



National Undersea Research Center
Caribbean Marine Research Center



Perry Institute for Marine Science

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NURP provides services and facilities to support undersea research and scientific exploration for the Wider Caribbean Region through the Caribbean Marine Research Center (CMRC). Both leased and in-house capabilities are available with the primary research facility located on Lee Stocking Island, Bahamas, where CMRC offers wet and dry laboratories, room and board, marine operations, field support, and advanced diving facilities. Given the regional dependence on fisheries, much

research is focused on ecologically and economically important species such as the queen conch, spiny lobster, snapper, and Nassau grouper. Similarly, coral reefs are vital to this region and ecological studies are focused on species recruitment, reproduction, and biodiversity. In supporting research on fisheries and coral reef ecosystems, researchers are focusing efforts to determine the effectiveness and design of Marine Protected Areas, especially no-take marine reserves. To understand climate change and its effects on coral reef ecosystems, CMRC maintains a comprehensive environmental monitoring program including a network of temperature-recording stations in several areas of the Caribbean and works with NOAA's Coral Reef Watch Program examining seawater temperatures, ultraviolet light, sea level, and weather patterns. New discoveries of biomedical compounds, aquaculture and stock enhancement, and advancing diving techniques are foundations for continuing research at CMRC.

Funding Opportunities

Find information on the current funding opportunities at: www.perryinstitute.org

PERRY INSTITUTE For Marine Science



CMRC Funding Opportunities

Undersea Research on Tropical and Subtropical Marine Ecosystems

As one of six National Undersea Research Centers under the auspices of NOAA's Undersea Research Program (NURP) (www.nurp.noaa.gov) the Caribbean Marine Research Center (CMRC) solicits proposals for undersea research in the wider Caribbean region on a two year funding cycle. Find the following information on the current funding cycle and request for proposals, solicited through the Perry Institute for Marine Science, at www.perryinstitute.org

[Request for Proposals - FY 2006](#)

[Proposal Guidelines](#)

[Proposal Forms](#)

[NURP Science Guidance](#)

Extra Forms to be used as necessary

[Biographical Sketch Form](#)

[Current and Pending Support Form](#)

CMRC Program Development Proposals

Small amounts of funding for 2006 is available for the initial development of research programs through the Caribbean Marine Research Center (CMRC) under the auspices of NOAA's Undersea Research Program (NURP).

Download the Proposal Guidelines and Forms for Program Development Proposals:

[Program Development Guide](#)

[Program Development Forms](#)

NOAA's Undersea Research Program (NURP)
CARIBBEAN MARINE RESEARCH CENTER

REQUEST FOR PROPOSALS
FY2006

Undersea Research on Tropical and Subtropical Marine Ecosystems

As one of six NURP Centers under the auspices of NOAA's Undersea Research Program (NURP) (www.nurp.noaa.gov), the Caribbean Marine Research Center (CMRC) (www.perryinstitute.org) is presently soliciting proposals for undersea research in the Caribbean region for FY2006. The present announcement is soliciting pre-proposals for **three** specific funding opportunities:

- 1) **NURP funds for one to two year projects focusing on NOAA/NURP research priorities under the research theme of *Examinations of the effectiveness of 'no-take' marine protected areas to be initiated in 2006; and***
- 2) **NOAA's Coral Reef Conservation Program (NCRCP) funds for one to two year projects (with one year preferred) that address the following priority research needs for the U.S. Caribbean: *overfishing, pollution, coral disease and bleaching, and invasive species, and the impact of these stressors on coral reef ecosystems. The evaluation of management effectiveness is also encouraged. Note that there is requirement of 100% non-federal match for these funds; and***
- 3) **University of Puerto Rico's Caribbean Coral Reef Institute (CCRI) funds for one or two year projects that address the following research priorities in Puerto Rico: *Basic assessment of resources, understanding reef processes, research to enhance the MPA process, water quality and coral reef health, dynamics of coral diseases and syndromes.***

These competitions are contingent upon CMRC receiving adequate funds from NOAA/NURP and CCRI receiving annual funding from Congress.

PROPOSAL SUBMISSION

Please note that pre-proposals are required. See the *Proposal Guidelines for full description of the FY2006 Request for Proposals and instructions for submitting proposals; all documents will be available at www.perryinstitute.org.*

At this time we are soliciting pre-proposals for undersea research in the Caribbean for the year 2006 in the three funding opportunities outlined above.

For Funding Opportunity #1: Proposals will be accepted for work at any site in the Caribbean pertinent to U.S. interests, but priority areas for operations are Lee Stocking Island, Bahamas, Puerto Rico, and the U.S. Virgin Islands.

For Funding Opportunity #2: Proposals will be accepted for work at any site in the U.S. Caribbean, which includes Puerto Rico and the U.S. Virgin Islands.

