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

101 Pivers Island Road
Beaufort, NC 28516

Cruise Report

Date Submitted: 05/03/2023

Platform: NOAA Ship Nancy Foster

Cruise Number: NF-10-15

Project Title: Southeast Fishery-Independent Survey (SEFIS)

Cruise Dates: 09/14/2010 - 10/22/2010

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CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

NOAA Ship *Nancy Foster* Cruise NF-10-15
September 14 – October 22, 2010
Total number of days at-sea: 36

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, NC 28516

187 camera-trap deployments
32 ROV dives
75 CTD casts
38 areas mapped

69 red snapper collected

INTRODUCTION

The NOAA Ship *Nancy Foster* departed Charleston, SC, on 14 September 2010 to initiate the Southeast Fishery-Independent Survey (SEFIS) in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and operates out of the 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, remotely operated vehicles, and acoustics. During this survey, chevron trap catches, associated underwater video, and remotely operated vehicle recordings were collected from known hardbottom habitats between 28.3 °N and 32.4° N. A total of 187 stations were sampled with camera-trap gear and 32 stations were sampled with ROVs over 36 sea days between 13 and 66 m depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, with one or more 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 versus split-beam sonar).

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. Survey reef fish assemblages and identify substrate types using a deep-water ROV equipped with instrumentation including low-light digital video and DIDSON sonar.

4. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen) at camera-trap sampling locations.

5. Map bottom habitats using multibeam sonar to improve survey design and to expand knowledge of hardbottom habitats in the southeast US.

6. Use fisheries acoustic gear (split-beam sonar) to assess its use as a fishery-independent survey tool.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted a chevron fish trap with a single high-definition GoPro video camera (model HD Hero®) attached above the mouth of the trap (Figure 1). Chevron traps were composed of plastic-coated wire mesh. Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were enumerated, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., 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 media storage devices. Biological samples and video files were brought to the Beaufort laboratory for further processing and analysis.

ROV Sampling
ROV dives were conducted with a deep-water ROV (Super Phantom S2). Dives were focused in shelf-edge waters (45-65m depths) at the seaward margin of the southeast US continental shelf off SC, GA and FL (see Figure 2). Video from ROV will be used to identify and quantify reef fish seen, describe habitat, examine for effects of Marine Protected Areas (MPAs) on fish distribution, and document changes in reef fish (including lionfish) abundance and community metrics over time.

Environmental Data Collection
Environmental data were collected with Seabird "Conductivity, Temperature, and Depth" instrument package (CTD; model SBE 9) and Scientific Computer System (SCS) software. CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile parameters were collected, including temperature (◦C), salinity, and dissolved oxygen (mg/L). CTD data were archived for further processing at the Beaufort laboratory. SCS software (version 4.2) was used to collected specific information for each fishing and CTD event, including soak time/cast duration as well as start latitude, longitude and depth (m).

Acoustic Data Collection
Multibeam acoustic data collection: The *Nancy Foster* multibeam unit (Kongsberg-Simrad EM 1002) was typically used to map benthic habitats during nighttime hours. Areas for mapping were selected based on the need for additional hardbottom sampling sites in an area, information from fishermen, and efficient use of vessel time. Raw multibeam data were processed by the ship's survey technicians each morning, and these hardbottom habitat maps were used to select areas for sampling during the day.

Split-beam acoustic data collection: Two EK60 echosounders (38 and 120 KHz) were used to collect water column information, as well as document bottom features indicative of hardbottom habitat. Interesting bottom features were logged using ER60 acquisition software, and GPS coordinates were extracted by mousing over specific features of the ocean bottom in georeferenced graphic displays or by processing EK60 files (*.raw) within Echoview software (v4.90).

SURVEY RESULTS

Camera-Trap Sampling
187 stations were sampled with camera-trap gear (Table 1, Figures 3-5). From these traps, 5,855 fish from 40 taxa were collected and worked up for length frequency data (Table 2). Snapper and grouper species were further processed for otolith and gonad tissues. Two traps and associated video camera were lost when the vessel drifted over (and cut) the buoy line during retrieval. The area where one trap was lost was mapped with multibeam acoustics and divers tried to retrieve the trap, however extreme turbidity and poor visibility in the area prevented trap recovery. A total of 69 red snapper were caught, but tissues were only extracted from 63 specimens because the other 6 fish were collected and thrown back alive inside the Grays Reef National Marine Sanctuary (GRNMS), as required by the SEFIS GRNMS sampling permit.

Environmental Data Collection
75 CTD casts were conducted during the cruise (Table 1, Figures 3-5). CTD data were processed with Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS-Beaufort Laboratory for

future analysis.

Acoustic Data Collection

Multibeam:

38 areas were mapped using multibeam acoustic gear (Figure 6-8). Multibeam data were processed with Caris software on board the Nancy Foster. Multibeam maps were useful in selecting camera-trap sampling sites, i.e., identifying hardbottom habitats. All multibeam acoustic data were archived on a server and compiled in an Arc GIS project at the NMFS-Beaufort Laboratory for future analysis and survey planning.

Split-beam:

The EK60 echosounders recorded water column information during all multibeam mapping efforts. GPS points extracted from EK60 data were often used in conjunction with the Simrad multibeam to determine probable trap/video sampling sites for the following day. All EK60 acoustic data were archived on a server at the NMFS-Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth, date and time for each event (camera-trap gear = 324), CTD cast (Gear=298), and ROV (Gear = ROV) conducted on the NF-10-15 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101001	324	09/15/2010	15:06:00	30.37002	-81.0472	21
101002	324	09/15/2010	15:22:00	30.36441	-81.0475	22
101003	324	09/15/2010	15:33:00	30.36317	-81.0337	20
101004	324	09/15/2010	15:54:00	30.35065	-81.0465	22
101005	324	09/15/2010	16:09:00	30.34755	-81.0474	22
101006	324	09/15/2010	16:27:00	30.34388	-81.045	22
101007	324	09/15/2010	19:47:00	30.38165	-81.0376	21
101008	324	09/15/2010	20:07:00	30.39375	-81.0377	22
101009	324	09/15/2010	20:28:00	30.40012	-81.0471	22
101010	298	09/15/2010	20:43:00	30.38868	-81.0491	21
101011	298	09/16/2010	02:09:00	30.37794	-80.4495	35
101012	324	09/16/2010	12:44:00	30.51859	-80.4757	35
101013	324	09/16/2010	12:53:00	30.51541	-80.4779	33
101014	324	09/16/2010	12:57:00	30.51535	-80.4803	35
101015	324	09/16/2010	13:05:00	30.51229	-80.482	34
101016	324	09/16/2010	13:12:00	30.51156	-80.4777	34
101017	324	09/16/2010	13:21:00	30.51657	-80.4758	35
101018	298	09/16/2010	12:04:00	30.51735	-80.4805	34
101019	324	09/17/2010	12:36:00	31.62488	-80.5778	21
101020	324	09/17/2010	12:51:00	31.62631	-80.58	21
101021	324	09/17/2010	13:00:00	31.628	-80.5786	20
101022	324	09/17/2010	13:08:00	31.62832	-80.5763	21
101023	324	09/17/2010	13:16:00	31.62754	-80.5744	20
101024	324	09/17/2010	13:27:00	31.62543	-80.5747	21
101025	298	09/17/2010	01:18:00	31.60628	-80.6057	17
101026	298	09/17/2010	07:14:00	31.6139	-80.6758	19
101027	298	09/17/2010	15:07:00	31.62721	-80.578	22
101028	324	09/17/2010	16:39:00	31.58354	-80.3689	28
101029	324	09/17/2010	16:51:00	31.58208	-80.364	27
101030	324	09/17/2010	16:59:00	31.58459	-80.3615	27
101031	324	09/17/2010	17:31:00	31.57475	-80.3625	27
101032	324	09/17/2010	17:40:00	31.58229	-80.3654	28
101033	324	09/17/2010	18:12:00	31.57742	-80.3584	32
101034	298	09/17/2010	20:16:00	31.57907	-80.3631	30
101035	298	09/18/2010	03:33:00	31.23271	-80.6967	17
101036	324	09/18/2010	12:28:00	31.59175	-80.7917	16
101037	324	09/18/2010	13:17:00	31.59504	-80.8	15
101038	324	09/18/2010	13:27:00	31.59694	-80.7917	15
101039	324	09/18/2010	13:34:00	31.59567	-80.784	15

