U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
3209 Frederic St, Pascagoula,
MS 39567

Cruise Report

Date Submitted: 09/25/2024

Platform: NOAA Ship PISCES

Cruise Number: 24-01

Project Title: SEAMAP Reef Fish

Cruise Dates: 03/22/2024 - 05/31/2024

Submitted by: PRIOR.JACK.HAMILTON.1594753182 Digitally signed by PRIOR.JACK.HAMILTON.1594753182 Date: 2024.09.25 12:34:41 -05'00' Date: 09/25/2024
Field Party Chief

Approved by: KELLISON.GREGORY.TODD.1365849206 Digitally signed by KELLISON.GREGORY.TODD.1365849206 Date: 2024.09.30 21:18:22 -04'00' Date: 09/30/2024
Division Director

Approved by: GERARD.TRIKA.LOLANI.1365898134 Digitally signed by GERARD.TRIKA.LOLANI.1365898134 Date: 2024.10.02 15:52:12 -04'00' Date: 10/02/2024
Director, SEFSC

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Introduction

NOAA Ship *Pisces* departed Pascagoula, MS on March 29, 2024 to conduct the GFISHER reef fish survey of natural hard bottom areas located on the continental shelf and shelf edge of the northern Gulf of Mexico (GOM). The planned itinerary divided the survey into four legs: Leg I) 03/22/2024 to 04/05/2024; Leg II) 04/10/2024 to 04/24/2024; Leg III) 04/28/2024 to 05/12/2024; and Leg IV) 05/17/2024 to 05/31/2024. One week was lost for ship repairs prior to Leg I (03/22 to 03/28), and 4 hours lost due to weather conditions on 4/2. Import occurred a day early on 04/04 due to personnel issues. Mapping was not possible during leg I due to equipment failure, so all operations at night consisted of transiting or staying in vicinity of camera stations. Departure for leg II initially occurred on time, but equipment failure led to a delay of operations and return to Galveston dock on 04/11 until the ship was able to depart again on 4/17 for a loss of 5 days of sampling. Leg III departed one day late (04/29) due to weather conditions. Two hours of sampling time was lost during leg III due to the ship entangling with buoy lines on 5/3. Leg IV was delayed until 05/20, three days late, to repair ship's fast rescue boat. On 5/21 ship required quick repairs to side sampling hydraulics leading to 2-3 hours loss of sampling effort. On 5/22 one hour of operations were stopped to have all aboard re-watch ship civility training video due to issues between crew members. One day of operations was then lost to drop a crew member in Key West via Coast Guard between 5/23 and 5/24. On 5/27 camera array was lost due to the ship entangling with buoy lines leading to loss of operations after 1500. (5 hours). On 5/28 ship was forced to stay in the area to attempt to recover gear leading to minimal sampling effort, but were able to conduct mapping operations instead of cameras. Camera equipment could not be recovered. One hour was again lost to hydraulic issues on 5/29. Seventeen sampling days were lost (excluding weather time), and no night operations occurred during leg 1. The effort for lost working time will be shifted to R/V *Southern Journey* and conducted in late summer. De-staging occurred on arrival to the dock in Pascagoula, MS on May 31, 2024.

Objectives

1) Assess relative abundance of reef fish on the continental shelf edge-banks of the northern GOM.
2) Determine length frequency distributions of reef fish.
3) Collect conductivity, temperature, dissolved oxygen, fluorescence, and transmissivity data profiles of water column at each sample site.
4) Collect acoustic data with the Simrad EM 2040, multibeam sonar and Simrad EK 80 echosounder.
5) Collect water samples for environmental DNA analysis.

Methods

The Gulf Fishery Independent Survey of Habitat and Ecosystem Resources (GFISHER) sampling design, which is conducted in collaboration with NMFS Panama City and Florida Wildlife Research Institute, was implemented in 2020. We moved to this design because it was created from a composite of mapping and habitat data collated over several decades of mapping effort among the three cooperating laboratories. Most importantly the design optimizes sampling (e.g. minimizes coefficient of variation - CV) by allocating increased number of sites to habitats having the highest variability for target species abundance. Thus, the new design increases precision without a consequent increase in sampling effort because of the statistical methods used to optimize site selection. The new design also divides the workload among the laboratories to take advantage of the strengths of each individual program (e.g. MS Labs has access to

OMAO white ships and thus can work in remote locations more easily). Selection of sampling sites follows a two-stage approach habitat-based survey design. Stage 1 uses the survey select procedure in SAS to select microgrids according to frequency of habitat strata within each Spatial/Depth stratum (i.e. weighted). Following the allocation assignment, Stage 2 imports the selected microgrids into GIS where a random point is then chosen for each habitat strata that were selected for that particular microgrid (e.g. microgrids with multiple habitat types can be selected multiple times). Selected reef sites were then sampled with the spherecam arrays. Each spherecam array had a mounted In-Situ Aqua TROLL 600 sonde, a CStar transmissometer, and pressure housings (rated to 500m). SphereCam provides a spherical field-of-view (360 *70 degrees) while two satellite cameras are used to capture stereo-images in paired orientations. One array also contained a single 5L Niskin bottle that was triggered at the depth at the beginning of the deployment to collect water for eDNA sampling exactly at the deployment location. The ship supplied Seabird 911 conductivity, temperature and depth (CTD) profiler was deployed prior to the fist array deployment and after the last array retrieval each day to validate SONDE data collections and to provide speed-of-sound measurements for the EM 2040. Additionally, the CTD was used as a backup system for collecting the eDNA water samples. Simrad EK 80 data was collected during daylight hours only. Bathymetric mapping was conducted at night at selected areas near the day's sampling with the Simrad EM 2040.

Bathymetric mapping operations focused on predetermined sites within or adjacent to sampling areas. HYPACK software was used to plan the survey transects over selected targets of interest. To optimize coverage for the EM 2040, the line spacing was calculated by 2.85(D) = LS, where D is water depth in meters, and LS is distance between lines. EM 2040 configurations and EK 80 configurations were based on the guidance from National Marine Fisheries Service personnel at Stennis Space Center. A Seabird 911 CTD or Castaway CTD was deployed prior to, mid-way, and at end of mapping operations to obtain speed-of-sound through water column for post processing of collected EM 2040 mapping data.

