



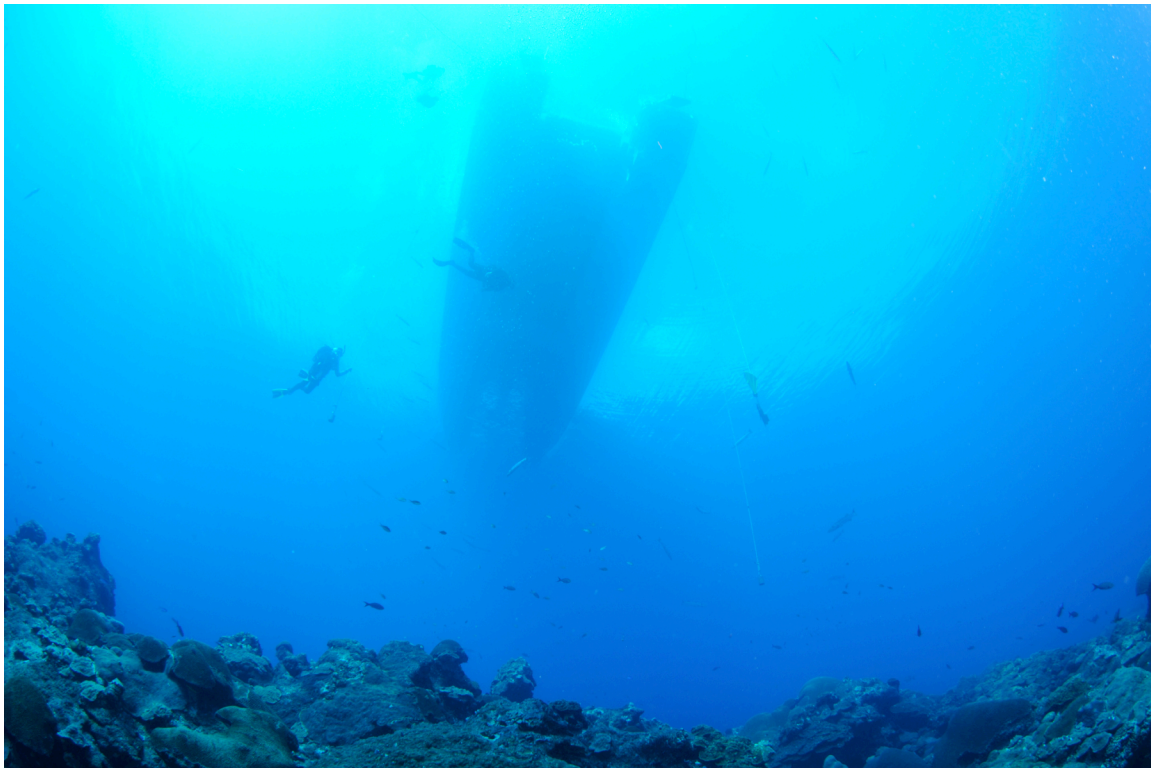
Flower Garden Banks National Marine Sanctuary

Research Summary

2009



Prepared by
Emma L. Hickerson
September 2009



Looking up from the reef at Flower Garden Banks National Marine Sanctuary.

Photo: Schmahl/FGBNMS

A. OVERVIEW

The purpose of this document is to report the activities of the Flower Garden Banks National Marine Sanctuary (FGBNMS) research team during FY2009.

B. SUMMARY

The FGBNMS research team was involved in 11 research cruises in the 2009 field season, at a value of approximately \$180K for the shiptime, all of which came directly out of the FGBNMS FY09 budget. A pool of 29 sanctuary personnel, scientists, and volunteer divers conducted approximately 485 SCUBA dives during the 2009 field season. Activities included biological surveys and collection, equipment maintenance, and image collection. Six sanctuary permits were processed, and an additional 11 were ongoing. A total of 624 hours of volunteer time was directed towards FGBNMS research activities.

It is important to note that a significant number of research cruises were taken off the schedule due to lack of funding. Primarily monitoring activities and post hurricane cruises were conducted. Research related to monthly data collection, grouper spawning aggregations, and mesophotic zone investigations succumbed to budgetary constraints.

C. HIGHLIGHTS

1. A significant development in FGBNMS research activities in 2009 was the acquisition of the FGBNMS Long-Term Monitoring (LTM) contract. This contract is for the acquisition of long-term monitoring data at East and West Flower Garden Banks. For many years this co-funded project has been administered as a contract through Minerals Management Service (MMS). Due to numerous factors, a proposal, which was successful, was made to MMS to bring the project back to the site. An important partnership in the transfer of this project to FGBNMS, is the collaboration between FGBNMS and Texas A&M University Galveston (TAMUG). The TAMUG Scientific Dive Program, led by Kevin Buch, has provided experienced AAUS scientific divers to assist in data collection during cruises.
2. The FGBNMS LTM received Department of Interior's "Partners in Conservation Award" from Secretary Salazar.

