

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

Project Instructions

Date Submitted:

Platform:

Cruise Number:

Project Title:

Cruise Dates: -

Prepared by: Date:
Field Party Chief

Approved by: Date:
Dr. Lisa Desfosse
Director, Mississippi Laboratory
NMFS, Pascagoula, MS

Approved by: Date:
Dr. Bonnie Ponwith
Director, SEFSC
NMFS, Miami, FL

Approved by: Date:
Captain Anita Lopez, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Project Period

April 1- June 7, 2013

B. Operating Area

The area of operation is the U.S. shelf waters of the Gulf of Mexico (27° 00' N, 96° 50' W; 24° 50' N, 83° 40' W) in depths between 30 and 150 m (Figures 1 & 2).

C. Summary of Objectives

NOAA Ship *Pisces* will conduct a survey of reef fish on the U.S. continental shelf of the Gulf of Mexico using a custom built stereo/video camera system and bandit reels. The ship's ME70 multibeam system and Simrad EK60 echosounder will be used to map blocks 93, 94, 128, and 129W in the western Gulf of Mexico as well as blocks 51, 69, 87, 163, 179, 180, and 196 in the eastern Gulf. Additional areas will be selected for mapping while at sea.

D. Participating Institutions

NOAA/NMFS/SEFSC Mississippi Laboratories

E. Personnel (Science Party)

Leg 1: 4/01/2013- 4/20/2013 (20 sea-days)

Name	Title	Sex	Organization	Citizenship	Watch
Joey Salisbury	FPC	M	IAP Pascagoula	US	D
Paul Felts	Fisheries Biologist	M	NMFS Pascagoula	US	D
Matt Campbell	Fisheries Biologist	M	NMFS Pascagoula	US	D
Andre Debose	Fisheries Biologist	M	NMFS Pascagoula	US	D
Jameson Paige	Volunteer	M	NMFS Pascagoula	US	D
Jim Johnson	Electronic Tech.	M	NMFS Stennis SC	US	N
TBD	Volunteer				

Leg 2: 4/24/2013- 5/11/2013 (18 sea-days)

Name	Title	Sex	Organization	Citizenship	Watch
Joey Salisbury	FPC	M	IAP Pascagoula	US	D
Kevin Rademacher	Fisheries Biologist	M	NMFS Pascagoula	US	D
John Moser	Fisheries Biologist	M	NMFS Pascagoula	US	D
Kristin Hannan	Fisheries Biologist	F	IAP Pascagoula	US	D
Jeneane Davis	Electronic Tech.	F	NMFS Stennis SC	US	N

Leg 3: 5/16/2013-5/26/2013 (11 sea-days)

Name	Title	Sex	Organization	Citizenship	Watch
Michael Felts	FPC	M	IAP Pascagoula	US	D
Paul Felts	Fisheries Biologist	M	NMFS Pascagoula	US	D
Kevin Rademacher	Fisheries Biologist	M	NMFS Pascagoula	US	D
Ken Wilkinson	Electronic Tech.	M	NMFS Stennis SC	US	N
Ariane Frappier	Volunteer	F	NMFS Pascagoula	US	D
Brondum Krebs	Volunteer	M	NMFS Pascagoula	US	D

Leg 4: 5/28/2013-6/07/2013 (11 sea-days)

Name	Title	Sex	Organization	Citizenship	Watch
Michael Felts	FPC	M	IAP Pascagoula	US	D
Paul Felts	Fisheries Biologist	M	NMFS Pascagoula	US	D
Kevin Rademacher	Fisheries Biologist	M	NMFS Pascagoula	US	D
Ken Wilkinson	Electronic Tech.	M	NMFS Stennis SC	US	N
Ariane Frappier	Volunteer	F	NMFS Pascagoula	US	D

F. Administrative

1. Points of Contact

Field Party Chief: Joey Salisbury, NMFS/IAPWS, 3209 Frederic St. Pascagoula, MS 39567. Phone: 228-549-1655 Joseph.Salisbury@noaa.gov

Alternate Contact: Kevin Rademacher, NMFS, 3209 Frederic St., Pascagoula, MS 39567. 228-549-1635 Kevin.R.Rademacher@noaa.gov

2. Diplomatic Clearances: N/A

3. Licenses and Permits

This cruise will be conducted under the following permits:

NMFS Highly Migratory Species Division Scientific Research Permit

NMFS Southeast Regional Office

Flower Gardens National Marine Sanctuary

NMFS Sea Turtle Permit

Texas Scientific Research Permit

Louisiana Saltwater Scientific Collection Permit

Mississippi Saltwater Scientific Collection Permit

Alabama Saltwater Scientific Collection Permit
Florida Special Activity License

II. Operations

A. Survey Itinerary Plan

<u>Leg</u>	<u>Date</u>	<u>Depart/Arrive Location</u>	<u>Sea Days</u>
Leg 1	04/01/2013	Depart Pascagoula, MS	20
	04/20/2013	Arrive Pascagoula, MS	
Leg 2	04/24/2013	Depart Pascagoula, MS	18
	05/11/2013	Arrive Pascagoula, MS	
Leg 3	05/16/2013	Depart Pascagoula, MS	11
	05/26/2013	Arrive Key West, FL	
Leg4	05/28/2013	Depart Key West, FL	11
	06/07/2013	Arrive Mayport, FL	

B. Staging and De-staging

Pascagoula, MS and Mayport, FL

C. Operations to be conducted

NOAA Ship *Pisces* will conduct a survey of reef fish located on the continental shelf and shelf-edge of the Gulf of Mexico from April 1 through June 7, 2013. Sixty-one blocks have been selected for sampling with stereo/video cameras, bandit reels and CTD during daylight hours (Figures 1 & 2; Tables 1 & 2). Eleven blocks (51, 69, 87, 93, 94, 128 129W, 163, 179, 180,196) have been selected for bathymetry mapping with the ME70 (Figures 1 & 2). Additional mapping will be conducted each night to locate features within blocks to expand the sampling universe as well as improve the ability for site selection by closing gaps created by mapping with inferior systems.

Video cameras will be deployed no earlier than 1 h after sunrise, with the last gear retrieval 1 h prior to sunset. The camera array will be baited with squid and soak on the sea bed for 40 min. A CTD cast will be conducted after the camera array is deployed. Every station will be sampled with the bandit reels after the site is sampled with the cameras and CTD.

Three electric (12V) bandit reels will be mounted on the side sampling station, starboard aft quarter, and starboard stern positions on the vessel. The aluminum spool on the bandit reel holds 275 m of 136.08-kg (300-lb) test monofilament line as the mainline. A detachable bandit gear section (backbone) attaches to the terminal end of the main line.

The 6-m long backbone is constructed of 136.08-kg (300-lb) test monofilament line. Ten pairs of crimps are placed around every 0.61 m mark from the terminal ends of the backbone to secure the gangions in place. Each end of the backbone was fitted with a black anodized 2/0 swivel snap. Sufficient weight (5 or 10 kg) will be placed at the bottom terminal end of the backbone to anchor the gear to the site. Three sets of 10 gangions, one per reel, (30 cm of 45.4 kg test monofilament line, size 8/0, 11/0, and 15/0 circle hooks, and a 6/0 model 120, 308 stainless 5 in longline clamp with swivel) will be baited with cut Atlantic mackerel and attached to the backbones between the paired crimps. Gangions with the varying hooks will be rotated through the 3 bandit reels and stations in an alternating order starting with a hook size that will be randomly selected before deployment. A 3 lb can float will be affixed to the terminal end of the mainline above the backbone as the gear is deployed to the bottom. When the weight reaches the bottom, a surface float will be attached to the mainline. The mainline will be played out or reeled in to allow the gear to soak unimpeded by the vessel for 5 min from the time the weight hits the bottom to the start of retrieval. At the end of 5 min the mainline will be reeled in, the floats detached and each gangion detached.