Results

The 2024 GFISHER project sampled 351stations in 71 blocks with the camera arrays (Figure 1 and 2, Table 1). Seven deployments were lost with unrecovered camera array. Video data were returned to the NOAA Fisheries Mississippi Laboratory for viewing, analysis and archiving. The Seabird 911 CTD profiler was deployed 75 times (Table 1). CTD data were processed at sea and uploaded to the National Coastal Data Development Center (NCDDC) server for real-time use. Castaway hand-deployed CTD was also utilized for mapping operation integrity, applied in real-time within the mapping blocks pictured in figure 3 and 4.

Bathymetric data was collected at predetermined sites within selected blocks (Figure 3 and 4). Approximately 919.1 linear nautical miles were surveyed. EK 80 acoustic data was collected during day operations only. Acoustic and bathymetric data were returned to the NOAA Fisheries Mississippi Laboratory for processing and archiving.

Twenty water samples were collected from either the Seabird 911 CTD array or the 5L Niskin bottle fired at depth on the camera array. The water samples were fixed and stored at sea and will be processed at the University of West Florida for eDNA analysis.

Cruise Participants:

Leg I: 03/29/2024 – 04/04/2024 **7 DAS Pascagoula, MS – Galveston, TX**

Name	Title	Organization
Jack Prior	Field Party Chief	Mississippi State University / NGI
Ryan Caillouet	General Engineer	NMFS - Stennis Space Center, MS
Kate Overly	Fisheries Biologist	TESA / NMFS – Panama City, FL

Leg II: 04/17/2023 – 04/24/2024 **10 DAS Galveston, TX – Galveston, TX**

Name	Title	Organization
Paul Felts	Field Party Chief	NMFS – Pascagoula, MS
James Johnson	General Engineer	NMFS - Stennis Space Center, MS
Kevin Rademacher	Fisheries Biologist	NMFS – Pascagoula, MS
Sarah Waugh	Acquisition Volunteer	NMFS – Acquisition and Grants
Bethany Davis	Student Volunteer	University of West Florida, Pensacola, FL

Leg III: 04/29/2024 – 05/12/2024 **14 DAS Galveston, TX – Pascagoula, MS**

Name	Title	Organization
Joseph Salisbury	Field Party Chief	TESA / NMFS – Pascagoula, MS
Kenneth Wilkinson	General Engineer	NMFS - Stennis Space Center, MS
Amanda Ravas	Fisheries Biologist	TESA / NMFS – Panama City, FL
Samantha Hurst	Student Volunteer	University of West Florida, Pensacola, FL

Leg IV: 05/20/2024 – 05/31/2024 **12 DAS Pascagoula, MS – Pascagoula, MS**

Name	Title	Organization
Joseph Salisbury	Field Party Chief	TESA / NMFS – Pascagoula, MS
James Johnson	General Engineer	NMFS - Stennis Space Center, MS
Kevin Rademacher	Fisheries Biologist	NMFS – Pascagoula, MS
Baye Bowman	Student Volunteer	University of West Florida, Pensacola, FL

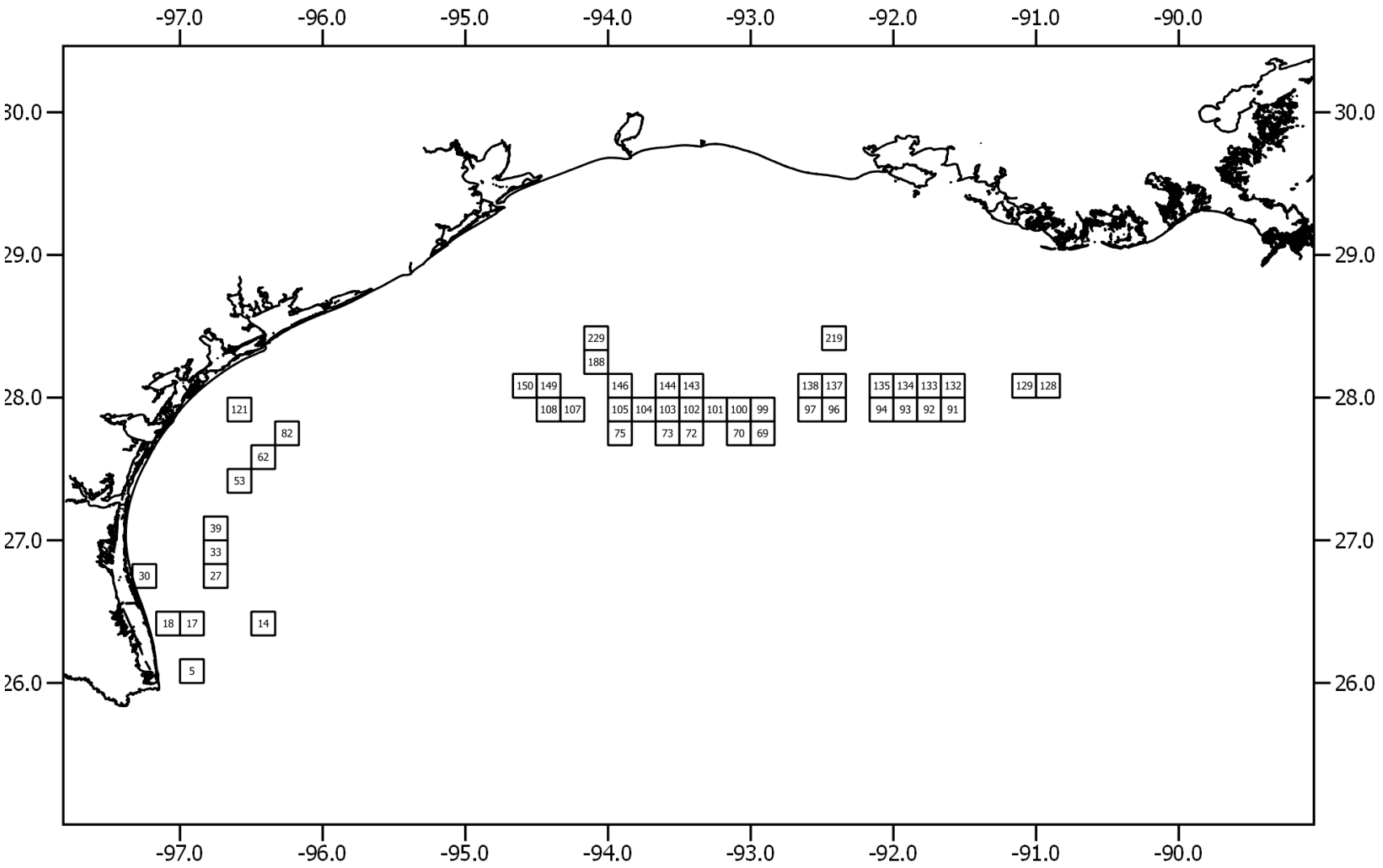

Figure 1. Blocks sampled with cameras in the western Gulf of Mexico during NOAA Ship *Pisces* 24-01 GFISHER project.