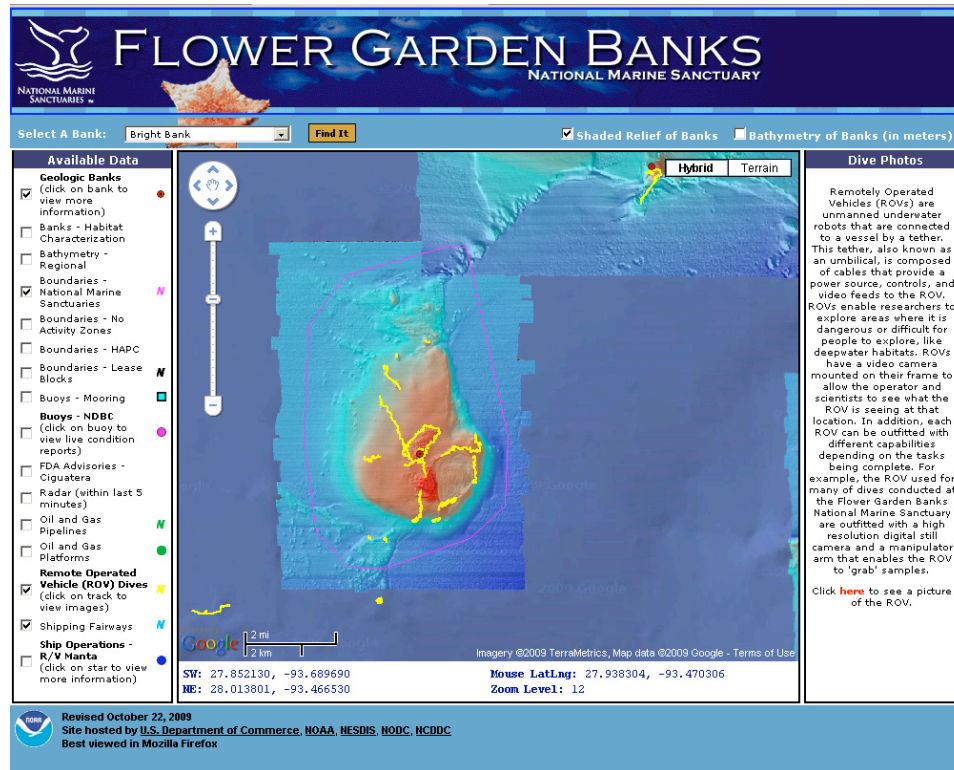


Sanctuary superintendent G.P. Schmahl accepts the Partners in Conservation award from Secretary of the Interior Ken Salazar. Photo: Dept. of the Interior

3. Development of the FGBNMS/NCDDC website. The FGBNMS partnered with National Coastal Data Development Center (NCDDC) to develop a GIS-based interactive website. This site provides layers of geo-referenced information for Flower Garden Banks National Marine Sanctuary as well as the region of the Northwestern Gulf of Mexico (NWGOM). Users are able to turn layers on and off, and zoom in to areas of interest. The FGBNMS research team will continue to add new information as it becomes available. The long term goal of this program is to provide a portal for research data, images, videos, bathymetry, infrastructure, and regulatory boundaries, to name a few. Available now is the regional bathymetry, high resolution multibeam for over a dozen reefs and banks in the NWGOM, sanctuary boundaries, biological habitat zonation for FGBNMS, MMS regulatory zones, Habitat Areas of Particular Concern (HAPCs) in the NWGOM, MMS Lease blocks, oil and gas infrastructure, shipping fairways, and oceanographic data buoys. Also available are tracks for over 100 remotely operated vehicle (ROV) surveys, along with over 1200 images taken in the mesophotic ecosystem zone in the NWGOM.

http://www.ncddc.noaa.gov/website/google_maps/FGB/mapsFGB.htm

http://flowergarden.noaa.gov/news_events/gismaparticle.html



A view of East Flower Garden Bank showing bathymetry, boundaries, and ROV tracks.

- Acoustic Tagging project – collaboration between Wildlife Conservation Society (WCS) and FGBNMS. Research Assistant Marissa Nuttall, joined WCS researcher, Dr. Rachel Graham, in Holbox, Mexico, to train to tag manta rays with acoustic tags. Dr. Graham has been tagging whale sharks and mantas in Mexico and Belize. The FGBNMS/WCS acoustic team has deployed acoustic receivers at East and West Flower Garden Bank, Stetson Bank, Bright Bank, and Sonnier Bank. Six manta rays have been tagged at the Flower Garden Banks, and the receivers have revealed use of multiple banks by individual mantas. Additionally, data from the Bright Bank receiver revealed the movement of a female whale shark, tagged in Isla Contoy, Mexico, on the Yucatan Peninsula in July 2008, to Bright Bank, Northwestern Gulf of Mexico, in November 2008. This connects the MesoAmerican Barrier Reef to the Northwestern Gulf of Mexico by a migratory animal.

http://flowergarden.noaa.gov/news_events/whalesharkarticle.html



A manta ray swims past the acoustic receiver, tethered in the water column on a floated line, in a sand patch at East Flower Garden Bank.