All fish captured on the bandit reel will be identified, measured, weighed, and have the sex and maturity determined. Select species will have otoliths and gonads collected for age and reproductive research. Select species may be retained whole for additional research.

Sampling protocol may be altered by the FPC or Watch Leader in order to optimize survey effort.

D. Dive Plan N/A

E. Applicable Restrictions N/A

III. Equipment

A. Equipment and Capabilities Provided by Vessel

1. Hydrographic winch for deploying CTD to a depth of 500 m.
2. Hydraulic pot hauler.
3. Two SBE9+ CTDs with calibrated sensors.
 - a. one Digiquartz depth sensor
 - b. two SBE 3 Premium temperature sensors.
 - c. two SBE 4 conductivity sensors (items b. and c. connected with TC ducts).
 - d. two SBE 43 dissolved oxygen sensors.
 - e. two SBE 5T pumps.
 - f. one WetStar fluorometer.
 - g. one SBE water sampler.
 - h. One transmissometer

4. Freezer space for frozen squid, mackerel and biological samples.
5. Scientific Computer System (SCS).
6. Forward articulating crane
7. Mounting for 3 bandit reels 1 at side-sampling station, 1 on starboard aft quarter, and 1 on starboard stern.
8. ME70 Multibeam and EK60 Simrad Echosounder systems

B. Equipment and Capabilities provided by Scientists

1. Stereo camera array with buoy retrieval system
2. External 2TB fathom drives (6) for stereo data storage
3. Specialized computer systems for stereo data downloads
4. Digital cameras with Gates underwater housings
5. TDRs (Temp/Depth Recorder) with associated software and pen reader.
6. (4) High-Flyers
7. (8) Poly Floats
8. (2) Norwegian balls
9. Buoy line (½") for sets of video arrays at depths between 30 and 150 m.
10. Spare weights for camera array, shock cord, and Magnesium releases for buoy retrieval system
11. 300 lb squid bait
12. 300 lb mackerel bait
13. (6) 12V Electric Bandit Reels, 1 mounted at side sampling station, 1 mounted at starboard aft quarter, and 1 mounted at starboard stern plus 3 back-ups.
14. Ethanol (1 gal)
15. Formalin (1 gal. 10% sol.)
16. (1) carboy (5 L) of 1% Triton-X solution
17. (2) Grappling hooks with 10 m of attached rope
18. (1) Rib release hook
19. Hammer locks
20. VCR/monitor/cords
21. Back-up spool for buoy retrieval system
22. Blu-Rays/MiniDV's
23. Turtle kit
24. Hach DO meter
25. (2) motion compensating scales/Calibration weights
26. Pinger
27. (3) 12V marine batteries and (3) trickle chargers for the 3 bandit reels at side-sampling station, starboard aft quarter, and starboard stern.

IV. **Hazardous Materials**

A. Responsibilities and Compliance

The FPC is responsible for complying with MOCDOC 15, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request. By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the FPC.

B. Radioactive Isotopes N/A

C. Inventory

Triton –X (5 L 1% solution)
Ethanol (1 gal)
Formalin (1 gal 10% solution)

V. Additional Projects

A. Supplementary (“Piggyback”) Projects N/A

B. NOAA Fleet Ancillary Projects N/A

VI. Disposition of Data and Reports

A. Data Responsibilities

Data will be stored on data base maintained by NMFS Pascagoula Laboratory IT.

B. Pre and Post Survey Meeting

Pre-Cruise Meeting: The FPC will conduct a meeting of the scientific party on the ship prior to departure to train them in sample collection and inform them of cruise objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship’s Operations Officer.

Post-Cruise Meeting: Upon completion of the cruise, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship’s officers, the FPC and members of the scientific party, the Vessel Coordinator and the Port Captain to review the cruise. Concerns regarding safety, efficiency, and suggestions for

improvements for future cruises should be discussed. Minutes of the post-cruise meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report

Within 7 days of the completion of the cruise, a Ship Operation Evaluation form is to be completed by the FPC. The preferred method of transmittal of this form is via email to OMAO.Customer.Satisfaction@noaa.gov . If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

VII. Miscellaneous

A. Meals and Berthing

Meals and berthing are required for up to 5 scientists. Meals will be served 3 times daily beginning 1 h before scheduled departure, extending throughout the cruise, and ending 2 h after the termination of the cruise. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least 21 days prior to the survey (e.g., FPC is allergic to fin fish).

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the FPC. The FPC and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The FPC is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The FPC is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the cruise and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The FPC will ensure that all non NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the FPC to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, Revised: 08/08) must be completed in advance by each participating scientist. The NHSQ can be obtained from the FPC or the NOAA website at http://www.oma.noaa.gov/medical/NHSQ_Final_wi_Instructions_fill.pdf. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the cruise to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

Contact information:

Regional Director of Health Services
Marine Operations Center – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757.441.6320
Fax 757.441.3760
E-mail MOA.Health.Services@noaa.gov

Prior to departure, the FPC must provide a listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: name, address, relationship to member, and telephone number.

C. Shipboard Safety

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

D. Communications

A progress report on operations prepared by the FPC may be relayed to the program office. Sometimes it is necessary for the FPC to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the FPC. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required it must be arranged at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *NMAO Fleet IT Security Policy* prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

(1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.

(2) Installation of the latest critical operating system security patches.

(3) No external public Internet Service Provider (ISP) connections.

Completion of these requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ships network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

N/A

VIII. Appendices

1. Figures, maps, and tables.

Appendix 1

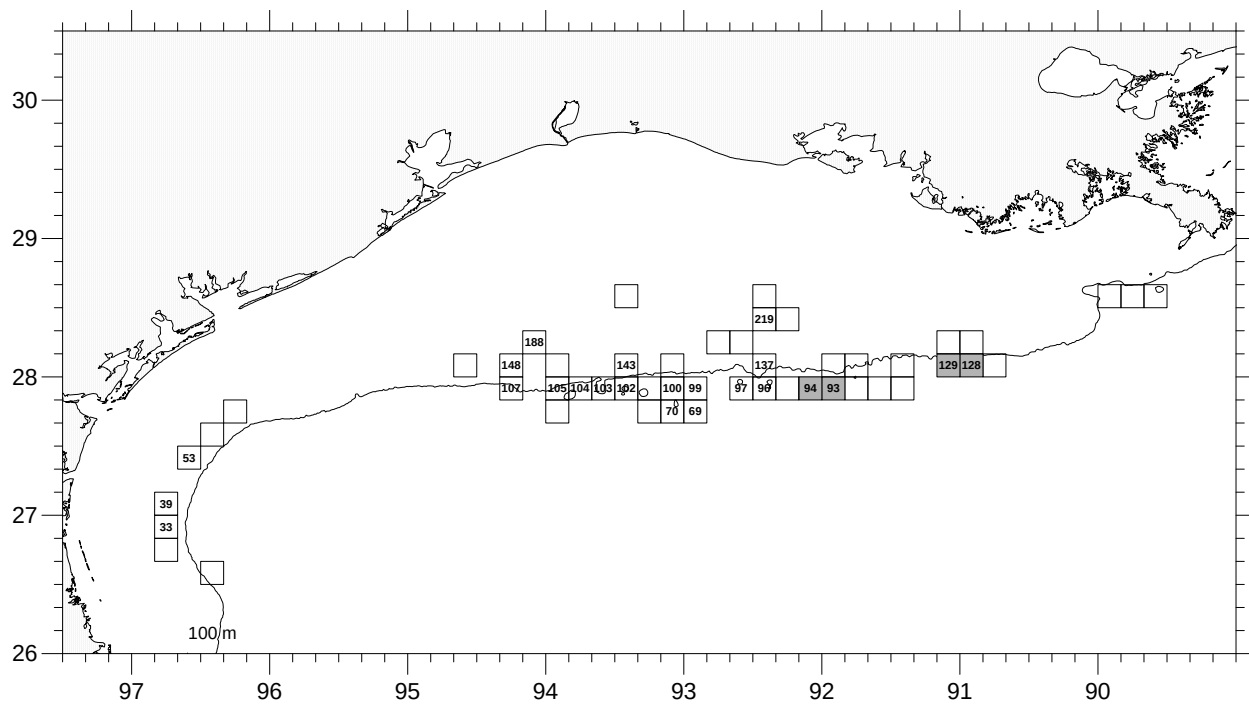


Figure 1. Numbered blocks selected for sampling during the NOAA Ship *Pisces* PC-13-02, SEAMAP reef fish survey, West Gulf. Shaded blocks will be mapped.

