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To Ian Anthony	From Angela Freeman
Dept./Agency	Phone #
Fax # 020 7008 3189	Fax #

Application for Consent to Co
in Areas Under National Jurisdiction of

United Kingdom for: Anguilla, British Virgin Islands
Dominican Republic
France for: Saint Martin, Saint Barthelemy
Netherlands Antilles for: Saba, Saint Eustatius, Saint Maarten
Saint Kitts and Nevis

Date: November 6, 2006

1. General Information

1.1 Cruise name and/or #:	Coral Reef Ecosystem Research (CRER) Cruise #1 NF-07-06

1.2 Sponsoring institution:	
Name:	Atlantic Oceanographic & Meteorological Laboratory
Address:	4301 Rickenbacker Causeway, Miami, FL 33149
Name of Director:	Dr. Robert M. Atlas

1.3 Scientists in charge of the project (include CV and passport photo):	
Name:	Dr. Elizabeth Johns and Mr. Ryan H. Smith
Address:	4301 Rickenbacker Causeway, Miami, FL 33149
Telephone:	305-361-4360, 305-361-4328
Fax:	305-361-4412
Email:	Libby.Johns@noaa.gov, Ryan.Smith@noaa.gov

1.4 Scientist(s) from coastal state involved in the planning of the project:	
Name(s):	N/A
Address:	N/A

1.5 Submitting officer:	
Name and address:	LT Nancy Ash, NOAA 4301 Rickenbacker Causeway, Miami, FL 33149
Nationality:	U.S.A
Telephone:	305-361-4544
Fax:	305-361-4449
Email:	Nancy.Ash@noaa.gov

2. Description of Project

2.1 Nature and objectives of the project:

The United States Virgin Islands' (USVI) Grammanik Bank, located to the south of St. Thomas, is the site of multi-species spawning aggregation for economically important fish including yellowfin grouper, Nassau grouper, tiger grouper, and dog snapper. Fishing pressure at this suspected source of larval recruits prompted the Caribbean Fisheries Council in 2004 to close the bank yearly from February - April. A series of banks south of the USVI (St. Thomas and St. John) and the British Virgin Islands (BVI) provide similar habitats and spawning aggregation sites. Unfortunately, the biological and physical processes which drive production on these banks, the circulation connecting

these banks, and the flows across these banks have yet to be quantified. Absent such data, management decisions (including Marine Protected Area [MPA] designations and temporary closures) are presently based on professional judgment rather than quantifiable, defensible scientific information.

To address this data gap, National Oceanic and Atmospheric Administration (NOAA) scientists from the Southeast Fisheries Science Center (SEFSC) and Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, Florida, working with scientists from the University of the Virgin Islands (UVI) in St. Thomas will be conducting a three-year interdisciplinary research project using the R/V NANCY FOSTER to conduct biological and physical oceanographic surveys of the Virgin Islands' (VI) bank ecosystems and surrounding regional waters. The long-term sustainability of fisheries in the VI and surrounding regions will depend on a comprehensive understanding of regional spawning aggregations, larval transport, and overall larval recruitment in the study area.

The project will be directed at answering one over-arching question: How are unprotected VI banks, MPAs such as the Hind Bank Marine Conservation District, seasonally closed areas such as the Grammanik Bank, and inshore areas ecologically linked via regional reef fish larval dispersal, transport, and life-history patterns?

To gain the information necessary to develop more specific hypotheses, **the first research cruise of this project (outlined in this request) will be conducted between March 22, 2007 and April 12, 2007 aboard the R/V NANCY FOSTER.** This survey will sample water properties, currents, and dispersal and transport of settlement-stage larvae in the VI and neighboring regions. It should yield not only an understanding of regional spatial variation in the supply of settlement-stage fishes, but also insights into the relative importance of Grammanik Bank and its MPAs as a source of juvenile fishes recruiting to the waters of the VI. Specifically, the cruise will address the following questions:

1) How do the abundance and composition of ichthyoplankton around Grammanik Bank and other similar banks change with space and time?
2) How much of this variation in abundance and composition can be explained by the oceanographic setting?
3) How do the oceanography and ichthyoplankton assemblages interface with the boundary areas of seasonally or permanently closed MPAs?

This survey will include neuston, bongo, Methot, and MOCNESS trawl tows, as well as CTDO2/LADCP casts measuring, temperature, salinity, dissolved oxygen, light transmission, chlorophyll, and water velocity. Continuous surface measurements of temperature, salinity, light transmission, chlorophyll, and water velocity will also be collected via the ship's flow-through system and hull-mounted ADCP. Satellite imagery of sea surface temperature, altimetry, and ocean color will be used to aid in the interpretation of and extrapolation from shipboard observations.