5. Manta Ray Identification Project. The FGBNMS research team has developed a series of products presenting the identification of individual manta rays observed in sanctuary waters. To date, 71 individual mantas have been documented, identifying individuals by the unique spot patterns on their ventral side. A poster of the individuals has been developed and is available for download on the FGBNMS website. Hard copy catalogs, available in binders, have been placed on recreational dive vessels for divers to refer to, and encourage divers to report their sightings. An online catalog is also available on the FGBNMS web site. Repeat sightings, locations, and date of sighting information is presented in the catalogs. The longevity of individual FGBNMS manta ray sighting data is contributing to the knowledge across the field of manta ray research, for support of use of the ventral markings in identifying individuals through time.

<http://flowergarden.noaa.gov/science/mantacatalog.html>

6. Release of Biogeographic Characterization of Fish Communities and Associated Benthic Habitats within the Flower Garden Banks NMS. The FGBNMS research team worked with the National Ocean Service (NOS) Biogeography Team to develop and undertake randomly placed benthic and fish surveys throughout the coral caps of FGBNMS. The report from this project is reported in this product. The methodologies used in this project will be drawn upon in the development of future surveys at the FGBNMS, including surveys in response to a proposed experimental fishing closure.
http://www.noaanews.noaa.gov/stories2009/20090813_flowergarden.html

D. CRUISES (\$ amt. represents approximate shiptime value)

1. POST HURRICANE IKE QUICK-LOOK

M/V EAGLE RAY

OCTOBER 10, 2008 (\$3500)



Captain Darrell Walker scooters over a toppled brain coral, Colpophyllia natans, during the post-hurricane cruise.

A quick-look cruise was conducted by FGBNMS staff and volunteers to determine the impacts of Hurricane Ike at East and West Flower Garden Banks. Emma Hickerson was joined by Marissa Nuttall (FGBNMS Research Assistant and TAMUG AAUS diver), and Eric McHugh (TAMUG AAUS diver). Significant impacts were photographed and videotaped, including

sponge injuries, collapse of the *Madracis* fields at East Flower Garden Bank, and extraction and movement of up to 4m coral colonies. No coral bleaching was encountered. Buoys and instrumentation were in place, but water quality instruments are in need of recovery and replacement. <http://flowergarden.noaa.gov/science/ike2008.html>

2. FLOWER GARDEN BANKS LONG TERM-MONITORING

M/V SPREE

NOVEMBER 3–7, 2008 (\$20,000)

G.P. Schmahl and Emma Hickerson participated in the Long-Term Monitoring Cruise to Flower Garden Banks NMS November 3-7. Long term photographic data was collected by contractor PBS&J at the coral caps of East and West Flower Garden Banks, and the Seabird water quality instruments were downloaded and redeployed at all three banks. Sea conditions were highly variable, with visibility ranging from 35ft to 150ft at EFGB, around 30ft at WFGB, and around 20ft at Stetson Bank. Water temperature ranged from 74-77F. Seas were calm for the first two days of the cruise, deteriorating to 4-7' seas for the last two days. This was the first visit to Stetson Bank since the passage of Hurricane Ike on September 12th. Significant impacts were observed and photographed.

3. POST HURRICANE IKE II

R/V MANTA

NOVEMBER 20, 2008 (\$5,000)

A second cruise was conducted to continue to assess the impacts of Hurricane Ike at the FGBNMS. Steve Gittings, Emma Hickerson, Jenn DeBose, Tracy Hamburger, and Marissa Nuttall joined the crew of the R/V MANTA and made a comfortable 5 hour run out on the afternoon of November 19th. Dives were conducted on November 20th at East and West Flower Garden Bank. Visibility was around 60', and water temperature was 75F. Seas were flat, and no current was encountered. Transects documenting damage were conducted from buoys at both banks. A survey was conducted on the north side of WFGB to determine the condition of the *Madracis* fields – the fields appear to be intact, with very little damage sustained, unlike the flattened fields at EFGB. The newly installed u-bolt at EFGB#2 is now, unfortunately, on the bottom side of a very large upturned coral colony. Other sightings of note were a loggerhead sea turtle on the surface at WFGB, and a spotted eagle ray at EFGB. A rotary camera was retrieved from EFGB for TAMU-CC researchers, Ian MacDonald and Doug Weaver.

4. WATER QUALITY

R/V MANTA

JANUARY 21-23, 2009 (\$5,000)

Emma Hickerson, Jenn DeBose, Tracy Hamburger, Marissa Nuttall, and PBS&J biologist Jeremy Marshall joined the crew of the R/V MANTA on a quick trip out. The objective of the cruise was to download the Seabird water quality instruments and the acoustic receivers. This was accomplished at EFGB and WFGB, but not at Stetson Bank. Only EFGB buoys #2 and #6 were in place, and #5 was marked by a Norwegian buoy. At WFGB, only buoy #2 was in place. Two buoys were seen at Stetson Bank. Water temperature was 68F and seas were 1-2' during dive operations on January 22nd. Visibility was approximately 70' at EFGB and 30' at WFGB. Seas picked up to 6' during the early morning hours on January 23rd, and forced us to head into Galveston before getting the instruments downloaded at Stetson Bank.