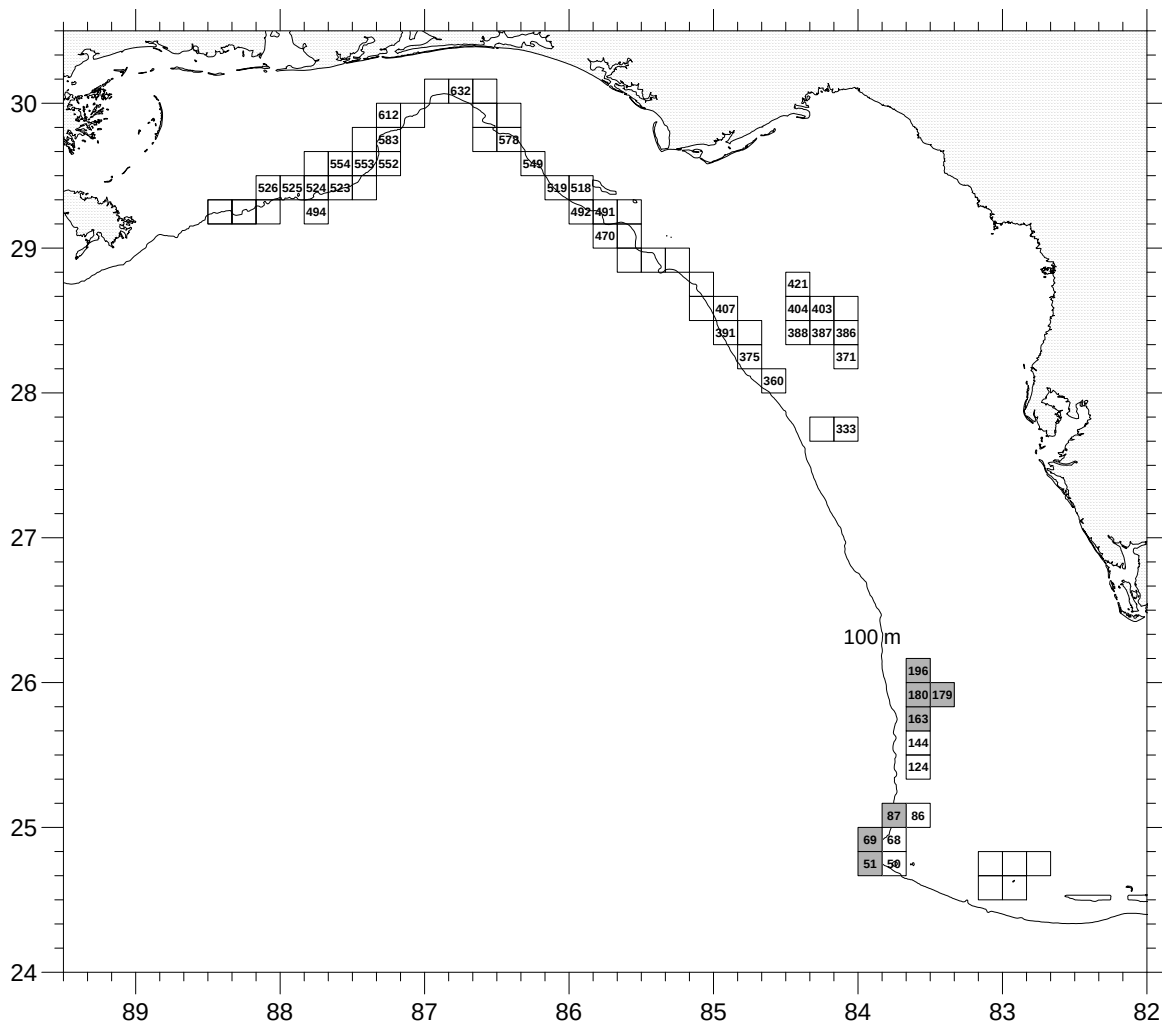


Figure 2. Numbered blocks selected for sampling during NOAA Ship *Pisces* PC-13-02, SEAMAP reef fish survey, East Gulf. Shaded blocks will be mapped.

Table 1. Sites selected for sampling during PC-13-02, SEAMAP reef fish survey, West Gulf.

West Gulf						
Block	Site	Name	Latitude		Longitude	
27		Mysterious Bank				
33	1	Blackfish Bank/Big Adam Bank	26°	52.49991	96°	46.70019
33	2	Blackfish Bank/Big Adam Bank	26°	52.60004	96°	46.70019
33	4	Blackfish Bank/Big Adam Bank	26°	52.49991	96°	46.60007
33	5	Blackfish Bank/Big Adam Bank	26°	52.60004	96°	46.60007
33	6	Blackfish Bank/Big Adam Bank	26°	52.70017	96°	46.60007
33	7	Blackfish Bank/Big Adam Bank	26°	52.49991	96°	46.49994

33	8	Blackfish Bank/Big Adam Bank	26°	52.60004	96°	46.49994
33	9	Blackfish Bank/Big Adam Bank	26°	52.70017	96°	46.49994
33	10	Blackfish Bank/Big Adam Bank	26°	52.60004	96°	46.39981
33	11	Blackfish Bank/Big Adam Bank	26°	52.70017	96°	46.39981
39	4	Dream Bank	27°	1.90158	96°	42.09856
39	5	Dream Bank	27°	1.90158	96°	41.99893
39	11	Dream Bank	27°	2.39971	96°	42.69952
39	22	Dream Bank	27°	2.49933	96°	42.59989
39	29	Dream Bank	27°	2.59896	96°	42.69952
39	31	Dream Bank	27°	2.59896	96°	42.50027
39	35	Dream Bank	27°	2.59896	96°	42.00215
39	38	Dream Bank	27°	2.69858	96°	42.69630
39	47	Dream Bank	27°	2.80142	96°	42.40064
39	48	Dream Bank	27°	2.80142	96°	42.30102
53	1	Southern Bank	27°	26.20050	96°	31.50025
53	2	Southern Bank	27°	26.20050	96°	31.40030
53	7	Southern Bank	27°	26.40040	96°	31.60019
53	9	Southern Bank	27°	26.40040	96°	31.40030
53	14	Southern Bank	27°	26.50035	96°	31.40030
53	15	Southern Bank	27°	26.50035	96°	31.20040
53	16	Southern Bank	27°	26.50193	96°	31.30035
53	21	Southern Bank	27°	26.60029	96°	31.30035
53	25	Southern Bank	27°	26.70024	96°	31.50025
53	28	Southern Bank	27°	26.70024	96°	31.20040
69	2	Elvers Bank	27°	48.99684	92°	54.39916
69	5	Elvers Bank	27°	48.89675	92°	54.19898
69	14	Elvers Bank	27°	48.89926	92°	53.90123
69	28	Elvers Bank	27°	49.29710	92°	53.70106
69	42	Elvers Bank	27°	49.09943	92°	53.50339
69	51	Elvers Bank	27°	49.40218	92°	53.49839
69	52	Elvers Bank	27°	49.59985	92°	53.49839
69	66	Elvers Bank	27°	49.19701	92°	53.29572
69	67	Elvers Bank	27°	49.19951	92°	53.20063
69	71	Elvers Bank	27°	49.19951	92°	53.10055
70	29	Geyer Bank	27°	47.50152	93°	3.30030
70	173	Geyer Bank	27°	48.10025	93°	4.10073
70	174	Geyer Bank	27°	48.10025	93°	4.00116
70	197	Geyer Bank	27°	48.19983	93°	4.39946
70	250	Geyer Bank	27°	48.39898	93°	2.20115
70	379	Geyer Bank	27°	48.89685	93°	3.19817
70	481	Geyer Bank	27°	49.20196	93°	4.59861

