	11:06	34.10276	-76.82825	35
213755	324	7/11/2021	11:09	34.10086	-76.83135	35
213756	324	7/11/2021	11:12	34.09733	-76.83165	35
213757	324	7/11/2021	11:14	34.09527	-76.83101	35
213758	324	7/11/2021	11:19	34.09013	-76.83231	35
213759	298	7/11/2021	11:29	34.08588	-76.83657	37
213760	324	7/11/2021	14:18	34.13111	-76.81026	34
213761	324	7/11/2021	14:21	34.13503	-76.80975	32
213762	324	7/11/2021	14:25	34.14019	-76.80933	32
213763	324	7/11/2021	14:30	34.14226	-76.81278	33
213764	324	7/11/2021	14:38	34.14080	-76.82509	34
213765	324	7/11/2021	14:46	34.13322	-76.82176	35
213766	298	7/11/2021	14:54	34.12917	-76.81726	35
213767	324	7/11/2021	17:19	34.19054	-76.92798	31
213768	324	7/11/2021	17:23	34.19071	-76.93452	31
213769	324	7/11/2021	17:32	34.18154	-76.93799	32
213770	324	7/11/2021	17:36	34.17720	-76.93914	30
213771	324	7/11/2021	17:38	34.17438	-76.93777	31
213772	324	7/11/2021	17:48	34.17691	-76.94736	28
213773	298	7/11/2021	17:56	34.17700	-76.95300	32
213774	324	7/12/2021	10:59	34.20151	-76.94144	31
213775	324	7/12/2021	11:04	34.19599	-76.94385	31
213776	324	7/12/2021	11:11	34.19505	-76.93748	31
213777	324	7/12/2021	11:18	34.19257	-76.94058	31
213778	324	7/12/2021	11:24	34.18952	-76.94759	33
213779	324	7/12/2021	11:27	34.18702	-76.94922	32
213780	298	7/12/2021	11:35	34.18322	-76.94825	32
213781	324	7/12/2021	14:23	34.31538	-77.06257	25
213782	324	7/12/2021	14:25	34.31284	-77.06058	25

213783	324	7/12/2021	14:29	34.31034	-77.06009	26
213784	324	7/12/2021	14:35	34.30821	-77.05614	26
213785	324	7/12/2021	14:38	34.30671	-77.05127	27
213786	324	7/12/2021	14:45	34.30281	-77.05531	26
213787	298	7/12/2021	14:52	34.30095	-77.05933	27
213788	324	7/12/2021	17:40	34.12183	-77.16381	27
213789	324	7/12/2021	17:44	34.11948	-77.16933	29
213790	324	7/12/2021	17:50	34.11696	-77.16444	30
213791	324	7/12/2021	17:56	34.11839	-77.15677	29
213792	324	7/12/2021	18:01	34.11399	-77.15148	29
213793	324	7/12/2021	18:05	34.11109	-77.14581	30
213794	298	7/12/2021	18:13	34.10910	-77.14070	31
213795	324	7/13/2021	10:59	33.87443	-76.47602	78
213796	324	7/13/2021	11:10	33.87274	-76.47814	79
213797	324	7/13/2021	11:12	33.87127	-76.48086	77
213798	324	7/13/2021	11:22	33.86979	-76.48367	74
213799	324	7/13/2021	11:26	33.86733	-76.48690	75
213800	324	7/13/2021	11:28	33.86602	-76.49027	73
213801	298	7/13/2021	11:39	33.86513	-76.49650	71
213802	324	7/13/2021	14:21	33.81326	-76.55997	81
213803	324	7/13/2021	14:26	33.80893	-76.56570	85
213804	324	7/13/2021	14:29	33.80604	-76.57077	84
213805	324	7/13/2021	14:37	33.79798	-76.57900	93
213806	324	7/13/2021	14:40	33.79493	-76.58308	95
213807	324	7/13/2021	14:45	33.79059	-76.58833	100
213808	298	7/13/2021	14:55	33.78579	-76.59120	104
213809	324	7/13/2021	16:55	33.76641	-76.61957	105
213810	324	7/13/2021	17:03	33.76426	-76.62052	109
213811	324	7/13/2021	17:09	33.76164	-76.62704	107
213812	324	7/13/2021	17:11	33.76168	-76.63010	92
213813	324	7/13/2021	17:17	33.75768	-76.63187	104
213814	324	7/13/2021	17:24	33.75523	-76.63885	90
213815	298	7/13/2021	17:43	33.74614	-76.63390	119
213816	324	7/14/2021	11:08	33.75088	-76.64292	103
213817	324	7/14/2021	11:14	33.74610	-76.64954	99
213818	324	7/14/2021	11:21	33.74072	-76.65724	103
213819	324	7/14/2021	11:24	33.73811	-76.66074	101
213820	324	7/14/2021	11:28	33.73478	-76.66492	106
213821	324	7/14/2021	11:32	33.73127	-76.66909	105
213822	298	7/14/2021	11:50	33.72482	-76.67754	111
213823	324	7/14/2021	14:19	33.70847	-76.71818	71
213824	324	7/14/2021	14:23	33.71240	-76.71313	71
213825	324	7/14/2021	14:30	33.71858	-76.70589	70