5. STETSON BANK POST HURRICANE CRUISE

R/V MANTA

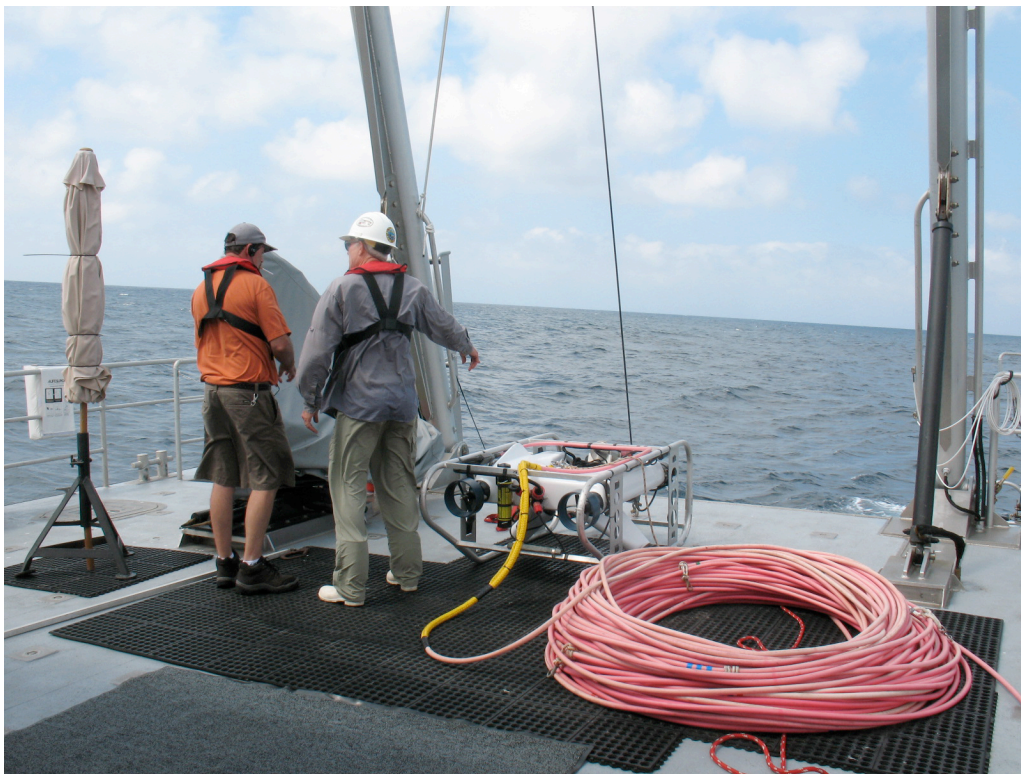
MARCH 17-19, 2009 (\$15,000)

The FGBNMS research team (DeBose, Hickerson, Schmahl, Nuttall, Hamburger) was joined by five TAMUG AAUS divers to conduct an assessment to determine the effects of Hurricane Ike on the benthic habitat at Stetson Bank. Conditions were decent for winter at Stetson – with 2-4' seas, 40' visibility, 66F. Buoys #1 and #5 were in place. Twenty-five long-term monitoring stations were located and photographed, however, there appear to be many stations missing. Large schools of Spanish mackerel, king mackerel, cero, and wahoo were observed. Other sightings included a pod of bottlenose dolphins on the surface, a loggerhead sea turtle on the surface, hammerhead sharks, a sandbar shark, and fields of sailfin blennies. The acoustic receiver and Seabird water quality instrument were both downloaded.

6. DFH13 – DEEPWATER FISH HABITAT ROV SURVEYS

R/V MANTA

MAY 11–13, 2009 (\$25,000)