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101040	298	09/18/2010	15:50:00	31.59439	-80.7926	15
101041	324	09/18/2010	16:54:00	31.58172	-80.7573	16
101042	324	09/18/2010	17:03:00	31.58398	-80.7609	17
101043	324	09/18/2010	17:10:00	31.5899	-80.7668	16
101044	324	09/18/2010	17:15:00	31.59135	-80.7728	17
101045	324	09/18/2010	17:24:00	31.58759	-80.7748	16
101046	324	09/18/2010	17:37:00	31.58114	-80.7595	17
101047	298	09/18/2010	23:15:00	31.58636	-80.7668	17
101050	298	09/19/2010	06:52:00	31.6126	-80.8382	13
101051	324	09/19/2010	12:50:00	31.59081	-80.8055	16
101052	324	09/19/2010	12:56:00	31.59333	-80.807	16
101053	324	09/19/2010	13:01:00	31.59498	-80.8049	16
101054	324	09/19/2010	13:05:00	31.59644	-80.8027	16
101055	324	09/19/2010	13:12:00	31.5959	-80.7985	16
101056	324	09/19/2010	13:25:00	31.59507	-80.7979	16
101057	298	09/19/2010	16:10:00	31.59203	-80.8027	16
101058	298	09/19/2010	23:16:00	31.43224	-80.7285	22
101059	298	09/20/2010	05:49:00	31.42681	-80.7316	19
101060	324	09/20/2010	13:12:00	31.39039	-80.8836	16
101061	324	09/20/2010	13:27:00	31.38676	-80.8898	16
101062	324	09/20/2010	13:34:00	31.38645	-80.8955	15
101063	324	09/20/2010	13:40:00	31.38947	-80.895	14
101064	324	09/20/2010	13:49:00	31.39597	-80.8939	13
101065	324	09/20/2010	13:55:00	31.39529	-80.8916	15
101066	298	09/20/2010	16:08:00	31.39025	-80.8892	14
101067	324	09/20/2010	17:02:00	31.37659	-80.8882	15
101068	324	09/20/2010	17:22:00	31.37473	-80.8861	15
101069	324	09/20/2010	17:30:00	31.3675	-80.8949	15
101070	324	09/20/2010	17:35:00	31.36436	-80.8914	15
101071	324	09/20/2010	17:49:00	31.38049	-80.8939	15
101072	324	09/20/2010	17:58:00	31.38267	-80.892	15
101073	298	09/20/2010	21:03:00	31.38252	-80.8876	18
101074	324	09/20/2010	20:19:00	31.37914	-80.8892	15
101075	324	09/20/2010	20:32:00	31.39043	-80.8906	15
101076	298	09/21/2010	00:07:00	31.26937	-80.7409	19
101077	298	09/21/2010	06:10:00	31.20824	-80.7097	19
101078	324	09/21/2010	12:17:00	31.25094	-80.7488	19
101079	324	09/21/2010	12:26:00	31.25322	-80.7437	17
101080	324	09/21/2010	12:30:00	31.2542	-80.7418	18
101081	324	09/21/2010	12:37:00	31.2557	-80.7392	17
101082	324	09/21/2010	12:59:00	31.25262	-80.7454	18
101083	324	09/21/2010	13:19:00	31.24977	-80.752	19
101084	298	09/21/2010	15:14:00	31.25151	-80.7457	17

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101085	324	09/21/2010	19:54:00	31.27516	-80.5075	31
101086	324	09/21/2010	20:08:00	31.27125	-80.5077	30
101087	324	09/21/2010	20:17:00	31.27283	-80.5071	30
101088	324	09/21/2010	20:25:00	31.27122	-80.5074	30
101089	324	09/21/2010	20:35:00	31.26472	-80.5239	30
101090	324	09/21/2010	21:01:00	31.27978	-80.5135	24
101091	298	09/21/2010	21:12:00	31.27401	-80.5149	30
101092	298	09/22/2010	03:03:00	31.25928	-80.3962	31
101094	298	09/22/2010	09:55:00	30.84783	-80.2204	40
101095	324	09/22/2010	13:02:00	30.7579	-80.2184	41
101096	324	09/22/2010	13:11:00	30.7587	-80.2162	40
101097	324	09/22/2010	13:17:00	30.75931	-80.2188	41
101098	324	09/22/2010	13:26:00	30.75666	-80.2152	41
101099	324	09/22/2010	13:43:00	30.75653	-80.2145	40
101100	324	09/22/2010	14:07:00	30.76135	-80.2155	40
101101	298	09/22/2010	16:18:00	30.75567	-80.2185	43
101102	324	09/22/2010	17:09:00	30.73734	-80.2216	39
101103	324	09/22/2010	17:23:00	30.73484	-80.2209	41
101104	324	09/22/2010	17:34:00	30.74047	-80.2206	40
101105	324	09/22/2010	17:52:00	30.75145	-80.2124	40
101106	324	09/22/2010	18:02:00	30.7549	-80.2161	39
101107	324	09/22/2010	18:14:00	30.74966	-80.2126	41
101108	298	09/22/2010	20:24:00	30.74539	-80.2184	40
101109	298	09/23/2010	04:21:00	30.57	-80.242	43
101110	324	09/23/2010	12:27:00	30.63378	-80.2133	40
101111	324	09/23/2010	12:33:00	30.63603	-80.2132	39
101112	324	09/23/2010	12:39:00	30.64231	-80.2094	42
101113	324	09/23/2010	12:44:00	30.64367	-80.2127	41
101114	324	09/23/2010	13:10:00	30.6406	-80.2124	40
101115	324	09/23/2010	13:24:00	30.63076	-80.2129	43
101116	324	09/23/2010	16:46:00	30.57905	-80.1583	49
101117	324	09/23/2010	16:52:00	30.58154	-80.159	46
101118	324	09/23/2010	17:03:00	30.57645	-80.1607	46
101119	324	09/23/2010	17:09:00	30.57373	-80.1618	46
101120	324	09/23/2010	17:18:00	30.57131	-80.163	48
101121	324	09/23/2010	17:24:00	30.56806	-80.1642	46
101122	298	09/23/2010	15:56:00	30.63008	-80.2125	44
101123	324	09/23/2010	20:05:00	30.5856	-80.1555	49
101124	324	09/23/2010	20:14:00	30.58995	-80.154	54
101125	324	09/23/2010	20:20:00	30.59308	-80.1539	49
101126	298	09/23/2010	20:32:00	30.5874	-80.1555	49
101127	298	09/24/2010	00:07:00	30.42968	-80.2443	45
101128	298	09/24/2010	06:21:00	30.43645	-80.2274	44

