



Flower Garden Banks National Marine Sanctuary

Research Summary

2003

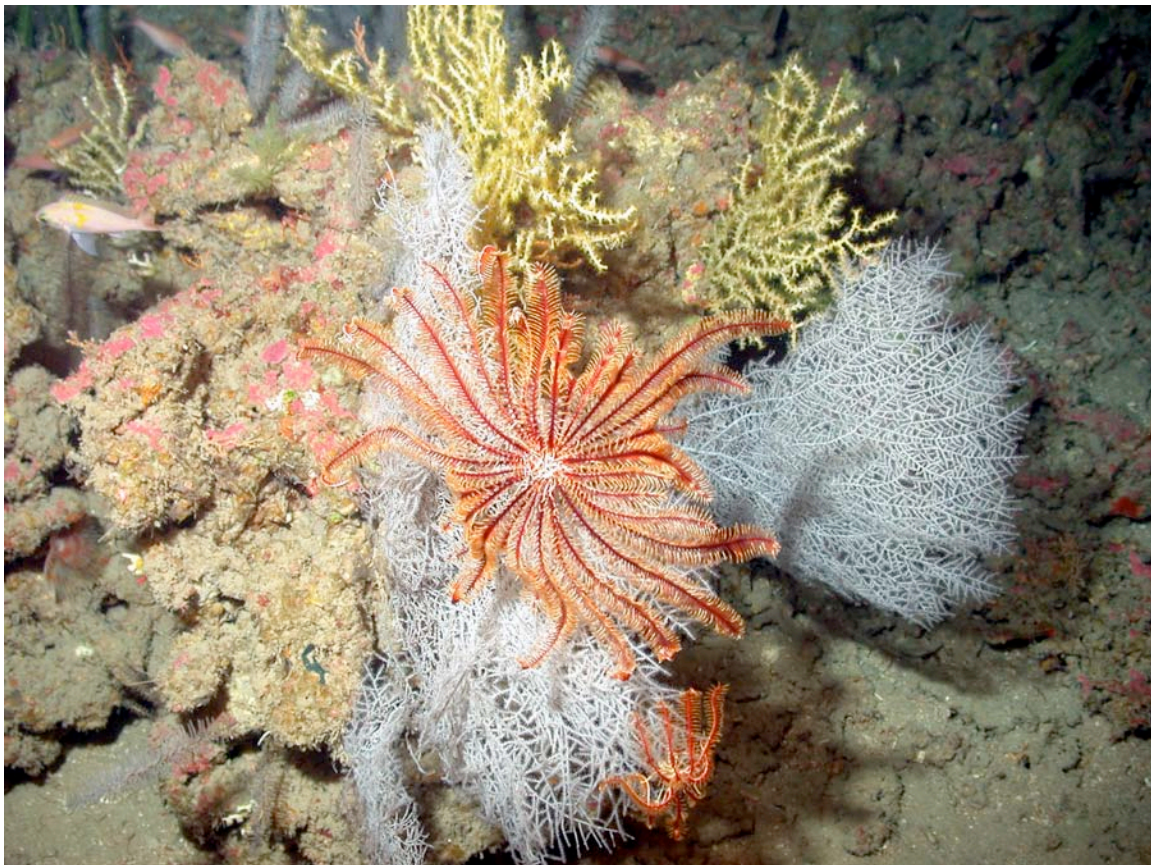


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January 2004



A. OVERVIEW

The purpose of this document is to report the activities of the Research team during 2003. The team included Emma L. Hickerson (Research Coordinator), G.P. Schmahl (Sanctuary Manager), and Doug Weaver (GIS specialist).

B. SUMMARY

13 research cruise efforts were conducted – 3 ROV cruises to continue the characterization of the topographic features in the Northwestern Gulf of Mexico, and 8 SCUBA cruises to the FGBNMS. A total of 82 hr 41mins of ROV time was accomplished. A pool of 43 sanctuary personnel, scientists, and volunteer divers conducted approximately 667 SCUBA dives within the Sanctuary during the 2003 field season. Activities included biological surveys, equipment maintenance, and image collection. Three undescribed species (2 rhodophyta, 1 primnoid) were discovered at the West Flower Garden Bank. Four new species records (crustaceans and fish) were added to the Sanctuary list. Ten Sanctuary permits were processed, and an additional 6 were ongoing. The first possible record of spawning behavior of marbled grouper on the reef cap was reported by a recreational diver.

C. CRUISES

1. FGBNMS-2003-DFH4 – February 18-21. M/V Spree - NURC Phantom S2 ROV contracted. 9 ROV dives totaling 14hrs 43mins were conducted. Depth ranges: 104'-387'. Approximately 700 high resolution digital still images were obtained during the ROV surveys. 15 hours of high resolution side scan were conducted by Texas A&M Galveston with limited success. SCUBA ops were conducted to change out the East and West Bank YSI datasondes. Texas A&M Nautical Archaeology students provided deck support. Rolex scholar, Stefanie Wells, also participated in the cruise. Schmahl, Hickerson, Weaver.