213826	324	7/14/2021	14:33	33.72017	-76.70169	71
213827	324	7/14/2021	14:37	33.72160	-76.69541	71
213828	324	7/14/2021	14:45	33.71370	-76.69972	89
213829	298	7/14/2021	14:55	33.71133	-76.70554	82
213830	324	7/14/2021	17:30	33.62643	-76.84663	68
213831	324	7/14/2021	17:35	33.62802	-76.84138	72
213832	324	7/14/2021	17:38	33.62923	-76.83739	76
213833	324	7/14/2021	17:42	33.63274	-76.83476	69
213834	324	7/14/2021	17:47	33.63406	-76.82911	79
213835	324	7/14/2021	17:55	33.62944	-76.83291	100
213836	298	7/14/2021	18:08	33.62402	-76.83528	94
213837	324	7/15/2021	11:01	33.60850	-76.87221	72
213838	324	7/15/2021	11:06	33.60939	-76.86663	89
213839	324	7/15/2021	11:08	33.61171	-76.86523	78
213840	324	7/15/2021	11:12	33.61454	-76.86230	75
213841	324	7/15/2021	11:19	33.61973	-76.85354	77
213842	324	7/15/2021	11:22	33.62190	-76.85071	74
213843	298	7/15/2021	11:36	33.62375	-76.84596	80
213844	324	7/15/2021	14:26	33.49371	-76.95506	77
213845	324	7/15/2021	14:33	33.50214	-76.94868	84
213846	324	7/15/2021	14:35	33.50320	-76.94568	76
213847	324	7/15/2021	14:41	33.50519	-76.94231	83
213848	324	7/15/2021	14:47	33.50409	-76.93852	87
213849	324	7/15/2021	14:51	33.50739	-76.93926	79
213850	298	7/15/2021	15:00	33.50959	-76.94527	77
213851	324	7/18/2021	11:00	34.35850	-76.37800	24
213852	324	7/18/2021	11:06	34.35190	-76.37800	22
213853	324	7/18/2021	11:12	34.34710	-76.38100	23
213854	324	7/18/2021	11:17	34.34180	-76.38000	24
213855	324	7/18/2021	11:22	34.33800	-76.38000	24
213856	324	7/18/2021	11:26	34.33400	-76.38000	22
213857	298	7/18/2021	11:35	34.32840	-76.37300	27
213858	324	7/18/2021	14:10	34.23990	-76.39500	33
213859	324	7/18/2021	14:15	34.23370	-76.39700	31
213860	324	7/18/2021	14:18	34.23250	-76.40100	30
213861	324	7/18/2021	14:20	34.23410	-76.40300	32
213862	324	7/18/2021	14:24	34.23600	-76.40700	31
213863	324	7/18/2021	14:30	34.23090	-76.40500	33
213864	298	7/18/2021	14:40	34.22830	-76.40000	34
213865	324	7/18/2021	18:16	34.13210	-76.54700	37
213866	324	7/18/2021	18:20	34.12750	-76.54900	38
213867	324	7/18/2021	18:24	34.12240	-76.55100	37
213868	324	7/18/2021	18:33	34.11920	-76.55400	38