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101129	324	09/24/2010	11:58:00	30.39933	-80.2156	53
101130	324	09/24/2010	12:12:00	30.39864	-80.2158	52
101131	324	09/24/2010	12:25:00	30.39733	-80.2156	61
101132	324	09/24/2010	12:37:00	30.39477	-80.2164	58
101133	324	09/24/2010	12:49:00	30.39193	-80.2169	54
101134	324	09/24/2010	12:56:00	30.38823	-80.2171	60
101135	298	09/24/2010	15:38:00	30.39802	-80.215	64
101136	324	09/24/2010	17:28:00	30.51876	-80.4709	34
101137	324	09/24/2010	17:31:00	30.51935	-80.4744	34
101138	324	09/24/2010	17:43:00	30.51689	-80.4766	34
101139	324	09/24/2010	17:57:00	30.51942	-80.467	35
101140	324	09/24/2010	17:59:00	30.52085	-80.4637	33
101141	324	09/24/2010	18:24:00	30.52219	-80.461	34
101142	298	09/24/2010	20:25:00	30.51677	-80.4672	35
101143	298	09/29/2010	15:17:00	30.5507	-81.1499	18
101144 (dive 1)	ROV	09/29/2010	19:04:00	30.54842	-81.1291	21
101145 (dive 2)	ROV	09/29/2010	21:00:00	30.54867	-81.1292	21
101146	298	09/30/2010	00:43:00	30.4644	-81.2227	16
101147	298	09/30/2010	08:29:00	30.4241	-81.1863	18
101148 (dive 3)	ROV	09/30/2010	12:21:00	30.42765	-81.24	17
101149 (dive 4)	ROV	09/30/2010	14:20:00	30.42258	-81.2243	21
101150 (dive 5)	ROV	09/30/2010	21:09:00	29.74152	-80.7404	26
101151	298	10/01/2010	00:27:00	29.74088	-80.7476	48
101152	298	10/01/2010	08:08:00	29.17428	-80.5643	25
101153 (dive 6)	ROV	10/01/2010	15:30:00	29.14947	-80.2272	54
101154 (dive 7)	ROV	10/01/2010	18:32:00	29.30583	-80.3904	30
101155	298	10/02/2010	01:46:00	29.98004	-80.2288	165
101156	298	10/02/2010	08:35:00	30.01709	-80.2219	165
101157 (dive 8)	ROV	10/02/2010	11:48:00	29.99167	-80.2801	65
101158 (dive 9)	ROV	10/02/2010	12:48:00	29.99197	-80.2804	64
101159 (dive 10)	ROV	10/02/2010	16:00:00	30.0026	-80.2803	52
101160 (dive 11)	ROV	10/02/2010	18:55:00	30.01242	-80.2808	54
101161 (dive 12)	ROV	10/02/2010	21:32:00	30.02123	-80.2796	60
101162	298	10/03/2010	08:45:00	29.84617	-80.2922	58
101163 (dive 13)	ROV	10/03/2010	12:25:00	29.87897	-80.2843	61
101164 (dive 14)	ROV	10/03/2010	14:50:00	29.94052	-80.2841	61
101165 (dive 15)	ROV	10/03/2010	18:02:00	30.06167	-80.2778	55
101166	298	10/03/2010	23:37:00	30.39413	-80.2035	72
101167	298	10/04/2010	08:04:00	30.4455	-80.2053	55
101168 (dive 16)	ROV	10/04/2010	11:52:00	30.47562	-80.1956	56
101169 (dive 17)	ROV	10/04/2010	14:20:00	30.43848	-80.2069	56
101170 (dive 18)	ROV	10/04/2010	16:49:00	30.40293	-80.2153	54
101171 (dive 19)	ROV	10/04/2010	20:09:00	30.37183	-80.22	59