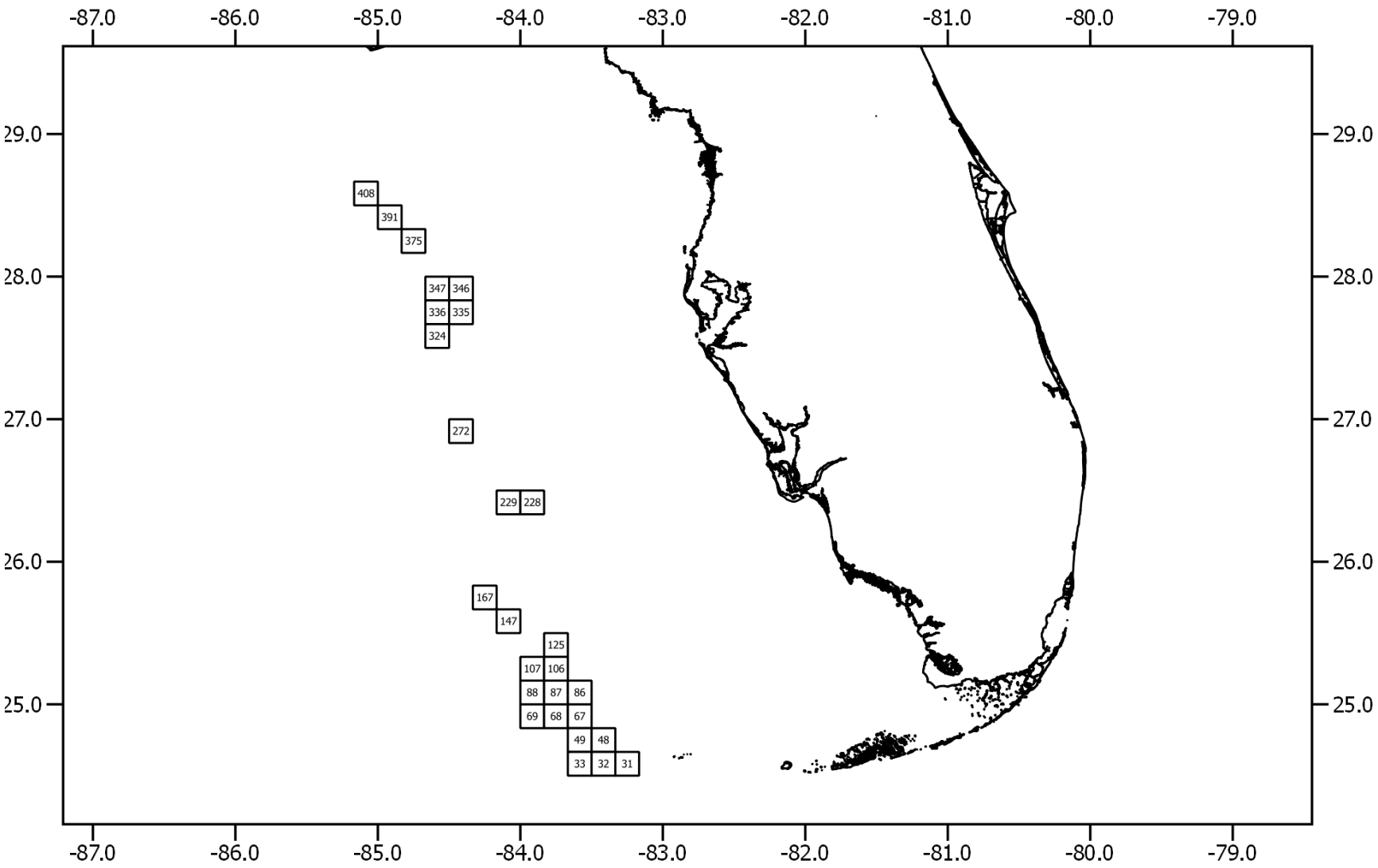

Figure 2. Blocks sampled with cameras in the eastern Gulf of Mexico during NOAA Ship *Pisces* 24-01 GFISHER project.