213869	324	7/18/2021	18:35	34.12110	-76.55700	38
213870	324	7/18/2021	18:39	34.12570	-76.55900	37
213871	298	7/18/2021	18:55	34.13840	-76.56400	
213872	324	7/19/2021	11:09	34.54320	-76.40100	19
213873	324	7/19/2021	11:12	34.54050	-76.40200	21
213874	324	7/19/2021	11:14	34.53860	-76.40100	20
213875	324	7/19/2021	11:17	34.53720	-76.40400	19
213876	324	7/19/2021	11:21	34.53410	-76.40300	19
213877	324	7/19/2021	11:25	34.52990	-76.40400	19
213878	298	7/19/2021	11:32	34.52830	-76.40800	17
213879	324	7/19/2021	14:25	34.51380	-76.35550	23
213880	324	7/19/2021	14:27	34.51586	-76.35470	23
213881	324	7/19/2021	14:29	34.51830	-76.35500	23
213882	324	7/19/2021	14:32	34.52040	-76.35380	23
213883	324	7/19/2021	14:37	34.52370	-76.35280	25
213884	324	7/19/2021	14:39	34.52650	-76.35390	24
213885	298	7/19/2021	14:47	34.51770	-76.33000	25
213886	324	7/19/2021	16:45	34.52270	-76.34900	25
213887	324	7/19/2021	16:48	34.52020	-76.34900	25
213888	324	7/19/2021	16:50	34.51790	-76.35100	23
213889	324	7/19/2021	16:56	34.51460	-76.35000	24
213890	324	7/19/2021	16:59	34.51300	-76.35200	23
213891	324	7/19/2021	17:03	34.51070	-76.35600	23
213892	298	7/19/2021	17:19	34.50990	-76.36100	24
213893	324	7/19/2021	19:26	34.53410	-76.34600	23
213894	324	7/19/2021	19:30	34.53000	-76.34700	24
213895	298	7/19/2021	19:41	34.52650	-76.34400	25
213896	324	7/20/2021	10:59	34.30200	-76.58100	29
213897	324	7/20/2021	11:03	34.29880	-76.58500	24
213898	324	7/20/2021	11:07	34.29490	-76.58400	29
213899	324	7/20/2021	11:16	34.28730	-76.57700	28
213900	324	7/20/2021	11:22	34.28250	-76.58400	30
213901	324	7/20/2021	11:26	34.27920	-76.58700	31
213902	298	7/20/2021	11:34	34.27430	-76.58800	33
213903	324	7/20/2021	13:48	34.24800	-76.59500	30
213904	324	7/20/2021	13:51	34.25180	-76.59700	29
213905	324	7/20/2021	13:56	34.25640	-76.60200	32
213906	324	7/20/2021	14:00	34.25910	-76.60700	32
213907	324	7/20/2021	14:02	34.26020	-76.61000	29
213908	324	7/20/2021	14:09	34.26860	-76.61400	30
213909	298	7/20/2021	14:20	34.26930	-76.61800	29
213910	324	7/20/2021	16:54	34.27160	-76.81400	30
213911	324	7/20/2021	16:57	34.27160	-76.81800	30