2. FGBNMS – 2003 – Spring Research Cruise – May 27 – 30 - 13 participants, including Sanctuary personnel, researchers, and an aquarium representative. Researchers represented the following institutions: TAMUCC (Grossman – cone snail collection for paleoclimatology), TAMU(Grossman), TAMUG (Culbertson – tunicate surveys), Wesleyan College (Burnside – conch surveys), University of Houston (Borneman – coral disease). Carol Farmer represented the Tennessee Aquarium. Schmahl, Hickerson, Weaver.

3. FGBNMS – 2003 – Site Rehabilitation/Deep Station Establishment Cruise – May 12-16 – accompanied long-term monitoring contractors, PBS&J, Geo Marine, Inc., and Dauphin Island Sea Lab on cruise to rehabilitate existing repetitive photostations at the East and West Flower Garden Bank. MMS participants, Gregory Boland and Les Dauterive, and Sanctuary personnel, Schmahl, Hickerson, and Weaver, established deep stations (to 130') on the East Flower Garden Bank. YSI datasondes were changed out on East and West Bank.

4. FGBNMS – 2003 – Drilling I – M/V Spree - June 22-25 – Reestablish mooring sites. Schmahl.

5. FGBNMS – 2003 – Drilling II – M/V Spree - July 1-5 – Reestablish mooring sites. Schmahl, Weaver.

6. FGBNMS – 2003 – YSI Datasonde changeout I – R/V Pt. Glass – July 10-11 - Changeout YSI datasondes. Schmahl, Weaver.

7. FGBNMS – 2003 – Turtle rescue I – R/V Pt. Glass – July 27 – Stetson Bank – loggerhead turtle reported to have hook in mouth, and line protruding. Recruited NMFS Sea Turtle Coordinator, Shauna Baker, and Head Vet. Houston Zoo – Joe Flanagan, to remove and monitor animal if captured. After a day's worth of underwater and above water surveys looking for the animal, it was determined that the animal was not at the site. Since the attempt, the animal has been reported back on site, and eating well, The hook and line persist, so a future attempt will be planned. Hickerson, Weaver.

8. FGBNMS – 2003 – DFH5 – NOAA Ship NANCY FOSTER – July 29 – August 8 - NURC Phantom S2 ROV contracted. Conducted 23 ROV dives totaling 44hr 44min survey time. Approximately 3736 digital images were obtained during the ROV surveys. McGrail Bank – 7 dives, WFGB – 9 dives, EFGB – 4 dives, Bright Bank – 3 dives. Depths ranges: 98—481'. Approximately 3800 high resolution digital images were taken during the dives. College Station High School students interned as umbilical handlers. Two NOAA Teacher-at-Sea participants also were on board. Water samples were obtained for cephalopod researcher, Jenn DeBose. Schmahl, Hickerson, Weaver.

9. FGBNMS – 2003 – Coral Spawning – M/V Spree - August 18-22. 22 participants, including Sanctuary personnel, researchers, and volunteers – representing University of Calgary (Vize – coral spawning), TAMU (Wicksten – crustaceans, and cleaning behavior), NCCOS (Woodley – biomolecular markers in coral), University of Houston (Jimenez – algae/coral dynamics, Borneman – coral diseases), and REEF. The diving was conducted on WFGB#2, and EFGB#4. A spawning report was generated and posted to the Coral List. Four REEF participants conducted 52 fish surveys on the WFGB and 16 at the EFGB. NCCOS participants collected approximately 78 coral plugs – 4 transects were conducted at the WFGB, and 3 transects were conducted at the EFGB. DeBose collected 13 squid, and 9 suites of water samples. Jimenez placed 8 exclusion cages on the reef at WFGB. Occurrences of interest: 3 separate incidents were reported of intentional ramming of divers by barracuda. Schmahl, Hickerson, Weaver.

10. FGBNMS – 2003 – Long Term Monitoring – M/V Fling - August 25-29. Hickerson accompanied contractors, PBS&J, Geo-Marine, Inc., and Dauphin Island Sea Lab, during the annual data collection cruise. Also in attendance in observer capacities was Sanctuary Science Coordinator, Steve Gittings, and NURP Florida Keys Director, Stephen Miller. TAMU graduate student, Amy Bratcher also participated, in order to identify suitable coral heads for coring – paleoclimatology study.