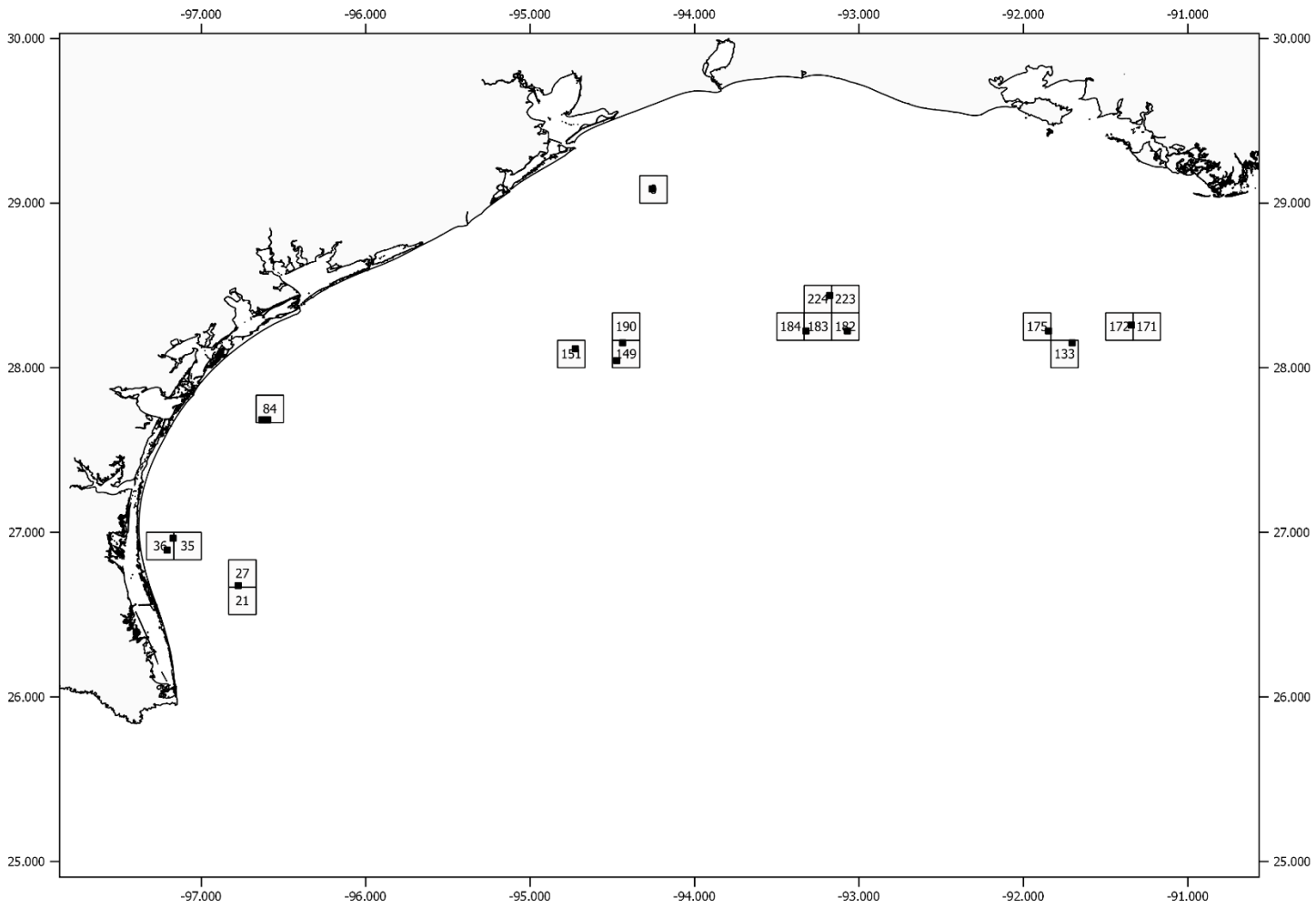

Figure 3. Mapping targets sampled in the western Gulf of Mexico during NOAA Ship *Pisces* 24-01 GFISHER project.

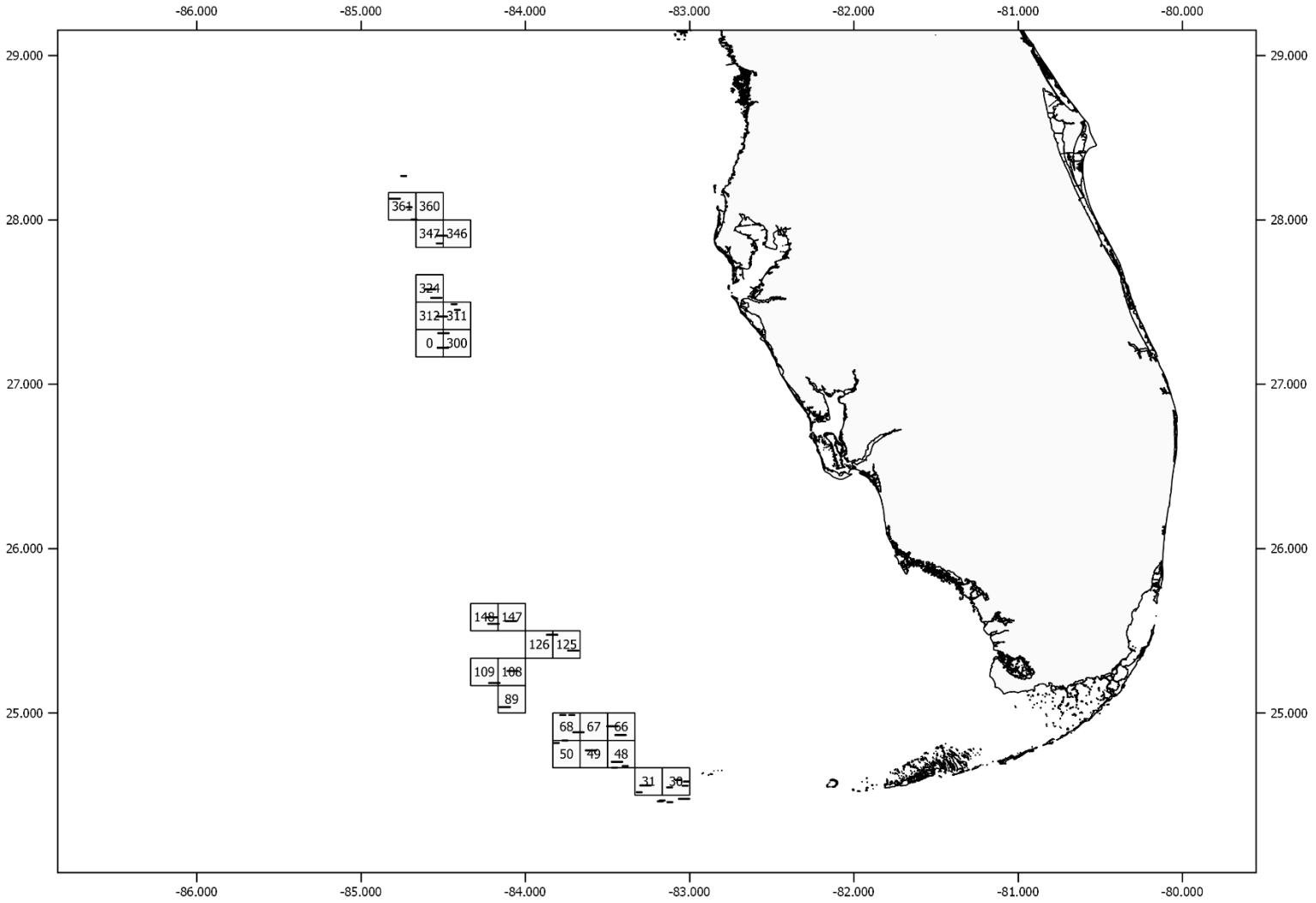

Figure 4. Mapping targets sampled in the eastern Gulf of Mexico during NOAA Ship *Pisces* 24-01 GFISHER project.

Table 1. Stations sampled in the Gulf of Mexico during NOAA Ship *Pisces* 24-01 GFISHER project. VC=camera array. CTD=Seabird 911 profiler.