213912	324	7/20/2021	17:07	34.27360	-76.82400	30
213913	324	7/20/2021	17:12	34.26940	-76.82800	30
213914	324	7/20/2021	17:14	34.26690	-76.82800	30
213915	324	7/20/2021	17:16	34.26480	-76.82900	31
213916	298	7/20/2021	17:26	34.26170	-76.83200	31
213917	324	7/20/2021	19:50	34.26250	-76.82800	31
213918	324	7/20/2021	19:45	34.26200	-76.82300	31
213919	298	7/20/2021	20:00	34.26220	-76.83300	32
213920	324	7/21/2021	11:14	34.49090	-75.86500	89
213921	324	7/21/2021	11:17	34.48840	-75.86800	88
213922	324	7/21/2021	11:26	34.47980	-75.87400	88
213923	324	7/21/2021	11:29	34.47600	-75.87900	85
213924	324	7/21/2021	11:34	34.47040	-75.88300	87
213925	324	7/21/2021	11:37	34.46780	-75.88700	84
213926	298	7/21/2021	12:25	34.49300	-75.86100	93
213927	324	7/21/2021	13:56	34.48420	-75.87300	82
213928	324	7/21/2021	14:00	34.48170	-75.87900	78
213929	324	7/21/2021	14:05	34.47740	-75.88200	78
213930	324	7/21/2021	14:07	34.47430	-75.88400	81
213931	324	7/21/2021	14:11	34.47070	-75.88800	80
213932	324	7/21/2021	14:14	34.46840	-75.89300	79
213933	298	7/21/2021	14:24	34.46580	-75.89500	80
213934	324	7/21/2021	16:28	34.48810	-75.88300	72
213935	324	7/21/2021	16:33	34.48290	-75.88500	74
213936	324	7/21/2021	16:43	34.48340	-75.89100	73
213937	324	7/21/2021	16:47	34.47990	-75.89300	73
213938	324	7/21/2021	16:51	34.47710	-75.89700	73
213939	324	7/21/2021	16:54	34.47370	-75.89900	73
213940	298	7/21/2021	17:06	34.47000	-75.90000	73
213941	324	7/21/2021	19:21	34.46600	-75.91000	72
213942	324	7/21/2021	19:25	34.46100	-75.91200	72
213943	324	7/21/2021	19:36	34.46000	-75.91700	71
213944	324	7/21/2021	19:40	34.45510	-75.91900	73
213945	298	7/21/2021	19:52	34.45030	-75.91900	75
213946	324	7/22/2021	10:59	34.58140	-75.80500	63
213947	324	7/22/2021	11:03	34.57960	-75.80900	62
213948	324	7/22/2021	11:07	34.57630	-75.81000	63
213949	324	7/22/2021	11:18	34.58020	-75.82400	62
213950	324	7/22/2021	11:22	34.57660	-75.82700	62
213951	324	7/22/2021	11:32	34.57150	-75.84100	62
213952	298	7/22/2021	11:40	34.57040	-75.84500	61
213953	324	7/22/2021	14:00	34.54370	-75.81400	77
213954	324	7/22/2021	14:06	34.55020	-75.80800	79

213955	324	7/22/2021	14:10	34.55410	-75.80600	73
213956	324	7/22/2021	14:16	34.55130	-75.80200	91
213957	324	7/22/2021	14:23	34.55490	-75.79700	95
213958	324	7/22/2021	14:30	34.55350	-75.78800	101
213959	298	7/22/2021	14:45	34.55010	-75.78500	107
213960	324	7/22/2021	17:24	34.64890	-75.74100	60
213961	324	7/22/2021	17:35	34.65160	-75.75200	59
213962	324	7/22/2021	17:38	34.65410	-75.74900	57
213963	324	7/22/2021	17:48	34.66730	-75.74200	57
213964	324	7/22/2021	17:52	34.66790	-75.73800	57
213965	324	7/22/2021	17:58	34.66710	-75.72900	59
213966	298	7/22/2021	18:12	34.66280	-75.73400	60
213967	324	7/23/2021	10:58	34.86560	-75.52600	57
213968	324	7/23/2021	11:03	34.86820	-75.52000	60
213969	324	7/23/2021	11:09	34.86540	-75.51500	56
213970	324	7/23/2021	11:14	34.86730	-75.51300	56
213971	324	7/23/2021	11:18	34.87120	-75.51100	58
213972	324	7/23/2021	11:22	34.87200	-75.50700	59
213973	298	7/23/2021	11:35	34.86980	-75.50100	63
213974	324	7/23/2021	13:59	34.91500	-75.51000	55
213975	324	7/23/2021	14:04	34.90960	-75.51400	56
213976	324	7/23/2021	14:06	34.90700	-75.51500	58
213977	324	7/23/2021	14:08	34.90530	-75.51800	56
213978	324	7/23/2021	14:13	34.90350	-75.51900	57
213979	324	7/23/2021	14:16	34.90150	-75.52200	56
213980	298	7/23/2021	14:23	34.90170	-75.52700	55
213981	324	7/23/2021	16:43	34.92480	-75.52000	53
213982	324	7/23/2021	16:46	34.92680	-75.51700	53
213983	324	7/23/2021	16:50	34.92660	-75.51200	54
213984	324	7/23/2021	16:56	34.92230	-75.50700	54
213985	324	7/23/2021	17:00	34.92220	-75.50400	56
213986	324	7/23/2021	17:03	34.92370	-75.50100	56
213987	298	7/23/2021	17:16	34.92900	-75.49900	59
213988	324	7/23/2021	19:29	34.92020	-75.53100	52
213989	324	7/23/2021	19:33	34.92090	-75.52600	52
213990	324	7/23/2021	19:35	34.92250	-75.52300	53
213991	298	7/23/2021	19:46	34.92890	-75.52000	53
213992	324	7/24/2021	10:59	34.99760	-75.46600	50
213993	324	7/24/2021	11:03	35.00090	-75.46400	50
213994	324	7/24/2021	11:06	35.00440	-75.46300	50
213995	324	7/24/2021	13:22	35.00960	-75.46100	51
213996	324	7/24/2021	11:14	35.01210	-75.46400	50
213997	324	7/24/2021	11:18	35.01490	-75.46300	50