70	559	Geyer Bank	27°	49.60026	93°	4.29861
70	605	Geyer Bank	27°	49.79941	93°	3.90031
70	633	Geyer Bank	27°	49.99984	93°	4.39946
93		Sweet Bank/Phleger Bank/Parker Bank	27°			
96	188	Rezak-Sidner Bank	27°	56.00109	92°	22.19961
96	242	Rezak-Sidner Bank	27°	56.60011	92°	22.49912
96	304	Rezak-Sidner Bank	27°	57.19914	92°	22.69973
96	330	Rezak-Sidner Bank	27°	57.30368	92°	21.99899
96	443	Rezak-Sidner Bank	27°	57.80099	92°	22.40022
96	472	Rezak-Sidner Bank	27°	57.99878	92°	23.99950
96	524	Rezak-Sidner Bank	27°	58.19939	92°	23.19986
96	574	Rezak-Sidner Bank	27°	58.40001	92°	22.30133
96	830	Rezak-Sidner Bank	27°	59.49916	92°	23.29876
96	834	Rezak-Sidner Bank	27°	59.50198	92°	23.79889
97	22	18 Fathom Bank	27°	57.29908	92°	34.90149
97	49	18 Fathom Bank	27°	57.43653	92°	32.80096
97	109	18 Fathom Bank	27°	57.79952	92°	35.30050
97	179	18 Fathom Bank	27°	58.19987	92°	37.09943
97	189	18 Fathom Bank	27°	58.27060	92°	33.99936
97	202	18 Fathom Bank	27°	58.29996	92°	37.09809
97	209	18 Fathom Bank	27°	58.29996	92°	34.80006
97	252	18 Fathom Bank	27°	58.59889	92°	35.69819
97	264	18 Fathom Bank	27°	58.69898	92°	35.89837
97	279	18 Fathom Bank	27°	58.97522	92°	36.76313
99	2	Elvers Bank	27°	51.29382	92°	55.39900
99	5	Elvers Bank	27°	51.10063	92°	55.29915
99	24	Elvers Bank	27°	50.49934	92°	54.30496
99	34	Elvers Bank	27°	50.39949	92°	54.00107
99	51	Elvers Bank	27°	50.69471	92°	53.09588
99	56	Elvers Bank	27°	50.59703	92°	52.80067
99	58	Elvers Bank	27°	50.49717	92°	52.60096
99	63	Elvers Bank	27°	50.59703	92°	52.40126
99	64	Elvers Bank	27°	50.69905	92°	52.40126
99	76	Elvers Bank	27°	50.70339	92°	51.90634
100	14	Geyer Bank	27°	51.49775	93°	4.69980
100	45	Geyer Bank	27°	51.49775	93°	4.50023
100	91	Geyer Bank	27°	50.39851	93°	4.20029
100	99	Geyer Bank	27°	51.09751	93°	4.20029
100	102	Geyer Bank	27°	51.39855	93°	4.20029
100	110	Geyer Bank	27°	50.29817	93°	4.09994
100	146	Geyer Bank	27°	50.59806	93°	3.90036

100	189	Geyer Bank	27°	51.19786	93°	3.69965
100	219	Geyer Bank	27°	50.59806	93°	3.50007
100	231	Geyer Bank	27°	50.19782	93°	3.39971
102	10	Rankin Bank	27°	53.50058	93°	26.80086
102	11	Rankin Bank	27°	53.50058	93°	26.60211
102	110	Rankin Bank	27°	55.29961	93°	26.99814
102	176	Rankin Bank	27°	52.59666	93°	26.29884
102	200	Rankin Bank	27°	52.79982	93°	25.90429
102	407	Rankin Bank	27°	54.39568	93°	26.29884
102	538	Rankin Bank	27°	55.10233	93°	24.09938
102	639	Rankin Bank	27°	55.49688	93°	24.39971
102	783	Rankin Bank	27°	56.44792	93°	25.90429
102	833	Rankin Bank	27°	51.19697	93°	26.39573
103	25	East Flower Gardens	27°	52.94736	93°	37.93261
103	26	East Flower Gardens	27°	52.72594	93°	37.92420
103	46	East Flower Gardens	27°	53.72093	93°	37.40569
103	64	East Flower Gardens	27°	54.20020	93°	37.20108
103	72	East Flower Gardens	27°	52.85206	93°	37.04132
103	79	East Flower Gardens	27°	53.54996	93°	36.90399
103	93	East Flower Gardens	27°	58.02600	93°	36.74143
103	104	East Flower Gardens	27°	54.03764	93°	36.60129
103	117	East Flower Gardens	27°	55.89589	93°	36.50039
103	192	East Flower Gardens	27°	55.49789	93°	34.74865
104	5	West Flower Gardens	27°	50.19920	93°	49.89880
104	49	West Flower Gardens	27°	51.09642	93°	47.30127
104	56	West Flower Gardens	27°	51.10190	93°	47.69748
104	62	West Flower Gardens	27°	51.20009	93°	49.40153
104	148	West Flower Gardens	27°	51.99826	93°	48.29928
104	167	West Flower Gardens	27°	52.29916	93°	48.70154
104	219	West Flower Gardens	27°	53.00232	93°	47.80517
104	369	West Flower Gardens	27°	54.19958	93°	47.09885
104	399	West Flower Gardens	27°	54.60184	93°	48.40381
104	406	West Flower Gardens	27°	54.80443	93°	49.11330
105	27	West Flower Gardens	27°	50.70034	93°	52.62518
105	37	West Flower Gardens	27°	50.16395	93°	52.51520
105	58	West Flower Gardens	27°	52.29408	93°	52.00390
105	65	West Flower Gardens	27°	51.50493	93°	51.89777
105	69	West Flower Gardens	27°	52.81504	93°	51.79165
105	70	West Flower Gardens	27°	52.92116	93°	51.78201
105	85	West Flower Gardens	27°	53.05236	93°	51.50223
105	98	West Flower Gardens	27°	51.00327	93°	51.29964