Station	Block	Reef Name	Latitude	Longitude	Depth (m)	Gear
1	128	Ewing Bank	28.0878	-90.9707	85.1	VC, CTD
2	128	Ewing Bank	28.0822	-90.9760	87.4	VC
3	128	Ewing Bank	28.0812	-90.9865	82	VC
3	128	Ewing Bank	28.0813	-90.9868	80.6	VC
4	129	Ewing Bank	28.0858	-91.0308	59.5	VC
5	129	Ewing Bank	28.0883	-91.0397	76.4	VC
6	129	Ewing Bank	28.0932	-91.0408	62.6	VC
7	129	Ewing Bank	28.0917	-91.0282	58.7	VC, CTD
8	128	Ewing Bank	28.1073	-90.9208	79.6	CTD
9	091	Jakkula Bank	27.9960	-91.6612	106.5	VC, CTD
10	132	Jakkula Bank	28.0005	-91.6607	116.3	VC
11	133	Jakkula Bank	28.0035	-91.6668	118	VC
12	133	Jakkula Bank	28.0048	-91.7027	121.4	VC
13	133	Jakkula Bank	28.0025	-91.7113	119.9	VC
14	133	Jakkula Bank	28.0067	-91.7347	109.5	VC
15	133	Jakkula Bank	28.0110	-91.7352	108.3	VC
16	133	Jakkula Bank	28.0090	-91.7337	110.8	VC
17	133	Jakkula Bank	28.0123	-91.7408	105.9	VC
18	133	Jakkula Bank	28.0137	-91.7400	110.4	VC
19	133	Jakkula Bank	28.0083	-91.7437	105.9	VC
20	133	Jakkula Bank	28.0055	-91.7487	109.7	VC
21	133	Jakkula Bank	28.0012	-91.7533	106.4	VC
22	092	Jakkula Bank	27.9943	-91.7572	96.7	VC
23	133	Jakkula Bank	28.0008	-91.7695	96.3	VC, CTD
24	069	Elvers Bank	27.8260	-92.9103	149.8	VC, CTD
25	099	Elvers Bank	27.8367	-92.9005	131.5	VC
26	099	Elvers Bank	27.8467	-92.9083	146.4	VC
27	099	Elvers Bank	27.8483	-92.9183	140.1	VC
28	070	Geyer Bank	27.8303	-93.0418	147.1	VC
29	070	Geyer Bank	27.8213	-93.0473	71.6	VC, CTD
30	070	Geyer Bank	27.8312	-93.0542	93	VC
31	100	Geyer Bank	27.8352	-93.0682	77.8	VC
32	070	Geyer Bank	27.8130	-93.0435	67.7	VC
33	070	Geyer Bank	27.7993	-93.0473	89.8	VC
34	070	Geyer Bank	27.7940	-93.0535	64.1	VC
35	070	Geyer Bank	27.8085	-93.0770	89.8	VC
36	070	Geyer Bank	27.7217	-93.1118	167.8	VC, CTD
37	101	Bright Bank	27.8978	-93.2975	54.1	VC, CTD
38	101	Bright Bank	27.8963	-93.3140	67.9	VC
39	101	Bright Bank	27.8852	-93.3223	97.6	VC

40	102	Rankin Bank	27.9047	-93.3357	132.3	VC
41	102	Rankin Bank	27.9083	-93.3665	94.7	VC
42	102	Rankin Bank	27.9343	-93.3973	112.1	VC
43	102	Rankin Bank	27.9330	-93.4080	98.2	VC
44	102	Rankin Bank	27.8942	-93.3655	112.4	VC
45	102	Rankin Bank	27.8982	-93.3758	114.8	VC
46	102	Rankin Bank	27.8930	-93.3873	112.5	VC, CTD
47	144	MacNeil Bank	28.0518	-93.6118	89.3	VC, CTD
48	103	East Flower Gardens	27.9608	-93.6152	87.7	VC
49	103	East Flower Gardens	27.9437	-93.6167	79.1	VC
50	103	East Flower Gardens	27.9310	-93.6005	48.6	VC
51	103	East Flower Gardens	27.9252	-93.5808	87.5	VC
52	103	East Flower Gardens	27.9085	-93.5818	85.2	VC
53	103	East Flower Gardens	27.9037	-93.5832	91.7	VC
54	103	East Flower Gardens	27.8967	-93.5990	92.2	VC, CTD
55	188	Claypile Bank	28.3255	-94.1155	50.2	VC, CTD
56	188	Claypile Bank	28.3272	-94.1202	50.3	VC
57	188	Claypile Bank	28.3287	-94.1237	50.4	VC
58	188	Claypile Bank	28.3277	-94.1275	49.5	VC
59	188	Claypile Bank	28.3293	-94.1257	50.4	VC
60	188	Claypile Bank	28.3255	-94.1252	49.4	VC
61	188	Claypile Bank	28.3268	-94.1240	50.1	VC
62	188	Claypile Bank	28.3263	-94.1270	48.9	VC
63	108	Applebaum Bank West	27.9967	-94.4238	75.6	VC, CTD
64	149	No Current Reef Name	28.0030	-94.4110	77.8	VC
65	108	Applebaum Bank West	27.9973	-94.4162	87	VC
66	108	Applebaum Bank West	27.9990	-94.4268	72.7	VC
67	108	Applebaum Bank West	27.9978	-94.4227	73.2	VC
68	108	Applebaum Bank West	27.9950	-94.4255	75.5	VC
69	108	Applebaum Bank West	27.9955	-94.4402	81.4	VC
70	108	Applebaum Bank West	27.9932	-94.4453	80.9	VC
71	108	Applebaum Bank West	27.9893	-94.4552	86.5	VC
72	108	Applebaum Bank West	27.9920	-94.4482	77.2	VC
73	108	Applebaum Bank West	27.9892	-94.4570	85.3	VC
74	108	Applebaum Bank West	27.9900	-94.4665	75.5	VC
75	108	Applebaum Bank West	27.9897	-94.4747	78.6	VC, CTD
76	014	Snapper Bank	26.3585	-96.4147	80.3	VC, CTD
77	005	East Bank	26.0460	-96.8365	42.1	VC, CTD
78	017	Seabree Bank	26.4107	-96.9865	32.3	VC, CTD
79	017	Seabree Bank	26.4047	-96.9740	37	VC
80	017	Seabree Bank	26.4250	-96.9970	33.3	VC
81	017	Seabree Bank	26.4188	-96.9885	36.4	VC
82	017	Seabree Bank	26.4315	-97.0048	32.1	VC
83	017	Seabree Bank	26.4272	-96.9988	33.8	VC, CTD
84	027	Mysterious Bank	26.7818	-96.7575	71.2	VC, CTD
85	027	Mysterious Bank	26.7702	-96.7405	71.5	VC
86	027	Mysterious Bank	26.7852	-96.7388	75.2	VC
87	027	Mysterious Bank	26.7792	-96.7372	77.6	VC
88	027	Mysterious Bank	26.7693	-96.7343	74.8	VC