213999	298	7/24/2021	11:39	35.01680	-75.46500	49
213999	324	7/24/2021	14:15	34.98390	-75.46400	52
214000	324	7/24/2021	14:17	34.98640	-75.46300	52
214001	324	7/24/2021	14:23	34.99380	-75.46100	51
214002	324	7/24/2021	14:26	34.99750	-75.46100	51
214003	324	7/24/2021	14:30	34.99920	-75.45800	51
214004	324	7/24/2021	14:34	35.00180	-75.45500	50
214005	298	7/24/2021	14:42	35.00620	-75.45700	51
214006	324	7/24/2021	17:10	34.92450	-75.46400	63
214007	324	7/24/2021	17:14	34.92700	-75.46200	62
214008	324	7/24/2021	17:20	34.92920	-75.46000	61
214009	324	7/24/2021	17:25	34.93060	-75.45700	64
214010	324	7/24/2021	17:29	34.93340	-75.45700	61
214011	324	7/24/2021	17:33	34.93450	-75.45400	63
214012	298	7/24/2021	17:49	34.94270	-75.45300	68
214013	324	7/25/2021	11:00	34.62900	-76.15400	38
214014	324	7/25/2021	11:03	34.62600	-76.15300	39
214015	324	7/25/2021	11:06	34.62480	-76.14900	38
214016	324	7/25/2021	11:08	34.62400	-76.14600	39
214017	324	7/25/2021	11:14	34.62290	-76.13800	39
214018	324	7/25/2021	11:17	34.62080	-76.13600	39
214019	298	7/25/2021	11:24	34.61740	-76.13500	39
214020	324	7/25/2021	13:29	34.60570	-76.13600	40
214021	324	7/25/2021	13:36	34.60570	-76.14700	38
214022	324	7/25/2021	13:43	34.60380	-76.14700	39
214023	324	7/25/2021	13:47	34.60250	-76.14900	39
214024	324	7/25/2021	13:54	34.59930	-76.14600	39
214025	324	7/25/2021	14:01	34.60350	-76.13600	40
214026	298	7/25/2021	14:09	34.60470	-76.13200	39
214027	324	7/25/2021	16:20	34.60210	-76.20000	37
214028	324	7/25/2021	16:25	34.59930	-76.19600	37
214029	324	7/25/2021	16:34	34.60310	-76.17800	38
214030	324	7/25/2021	16:44	34.60620	-76.17100	38
214031	324	7/25/2021	16:46	34.60420	-76.17200	39
214032	324	7/25/2021	16:49	34.60090	-76.17100	39
214033	298	7/25/2021	17:00	34.59900	-76.16700	38
214034	324	7/25/2021	18:58	34.61760	-76.16500	37
214035	324	7/25/2021	19:01	34.61480	-76.16800	38
214036	324	7/25/2021	19:04	34.61110	-76.16800	38
214037	324	7/25/2021	19:15	34.61470	-76.16500	37
214038	324	7/25/2021	19:17	34.61510	-76.16200	38
214039	324	7/25/2021	19:20	34.61600	-76.15900	38
214040	298	7/25/2021	19:31	34.61910	-76.15500	37