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101172	298	10/05/2010	00:28:00	30.39186	-80.2102	67
101173	298	10/05/2010	18:52:00	32.22009	-79.8806	23
101174 (dive 20)	ROV	10/05/2010	20:32:00	32.219	-79.8818	26
101175	298	10/06/2010	04:34:00	32.32474	-79.065	22
101176 (dive 21)	ROV	10/06/2010	11:51:00	32.4006	-78.9994	59
101177 (dive 22)	ROV	10/06/2010	14:20:00	32.34285	-79.047	55
101178 (dive 23)	ROV	10/06/2010	16:44:00	32.33928	-79.0417	60
101179 (dive 24)	ROV	10/06/2010	21:05:00	32.26543	-79.1698	53
101180	298	10/07/2010	02:24:00	32.07537	-79.4162	48
101182	298	10/07/2010	09:19:00	32.00891	-79.4352	48
101183 (dive 25)	ROV	10/07/2010	12:29:00	32.14568	-79.2845	51
101184 (dive 26)	ROV	10/07/2010	15:23:00	32.0443	-79.4271	51
101185 (dive 27)	ROV	10/07/2010	18:04:00	32.02548	-79.4409	56
101186 (dive 28)	ROV	10/07/2010	21:52:00	31.96472	-79.497	52
101188	298	10/08/2010	04:45:00	31.57576	-79.7131	61
101189 (dive 29)	ROV	10/08/2010	12:31:00	31.53532	-79.7343	66
101190 (dive 30)	ROV	10/08/2010	14:13:00	31.53302	-79.7374	60
101191 (dive 31)	ROV	10/08/2010	18:35:00	31.21377	-79.8916	52
101192 (dive 32)	ROV	10/08/2010	20:29:00	31.25373	-79.8788	48
101193	298	10/08/2010	22:03:00	31.3028	-79.8716	44
101194	298	10/14/2010	22:45:00	28.28772	-80.0209	72
101195	298	10/15/2010	04:59:00	28.31005	-80.0579	62
101196	324	10/15/2010	12:28:00	28.49945	-80.1089	51
101197	324	10/15/2010	12:43:00	28.50327	-80.1089	53
101198	324	10/15/2010	12:56:00	28.50697	-80.1085	52
101199	324	10/15/2010	13:14:00	28.50968	-80.1134	52
101200	324	10/15/2010	13:18:00	28.51048	-80.1099	53
101201	298	10/15/2010	13:36:00	28.50953	-80.1176	50
101202	324	10/15/2010	17:05:00	28.51827	-80.1174	51
101203	324	10/15/2010	17:16:00	28.5212	-80.113	52
101204	324	10/15/2010	17:19:00	28.52093	-80.1177	48
101205	324	10/15/2010	17:28:00	28.5231	-80.1166	51
101206	324	10/15/2010	17:38:00	28.52527	-80.1177	49
101207	324	10/15/2010	17:47:00	28.52778	-80.1171	51
101208	324	10/15/2010	20:27:00	28.51142	-80.1103	52
101209	324	10/15/2010	20:30:00	28.51108	-80.1143	49
101210	298	10/15/2010	20:56:00	28.51495	-80.1078	55
101211	298	10/16/2010	00:08:00	28.70992	-80.1051	64
101212	298	10/16/2010	06:25:00	28.73719	-80.1622	49
101213	324	10/16/2010	12:04:00	28.7313	-80.1452	52
101214	324	10/16/2010	12:13:00	28.72877	-80.1426	54
101215	324	10/16/2010	12:21:00	28.72702	-80.1421	51
101216	324	10/16/2010	12:30:00	28.72508	-80.1409	58

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101217	324	10/16/2010	12:38:00	28.72272	-80.1413	49
101218	324	10/16/2010	12:43:00	28.72123	-80.141	61
101219	298	10/16/2010	12:53:00	28.72332	-80.1361	55
101220	324	10/16/2010	16:27:00	28.71915	-80.1413	48
101221	324	10/16/2010	16:41:00	28.71727	-80.141	49
101222	324	10/16/2010	16:54:00	28.71513	-80.1404	57
101223	324	10/16/2010	17:01:00	28.71317	-80.1407	49
101224	324	10/16/2010	17:10:00	28.71157	-80.1402	55
101225	324	10/16/2010	17:17:00	28.70957	-80.1402	51
101226	298	10/16/2010	17:45:00	28.716	-80.1457	51
101227	298	10/16/2010	23:49:00	29.16404	-80.5626	25
101228	298	10/17/2010	05:43:00	29.17822	-80.6204	22
101229	324	10/17/2010	12:09:00	29.16255	-80.5384	22
101230	324	10/17/2010	12:18:00	29.16353	-80.5406	23
101231	324	10/17/2010	12:27:00	29.16458	-80.5426	22
101232	324	10/17/2010	12:36:00	29.164	-80.5451	24
101233	324	10/17/2010	12:44:00	29.16325	-80.5469	21
101234	298	10/17/2010	12:59:00	29.16137	-80.5411	25
101235	324	10/17/2010	16:02:00	29.16515	-80.5555	22
101236	324	10/17/2010	16:11:00	29.16622	-80.5577	25
101237	324	10/17/2010	16:20:00	29.16677	-80.5593	23
101238	324	10/17/2010	16:35:00	29.16662	-80.5677	26
101239	324	10/17/2010	16:43:00	29.16715	-80.5707	23
101240	298	10/17/2010	17:08:00	29.16273	-80.5607	25
101241	298	10/17/2010	21:37:00	29.29528	-80.3796	30
101242	298	10/18/2010	00:35:00	29.34029	-80.5899	27
101243	298	10/18/2010	06:49:00	29.3905	-80.6042	28
101244	324	10/18/2010	12:00:00	29.30097	-80.3859	27
101245	324	10/18/2010	12:09:00	29.3022	-80.3877	30
101246	324	10/18/2010	12:16:00	29.3056	-80.3894	27
101247	324	10/18/2010	12:25:00	29.3052	-80.3905	30
101248	324	10/18/2010	12:32:00	29.30715	-80.3911	28
101250	298	10/18/2010	14:50:00	29.30732	-80.3951	27
101251	324	10/18/2010	19:39:00	29.69718	-80.4638	30
101252	324	10/18/2010	19:49:00	29.70003	-80.4601	32
101253	324	10/18/2010	20:10:00	29.69988	-80.4777	30
101254	324	10/18/2010	20:21:00	29.69928	-80.483	31
101255	298	10/18/2010	22:40:00	29.70052	-80.47	32
101256	298	10/19/2010	05:00:00	29.76636	-80.4579	34
101257	324	10/19/2010	12:14:00	29.76932	-80.4564	32
101258	324	10/19/2010	12:21:00	29.76765	-80.4563	31
101259	324	10/19/2010	12:23:00	29.76748	-80.4539	33
101260	324	10/19/2010	12:31:00	29.76562	-80.4554	33