89	027	Mysterious Bank	26.7660	-96.7357	72.4	VC
90	027	Mysterious Bank	26.7827	-96.7223	76.1	VC
91	027	Mysterious Bank	26.7715	-96.7213	76.3	VC
92	027	Mysterious Bank	26.7852	-96.7100	80.9	VC
93	027	Mysterious Bank	26.7757	-96.7132	78.1	VC
94	027	Mysterious Bank	26.7752	-96.7178	81.8	VC
95	027	Mysterious Bank	26.7707	-96.7142	76.2	VC
96	027	Mysterious Bank	26.7640	-96.7052	76.6	VC
97	027	Mysterious Bank	26.7388	-96.7063	77.6	VC
98	027	Mysterious Bank	26.7377	-96.6972	81	VC
99	027	Mysterious Bank	26.7393	-96.6933	81.1	VC
100	027	Mysterious Bank	26.7340	-96.6877	80.3	VC, CTD
101	030	Steamer Bank	26.8203	-97.1998	29.4	VC, CTD
102	030	Steamer Bank	26.8197	-97.1953	29.1	VC
103	033	Blackfish Bank	26.8715	-96.7718	75.3	VC, CTD
104	033	Blackfish Bank	26.8700	-96.7685	75.3	VC
105	033	Blackfish Bank	26.9467	-96.8317	64.9	VC
106	033	Blackfish Bank	26.9557	-96.8172	64.8	VC
107	039	Dream Bank	27.0450	-96.7050	68.6	VC, CTD
108	039	Dream Bank	27.0313	-96.6988	83.3	VC
109	053	Steamboat Lumps	27.4373	-96.5260	67.9	VC, CTD
110	053	Southern Bank	27.4423	-96.5273	70.9	VC
111	053	Southern Bank	27.4385	-96.5232	64.2	VC
112	053	South Baker Bank	27.4450	-96.5260	73.5	VC, CTD
113	062	Hospital Bank	27.5413	-96.4827	65.9	VC, CTD
114	062	Hospital Bank	27.5428	-96.4728	61.6	VC
115	062	Hospital Bank	27.5512	-96.4828	74.3	VC
116	062	Hospital Bank	27.5550	-96.4735	74.2	VC
117	062	Hospital Bank	27.5740	-96.4772	60.6	VC
118	062	Hospital Bank	27.5808	-96.4833	70.5	VC
119	082	North Baker Bank	27.7420	-96.2413	64.3	VC, CTD
120	121	None	27.8573	-96.5138	37.9	VC, CTD
121	121	None	27.8655	-96.5133	37.4	VC
122	121	None	27.8602	-96.5165	37.5	VC
123	121	None	27.8725	-96.5118	36.6	VC
124	121	None	27.8797	-96.5202	35.3	VC
125	121	None	27.8732	-96.5158	36.2	VC, CTD
126	None	Patch Test Galveston	29.0760	-94.2887	14.8	CTD
127	229	Claypile Bank	28.3393	-94.1633	50.3	VC, CTD
128	229	Claypile Bank	28.3397	-94.1567	46.7	VC
129	229	Claypile Bank	28.3380	-94.1595	38.9	VC
130	229	Claypile Bank	28.3387	-94.1487	48.4	VC
131	229	Claypile Bank	28.3352	-94.1508	51.3	VC
132	229	Claypile Bank	28.3373	-94.1470	48.6	VC
133	229	Claypile Bank	28.3348	-94.1432	48.5	VC
134	188	Claypile Bank	28.3313	-94.1453	39.3	VC
135	188	Claypile Bank	28.3307	-94.1420	42	VC
136	188	Claypile Bank	28.3295	-94.1375	46	VC
137	188	Claypile Bank	28.3307	-94.1395	44.5	VC

138	188	Claypile Bank	28.3335	-94.1357	50	VC
139	229	Claypile Bank	28.3345	-94.1398	48.9	VC
140	229	Claypile Bank	28.3352	-94.1365	50.7	VC
141	229	Claypile Bank	28.3350	-94.1350	50.8	VC
142	188	Claypile Bank	28.3302	-94.1310	49.8	VC
143	188	Claypile Bank	28.3270	-94.1372	45.1	VC
144	188	Coffee Lump	28.3260	-94.1342	47.2	VC, CTD
145	229	Claypile Bank	28.3337	-94.1635	42.8	VC, CTD
146	188	Claypile Bank	28.3267	-94.1603	51.2	VC
147	188	Claypile Bank	28.3235	-94.1557	49.6	VC
148	188	Claypile Bank	28.3263	-94.1533	50.5	VC
149	188	Claypile Bank	28.3287	-94.1507	48.7	VC
150	188	Claypile Bank	28.3255	-94.1485	38.1	VC
151	188	Claypile Bank	28.3278	-94.1492	37.9	VC
152	188	Claypile Bank	28.3227	-94.1522	46	VC
153	188	Claypile Bank	28.3187	-94.1527	50.4	VC
154	188	Claypile Bank	28.3222	-94.1493	39.8	VC
155	188	Claypile Bank	28.3253	-94.1443	40.8	VC
156	188	Claypile Bank	28.3190	-94.1413	48.4	VC
157	188	Claypile Bank	28.3243	-94.1427	51.6	VC
158	188	Claypile Bank	28.3167	-94.1375	41.7	VC
159	188	Claypile Bank	28.3208	-94.1350	45.1	VC
160	188	Claypile Bank	28.3200	-94.1302	48.5	VC
161	188	Claypile Bank	28.3182	-94.1248	49.9	VC
162	188	Claypile Bank	28.3220	-94.1182	50.5	VC
163	188	Claypile Bank	28.3222	-94.1228	49.2	VC
164	188	Claypile Bank	28.3195	-94.1217	50.6	VC, CTD
165	150	32 Fathom Bank	28.0662	-94.5435	54.8	VC, CTD
166	150	32 Fathom Bank	28.0668	-94.5293	54.2	VC
167	150	32 Fathom Bank	28.0628	-94.5267	55.4	VC
168	150	32 Fathom Bank	28.0618	-94.5323	54.2	VC
169	150	32 Fathom Bank	28.0640	-94.5235	55.1	VC
170	107	Applebaum Bank West	27.8788	-94.2587	123.4	VC, CTD
171	107	Applebaum Bank West	27.8770	-94.2537	119.8	VC
172	107	Applebaum Bank West	27.8647	-94.2560	85.9	VC
173	107	Applebaum Bank West	27.8797	-94.2410	120.1	VC
174	107	Applebaum Bank West	27.8763	-94.2377	113.8	VC
175	107	Applebaum Bank West	27.8648	-94.2345	96.5	VC, CTD
176	107	Applebaum Bank West	27.8777	-94.2605	120.9	VC, CTD
177	107	Applebaum Bank West	27.8528	-94.2640	103.4	VC
178	107	Applebaum Bank West	27.8593	-94.2558	83.2	VC
179	107	Applebaum Bank West	27.8598	-94.2515	75.5	VC
180	107	Applebaum Bank West	27.8650	-94.2560	91.8	VC
181	107	Applebaum Bank West	27.8810	-94.2443	121.1	VC
182	107	Applebaum Bank West	27.8775	-94.2402	110.6	VC
183	107	Applebaum Bank West	27.8747	-94.2390	107.3	VC
184	146	Coffee Lump	28.0247	-93.9123	66.5	VC, CTD
185	104	West Flower Gardens	27.9042	-93.8055	99.8	VC, CTD
186	105	West Flower Gardens	27.8887	-93.8412	97.2	VC