Identification and analysis of samples and shipboard data analysis will commence immediately after the cruise and should be completed by the end of 2007. Upon completion of this analysis, initial results will be used to focus and refine the field activities for Year-2.

Initially, the success of the project will be measured by the extent of the surveys made

and the number of samples collected, as well as the utility and quality of useful information generated from analysis of the data collected. Settlement-stage larvae collected from inshore sampling will constitute another measure of success for the field study portion of this project. Determination of the utility of stable isotope analysis of these larvae will provide an additional benchmark. The synthesis of these data, to determine the location and relative importance of spawning sites, and the incorporation of this information into fisheries oceanographic models that help local resource managers in making decisions as to MPA sites and optimal seasonal closures with respect to time and place, will provide the ultimate measure of project success. In addition, it is our intention that all data generated and analyzed will be published in peer-reviewed literature. We consider this an essential step both to guarantee data quality and to assure that management decisions based on this information are defensible.

2.2 Relevant previous or future research cruises:

A. The second research cruise of this project is scheduled to take place in FY08 aboard the R/V NANCY FOSTER (per year 2 requirements).

B. NOAA/SEFSC and NOAA/AOML will submit proposals for additional funding to extend the scope and duration of this project beyond FY08 (through FY11) and plan to conduct approximately one cruise per year aboard the R/V NANCY FOSTER in the project study area outlined in this request.

2.3 Previously published research relating to the project:

Lindeman, K. C., W. J. Richards, J. Lyczkowski-Shultz, D. M. Drass, C. Paris-Limouzy, M. Lara & B. Comyns. 2005. Lutjanidae: snappers. Pages 1549-1585 in Early stages of Atlantic fishes: an identification guide for the western central North Atlantic. Vol. 2. W. J. Richards (ed.). CRC Press, Boca Raton, FL. 1,337-2,640 p.

Lamkin, John T. 2005 Chapter 195. Suborder Stromateoidei. In: W. J. Richards, Ed. Laboratory guide for the identification of the early life history stages of fishes from the western central Atlantic. Lawrence, Kansas, Allen Press, Inc.

Lara, M.R., D.L.Jones, J.T.Lamkin, Z. Chen, and C.Y. Jones. Spatial variation of otolith elemental signatures among juvenile grey snapper nursery regions within the South Florida's marine ecosystem. Mar. Bio. In review.

Wilson, W. D., and W. E. Johns, 1997. Velocity Structure and Transport in the Windward Islands Passages. Deep-sea Res., 44, 487-520.

Johns, E., W. D. Wilson and R. L. Molinari, 1999. Direct observations of velocity and transport in the passages between the Intra-Americas Sea and the Atlantic Ocean, 1984 - 1996, J. Geophys. Res., 104, 25805-25820.

Johns, W. E., T. L. Townsend, D. M. Fratantoni, and W. D. Wilson, 2002. On the Atlantic Inflow to the Caribbean Sea, Deep-sea Res., 49, 211-243.

3. Methods and Means to be Used

3.1 Particulars of vessels:	
Name of Vessel:	NOAA Ship NANCY FOSTER
Nationality (Flag state):	U.S.A.
Owner:	DOC/NOAA
Operator:	NOAA Marine & Aviation Operations
Overall length (meters):	56.7
Maximum draught (meters):	3.4
Displacement/Gross tonnage:	1190
Propulsion:	Main Propulsion: Cummins KTA 50m (16 cylinders, 1250 shaft HP) Bowthruster: Omnithruster (400 HP) Z-Drives (4): Ulstein Marine Ltd. 260/370-H (300 HP at 180 RPM)
Cruising & Maximum speed:	10.5 & 12 kts
Call sign:	WTER
Method and capability of communication (including emergency frequencies):	GMDSS Equipped - VHF, MF/HF, Inmarsat-B & C (156.525MHz, 2187.5 kHz, 8414.5 kHz) Cellular, Iridium
Name of master:	CDR James S Verlaque, NOAA
Number of crew:	10
Number of scientists on board:	15