105	121	West Flower Gardens	27°	52.20147	93°	50.71308
105	130	West Flower Gardens	27°	52.45230	93°	50.59345
107	55	Applebaum Bank	27°	51.09944	94°	15.59954
107	134	Applebaum Bank	27°	51.39998	94°	14.10036
107	142	Applebaum Bank	27°	51.49957	94°	15.90009
107	144	Applebaum Bank	27°	51.49957	94°	15.69735
107	282	Applebaum Bank	27°	52.00108	94°	13.79769
107	342	Applebaum Bank	27°	52.29985	94°	14.39878
107	387	Applebaum Bank	27°	52.49903	94°	14.70111
107	390	Applebaum Bank	27°	52.49903	94°	14.29919
107	407	Applebaum Bank	27°	52.60217	94°	14.29919
107	426	Applebaum Bank	27°	52.80135	94°	14.90029
129	4	Ewing Bank	28°	5.79932	91°	2.60053
129	49	Ewing Bank	28°	5.69899	91°	2.09886
129	111	Ewing Bank	28°	6.10032	91°	1.70010
129	120	Ewing Bank	28°	5.40056	91°	1.59977
129	128	Ewing Bank	28°	6.20066	91°	1.59977
129	152	Ewing Bank	28°	5.40056	91°	1.39910
129	216	Ewing Bank	28°	6.39875	91°	1.10067
129	238	Ewing Bank	28°	6.69975	91°	1.00034
129	271	Ewing Bank	28°	5.69899	91°	0.79967
129	347	Ewing Bank	28°	6.69975	91°	0.50125
137	26	Bouma Bank	28°	2.39965	92°	27.39911
137	69	Bouma Bank	28°	2.69929	92°	27.70078
137	279	Bouma Bank	28°	3.80270	92°	28.09963
137	456	Bouma Bank	28°	0.60111	92°	27.50042
137	598	Bouma Bank	28°	1.20094	92°	28.00105
137	861	Bouma Bank	28°	2.59900	92°	28.90310
137	904	Bouma Bank	28°	2.79971	92°	26.59996
137	1004	Bouma Bank	28°	3.30034	92°	28.60087
137	1041	Bouma Bank	28°	3.50105	92°	26.00013
137	1275	Bouma Bank	28°	4.70070	92°	28.10256
143	50	29 Fathom Bank	28°	7.59871	93°	28.79978
143	62	29 Fathom Bank	28°	7.70241	93°	29.09770
143	118	29 Fathom Bank	28°	8.20019	93°	28.89972
143	122	29 Fathom Bank	28°	8.30012	93°	29.90094
143	135	29 Fathom Bank	28°	8.40006	93°	29.90094
143	149	29 Fathom Bank	28°	8.49999	93°	29.49932
143	151	29 Fathom Bank	28°	8.49999	93°	29.20140
143	154	29 Fathom Bank	28°	8.49999	93°	28.79978
143	161	29 Fathom Bank	28°	8.59993	93°	29.70295

143	175	29 Fathom Bank	28°	8.69986	93°	28.99965
148	4	Stetson Bank	28°	9.72510	94°	18.40542
148	5	Stetson Bank	28°	10.20140	94°	18.34786
148	14	Stetson Bank	28°	10.08289	94°	18.09955
148	15	Stetson Bank	28°	10.08854	94°	18.00023
148	18	Stetson Bank	28°	9.90005	94°	17.89865
148	21	Stetson Bank	28°	10.52759	94°	17.79933
148	22	Stetson Bank	28°	9.89892	94°	17.70000
148	26	Stetson Bank	28°	10.00050	94°	17.59955
148	27	Stetson Bank	28°	10.09982	94°	17.59955
148	29	Stetson Bank	28°	10.01743	94°	17.36366
150		32-Fathom Break	28°		94°	
188	1	Claypile Bank	28°	18.89976	94°	7.70250
188	3	Claypile Bank	28°	18.99784	94°	8.20016
188	4	Claypile Bank	28°	18.99784	94°	7.80058
188	35	Claypile Bank	28°	19.29934	94°	8.89943
188	73	Claypile Bank	28°	19.60084	94°	8.59793
188	82	Claypile Bank	28°	19.70074	94°	8.79953
188	85	Claypile Bank	28°	19.70074	94°	8.39814
188	102	Claypile Bank	28°	19.80063	94°	8.39814
188	126	Claypile Bank	28°	20.00042	94°	8.49985
188	127	Claypile Bank	28°	20.00042	94°	8.40177
219	13	Sonnier Bank	28°	19.52867	92°	27.60035
219	14	Sonnier Bank	28°	20.71246	92°	27.59468
219	15	Sonnier Bank	28°	20.54820	92°	27.51822
219	19	Sonnier Bank	28°	20.50005	92°	27.40211
219	24	Sonnier Bank	28°	20.09791	92°	27.24635
219	25	Sonnier Bank	28°	19.60514	92°	27.23785
219	27	Sonnier Bank	28°	20.16304	92°	27.21519
219	30	Sonnier Bank	28°	20.94185	92°	27.12457
219	32	Sonnier Bank	28°	20.44908	92°	27.05943
219	35	Sonnier Bank	28°	20.53404	92°	26.98297
244		Sackett Bank				

Table 2. Sites selected for sampling during PC-13-02, SEAMAP reef fish survey, East Gulf.

East Gulf						
Block	Site	Feature Name	Latitude		Longitude	
50	199	Howell's Hook	24°	42.50000	83°	43.20000
50	425	Howell's Hook	24°	43.10000	83°	42.20000
50	685	Howell's Hook	24°	43.90000	83°	45.00000
50	872	Howell's Hook	24°	44.40000	83°	44.30000
50	1412	Howell's Hook	24°	45.50000	83°	40.50000
50	2286	Howell's Hook	24°	47.30000	83°	43.10000
50	2515	Howell's Hook	24°	47.70000	83°	40.20000
50	2559	Howell's Hook	24°	47.80000	83°	40.80000
50	2852	Howell's Hook	24°	48.40000	83°	41.50000
50	3604	Howell's Hook	24°	49.90000	83°	41.30000
68	21	Howell's Hook	24°	50.20000	83°	41.20000
68	143	Howell's Hook	24°	50.90000	83°	40.20000
68	148	Howell's Hook	24°	51.00000	83°	41.30000
68	193	Howell's Hook	24°	51.30000	83°	41.60000
68	272	Howell's Hook	24°	51.70000	83°	40.10000
68	330	Howell's Hook	24°	52.10000	83°	40.70000
68	364	Howell's Hook	24°	52.30000	83°	40.50000
68	443	Howell's Hook	24°	52.80000	83°	40.60000
68	613	Howell's Hook	24°	53.90000	83°	41.20000
68	672	Howell's Hook	24°	54.20000	83°	40.10000
86	10	Pulley Ridge	25°	9.80069	83°	36.19929
86	25	Pulley Ridge	25°	8.49843	83°	36.00024
86	34	Pulley Ridge	25°	8.10286	83°	35.89987
86	72	Pulley Ridge	25°	7.50065	83°	35.69913
86	93	Pulley Ridge	25°	6.29876	83°	35.59876
86	110	Pulley Ridge	25°	6.10056	83°	35.49924
86	166	Pulley Ridge	25°	4.90035	83°	35.09861
86	224	Pulley Ridge	25°	1.99979	83°	34.80003
86	259	Pulley Ridge	25°	2.39958	83°	34.69882
86	285	Pulley Ridge	25°	0.89996	83°	34.49977
124	8	Pulley Ridge	25°	20.90112	83°	37.79958
124	12	Pulley Ridge	25°	21.09946	83°	37.49977
124	16	Pulley Ridge	25°	21.09946	83°	37.79958
124	25	Pulley Ridge	25°	21.30010	83°	37.80419
124	47	Pulley Ridge	25°	22.49932	83°	37.60124
124	52	Pulley Ridge	25°	22.29868	83°	37.70272