187	105	West Flower Gardens	27.8530	-93.8852	122.9	VC
188	105	West Flower Gardens	27.8473	-93.8923	131.9	VC
189	105	West Flower Gardens	27.8352	-93.8895	135.3	VC
190	105	West Flower Gardens	27.8342	-93.8478	96.5	VC
191	075	None	27.8230	-93.8372	133.7	VC
192	105	West Flower Gardens	27.8448	-93.8342	81.9	VC
193	104	West Flower Gardens	27.8833	-93.8165	86	VC
194	104	West Flower Gardens	27.8820	-93.7958	103.4	VC
195	104	West Flower Gardens	27.8625	-93.7897	112.3	VC
196	104	West Flower Gardens	27.8747	-93.7107	111.3	VC
197	104	West Flower Gardens	27.8670	-93.6842	110.5	VC
198	073	None	27.8133	-93.6530	124.3	VC, CTD
199	144	MacNeil Bank	28.0060	-93.5377	95.9	VC, CTD
200	144	MacNeil Bank	28.0150	-93.5015	86.7	VC
201	143	29 Fathom Bank	28.0047	-93.4997	93.9	VC
202	102	Rankin Bank	27.9690	-93.4512	117.2	VC
203	102	Rankin Bank	27.9253	-93.3960	105.1	VC
204	102	Rankin Bank	27.8978	-93.4595	150.8	VC
205	102	Rankin Bank	27.8888	-93.4620	93.5	VC
206	102	Rankin Bank	27.8823	-93.4478	91.6	VC
207	102	Rankin Bank	27.8760	-93.4538	101.9	VC
208	102	Rankin Bank	27.8748	-93.4415	100.1	VC
209	102	Rankin Bank	27.8697	-93.4348	114	VC
210	102	Rankin Bank	27.8660	-93.4350	105	VC
211	102	Rankin Bank	27.8390	-93.4253	130	VC
212	102	Rankin Bank	27.8390	-93.4117	131.9	VC
213	072	None	27.8287	-93.3885	149.5	VC, CTD
214	070	Geyer Bank	27.7070	-93.1227	137.2	VC, CTD
215	070	Geyer Bank	27.7103	-93.1263	188.3	VC
216	101	Bright Bank	27.8602	-93.2955	123.3	VC, CTD
217	101	Bright Bank	27.8718	-93.3020	69.5	VC
218	101	Bright Bank	27.8952	-93.2595	126.6	VC
219	102	Rankin Bank	27.9047	-93.3385	118.6	VC
220	072	None	27.8330	-93.3658	147.5	VC
221	102	Rankin Bank	27.8835	-93.4037	104	VC, CTD
222	219	Sonnier Bank	28.3492	-92.4607	60.6	VC, CTD
223	219	Sonnier Bank	28.3433	-92.4473	60.9	VC
224	219	Sonnier Bank	28.3330	-92.4588	63.3	VC
225	097	MacGrail Bank	27.9697	-92.6243	127.9	VC, CTD
226	097	MacGrail Bank	27.9675	-92.5675	133.7	VC
227	097	MacGrail Bank	27.9963	-92.5538	113.3	VC
228	138	None	28.0045	-92.5340	111.5	VC
229	137	Bouma Bank	28.0630	-92.4417	74.2	VC
230	137	Bouma Bank	28.0303	-92.3718	115.9	VC
231	096	Rezak Bank	27.9917	-92.3668	130.4	VC
232	096	Rezak Bank	27.9793	-92.3743	77.7	VC, CTD
233	096	Rezak Bank	27.9715	-92.4172	106.5	VC, CTD
234	096	Rezak Bank	27.9647	-92.4157	105.3	VC
235	096	Rezak Bank	27.9140	-92.4195	155.7	VC