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
101261	324	10/19/2010	12:39:00	29.76338	-80.4526	32
101262	298	10/19/2010	12:51:00	29.77045	-80.4508	36
101263	324	10/19/2010	15:40:00	29.7607	-80.4526	32
101264	324	10/19/2010	15:50:00	29.75924	-80.4519	31
101265	324	10/19/2010	15:57:00	29.75653	-80.4521	31
101266	324	10/19/2010	16:04:00	29.75468	-80.4513	30
101267	324	10/19/2010	16:11:00	29.75198	-80.4536	31
101268	324	10/19/2010	18:36:00	29.77273	-80.4283	39
101269	324	10/19/2010	18:44:00	29.77545	-80.4304	37
101270	324	10/19/2010	18:51:00	29.77677	-80.4286	40
101271	324	10/19/2010	18:56:00	29.77928	-80.4279	38
101272	324	10/19/2010	19:09:00	29.76957	-80.4442	36
101273	298	10/19/2010	19:30:00	29.77587	-80.4366	36
101274	298	10/19/2010	22:00:00	29.76075	-80.4633	35
101275	298	10/20/2010	04:55:00	29.69551	-80.4373	34
101276	324	10/20/2010	12:17:00	29.7407	-80.468	31
101277	324	10/20/2010	12:24:00	29.739	-80.468	34
101278	324	10/20/2010	12:35:00	29.73598	-80.4685	32
101279	324	10/20/2010	12:42:00	29.73397	-80.4686	33
101280	324	10/20/2010	12:52:00	29.7303	-80.4697	33
101281	298	10/20/2010	13:13:00	29.74397	-80.4732	35
101282	324	10/20/2010	15:55:00	29.7381	-80.4599	32
101283	324	10/20/2010	16:05:00	29.7327	-80.46	31
101284	324	10/20/2010	16:10:00	29.7297	-80.4597	33
101285	324	10/20/2010	16:17:00	29.72832	-80.4611	30
101286	324	10/20/2010	16:26:00	29.72597	-80.4614	33
101287	324	10/20/2010	19:27:00	29.73535	-80.4479	30
101288	324	10/20/2010	19:36:00	29.73325	-80.4492	31
101289	324	10/20/2010	19:43:00	29.73148	-80.4472	31
101290	324	10/20/2010	19:51:00	29.72977	-80.4471	32
101291	324	10/20/2010	19:58:00	29.72755	-80.446	32
101292	298	10/20/2010	20:10:00	29.73275	-80.4447	32
101293	298	10/20/2010	23:57:00	29.85159	-80.2711	64
101294	298	10/21/2010	06:07:00	29.84495	-80.29	51
101295	324	10/21/2010	11:46:00	29.97877	-80.2841	53
101296	324	10/21/2010	11:52:00	29.97667	-80.2835	58
101297	324	10/21/2010	12:00:00	29.97405	-80.2841	53
101298	324	10/21/2010	12:05:00	29.9727	-80.2859	49
101299	324	10/21/2010	12:13:00	29.97023	-80.2851	50
101300	298	10/21/2010	12:39:00	29.98113	-80.2793	62

Table 2. Taxa, listed in decreasing order of abundance, caught in camera-trap gear on the NF-10-15 survey. Total abundance and number of fish sampled for otolith (spines for gray triggerfish) and gonad tissues are listed for each taxon.

Taxa	Total catch	Otoliths	Gonads
Centropristis striata	2203	1	1
Haemulon aurolineatum	1884		
Rhomboplites aurorubens	736	13	13
Stenotomus sp.	425		
Balistes capriscus	212		
Centropristis ocyurus	108		
Pagrus pagrus	79	1	1
Lutjanus campechanus	69	63	63
Lagodon rhomboides	33		
Stenotomus spp.	16		
Diplectrum formosum	9		
Opsanus sp.	8		
Echeneis naucrates	8		
Chaetodon sedentarius	7		
Holocentrus ascensionis	7		
Mycteroperca microlepis	6	6	6
Mycteroperca phenax	4	4	4
Gymnothorax moringa	3		
Gymnothorax vicinus	3		
Cephalopholis fulva	3	2	2
Epinephelus morio	3	3	3
Haemulon plumieri	3	1	1
Equetus lanceolatus	3		
Rypticus maculatus	3		
Stephanolepis hispida	2		
Seriola dumerili	2		
Diplodus holbrookii	2		
Pareques umbrosus	2		
Sphoeroides maculatus	1		
Seriola rivoliana	1		
Chaetodon ocellatus	1		
Rachycentron canadum	1		
Calamus leucosteus	1		
Epinephelus nigritus	1	1	1
Pomatomus saltatrix	1		
Holacanthus bermudensis	1		
Synodontidae	1		
Ocyurus chrysurus	1	1	1
Orthopristis chrysoptera	1		
Equetus lanceolatus	1		

Figure 1. Chevron trap with video camera attached over the mouth position.

Figure 2. ROV (Super Phantom S2) used on continental shelf and shelf break habitats during leg 2.

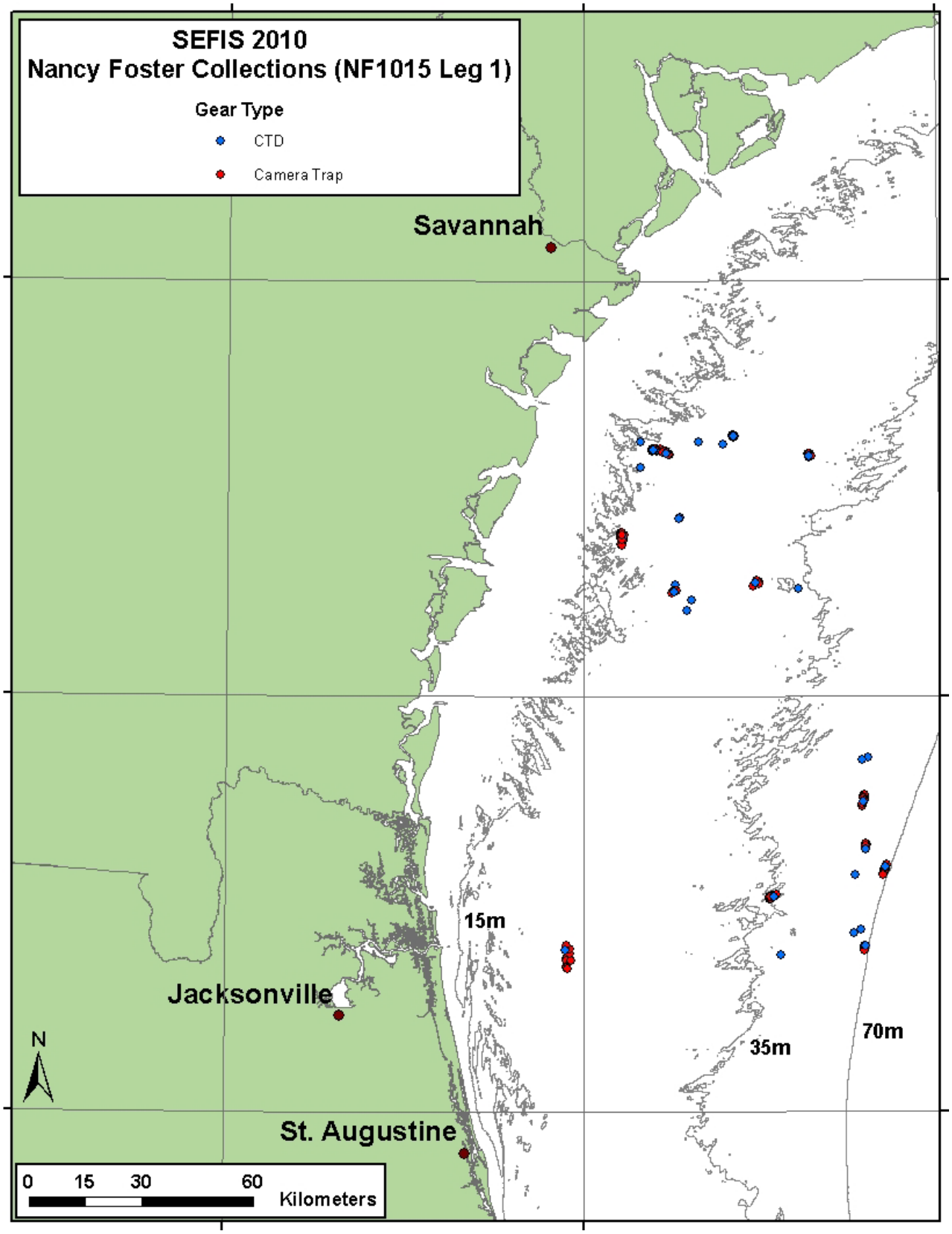

Figure 3. Locations of stations sampled with camera-trap and CTD gear on the NF-10-15-Leg 1 survey. Note that symbols overlap in many cases.