124	56	Pulley Ridge	25°	23.19810	83°	37.79958
124	60	Pulley Ridge	25°	22.99746	83°	37.70041
124	71	Pulley Ridge	25°	22.60310	83°	37.40291
124	75	Pulley Ridge	25°	28.67764	83°	38.63673
144	5	Pulley Ridge	25°	32.69959	83°	39.39994
144	15	Pulley Ridge	25°	30.50009	83°	38.99886
144	74	Pulley Ridge	25°	32.79986	83°	38.70019
144	90	Pulley Ridge	25°	32.90013	83°	38.59992
144	137	Pulley Ridge	25°	34.80096	83°	38.39939
144	158	Pulley Ridge	25°	35.60097	83°	38.29912
144	200	Pulley Ridge	25°	37.20313	83°	38.19672
144	227	Pulley Ridge	25°	39.49864	83°	38.09858
144	232	Pulley Ridge	25°	37.59781	83°	38.09645
144	235	Pulley Ridge	25°	39.69704	83°	38.09645
163	1	Pulley Ridge	25°	40.83650	83°	40.82844
163	3	Pulley Ridge	25°	41.29741	83°	40.69858
163	4	Pulley Ridge	25°	41.63761	83°	40.75528
163	5	Pulley Ridge	25°	42.19913	83°	40.75162
163	8	Pulley Ridge	25°	48.99948	83°	41.90208
163	9	Pulley Ridge	25°	48.99948	83°	41.80148
163	11	Pulley Ridge	25°	49.14214	83°	41.88196
163	12	Pulley Ridge	25°	49.19884	83°	41.79965
163	13	Pulley Ridge	25°	49.20616	83°	42.00085
163	14	Pulley Ridge	25°	49.29761	83°	41.89842
180	3	Pulley Ridge	25°	52.19961	83°	42.36005
180	4	Pulley Ridge	25°	56.59937	83°	43.30013
180	17	Pulley Ridge	25°	57.60015	83°	43.01500
180	18	Pulley Ridge	25°	57.70037	83°	43.33260
180	24	Pulley Ridge	25°	58.20005	83°	43.33683
180	27	Pulley Ridge	25°	58.40190	83°	43.19991
180	29	Pulley Ridge	25°	58.49930	83°	43.19991
180	34	Pulley Ridge	25°	59.00039	83°	43.13922
180	35	Pulley Ridge	25°	59.10061	83°	43.11804
180	36	Pulley Ridge	25°	59.18389	83°	43.09969
333	5	The Elbow	27°	43.09870	84°	9.10165
333	31	The Elbow	27°	43.49913	84°	9.30018
333	194	The Elbow	27°	44.99991	84°	9.19923
333	391	The Elbow	27°	46.79974	84°	9.79974
333	519	The Elbow	27°	47.59968	84°	8.29968
333	554	The Elbow	27°	47.80055	84°	8.39922
333	713	The Elbow	27°	48.60123	84°	9.49875

333	821	The Elbow	27°	49.10261	84°	7.49997
333	876	The Elbow	27°	49.40042	84°	8.99829
333	914	The Elbow	27°	49.59951	84°	8.50055
360	345	Steamboat Lumps	28°	5.80000	84°	38.40000
360	516	Steamboat Lumps	28°	6.20000	84°	37.70000
360	1156	Steamboat Lumps	28°	7.80000	84°	39.30000
360	1159	Steamboat Lumps	28°	7.80000	84°	39.00000
360	1191	Steamboat Lumps	28°	7.90000	84°	39.90000
360	1297	Steamboat Lumps	28°	8.10000	84°	37.50000
360	1741	Steamboat Lumps	28°	9.20000	84°	38.20000
360	1801	Steamboat Lumps	28°	9.30000	84°	36.30000
360	1834	Steamboat Lumps	28°	9.40000	84°	37.10000
360	1984	Steamboat Lumps	28°	9.80000	84°	38.50000
371	79	Florida Middle Grounds	28°	15.50398	84°	5.99107
371	180	Florida Middle Grounds	28°	16.00859	84°	7.89876
371	191	Florida Middle Grounds	28°	16.10090	84°	7.28953
371	281	Florida Middle Grounds	28°	17.40551	84°	6.40338
371	282	Florida Middle Grounds	28°	17.49781	84°	6.49568
371	301	Florida Middle Grounds	28°	18.50089	84°	9.99106
371	357	Florida Middle Grounds	28°	18.99935	84°	8.79721
371	494	Florida Middle Grounds	28°	19.50396	84°	9.80029
371	535	Florida Middle Grounds	28°	19.79934	84°	7.59722
371	564	Florida Middle Grounds	28°	19.89781	84°	8.39106
375	34	Steamboat Lumps	28°	15.59663	84°	45.19406
375	61	Steamboat Lumps	28°	16.29041	84°	45.60645
375	63	Steamboat Lumps	28°	16.30011	84°	45.38813
375	96	Steamboat Lumps	28°	18.30382	84°	47.19777
375	123	Steamboat Lumps	28°	18.70165	84°	47.99343
375	143	Steamboat Lumps	28°	19.79811	84°	48.79395
375	150	Steamboat Lumps	28°	19.49731	84°	48.79395
375	170	Steamboat Lumps	28°	12.37890	84°	42.91923
375	195	Steamboat Lumps	28°	12.33002	84°	42.94062
375	212	Steamboat Lumps	28°	12.56223	84°	43.21662
386	135	Florida Middle Grounds	28°	21.19312	84°	7.89278
386	251	Florida Middle Grounds	28°	22.19990	84°	9.60231
386	288	Florida Middle Grounds	28°	23.20169	84°	8.20677
386	364	Florida Middle Grounds	28°	25.90305	84°	9.19860
386	398	Florida Middle Grounds	28°	27.49794	84°	8.30147
386	489	Florida Middle Grounds	28°	28.89846	84°	8.20179
386	546	Florida Middle Grounds	28°	29.40185	84°	8.60550
386	566	Florida Middle Grounds	28°	29.60121	84°	9.19860

386	593	Florida Middle Grounds	28°	29.80058	84°	9.80665
386	638	Florida Middle Grounds	28°	29.99496	84°	8.60051
387	25	Florida Middle Grounds	28°	20.49888	84°	12.59940
387	247	Florida Middle Grounds	28°	24.99338	84°	14.10927
387	502	Florida Middle Grounds	28°	26.08690	84°	19.81267
387	556	Florida Middle Grounds	28°	26.28755	84°	17.30959
387	936	Florida Middle Grounds	28°	27.30082	84°	16.99859
387	940	Florida Middle Grounds	28°	27.30082	84°	15.10247
387	969	Florida Middle Grounds	28°	27.40114	84°	19.10037
387	980	Florida Middle Grounds	28°	27.40114	84°	16.90328
387	1088	Florida Middle Grounds	28°	27.69710	84°	16.60231
387	1667	Florida Middle Grounds	28°	29.79785	84°	17.80028
388	9	Florida Middle Grounds	28°	24.59924	84°	20.29980
388	50	Florida Middle Grounds	28°	28.00043	84°	22.19937
388	74	Florida Middle Grounds	28°	28.49920	84°	22.39835
388	79	Florida Middle Grounds	28°	28.49920	84°	20.60224
388	95	Florida Middle Grounds	28°	28.70084	84°	22.00040
388	96	Florida Middle Grounds	28°	28.79900	84°	22.49917
388	106	Florida Middle Grounds	28°	28.89981	84°	22.10121
388	113	Florida Middle Grounds	28°	29.09879	84°	22.30019
388	163	Florida Middle Grounds	28°	29.60021	84°	21.89958
388	193	Florida Middle Grounds	28°	29.90001	84°	22.00040
391	59	The Edges	28°	23.49862	84°	50.79809
391	79	The Edges	28°	24.20199	84°	51.19508
391	108	The Edges	28°	25.09954	84°	51.60502
391	114	The Edges	28°	25.29372	84°	51.70859
391	151	The Edges	28°	26.49764	84°	52.30407
391	202	The Edges	28°	28.09856	84°	53.19299
391	205	The Edges	28°	28.19781	84°	53.50369
391	210	The Edges	28°	28.29706	84°	53.39149
391	233	The Edges	28°	28.90118	84°	53.79711
391	237	The Edges	28°	29.09536	84°	54.20274
403	379	Florida Middle Grounds	28°	31.89844	84°	14.69846
403	425	Florida Middle Grounds	28°	32.10199	84°	16.30275
403	474	Florida Middle Grounds	28°	32.29897	84°	15.40102
403	687	Florida Middle Grounds	28°	33.19850	84°	12.70022
403	736	Florida Middle Grounds	28°	33.39548	84°	13.50127
403	868	Florida Middle Grounds	28°	34.10023	84°	15.60019
403	940	Florida Middle Grounds	28°	34.49857	84°	15.40102
403	1094	Florida Middle Grounds	28°	35.59727	84°	15.00268
403	1139	Florida Middle Grounds	28°	35.89712	84°	15.20404