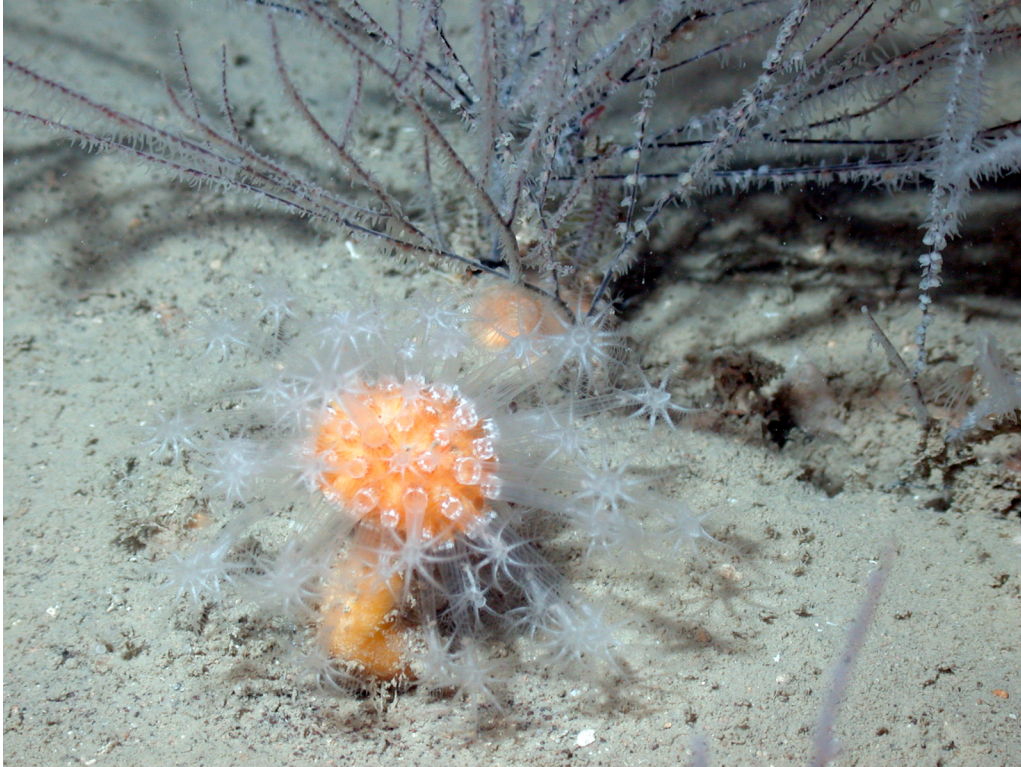


Phantom S2 ROV on the back deck of the R/V MANTA, ready for deployment.

The FGBNMS research team (Hickerson, DeBose, Nuttall) partnered with National Undersea Research Center/University of North Carolina at Wilmington (NURC/UNCW), to conduct remotely operated vehicle (ROV) surveys on board the R/V MANTA. The cruise was originally

scheduled for six days, but was reduced to three due to inclement weather. This was the first FGBNMS ROV cruise to be conducted on board the R/V MANTA.

NURC/UNCW's Phantom S2 ROV successfully conducted fourteen surveys to characterize the biology at MacNeil and McGrail Banks, located in the area of interest in the Northwestern Gulf of Mexico. These two banks are included in the sites for possible sanctuary expansion. NURC ROV pilots were Lance Horn and Glenn Taylor. Surveys were also conducted at Stetson Bank to document marine debris in the deepwater habitat. Ten discarded shrimp nets were observed draped over the siltstone/claystone outcroppings ringing Stetson Bank.



Anthomastus robusta as viewed by the Phantom S2 ROV.

R/V FULMAR Captain Dave Minard assisted Captain Chuck Curry to run the R/V MANTA. Wes Haislip and Lt. Tracy Hamburger also assisted in vessel operations. Volunteers Andrew McInnes and Travis March from Texas A&M University Galveston provided excellent deck support during the ROV operations.

**7. STETSON BANK LONG-TERM MONITORING
R/V MANTA
JUNE 5-7, 2009 (\$15,000)**

The FGBNMS research team (Schmahl, Hickerson, DeBose, Nuttall) partnered with AAUS scientific divers from Texas A&M University Galveston to successfully complete the 16th annual long-term monitoring mission at Stetson Bank, utilizing the R/V MANTA. Of the 45 pin locations found in 2008 (prior to Hurricane Ike), 28 pins were found intact and 11 photostations were found unmarked during this monitoring cruise. Due to the high number of 'lost' stations, pin reestablishment is a priority. Annual long-term monitoring of Stetson Bank has been ongoing since 1993.

8. FGBNMS LONG-TERM MONITORING RECONNAISSANCE CRUISE

R/V MANTA

JULY 7-9, 2009 (\$25,000)

The FGBNMS Research Team (Schmahl, Hickerson, Nuttall, Embesi) conducted a Long-Term Monitoring (LTM) reconnaissance cruise July 7-9, 2009 to acquaint divers with the study sites that will be the targets for monitoring activities next month. Corner sites and moorings were located and marked. Water samples were collected for analysis as part of the long-term monitoring, as well as a TAMUG research project. Observations of note: manta ray, mobula, mahi mahi. FGBNMS divers were joined by Dr. Steve Gittings from the Office of National Marine Sanctuaries (ONMS), and four Texas A&M University Galveston AAUS Divers. The FGBNMS LTM, a partnership between FGBNMS and Minerals Management Service, has been conducted through contractors for many years, and as of this year, will be conducted by the FGBNMS research team and partners.