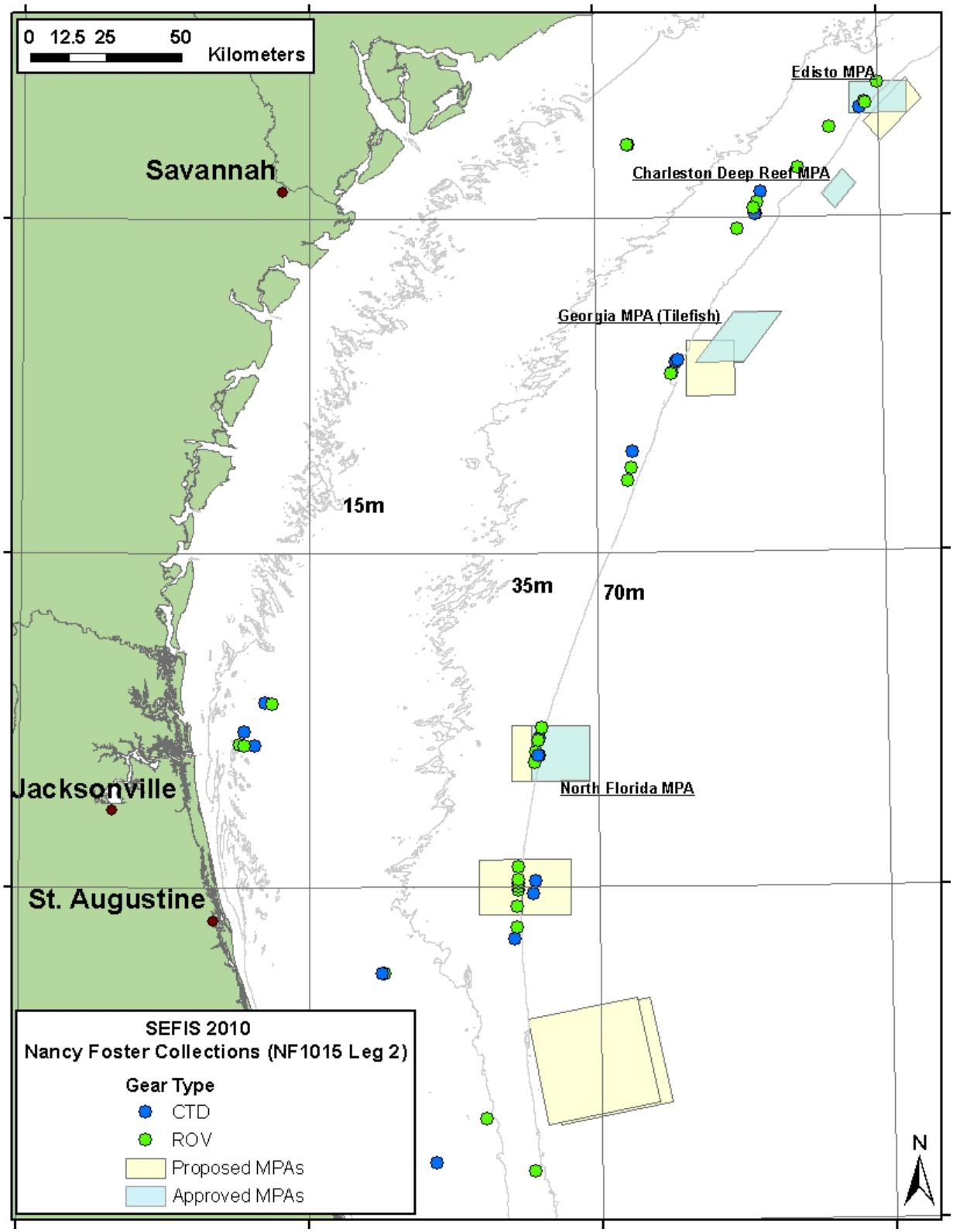

Figure 4. Locations of ROV dives and CTD profiles conducted on the NF-10-15-Leg 2 survey. Note that symbols overlap in many cases.