214041	324	7/26/2021	10:58	34.55360	-76.33200	28
214042	324	7/26/2021	11:07	34.55350	-76.34000	26
214043	324	7/26/2021	11:09	34.55110	-76.33900	25
214044	324	7/26/2021	11:15	34.54890	-76.34100	24
214045	324	7/26/2021	11:18	34.54630	-76.34200	24
214046	324	7/26/2021	11:21	34.54360	-76.34200	26
214047	298	7/26/2021	11:30	34.54000	-76.34200	26
214048	324	7/26/2021	14:10	34.56910	-76.33100	26
214049	324	7/26/2021	14:12	34.56720	-76.33300	27
214050	324	7/26/2021	14:14	34.56560	-76.33600	29
214051	324	7/26/2021	14:20	34.56520	-76.33300	29
214052	324	7/26/2021	14:29	34.55950	-76.33800	25
214053	324	7/26/2021	14:32	34.55720	-76.33800	26
214054	298	7/26/2021	14:42	34.55490	-76.33500	28
214055	324	7/26/2021	17:23	34.59580	-76.32300	26
214056	324	7/26/2021	17:25	34.59420	-76.32100	25
214057	324	7/26/2021	17:31	34.58780	-76.31700	27
214058	324	7/26/2021	17:34	34.58450	-76.31600	27
214059	324	7/26/2021	17:49	34.59490	-76.31400	28
214060	324	7/26/2021	17:52	34.59390	-76.31100	26
214061	298	7/26/2021	18:01	34.59160	-76.30700	28
214062	324	7/26/2021	19:58	34.58600	-76.31500	27
214063	324	7/26/2021	20:03	34.58180	-76.31400	27
214064	298	7/26/2021	20:13	34.58020	-76.31100	29
214065	324	7/27/2021	14:10	34.53910	-76.21000	40
214066	324	7/27/2021	14:14	34.53690	-76.21400	40
214067	324	7/27/2021	14:20	34.53400	-76.21200	37
214068	324	7/27/2021	14:27	34.53290	-76.21500	40
214069	324	7/27/2021	14:37	34.52450	-76.20900	40
214070	324	7/27/2021	14:44	34.52350	-76.21400	40
214071	298	7/27/2021	14:53	34.52330	-76.21800	40
214072	324	7/27/2021	17:09	34.56680	-76.22300	37
214073	324	7/27/2021	17:15	34.56130	-76.22800	38
214074	324	7/27/2021	17:21	34.56180	-76.22300	38
214075	324	7/27/2021	17:30	34.56710	-76.20400	38
214076	324	7/27/2021	17:37	34.56240	-76.19900	38
214077	324	7/27/2021	17:46	34.54680	-76.20400	40
214078	298	7/27/2021	17:55	34.54360	-76.20300	39
214079	324	7/27/2021	20:16	34.55820	-76.23300	37
214080	324	7/27/2021	20:20	34.55620	-76.23800	36
214081	324	7/27/2021	20:28	34.55220	-76.22800	38
214082	324	7/27/2021	20:41	34.53960	-76.25200	36
214083	324	7/27/2021	20:55	34.52090	-76.26300	36