403	1218	Florida Middle Grounds	28°	36.49900	84°	15.19966
404	132	Florida Middle Grounds	28°	31.40028	84°	21.59922
404	379	Florida Middle Grounds	28°	33.39885	84°	20.70058
404	387	Florida Middle Grounds	28°	33.40088	84°	20.80020
404	759	Florida Middle Grounds	28°	35.79793	84°	20.60096
404	889	Florida Middle Grounds	28°	36.30127	84°	21.39877
404	1168	Florida Middle Grounds	28°	37.59522	84°	23.30298
404	1236	Florida Middle Grounds	28°	37.89612	84°	23.40464
404	1251	Florida Middle Grounds	28°	37.90018	84°	22.90042
404	1303	Florida Middle Grounds	28°	38.09943	84°	22.10344
404	1329	Florida Middle Grounds	28°	38.50199	84°	23.99831
407	16	The Little Elbow	28°	31.09659	84°	55.39549
407	17	The Little Elbow	28°	31.10489	84°	55.27935
407	41	The Little Elbow	28°	31.79345	84°	55.90154
407	73	The Little Elbow	28°	32.68940	84°	56.68965
407	82	The Little Elbow	28°	32.88850	84°	56.69795
407	203	The Little Elbow	28°	36.69632	84°	59.10376
407	212	The Little Elbow	28°	36.98668	84°	59.40241
407	231	The Little Elbow	28°	37.59228	84°	59.60151
407	232	The Little Elbow	28°	37.60057	84°	59.70936
407	235	The Little Elbow	28°	37.70012	84°	59.70106
421	14	Florida Middle Grounds	28°	40.09852	84°	23.89821
421	28	Florida Middle Grounds	28°	40.20070	84°	27.49869
421	258	Florida Middle Grounds	28°	41.40248	84°	23.59655
421	291	Florida Middle Grounds	28°	41.69928	84°	27.49869
421	297	Florida Middle Grounds	28°	41.69928	84°	26.90024
421	318	Florida Middle Grounds	28°	41.80145	84°	23.80090
421	319	Florida Middle Grounds	28°	41.80145	84°	23.69873
421	342	Florida Middle Grounds	28°	41.99608	84°	27.80036
421	444	Florida Middle Grounds	28°	42.69184	84°	26.40395
421	468	Florida Middle Grounds	28°	42.89620	84°	26.10716
470	29	Madison-Swanson	29°	8.34956	85°	46.65027
470	32	Madison-Swanson	29°	8.34956	85°	46.50010
470	34	Madison-Swanson	29°	8.35143	85°	46.40217
470	20	Madison-Swanson	29°	8.43164	85°	46.94966
470	45	Madison-Swanson	29°	8.74969	85°	46.09998
470	49	Madison-Swanson	29°	9.69929	85°	45.69937
470	69	Madison-Swanson	29°	9.79829	85°	43.55050
470	70	Madison-Swanson	29°	9.79829	85°	43.50313
470	75	Madison-Swanson	29°	9.80035	85°	43.40119
470	60	Madison-Swanson	29°	9.80138	85°	44.00153

491	146	Madison-Swanson	29°	15.28008	85°	41.35964
491	165	Madison-Swanson	29°	15.38011	85°	41.48078
491	241	Madison-Swanson	29°	15.80032	85°	41.81957
491	386	Madison-Swanson	29°	16.44020	85°	42.63989
491	402	Madison-Swanson	29°	16.52012	85°	42.79973
491	445	Madison-Swanson	29°	16.73978	85°	43.19884
491	499	Madison-Swanson	29°	16.99914	85°	43.81961
491	559	Madison-Swanson	29°	11.35004	85°	41.14974
491	614	Madison-Swanson	29°	17.33202	85°	44.79917
491	732	Madison-Swanson	29°	19.70196	85°	44.70014
492	1	Madison-Swanson	29°	16.00175	85°	50.59393
492	17	Madison-Swanson	29°	16.49525	85°	53.09969
492	33	Madison-Swanson	29°	17.85066	85°	52.19956
492	72	Madison-Swanson	29°	18.39629	85°	55.09456
492	104	Madison-Swanson	29°	18.60134	85°	57.39527
492	113	Madison-Swanson	29°	18.69865	85°	57.49953
492	148	Madison-Swanson	29°	19.20953	85°	54.29870
492	155	Madison-Swanson	29°	19.47019	85°	54.89994
492	159	Madison-Swanson	29°	19.63006	85°	55.29961
492	162	Madison-Swanson	29°	19.69956	85°	56.70019
494	14	Mobile Pinnacles	29°	19.11653	87°	47.30125
494	17	Mobile Pinnacles	29°	19.12335	87°	47.09659
494	20	Mobile Pinnacles	29°	19.23591	87°	48.50193
494	54	Mobile Pinnacles	29°	19.48150	87°	47.59801
494	62	Mobile Pinnacles	29°	19.48492	87°	48.99652
494	70	Mobile Pinnacles	29°	19.48833	87°	48.50534
494	76	Mobile Pinnacles	29°	19.60089	87°	49.40243
494	79	Mobile Pinnacles	29°	19.60089	87°	49.09544
494	106	Mobile Pinnacles	29°	19.83625	87°	45.90274
494	118	Mobile Pinnacles	29°	19.95905	87°	49.80152
518	3	Coral Trees	29°	21.29965	86°	0.00007
518	45	Coral Trees	29°	25.22883	85°	57.10331
518	122	Coral Trees	29°	22.73606	85°	54.59857
518	128	Coral Trees	29°	22.85576	85°	54.19757
518	171	Coral Trees	29°	27.70065	85°	51.19308
518	179	Coral Trees	29°	29.19691	85°	51.09433
518	213	Coral Trees	29°	29.49616	85°	50.79807
518	228	Coral Trees	29°	29.17297	85°	50.60355
518	248	Coral Trees	29°	28.64628	85°	50.40904
518	270	Coral Trees	29°	29.20289	85°	50.20555
519	13	DeSoto Canyon	29°	20.70163	86°	0.50080

519	14	DeSoto Canyon	29°	20.78856	86°	3.89951
519	60	DeSoto Canyon	29°	21.30204	86°	0.20195
519	71	DeSoto Canyon	29°	21.69597	86°	4.40212
519	108	DeSoto Canyon	29°	25.09740	86°	7.37158
519	123	DeSoto Canyon	29°	25.70325	86°	5.50242
519	131	DeSoto Canyon	29°	26.11349	86°	9.36028
519	140	DeSoto Canyon	29°	26.89864	86°	6.20064
519	149	DeSoto Canyon	29°	29.50133	86°	8.49905
519	154	DeSoto Canyon	29°	29.70238	86°	8.80062
523	18	Mobile Pinnacles	29°	27.80171	87°	39.08420
523	32	Mobile Pinnacles	29°	27.80624	87°	37.69762
523	43	Mobile Pinnacles	29°	26.30638	87°	37.19918
523	57	Mobile Pinnacles	29°	26.99514	87°	35.77181
523	59	Mobile Pinnacles	29°	26.88186	87°	35.60416
523	69	Mobile Pinnacles	29°	26.59638	87°	35.40025
523	85	Mobile Pinnacles	29°	26.30185	87°	34.41242
523	96	Mobile Pinnacles	29°	26.70060	87°	32.99413
523	166	Mobile Pinnacles	29°	28.69438	87°	30.39769
523	172	Mobile Pinnacles	29°	28.49953	87°	30.28894
524	4	Mobile Pinnacles	29°	20.19834	87°	45.89794
524	9	Mobile Pinnacles	29°	20.20456	87°	47.49962
524	53	Mobile Pinnacles	29°	20.79379	87°	45.69046
524	59	Mobile Pinnacles	29°	20.89545	87°	43.59292
524	78	Mobile Pinnacles	29°	21.10292	87°	46.19877
524	83	Mobile Pinnacles	29°	21.19836	87°	44.39791
524	123	Mobile Pinnacles	29°	23.90586	87°	47.10542
524	179	Mobile Pinnacles	29°	26.11959	87°	43.51616
524	203	Mobile Pinnacles	29°	27.39762	87°	40.00988
524	207	Mobile Pinnacles	29°	27.47231	87°	41.72775
525	21	Mobile Pinnacles	29°	24.03894	87°	58.20060
525	26	Mobile Pinnacles	29°	25.02642	87°	57.89978
525	28	Mobile Pinnacles	29°	25.06347	87°	57.69923
525	48	Mobile Pinnacles	29°	25.18555	87°	56.09921
525	62	Mobile Pinnacles	29°	25.18337	87°	54.69973
525	64	Mobile Pinnacles	29°	25.17247	87°	54.49919
525	79	Mobile Pinnacles	29°	25.23568	87°	52.99944
525	93	Mobile Pinnacles	29°	25.37301	87°	51.29914
525	96	Mobile Pinnacles	29°	25.39699	87°	51.10078
525	105	Mobile Pinnacles	29°	25.50163	87°	50.10022
526	1	MS/AL Shelf	29°	22.08488	88°	3.20028
526	4	MS/AL Shelf	29°	22.07036	88°	2.90141