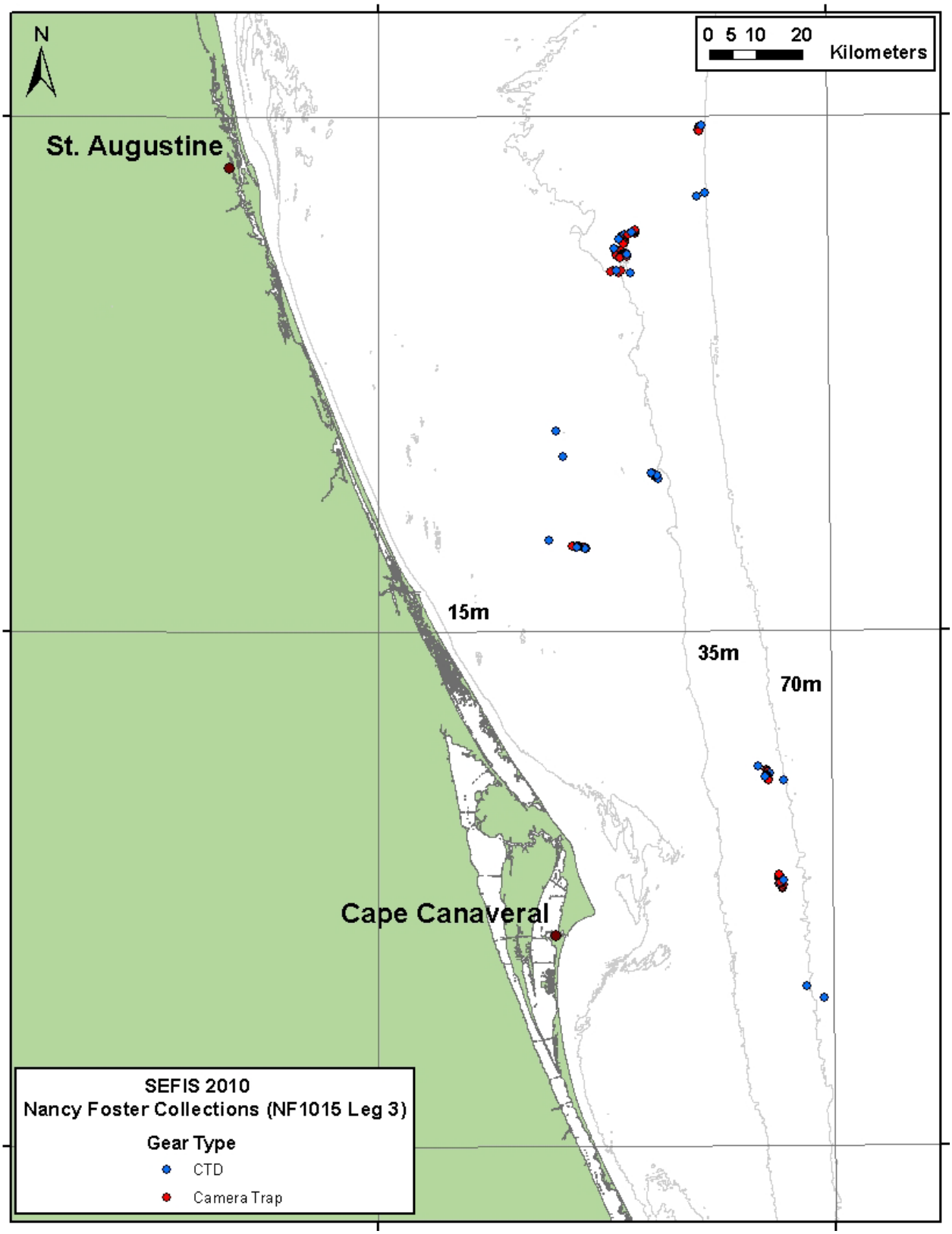

Figure 5. Locations of stations sampled with camera-trap and CTD gear on the NF-10-15-Leg 3 survey. Note that symbols overlap in many cases.

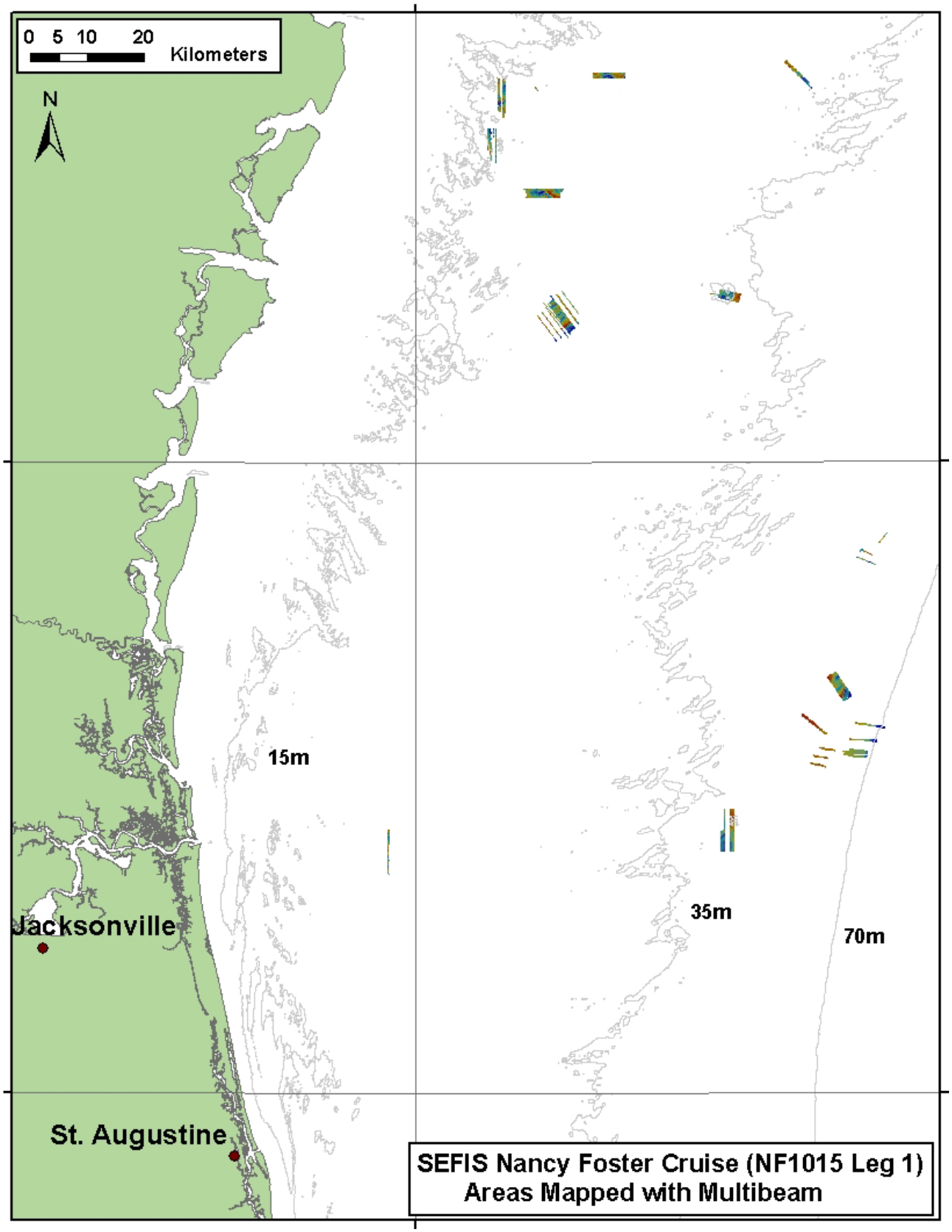

Figure 6. Locations mapped with multibeam acoustic gear on the NF-10-15-Leg 1 survey.