3.2 Aircraft or other craft to be used in the project:
N/A

3.3 Particulars of methods and scientific instruments:		
Types of samples and data	Methods to be used	Instruments to be used
Temperature, Salinity, Dissolved Oxygen, and Pressure	Conductivy-Temperature-Depth-O2 (CTDO2) stations	Conductivity Temperature Depth-O2 recorder (CTDO2)
Water samples (O2, Salinity)	Bottle sampling at CTD stations	Niskin bottles on CTD carousel
Water Velocity	Direct Measurement via lowered and hull mounted Acoustic Doppler Current Profilers	Lowered and Vessel Mounted Acoustic Doppler Current Profiler(LADCP, SADCP)
Water Depth	Multibeam sounder	Vessel Mounted multibeam instrument
Neuston Net Tow	10 minute surface tow	1mm mesh 1m x 2m Nueston net
Methot Net Tow	30 minute oblique tow	3mm mesh 1m x 3m Methot net
MOCNESS Net Tow	60 minute stepped oblique tow	0.5mm – 3mm 1m x 1m MOCENESS nets

3.4 Indicate whether harmful substances will be used:
N/A

3.5 Indicate whether drilling will be carried out:
N/A

3.6 Indicate whether explosives will be used:
N/A

4. Installations and Equipment

Details of installations and equipment (dates of laying, servicing, recovery; exact locations and depth):
N/A

5. Geographical Areas

5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):
16.5°N - 19°N, 62°W – 69°W

5.2 Attach chart(s) at an appropriate scale (1 page, high-resolution) showing the geographical areas of the intended work and, as far as practicable, the positions of intended stations, the tracks of survey lines, and the locations of installations and equipment.
See attached charts (Figures 1 and 2)

6. Dates

6.1 Expected dates of first entry into and final departure from the research area of the research vessel:
March 22, 2007 – April 12, 2007

6.2 Indicated if multiple entry is expected:
N/A

7. Port Calls

7.1 Dates and names of intended ports of call:
On or about, March 22, 2007 – San Juan, Puerto Rico (embarkation) On or about, March 30, 2007 – Road Town, Tortola, BVI (port call) On or about, April 12, 2007 – San Juan, Puerto Rico (disembarkation)

7.2 Any special logistical requirements at ports of call:
N/A

7.3 Name/Address/Telephone of shipping agent (if available):
N/A

8. Participation:

8.1 Extent to which coastal state will be enabled to participate or to be represented in the research project:
Coastal State scientists and/or observers are welcome to participate in the cruise.

8.2 Proposed dates and ports for embarkation/disembarkation:
March 22, 2007 – San Juan, Puerto Rico; April 12, 2007 – San Juan, Puerto Rico

9. Access to data, samples and research results

9.1 Expected dates of submission to coastal state of preliminary reports, which should include the expected dates of submission of the final results:
May 12, 2007

9.2 Proposed means for access by coastal state to data and samples:
All data will be delivered to coastal states through U.S. Department of State within one year of the end of the project.

9.3 Proposed means to provide coastal state with assessment of data, samples and research results or provide assistance in their assessment or interpretation:
Assistance available on request from Chief Scientist

9.4 Proposed means of making results internationally available:
Publication of data results in peer-reviewed journals.

Preliminary CTDO2/LADCP and Net Tow Station Locations with Associated Cruise Track:

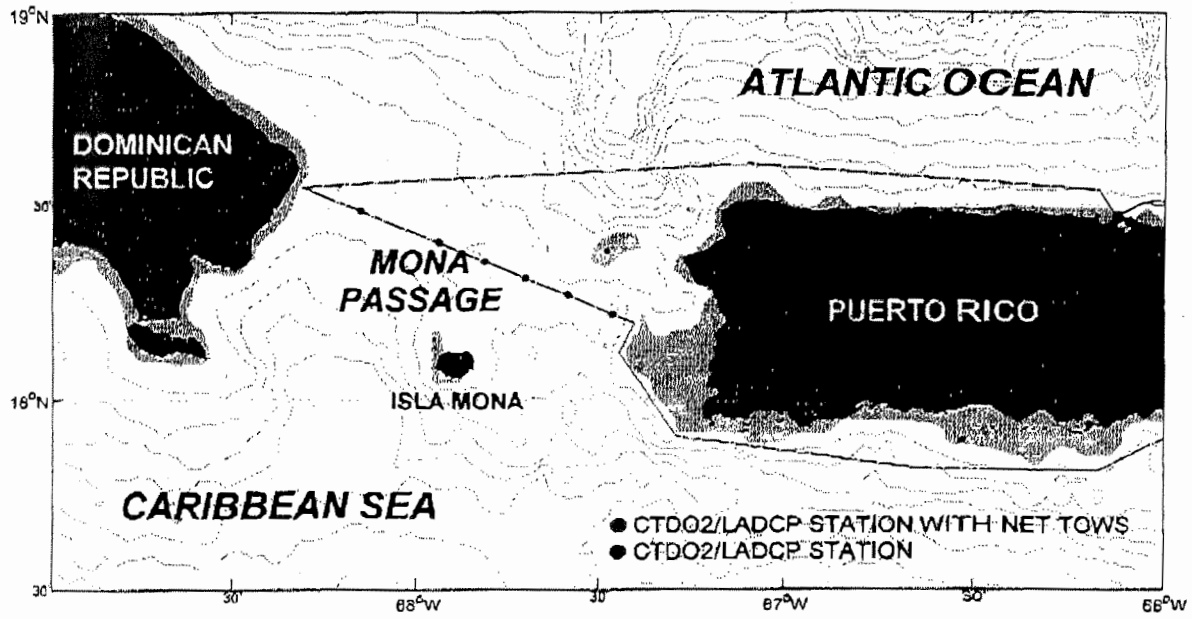

Figure 1. The *R/V Nancy Foster* will depart from San Juan and head west to the Mona Passage where it will conduct six stations before heading east towards the Virgin Islands.

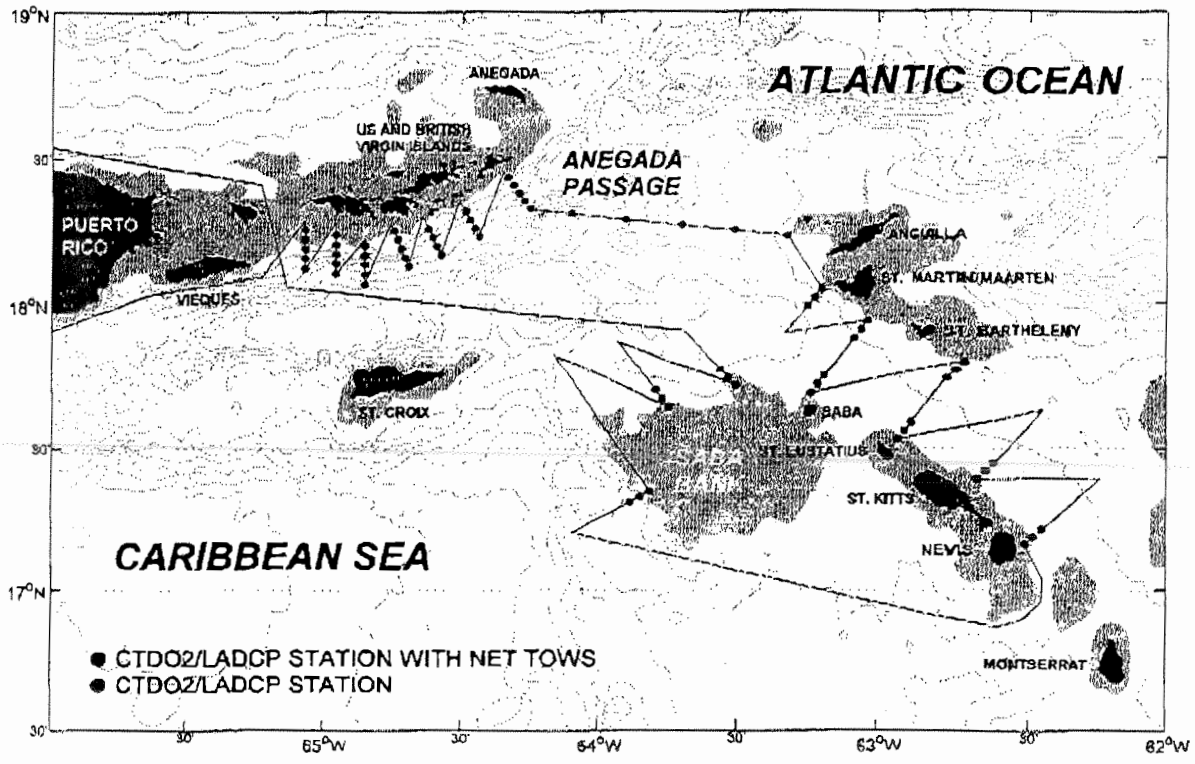

Figure 2. Preliminary CTDO2/LADCP and net tow stations east of Puerto Rico are

shown above.