526	10	MS/AL Shelf	29°	23.70002	88°	1.79994
526	14	MS/AL Shelf	29°	23.50969	88°	1.64706
526	15	MS/AL Shelf	29°	23.51733	88°	1.59967
526	18	MS/AL Shelf	29°	23.45771	88°	1.40017
526	23	MS/AL Shelf	29°	23.29948	88°	1.09977
526	24	MS/AL Shelf	29°	23.74741	88°	1.09977
526	25	MS/AL Shelf	29°	23.73288	88°	1.04702
526	27	MS/AL Shelf	29°	23.23757	88°	0.80013
549	8	Eastern Leg Desoto Canyon	29°	39.20013	86°	15.25491
549	33	Eastern Leg Desoto Canyon	29°	37.90066	86°	14.20059
549	48	Eastern Leg Desoto Canyon	29°	39.19956	86°	13.49997
549	53	Eastern Leg Desoto Canyon	29°	39.00070	86°	13.39974
549	74	Eastern Leg Desoto Canyon	29°	38.66981	86°	11.90117
549	75	Eastern Leg Desoto Canyon	29°	38.67936	86°	11.79935
549	78	Eastern Leg Desoto Canyon	29°	38.50118	86°	11.50028
549	82	Eastern Leg Desoto Canyon	29°	39.09934	86°	10.89894
549	87	Eastern Leg Desoto Canyon	29°	38.59981	86°	10.39941
549	96	Eastern Leg Desoto Canyon	29°	38.60037	86°	10.09989
552	2	Western Leg Desoto Canyon	29°	37.80117	87°	19.51882
552	13	Western Leg Desoto Canyon	29°	38.64175	87°	19.07592
552	14	Western Leg Desoto Canyon	29°	38.14645	87°	19.04920
552	15	Western Leg Desoto Canyon	29°	38.29339	87°	19.01324
552	17	Western Leg Desoto Canyon	29°	38.68286	87°	18.99988
552	20	Western Leg Desoto Canyon	29°	38.82466	87°	18.90020
552	23	Western Leg Desoto Canyon	29°	38.41157	87°	18.88581
552	25	Western Leg Desoto Canyon	29°	38.68902	87°	18.79950
552	28	Western Leg Desoto Canyon	29°	38.14336	87°	18.76045
552	31	Western Leg Desoto Canyon	29°	39.27681	87°	18.69982
553	7	Mobile Pinnacles	29°	30.76066	87°	24.97820
553	12	Mobile Pinnacles	29°	30.90944	87°	24.83280
553	24	Mobile Pinnacles	29°	31.19346	87°	28.79734
553	30	Mobile Pinnacles	29°	31.70235	87°	28.10080
553	31	Mobile Pinnacles	29°	31.91875	87°	28.32903
553	41	Mobile Pinnacles	29°	33.29830	87°	27.69504
553	44	Mobile Pinnacles	29°	33.33043	87°	28.01119
553	49	Mobile Pinnacles	29°	33.54683	87°	27.85058
553	54	Mobile Pinnacles	29°	34.24337	87°	28.53698
553	55	Mobile Pinnacles	29°	34.79621	87°	27.59699
554	16	Mobile Pinnacles	29°	33.69859	87°	38.19622
554	63	Mobile Pinnacles	29°	33.89627	87°	36.79593
554	76	Mobile Pinnacles	29°	34.30154	87°	36.20287

554	92	Mobile Pinnacles	29°	33.60633	87°	33.29684
554	97	Mobile Pinnacles	29°	34.39709	87°	33.09915
554	98	Mobile Pinnacles	29°	34.49923	87°	33.09915
554	99	Mobile Pinnacles	29°	34.59807	87°	33.09915
554	126	Mobile Pinnacles	29°	33.09564	87°	32.49620
554	133	Mobile Pinnacles	29°	31.89962	87°	32.29852
554	147	Mobile Pinnacles	29°	32.09401	87°	31.50776
578	1	DeSoto Canyon	29°	48.29951	86°	20.30047
578	105	DeSoto Canyon	29°	47.50054	86°	21.70027
578	114	DeSoto Canyon	29°	47.09360	86°	21.79828
578	180	DeSoto Canyon	29°	48.29738	86°	22.10295
578	207	DeSoto Canyon	29°	47.30026	86°	22.30110
578	357	DeSoto Canyon	29°	49.79732	86°	24.60214
578	441	DeSoto Canyon	29°	47.79882	86°	26.50050
578	491	DeSoto Canyon	29°	48.29738	86°	27.10132
578	667	DeSoto Canyon	29°	49.29876	86°	29.50037
578	676	DeSoto Canyon	29°	49.40103	86°	29.60051
583	106	DeSoto Canyon	29°	45.70060	87°	19.49945
583	150	DeSoto Canyon	29°	46.80090	87°	19.09791
583	204	DeSoto Canyon	29°	47.49966	87°	17.90116
583	207	DeSoto Canyon	29°	47.50360	87°	18.19641
583	225	DeSoto Canyon	29°	47.60202	87°	19.39316
583	236	DeSoto Canyon	29°	47.69847	87°	16.15130
583	252	DeSoto Canyon	29°	47.83035	87°	17.26341
583	310	DeSoto Canyon	29°	48.10198	87°	16.20247
583	328	DeSoto Canyon	29°	48.20236	87°	16.70047
583	409	DeSoto Canyon	29°	48.80074	87°	13.60032
612	30	DeSoto Canyon	29°	51.90142	87°	18.09451
612	68	DeSoto Canyon	29°	52.60325	87°	17.00071
612	76	DeSoto Canyon	29°	51.00547	87°	16.79912
612	94	DeSoto Canyon	29°	51.89769	87°	16.50047
612	132	DeSoto Canyon	29°	51.99475	87°	15.40293
612	135	DeSoto Canyon	29°	52.09554	87°	15.39920
612	177	DeSoto Canyon	29°	54.10396	87°	13.29371
612	204	DeSoto Canyon	29°	54.69753	87°	12.49856
612	240	DeSoto Canyon	29°	55.20523	87°	11.49808
612	256	DeSoto Canyon	29°	55.20523	87°	10.88958
632	64	DeSoto Canyon	30°	7.69574	86°	48.30086
632	83	DeSoto Canyon	30°	7.89737	86°	47.90106
632	105	DeSoto Canyon	30°	4.40351	86°	45.19635
632	110	DeSoto Canyon	30°	4.80330	86°	45.09901

632	119	DeSoto Canyon	30°	5.59594	86°	44.19513
632	139	DeSoto Canyon	30°	4.88674	86°	43.39901
632	171	DeSoto Canyon	30°	4.72682	86°	41.60167
632	186	DeSoto Canyon	30°	1.20166	86°	40.80208
632	198	DeSoto Canyon	30°	0.22130	86°	40.49615
632	202	DeSoto Canyon	30°	1.20862	86°	40.39185