9. FGBNMS MARINE DEBRIS REMOVAL/TECHNICAL DIVING CRUISE

R/V MANTA

JULY 20-25, 2009 (\$25,000)

A Technical Diving Mission to Assess and Remove Marine Debris at Stetson Bank was conducted July 20-25 aboard the NOAA Research Vessel MANTA. Flower Garden Banks NMS staff (Schmahl, Hickerson, Nuttall, DeBose, Eckert) assisted technical divers from the NOAA Technical Dive Team (Greg McFall, Russ Green), National Undersea Research Center/University of North Carolina (Doug Kesling, Scott Fowler) and Georgia Aquarium (Mauritius Bell, Jeff Reid) to assess and remove marine debris around Stetson Bank.

NOAA Working Divers removed 3 large anchors, an engine block and net from Stetson Bank. This mission was funded by NOAA's Marine Debris Program (<http://marinedebris.noaa.gov>). Mission blogs and expedition information can be found at <http://flowergarden.noaa.gov/science/techdive09.html>



10. CORAL SPAWNING I
R/V MANTA
AUGUST 11-14, 2009 (\$20,000)

The sanctuary research team (Schmahl, Hickerson, Hamburger, Embesi, Nuttall, Eckert) conducted a cruise to observe the predicted annual coral spawning event at FGBNMS. The team was joined by NOS Ocean Media Center videographers John Brooks and Paul Hillman. Sarah Davies and Eli Meyer from University of Texas were also on board to study aspects of the coral spawn, specifically the uptake of zooxanthellae by larval corals. Spawning was moderate, but did occur somewhat as predicted. A second spawn was anticipated to take place in September. The remains of a recruitment rack that was part of a permitted experiment, but destroyed by hurricanes, was consolidated for future recovery.

A detailed report is available online at
<http://flowergarden.noaa.gov/science/coralspawning09.html>



A spawning colony of Montastraea faveolata.

11. FGBNMS LONG TERM MONITORING CRUISE
R/V MANTA
AUGUST 17-21, 2009 (\$25,000)

The FGBNMS research team (Schmahl, Hickerson, Embesi, Nuttall, Hamburger, Eckert) conducted the annual data collection cruise for the Long-Term Monitoring (LTM) at the coral caps of East and West Flower Garden Banks on board the R/V MANTA. The FGBNMS LTM has been conducted through a contract for many years, and is now back in the hands of the

sanctuary staff. The LTM is co-funded by FGBNMS and Minerals Management Service (MMS). The team was joined by Steve Gittings (ONMS), two representatives from MMS, and two volunteer divers from Texas A&M University Galveston. This is a significant year for the data collection as it is 35 years since the first monitoring data was collected at the sanctuary, and 20 years since the current regime of monitoring was initiated. Objectives met included the collection of close to 200 repetitive photostations, thirty-two 10 meter random transects, 24 fish surveys, perimeter surveys, and lobster and urchin surveys.

E. ADDITIONAL R/V MANTA CRUISES

The R/V MANTA was chartered by several different user groups during the 2009 research season.

1. TAMUG - DELLAPENNA/USGS CRUISE I R/V MANTA MARCH 1-6, 2009

The FGBNMS Research Vessel MANTA conducted a surveying cruise at Sabine Bank and offshore Galveston during the week of March 1-6, 2009. The science project was conducted by researchers from Texas A&M University Galveston (Tim Dellapenna), and USGS, St. Petersburg (Jim Flocks). A total of 380 miles of SWATH and CHIRP surveys were completed. Sea conditions were 3-4'. This was the first surveying cruise to be conducted by the R/V MANTA and crew, and also the first cruise conducted by a visiting science crew.
<http://flowergarden.noaa.gov/science/chirp2009.html>

2. TAMUG - DELLAPENNA/USGS CRUISE II R/V MANTA MARCH 30-APRIL 1, 2009 and JULY 17, 2009

TAMUG researcher Tim Dellapenna, utilized the R/V MANTA to take students out to the Sabine area to demonstrate the use of box cores, gravity cores, shell dredges, and CTD casts. Fish sampling was also conducted.

3. UNIVERSITY OF TEXAS – INSTITUTE OF GEOLOGY R/V MANTA MAY 24-31, 2009

Flower Garden Banks National Marine Sanctuary teamed up with the University of Texas at Austin (UT) to give future ocean scientists hands-on experience in their field of study. The sanctuary's R/V MANTA worked out of Port Aransas, TX supporting science at sea for UT's Institute of Geophysics. From May 25-29, three UT instructors, three marine technicians, and eleven graduate students embarked on the MANTA daily to collect seismic data using a portable multi-channel seismic system. Students learned how to safely deploy and recover a sub-bottom profiler (CHIRP), a seismic air gun (producer), and a seismic streamer (receiver), which were towed simultaneously behind the vessel. The students designed study areas to locate old river channels that used to run through Corpus Christi and Port Aransas Bay, acquired the data, and began to process it the next day, with direction from the instructors. To complement the data

being acquired off the Manta, a university run small boat, the ITASCA, surveyed the same areas towing a side scan sonar and pole-mounted multibeam system. Thank you to UT Marine Science Institute for providing a sturdy dock and logistical support to the visiting crew and scientists. Special thanks also to the National Marine Sanctuary Foundation for facilitating this valuable partnership by providing critical administrative support to enable cost sharing between the partners.