For Funding Opportunity #3: Proposals will be accepted for work within Puerto Rico.

CMRC also encourages innovative uses of existing data and inter-site comparisons throughout the Caribbean. The *in situ* approach supported by NURP allows acquisition of otherwise unobtainable observations, samples, and experimentation related to NOAA's priority research objectives.

Eligible applicants are U.S. institutions of higher education, not-for-profit institutions, and state, local and Indian tribal governments. Proposals may include federal researchers as collaborators with a researcher who is affiliated with a U.S. academic institution, non-federal agency, or any other non-profit organization. Federal organizations may not charge federal salary, travel, or overhead, but other categories are appropriate. For proposals with a federal partner, the federal partner will receive funds through an inter-agency transfer (or intra-agency in the case of a NOAA partner) from the national NURP office. ***Note: Federal researchers are not eligible to apply for funds under the CCRI funding opportunity, but are encouraged to collaborate with eligible applicants.*** .

Pre-proposals are required and must be submitted by email by May 15, 2005. Pre-proposals will help ensure that appropriate research guidelines are addressed, and permit operations staff to evaluate feasibility. **Pre-proposal Requirements:** (1) All pre-proposals should be <3 pages and give a summary of the proposed research, describe research goals, address the methodological approach, estimate the level of support required, and include full contact information for the principal investigator; (2) for NURP/NCRCP, pre-proposals should also describe facilities/equipment requirements, outline time or logistic constraints, and give area of operations including depths; and (3) for CCRI, pre-proposals should address potential management applications. If you are interested in submitting a proposal that addresses any of these funding opportunities and you require further information please contact CMRC at pims@perryinstitute.org or 561-741-0192; for questions regarding CCRI pre-proposals may be directed to lillian@cima.uprm.edu or rappeldo@uprm.edu. **ALL Pre-proposals must be sent to pims@perryinstitute.org.**

Proposal budgets for NURP/NCRCP funded projects generally range from \$10-70K for direct scientific support. Smaller feasibility studies (<\$5K) may also be supported as program development projects (*see www.perryinstitute.org for details*). Proposals that have co-funding for data analysis and investigator salaries have the greatest rate of approval. Funding of the second year of proposals will be contingent upon progress and funding availability.

Proposal budgets for CCRI funded projects should range from \$30,000 to \$50,000, but larger budgets (up to \$115,000) may occasionally be considered. CCRI supports scientific research and monitoring of Puerto Rico's coral reef ecosystems. These activities are directly aimed at understanding the natural and anthropogenic processes and stresses affecting coral reef ecosystems and to enhance Puerto Rico's capacity for science-based management. CCRI is housed at the University of Puerto Rico and each year is allocated funds by Congress through NOAA's Center for Sponsored Coastal Ocean Research (CSCOR). CCRI's Management Committee sets research priorities and makes final decisions concerning specific projects to fund. Support of research by CCRI is dependent upon the availability of yearly funding by Congress. CCRI will support one or two-year proposals. Funding of the second year of proposals will be contingent upon demonstrable satisfactory progress and funding availability. Therefore, two-year proposals must have milestones and delivered products scheduled for each year that meet program specifications (see Proposal Guidelines). One-year proposals will be scheduled for funding in the first or second year at the discretion of the CCRI.

On the basis of the pre-proposals, requests for final proposals will be issued together with final submission guidelines. **Final proposals are due at CMRC by August 1, 2005.** Following peer review of the proposals, projects will be ranked by technical review panels on the basis of scientific merit, contribution to NOAA/NURP and NCRCP or CCRI programmatic goals, contribution to research theme, management relevance, and logistical considerations. Investigators funded by NURP/NCRCP will be notified of the status of their proposals by January 2006. Investigators funded by CCRI will be notified of the status of their proposals in December 2005.

DEADLINE FOR PRE-PROPOSALS IS MAY 15, 2005

DEADLINE FOR FULL PROPOSALS IS AUGUST 1, 2005

Address proposals, questions, or comments to:

John Marr, Ph.D., Center Director	561-741-0192 Voice
Caribbean Marine Research Center	561-741-0193 Fax
100 North U.S. Highway 1, Suite 202	pims@perryinstitute.org
Jupiter, FL 33477-5112	

Please see our web site (www.perryinstitute.org) for more details on our programs, information and guidelines for proposal preparation, previous research projects, publication list, and present research activities.