214084	324	7/27/2021	20:58	34.51890	-76.25800	37
214085	298	7/27/2021	21:07	34.51720	-76.25500	37
214086	324	7/28/2021	12:48	34.60540	-76.18900	38
214087	324	7/28/2021	12:50	34.60370	-76.19100	38
214088	324	7/28/2021	12:54	34.60470	-76.19500	38
214089	324	7/28/2021	12:56	34.60720	-76.19500	38
214090	324	7/28/2021	13:03	34.60750	-76.19900	37
214091	324	7/28/2021	13:07	34.60470	-76.20000	38
214092	298	7/28/2021	13:15	34.60160	-76.19900	37
214093	324	7/28/2021	16:00	34.59190	-76.20400	37
214094	324	7/28/2021	16:10	34.58160	-76.21100	37
214095	324	7/28/2021	16:14	34.57870	-76.21700	37
214096	324	7/28/2021	16:17	34.57720	-76.22000	37
214097	324	7/28/2021	16:21	34.57370	-76.22500	37
214098	324	7/28/2021	16:24	34.57150	-76.22700	37
214099	298	7/28/2021	16:38	34.57700	-76.22700	36
214100	324	7/28/2021	18:36	34.57020	-76.22500	37
214101	324	7/28/2021	18:41	34.56670	-76.22800	37
214102	324	7/28/2021	18:44	34.56410	-76.23300	37
214103	324	7/28/2021	18:47	34.56140	-76.23500	37
214104	324	7/28/2021	18:57	34.56090	-76.24800	36
214105	324	7/28/2021	19:00	34.55740	-76.24500	36
214106	298	7/28/2021	19:16	34.56670	-76.23700	36
214107	324	7/29/2021	10:59	33.50530	-77.34600	33
214108	324	7/29/2021	11:07	33.50090	-77.35100	34
214109	324	7/29/2021	11:09	33.50190	-77.35400	33
214110	324	7/29/2021	11:17	33.50250	-77.36500	27
214111	324	7/29/2021	11:21	33.50010	-77.36100	34
214112	324	7/29/2021	11:24	33.49720	-77.35900	34
214113	298	7/29/2021	11:35	33.49400	-77.35600	34
214114	324	7/29/2021	14:09	33.48920	-77.39500	31
214115	324	7/29/2021	14:12	33.48720	-77.39900	30
214116	324	7/29/2021	14:20	33.48060	-77.40700	31
214117	324	7/29/2021	14:22	33.48200	-77.41000	30
214118	324	7/29/2021	14:25	33.48080	-77.41300	32
214119	324	7/29/2021	14:29	33.47820	-77.41700	31
214120	298	7/29/2021	14:38	33.47680	-77.42100	31
214121	324	7/29/2021	16:43	33.52650	-77.41200	32
214122	324	7/29/2021	16:49	33.53400	-77.41300	30
214123	324	7/29/2021	16:51	33.53710	-77.41500	30
214124	324	7/29/2021	16:56	33.53680	-77.42000	30
214125	324	7/29/2021	17:00	33.53330	-77.42300	31
214126	324	7/29/2021	17:08	33.52230	-77.42400	30

214127	298	7/29/2021	17:22	33.51750	-77.41700	30
214128	324	7/30/2021	11:02	32.79840	-78.30800	54
214129	324	7/30/2021	11:07	32.79860	-78.31600	50
214130	324	7/30/2021	11:11	32.79500	-78.31900	50
214131	324	7/30/2021	11:16	32.79090	-78.32400	52
214132	324	7/30/2021	11:23	32.78850	-78.33300	49
214133	324	7/30/2021	11:30	32.78270	-78.32700	64
214134	298	7/30/2021	11:40	32.77960	-78.32000	75
214135	324	7/30/2021	14:07	32.85010	-78.25800	51
214136	324	7/30/2021	14:13	32.84450	-78.26100	54
214137	324	7/30/2021	14:16	32.84160	-78.26300	50
214138	324	7/30/2021	14:20	32.83740	-78.26600	51
214139	324	7/30/2021	14:24	32.83510	-78.27000	53
214140	324	7/30/2021	14:27	32.83350	-78.27200	50
214141	298	7/30/2021	14:36	32.82930	-78.27200	55



Figure 1. Chevron trap with video cameras used to sample reef fish on the PC-21-03 survey.

CRUISE PARTICIPANTS

Leg 1 (6 – 16 July 2021; 11 DAS)

Name	Title	Organization
Zeb Schobernd	Field Party Chief	NMFS Beaufort
Erin Pickett	Watch Lead - Video	TechGlobal, Inc.
Brad Teer	Watch Lead - Deck	TechGlobal, Inc.
Kevan Gregalis	Deck Watch	NMFS Beaufort
Rob Cheshire	Deck Watch	NMFS Beaufort
Michael Burton	Deck Watch	NMFS Beaufort

Leg 2 (17 – 31 July 2021; 15 DAS)

Name	Title	Organization
Nate Bacheler	Field Party Chief	NMFS Beaufort
Christina Schobernd	Watch Lead - Video	NMFS Beaufort
Zach Gillum	Watch Lead - Deck	TechGlobal, Inc.
Brad Teer	Deck Watch	TechGlobal, Inc.
Andy Ostrowski	Deck Watch	NMFS Beaufort
David Hoke	Deck Watch	NMFS-SEFSC

Cruise Report Prepared by: Nate Bacheler and Christina Schobernd

Note: The use of trade, product, industry, or firm names, products, software, or models, whether commercially available or not, is for informative purposes only and does not constitute an endorsement by the U.S. Government or the National Oceanic and Atmospheric Administration.