11. FGBNMS – 2003 – Pt. Glass III – August 27-28 – rendezvous with M/V Fling for personnel transfer. Schmahl, Weaver.

12. FGBNMS – 2003 – Stetson Bank Long Term Monitoring – M/V Fling - September 2-4. Sanctuary staff and volunteers conducted the annual effort to collect the repetitive photographs at Stetson Bank. Unfortunately, due to diver, several of the photographs need to be retaken. This will be done at the earliest possible opportunity. (OK, so it's Emma's fault!). Schmahl, Hickerson, Weaver.

13. FGBNMS – 2003 – DFH6 - NOAA's Office of Exploration Cruise – R/V Ron Brown – September 21 – October 2. Shiptime was shared with Dauphin Island Marine Laboratory (Dr. Will Schroeder). Sanctuary staff and researchers participated in this cruise, sponsored by OE. Invited researchers included Suzanne Fredericq (University of Louisiana, Lafayette), Dr. Mary Wicksten (TAMU), Dr. John Bratton (USGS-Woods Hole), Dr. Peter Etnoyer (MCBI) and Ron Hill (NMFS – Galveston). The cruise involved the use of SonSub's Innovator ROV – a working class ROV, equipped to sample – something we have lacked thus far in our deepwater efforts. 5 ROV dives were conducted totaling 23 hrs 15 mins in depth ranging from Surveys and collections were conducted at Alderdice Bank, West FGB, and Diaphus Bank. 96 directed collections were obtain, which ended up with many more actual samples. Highlights were 3 undescribed species from the West Flower Garden Bank – 2 rhodophyta, and a new species of Primnoid (see below). In addition to the ROV surveys, approximately 1000 square km of seafloor was mapped using the SeaBeam system on board. This data is current being processed by oceanographers at TAMU. 198 digital still images were obtained during the ROV surveys. Schmahl, Hickerson, Weaver, Bernhardt.

D. CANCELLED AND/OR POSTPONED CRUISES:

FGBNMS-2003-Winter Pelagics (cancelled due to lack of participants)

FGBNMS – 2003 – Spring Research Cruise (postponed due to weather)

FGBNMS – 2003 – DFH7 (postponed twice due to weather)

FGBNMS – 2003 – Coral core drilling (postponed due to weather)

E. PROPOSALS:

Accepted:

NOAA's Office of Ocean Exploration – 5 days NOAA Ship Ron Brown/SonSub Innovator ROV use.

Submitted:

NURC – continuation of exploration and characterization of northwestern Gulf of Mexico – ROV, shiptime, TriMix training and subsequent exploration

NOAA's Office of Ocean Exploration – continuation of exploration and characterization of northwestern Gulf of Mexico – submersible, shiptime, bathymetric surveys

F. ADDITIONAL SCIENCE ACTIVITIES:

March 16 – 30 – Collaborated with whale shark biologist, Rachel T. Graham, in whale shark tagging, and documentation of spawning snapper aggregations at Gladden Spit, Belize - Hickerson

June 22 –25 - Participated in DUOY I Cruise – presented “Research in the Sanctuary” – Weaver

July 19-20 – Participated on recreational dive charter (Gulf Diving, Inc.) to document reports of “anchor damage” – Weaver

July 24–25 – Represented Sanctuary on recreational dive charter (Gulf Diving, Inc.) sponsored by Tennessee Aquarium - Hickerson

August 4-6 – initial coordination of Annual Agency/Industry Cruise. Coordinated at-sea shipboard visit of NOAA Ship Nancy Foster by Agency and Industry participants visiting from M/V Fling - Hickerson

Collaborated with George Dennis (USGS) and Greg Boland (MMS) to produce a CD cataloging the historical fish data of the northwestern Gulf of Mexico - Hickerson

G. DISCOVERY OF UNDESCRIBED SPECIES IN FGBNMS

Primnoid

Callogorgia sp. – collected by ROV at the West Flower Garden Bank at 285' during NOAA Ship Ron Brown cruise on September 28, 2003. Peter Etnoyer (MCBI) is heading up deep sea soft coral investigations.

Algae

Rhodophyta

1. *Halymenia sp.*
2. New gelatinous species of family Nemastomataceae

Both samples were collected by ROV at the West Flower Garden Bank during the NOAA Ship Ron Brown cruise. Dr. Suzanne Fredericq (University of Louisiana, Lafayette) is heading up the algae investigations.

H. NEW RECORDS FOR FGBNMS

Invertebrates

Class Echinodermata

Tosia parva – seastar documented at EFGB during DFH4 cruise. Identified by Chris Pomery – University of West Florida.

Class Crustacea

Subclass Malacostraca

Petrochirus diogenes – giant hermit crab documented at Stetson Bank by Emma Hickerson

Periclimenes pandionis - range extension for rare species of shrimp that lives on gorgonians.

Fish

Serranidae

Schultzea beta - school bass – documented during DFH4 – 100m depth.