236	096	Rezak Bank	27.9183	-92.4128	129.4	VC
237	096	Rezak Bank	27.9265	-92.3657	154.9	VC
238	096	Rezak Bank	27.9053	-92.3777	128	VC
239	096	Rezak Bank	27.9040	-92.3737	96.6	VC
240	096	Rezak Bank	27.9063	-92.3632	144.2	VC
241	096	Rezak Bank	27.8868	-92.3832	138.4	VC
242	096	Rezak Bank	27.8825	-92.3747	147.6	VC
243	096	Rezak Bank	27.8530	-92.3418	169.7	VC
244	096	Rezak Bank	27.8620	-92.3527	117.4	VC
245	094	Parker Bank	27.9365	-92.0622	121.4	VC
246	094	Parker Bank	27.9438	-92.0503	92.4	VC, CTD
247	134	Alderdice Bank	28.1187	-91.9348	91	VC
248	134	Alderdice Bank	28.0985	-91.9538	93.1	VC
249	134	Alderdice Bank	28.0967	-91.9615	93.7	VC
250	134	Alderdice Bank	28.0948	-91.9778	86.2	VC
251	134	Alderdice Bank	28.0780	-91.9850	88.8	VC
252	134	Alderdice Bank	28.0743	-91.9848	82.5	VC
253	134	Alderdice Bank	28.0695	-91.9918	95.7	VC
254	135	None	28.0548	-92.0365	105.6	VC
255	134	Alderdice Bank	28.0537	-91.9635	104.7	VC
256	134	Alderdice Bank	28.0603	-91.9615	94.9	VC
257	134	Alderdice Bank	28.0535	-91.9273	95.7	VC
258	093	Parker Bank	27.9702	-91.9608	112.6	VC
259	093	Parker Bank	27.9747	-91.9722	103.7	VC
260	094	Parker Bank	27.9727	-92.0122	104.4	VC
261	094	Parker Bank	27.9515	-92.0587	114.4	VC, CTD
262	093	Parker Bank	27.9445	-91.9505	131.9	VC, CTD
263	093	Parker Bank	27.9537	-91.9537	117.4	VC
264	093	Parker Bank	27.9518	-91.9623	116.9	VC
265	093	Parker Bank	27.9470	-91.9712	110.6	VC
266	093	Parker Bank	27.9498	-91.9723	108.1	VC
267	093	Parker Bank	27.9537	-91.9730	106.8	VC
268	093	Parker Bank	27.9512	-91.9710	108.8	VC
269	093	Parker Bank	27.9570	-91.9772	100.6	VC
270	093	Parker Bank	27.9587	-91.9780	97.7	VC
271	093	Parker Bank	27.9552	-91.9843	97	VC
272	093	Parker Bank	27.9428	-91.9887	113	VC
273	093	Sweet Bank	27.8373	-91.9155	137.4	VC
274	093	Sweet Bank	27.8355	-91.9077	146.5	VC
275	093	Sweet Bank	27.8380	-91.9128	144.5	VC
276	093	Sweet Bank	27.8417	-91.9023	156.6	VC
277	093	Sweet Bank	27.8492	-91.8965	177.6	VC
278	093	Sweet Bank	27.8425	-91.8900	172.6	VC
279	093	Sweet Bank	27.8353	-91.8878	148.2	VC, CTD
280	408	None	28.5040	-85.0120	102.2	VC, CTD
281	391	None	28.3933	-84.9920	115.1	VC
282	391	None	28.4185	-84.9242	90.3	VC
283	391	None	28.4193	-84.8998	84.5	VC
284	391	None	28.4417	-84.8343	58.8	VC

285	375	Steamboat Lumps	28.2685	-84.7558	70	VC
286	375	Steamboat Lumps	28.2613	-84.7542	72.7	VC, CTD
287	347	None	27.9573	-84.5358	91	VC, CTD
288	347	None	27.9413	-84.5428	95.8	VC
289	346	None	27.8673	-84.4487	87.1	VC
290	336	None	27.8137	-84.5352	122	VC
291	336	None	27.7537	-84.5055	119.9	VC
292	336	None	27.7322	-84.5058	122.2	VC
293	335	None	27.7317	-84.4985	118.7	VC
294	335	None	27.7313	-84.4968	118.5	VC
295	335	None	27.7300	-84.4998	119.7	VC
296	336	None	27.6795	-84.5245	129.5	VC
297	324	None	27.6490	-84.5115	128.3	VC
298	324	None	27.6477	-84.5187	134.2	VC
299	324	None	27.6427	-84.5200	131.6	VC, CTD
300	272	None	26.9087	-84.4547	172.2	VC, CTD
301	288	None	26.4183	-83.9090	116.2	VC, CTD
302	229	None	26.3513	-84.0278	138	VC
303	999	None	24.4587	-83.1568	82.8	VC, CTD
304	999	None	24.4558	-83.1603	83.7	VC
305	999	None	24.4615	-83.1668	82.8	VC
306	999	None	24.4608	-83.1755	81.8	VC
307	999	None	24.4610	-83.1848	126.9	VC
308	999	None	24.4642	-83.1867	82.6	VC, CTD
309	999	None	24.4915	-83.1682	65.8	VC, CTD
310	999	None	24.4613	-83.1870	125.2	VC
311	999	None	24.4605	-83.1933	124	VC
312	999	None	24.4618	-83.1975	110.8	VC
313	999	None	24.4605	-83.2075	107.7	VC
314	999	None	24.4637	-83.2117	109.7	VC
315	999	None	24.4803	-83.2318	86	VC
316	999	None	24.4783	-83.2378	101.8	VC
317	999	None	24.5195	-83.3048	68.9	VC
318	999	None	24.5453	-83.4085	91.8	VC
319	999	None	24.5630	-83.4167	68.5	VC
320	999	None	24.5835	-83.3760	62.9	VC
321	999	None	24.6137	-83.3148	66.7	VC
322	999	None	24.6150	-83.3137	66.7	VC
323	999	None	24.6180	-83.3120	66.6	VC, CTD
324	048	None	24.6108	-83.5838	114.7	VC, CTD
325	033	None	24.6813	-83.5168	63.9	VC
326	049	None	24.6945	-83.3735	67.4	VC
327	048	None	24.7800	-83.4737	66	VC
328	049	None	24.7868	-83.6515	68.2	VC
329	049	None	24.7953	-83.6042	68.9	VC
330	068	None	24.8328	-83.8145	81.5	VC
331	068	None	24.8822	-83.6775	72.8	VC, CTD
332	067	None	24.9648	-83.5488	74	VC, CTD
333	999	None	24.9877	-83.6275	72.8	VC

334	086	Pulley Ridge	25.0203	-83.6268	74.1	VC
335	068	Howell's Hook	24.9890	-83.7087	85.3	VC
336	068	Howell's Hook	24.9875	-83.7135	84.5	VC
337	068	Howell's Hook	24.9870	-83.7592	83.4	VC
338	068	Howell's Hook	24.9115	-83.7618	88.5	VC
339	999	Howell's Hook	24.9142	-83.7873	85.6	VC
340	068	Howell's Hook	24.9267	-83.8117	98.5	VC
341	069	None	24.9867	-83.8792	117.1	VC
342	088	None	25.0292	-83.8790	118.7	CTD
343	069	None	24.9863	-83.8788	117.2	VC, CTD
344	088	None	25.1310	-83.8852	121.4	VC
345	087	None	25.1515	-83.7267	89.4	VC, CTD
346	108	None	25.3213	-84.0922	153.6	CTD
347	125	Pulley Ridge	25.3790	-83.7090	89.5	VC, CTD
348	106	Pulley Ridge	25.3580	-83.7030	87.5	VC
349	107	None	25.3100	-83.7060	88.3	VC
350	125	None	25.3320	-83.8510	116.9	VC
351	147	None	25.6610	-84.0790	149	VC, CTD
352	147	None	25.6490	-84.0810	148.5	VC
353	147	None	25.6490	-84.0940	152	VC
354	147	None	25.6440	-84.0940	150.6	VC
355	167	None	25.6900	-84.1840	166.8	VC, CTD

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