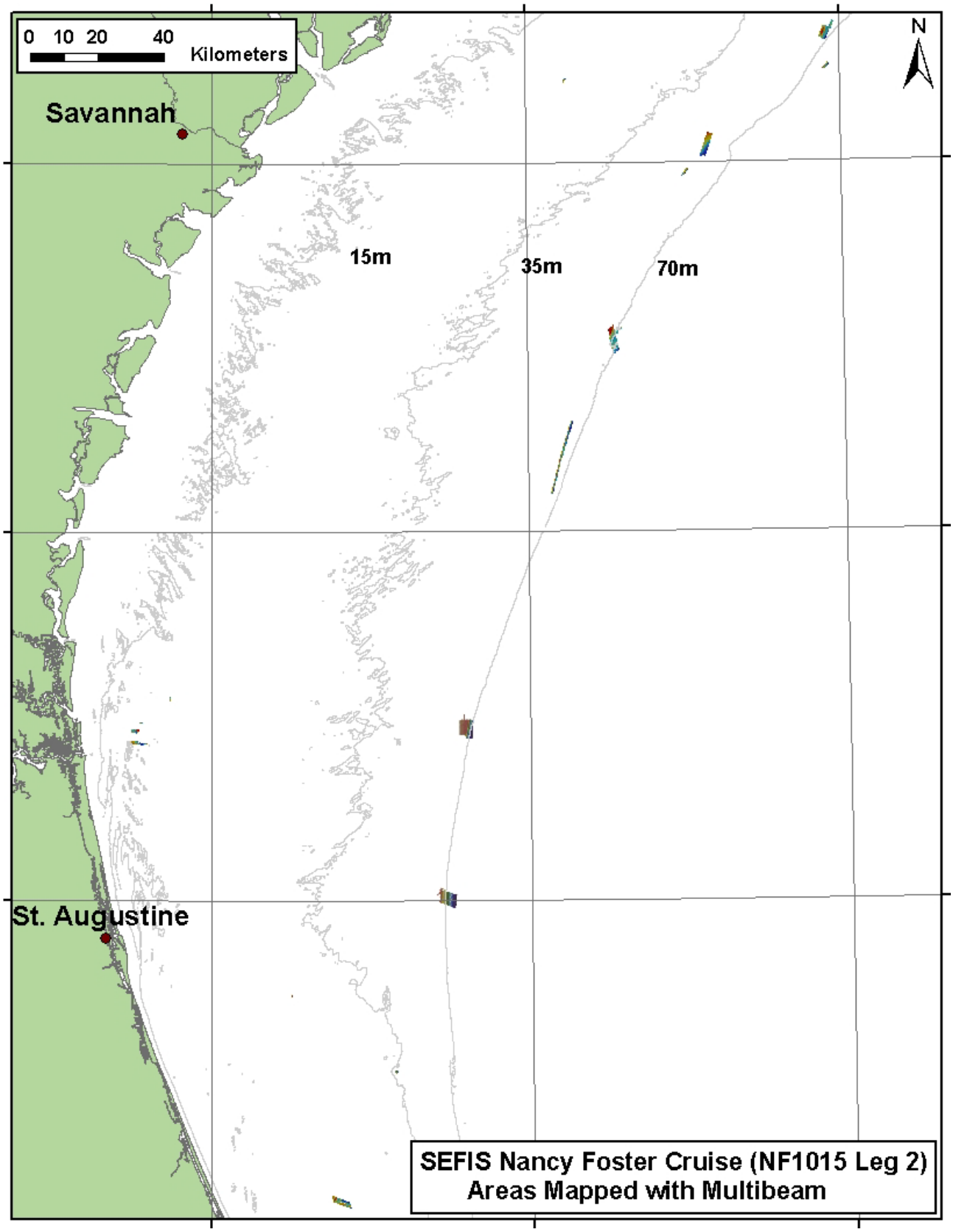

Figure 7. Locations mapped with multibeam acoustic gear on the NF-10-15-Leg 2 survey.

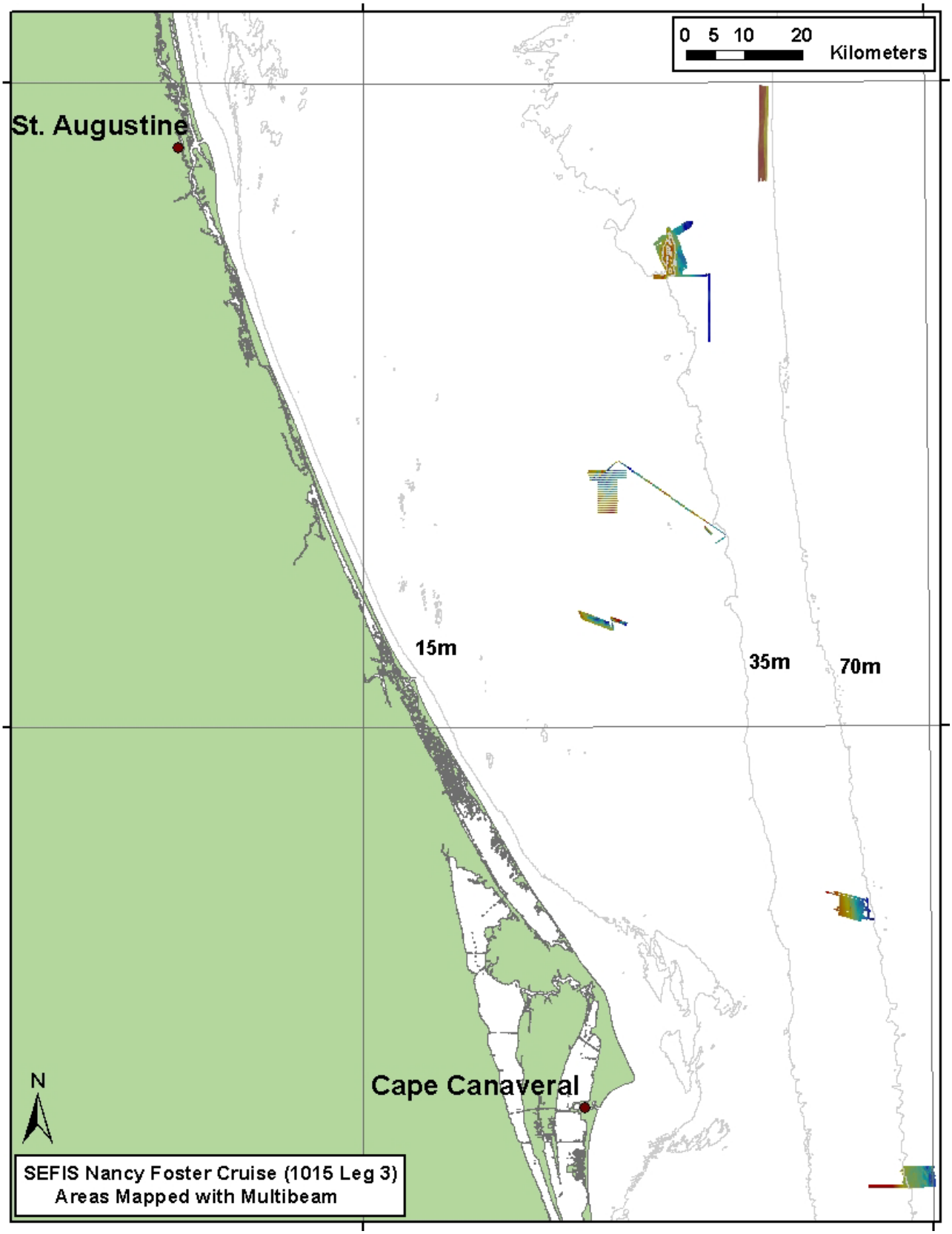

Figure 8. Locations mapped with multibeam acoustic gear on the NF-10-15-Leg 3 survey.

CRUISE PARTICIPANTS

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