I. NEW RECORDS FOR DIAPHUS BANK

Class Crustacea

Subclass Malacostraca

Stenopus spinosus

J. SCIENCE PRODUCTS

- Deep Water Habitat (DFH) - DFH4, DFH6, and DFH7 cruise notebooks
- 2002 Research Report
- 2003 Research Report

K. RESEARCH AND SCIENCE PARTNERSHIPS

- Azure Photographic Services
- Belize Whale Shark Research
- Dauphin Island Sea Laboratory (DISL)
- Environmental Protection Agency (EPA)
- GeoMarine, Inc.
- Minerals Management Service (MMS)
- National Undersea Research Center (NURC)
- National Marine Fisheries Service (NMFS)
- Office of Ocean Exploration (NOAA)
- North Carolina Coastal Ocean Service (NCCOS)

- PBS&J
- Reef Environmental Education Foundation (REEF)
- Texas A&M University (TAMU)
- Texas A&M University – Galveston – (TAMUG)
- Texas A&M University (TAMU) – Geochemical and Environmental Research Group (GERG)
- Texas Parks and Wildlife (TPWD)
- U.S. Geologic Survey (USGS) – Woods Hole
- University of Calgary
- University of California – Davis (UC-Davis)
- University of Houston
- University of Louisiana – Lafayette
- University of Texas – Marine Science Institute (UTMSI)

L. CONFERENCES, MEETINGS, PRESENTATIONS, TRAINING, ETC.

1. Coastal GeoTools - Charleston, SC – January 6-9 – attendee -Weaver
2. MMS – Information Transfer Meeting, New Orleans, LA – January 14-16 – attendee – Hickerson, Schmahl
3. Breax/FGBNMS event – New Orleans, LA – January 24 – Hickerson, Schmahl, Weaver
3. Research Coordinators Meetings, Charleston, Santa Cruz, CA, - January 28-30 – attendee – Hickerson
4. U.S. Hydro Conference, Biloxi, MS – March 24 – 27 – presenter – Weaver - High-resolution multibeam mapping and habitat characterization of topographic features in the northwestern Gulf of Mexico.
5. Dept. of Oceanography, Texas A&M University – departmental seminar – April 14 – presenter – Hickerson
6. Gulf and Caribbean Fisheries Institute conference – Tortola, BVI – presenter – Weaver – 1. Fish habitat characterization at the FGBNMS using multibeam mapping and submersible technology. 2. Multibeam mapping and habitat characterization of reef fish surveys in the northwestern Gulf of Mexico.
7. South Knoll 2nd graders – series of 5 presentations – sea turtles, deep water exploration, Flower Garden Banks National Marine Sanctuary, coral reef critters, and building a coral polyp activity – Hickerson.
8. First Aid, CPR, Defib. Training - Schmahl, Hickerson, Weaver, Bernhardt.

M. SCIENTIFIC INTERPRETATION/OUTREACH ACTIVITIES

1. Maintenance of slide library
2. Maintenance of digital slide catalog/library
3. Maintenance of Power Point presentation catalog
4. Maintenance of video library (annotations)
5. Video and images provided to various requesting parties: Tennessee State Aquarium
6. Production of photographic images for Sanctuary tabletop display
7. Development of PowerPoint presentations for various events

8. Assisted with development of highlights video for OE cruise for distribution to media.
9. Distributed over 200 Sanctuary calendars to researchers and associated groups.
10. Attended Sanctuary Web discussions.
11. Participated in Ocean AGE (Advancement of a new Generation of Explorers) web based forum, sponsored by NOAA's Office of Ocean Exploration (Hickerson).
12. Produced one-pager describing deep water habitat exploration at the FGBNMS.
13. Produced one-pagers describing the coral communities on Bright Bank and McGrail Bank.
14. Produced one-pager describing salvage activities at Bright Bank.
15. Obtained 3D bathymetric models of East and Stetson Banks.
16. Coordination of sighting data from recreational dive vessels.
17. Development of collage interpretation sheet.

N. MANAGEMENT ACTIVITIES

- Writing of permits for science activities
- Attended Sanctuary retreats
- Responded to oil and gas industry spill drills in Manager's absence.
- Participated in discussions with TAMU Dept. of Oceanography to collaborate with use of Pt. Glass by TAMU programs, and use of TAMU Oceanographic equipment.
- Participated in updating of Long Term Monitoring Statement of Work.

O. PERSONNEL

- Upgraded GIS specialist/Fish biologist – Doug Weaver – RSIS contract – full time.
- Hired on Spring research intern – general contract – part time – 3 months.
- Hired on summer research intern – general contract – fulltime for 3 months.

P. TECHNOLOGY

1. Maintenance and development of media equipment.
2. Research for underwater technologies to further Sanctuary's capabilities.