4. and 5. TAMU – GEOCHEMICAL AND ENVIRONMENTAL RESEARCH GROUP R/V MANTA

JUNE 10 AND 23, 2009

The R/V MANTA supported Texas A&M University's (TAMU) Geochemical and Environmental Research Group (GERG) at a Wind Farm project 10 miles south of Galveston. R/V MANTA was used to deploy a 300lb anchor package and then support TAMU and TAMU Galveston AAUS divers to connect instrumentation cables underwater. This instrument package detected evidence of hypoxic waters.

6. UNIVERSITY OF TEXAS MARINE SCIENCE INSTITUTE R/V MANTA

JUNE 26, 2009

The R/V MANTA supported University of Texas Marine Science Institute researcher Tracy Villareal during a cruise to sample for nitrogen fixing symbionts in relation to the Mississippi plume. Plankton tow sampling began off the edge of the continental shelf south of the Flower Garden Banks, and worked closer to shore.

F. CANCELLED AND/OR POSTPONED CRUISES (additional cruises were cancelled due to budget constraints):

1. January 27–29, 2009. R/V MANTA FGBNMS Cruise.
2. February 17–20, 2009. R/V MANTA FGBNMS Cruise.
3. March 9–13, 2009. R/V MANTA Stetson Bank Post-Hurricane Cruise.
4. September 9-12, 2009. R/V MANTA Coral Spawning Cruise.

G. ADDITIONAL SCIENCE ACTIVITIES:

1. Permitting
2. Scheduling of R/V MANTA
3. Coordination of SCUBA operations
4. Coordination of shipboard research equipment and activities
5. Submitted NOAA fleet shiptime requests and needs
6. Regional GIS support
7. Science presence at SAC meetings
8. Maintenance of Reel Report compilation of fishing activities.

H. SCIENTIFIC INTERPRETATION/OUTREACH ACTIVITIES

1. Maintenance of digital slide catalog/library
2. Maintenance of video library (annotations)

3. Development of PowerPoint presentations for various events
4. Contributed to Sanctuary Web discussions.
5. Web-based research reports and blogs
6. Presentations: GISD, Sea Camp, Girl Scouts of Austin, Austin Dive Club, Patton Elementary School
7. Reviewed media press releases and articles for submission to magazines.
8. Worked with Jacqui Stanley in development of FGBNMS education curriculum.

I. CONFERENCES, MEETINGS, PRESENTATIONS, TRAINING, ETC.

1. December 1-5, 2008. International Deep Sea Coral Symposium. Wellington, New Zealand. Presented poster: Alcyonarians of the Flower Garden Banks National Marine Sanctuary. Hickerson.
2. January 6-8, 2009. Minerals Management Service Information Transfer Meeting. New Orleans, LA. Attendees: Hickerson, Schmahl.
3. March 4-7, 2009. Benthic Ecology Meeting. Corpus Christi, TX. Presenter: DeBose, Attendee: Nuttall.
4. March 23-27, 2009. Unit Diving Supervisor Meeting, Seattle, WA. Hickerson.
5. April 20-24, 2009. Research Coordinators Meeting, Camp Gualala, Sonoma, CA. Hickerson
6. May 14, 2009. Deep Coral Program. Puerto Rico. Schmahl.
7. May 27-29, 2009. ONMS/NMFS Summit. San Francisco, CA. Hickerson, Schmahl
8. July 12-19, 2009 Manta Ray tagging training. Holbox, Mexico. Nuttall.

J. ABSTRACTS AND PUBLICATIONS:

Caldow, C., R. Clark, K. Edwards, S.D. Hile, C. Menza, E. Hickerson and G.P. Schmahl. 2009. Biogeographic Characterization of fish Communities and Associated Benthic Habitats within the Flower Garden Banks National Marine Sanctuary: Sampling Design and Implementation of SCUBA Surveys on the Coral Caps. NOAA Technical Memorandum NOS NCCOS 81. Silver Spring, MD. 134 pp.

Deis, D.R. Post-Hurricane Assessment of Sensitive Habitats of the Flower Garden Banks Vicinity. 2009 MMS-ITM, New Orleans, LA.

Deslarzes, K., R. Aronson, W. Precht, M. Robbart, B. Zimmer, L. Duncan, L. Kaufman, G.P. Schmahl, E.L. Hickerson and J. Sinclair. Long-Term Monitoring at the Flower Garden Banks National Marine Sanctuary, 2004-2008. 2009 MMS-ITM, New Orleans, LA.

Etnoyer, P. J., and E. Hickerson. Mesophotic Alcyonacea of Flower Garden Banks, Northwestern Gulf of Mexico. In Press. Marine Ecology Progress Series.

Precht, W. K. Deslarzes, E. Hickerson, G.P. Schmahl, J. Sinclair, and R. Aronson. Climate Change and the History of *Acropora* spp. at the Flower Garden Banks. 2009 MMS-ITM, New Orleans, LA.

Sammarco, P. Corals on Platforms Past I, II, and III. . 2009 MMS-ITM, New Orleans, LA.

Wicksten, M. K. Interactions with Fishes of Five Species of *Lysmata* (Decapoda, Caridea, Lysmatidae). 2009. *Crustaceana* 82 (9):1213-1223

K. FUNDING

- Received \$15K from CRCP Shallow and Deep Coral Programs to continue mesophotic efforts.
- Contributed to a successful NRL/NASA proposal entitled: High-Resolution Subsurface Physical and Optical Property Fields in the Gulf of Mexico: Establishing Baselines and Assessment Tools for Resource Managers
- Submitted CRCP proposal with NCCOS and CI for pre-closure surveys to be conducted in preparation for the proposed experimental fishing closure.
- Submitted CRCP Deep Sea Coral proposal to identify mesophotic sponges. Collaboration with Drs. Christi Savarese and Klaus Ruetzler.
- Submitted a proposal to the Gulf of Mexico Fisheries Management Council with the objective to confirm the suspected spawning aggregation of marbled grouper, *Dermatolepis inermis*, at Geyer Bank.

L. NEW SANCTUARY BIOLOGICAL RECORDS

Flaming reef lobster (*Enoplometopus antellensis*)

Stetson Bank

Photographed by Michael Bomalick

August 2009



Flaming Reef Lobster (Enoplometopus antellensis)

Photo: Michael Bomalick

Flying gurnard (*Dactylopterus volitans*)
Stetson Bank
G.P. Schmahl
August 2009

Anthomastus robusta
Family Alcyoniidae, Lamourous, 1812
DFH13-12A sample
May 12, 2009

M. RESEARCH AND SCIENCE PARTNERSHIPS

- Georgia State Aquarium
- GeoMarine, Inc.
- Harte Research Institute for Gulf of Mexico Studies
- Minerals Management Service (MMS)
- NCCOS – Biogeography
- National Centers for Coastal Ocean Science (NCCOS)
- NOS Ocean Media Center
- NURC-UNCW
- PBS&J
- Smithsonian Institute
- Texas A&M University (TAMU)
- Texas A&M University – Galveston (TAMUG)
- Texas A&M University - Corpus Christi (TAMU-CC)
- University of Texas
- Wildlife Conservation Society (WCS)

N. RESEARCH STAFFING

1. Emma Hickerson, Research Coordinator
2. G.P. Schmahl, Sanctuary Superintendent
3. John Embesi, Research Specialist
4. Marissa Nuttall, Research Assistant
5. Ryan Eckert, Research Intern
6. Tracy Hamburger, Ops Officer

Activity:

- Jennifer DeBose ended employment as Research Specialist (FTE) – July 31, 2009
- John Embesi began employment as Research Specialist (contract) – June 29, 2009
- Ryan Eckert began employment as Research Intern (contract) – June 1, 2009

Divers and research volunteers:

| Last Name | First Name | Affiliation | Volunteer Hours |
|---------------|------------|------------------|-----------------|
| 1. Bell | Mauritius | Georgia Aquarium | |
| 2. Bosquez | Joe | TAMUG-AAUS | 80 |
| 3. Brooks | John | NOS Ocean Media | |
| 4. Buch | Kevin | TAMUG-AAUS | 128 |
| 5. Clayton | David | TAMUG-AAUS | 80 |
| 6. Davenport | Sam | TAMUG-AAUS | 32 |
| 7. Davies | Sarah | UT | 40 |
| 8. DeBose | Jennifer | FGBNMS | |
| 9. Eckert | Ryan | FGBNMS | |
| 10. Embesi | John | FGBNMS | |
| 11. Fowler | Scott | UNCW | |
| 12. Frizell | Tyler | TAMUG-AAUS | 24 |
| 13. Green | Russ | TBNMS | |
| 14. Hamburger | Tracy | FGBNMS | |
| 15. Hickerson | Emma | FGBNMS | |
| 16. Hillman | Paul | NOS Ocean Media | |
| 17. Hufton | Amie | TAMUG-AAUS | 64 |
| 18. Kesling | Doug | UNCW | |
| 19. Marshall | Jeremy | PBS&J-AAUS | |
| 20. McFall | Greg | GRNMS | |
| 21. McHugh | Eric | TAMUG-AAUS | 48 |
| 22. Meyer | Eli | UT | 32 |
| 23. Nuttall | Marissa | FGBNMS | |
| 24. Reid | Jeff | Georgia Aquarium | |
| 25. Salmeron | Ashley | TAMUG-AAUS | 64 |
| 26. Schmahl | G.P. | FGBNMS | |
| 27. Sinclair | James | MMS | |
| 28. White | Laura | TAMUG-AAUS | 32 |
| 29. Winters | Kate | MMS | |
| | | | 624 hrs |