NOAA'S UNDERSEA RESEARCH CENTER - CARIBBEAN CMRC Proposal Guidelines for Funding 2006-2007



As one of six NURP Centers under the auspices of NOAA's Undersea Research Program (NURP) (www.nurp.noaa.gov), the Caribbean Marine Research Center (CMRC) (www.perryinstitute.org) is presently soliciting proposals for undersea research in the Caribbean region for FY2006. CMRC will be placing specific emphasis on the following research themes in addition to studies that address NURP research priorities in general:

- 1) NURP funds for two year projects focusing on NOAA/NURP research priorities under the research theme of *Examinations of the effectiveness of 'no-take' marine protected areas to be initiated in 2006; and*
- 2) NOAA Coral Reef Conservation Program (NCRCP) funds for one to two year projects (with one year preferred) that address the following priority research needs for the US Caribbean: *overfishing, pollution, coral disease and bleaching, and invasive species, and the impact of these stressors on coral reef ecosystems. The evaluation of management effectiveness is also encouraged.*

NOTE: Proposals submitted for NCRCP funds require a minimum non-federal match of 100% of total project costs. Non-federal matching funds may be comprised of a variety of public and private sources and may include in-kind contributions and other non-cash support. For further guidance on the matching requirement, please refer to Section 6403(b)(1) of the Coral Conservation Act of 2000 (<http://www.coralreef.noaa.gov/funding/grants/reefconservation.pdf>). Please indicate budget for matching funds in the budget justification section of the proposal.

- 3) University of Puerto Rico's Caribbean Coral Reef Institute (CCRI) funds for one or two year projects that address the following research priorities in Puerto Rico: **Basic assessment of resources, understanding reef processes, research to enhance the MPA process, water quality and coral reef health, dynamics of coral diseases and syndromes.**

PROGRAM

Introduction

The National Oceanic and Atmospheric Administration (NOAA, www.noaa.gov) supports research programs that improve understanding of the ocean and Great Lakes environments and their resources and that develop the capability of predicting change, either natural or anthropogenic. NOAA's Undersea Research Program (NURP, www.nurp.noaa.gov) supports *in situ* science programs that are directed, in part, by six NURP Centers. The NURP Centers have regional responsibilities in the Caribbean (Caribbean Marine Research Center), North Atlantic and the Great Lakes (University of Connecticut-Avery Point, www.nurc.uconn.edu), Middle Atlantic Bight (Rutgers University, www.marine.rutgers.edu/nurp/mabnurc.html), southeastern United States and Gulf of Mexico (University of

North Carolina-Wilmington, www.uncwil.edu/nurc/), West Coast and Polar Regions (University of Alaska-Fairbanks, www.westnurc.uaf.edu/), and the Hawaiian Archipelago (Hawaii Undersea Research Lab at the University of Hawaii-Manoa, www.soest.hawaii.edu/HURL/). Additionally, NURP, by agreement with the Navy, serves as the research manager for civilian use of U.S. Navy deep-submergence assets (*NR-1*, and other vehicles) and supports NOAA's use of DSV *Alvin* operated by the Woods Hole Oceanographic Institution.

Opportunities to apply a range of existing underwater technologies toward accomplishing *in situ* scientific objectives are offered principally through the NURP Centers. To match scientific research with the most appropriate underwater hardware and techniques, NURP contracts for specific undersea research platforms (i.e., manned submersibles, ROVs) through the NURP Centers. In addition, some centers themselves operate submersibles, ROVs, dive facilities, undersea research habitats, and marine laboratories.

NURP Research Themes

In general, NURP provides undersea platforms, tools, and technology needed to aid scientific research in several broad categories:

1. Promote healthy coasts and effective management with new scientific knowledge;
2. Foster ocean stewardship through an improved understanding of ocean processes and ecosystems;
3. Explore our oceans and the Great Lakes;
4. Develop new and novel underwater technologies; and
5. Educate the nation about the oceans and the Great Lakes.

The **Caribbean Marine Research Center (CMRC)** was created by the Perry Institute for Marine Science in 1984 to address problems related to living marine resources and marine geological processes of the Caribbean, Florida and other tropical and subtropical regions of the world.

The primary goal of CMRC is to provide critical support for NOAA's mission and in doing so CMRC will:

1. Improve understanding of the importance of scientific issues related to an ecosystem approach to management of resources of the wider Caribbean region; and
2. Promote the proliferation of knowledge about marine ecosystems and resources of the wider Caribbean region.

Specific objectives of CMRC include:

1. Providing the scientific community with facilities and support for research into marine species, habitats, and ecosystems of the wider Caribbean region;
2. Conducting and supporting research into high priority issues of national and international importance, including research into coral reefs and adjacent (e.g., mangrove and seagrass) ecosystems, important commercial and recreational fishery species, the impacts of long-term climate change, and developing new value from the sea;
3. Supporting the development of new techniques and technologies for marine research;
4. Conducting and supporting research into mariculture of commercially important species;
5. Conducting and supporting research that evaluates marine resource management tools and techniques;
6. Providing marine resource managers and policy makers with critical information that will promote the protection of marine ecosystems as well as effective and sustainable use of marine resources in coastal areas of U.S territories in the Caribbean, Florida, the Bahamas, and all Caribbean nations; and

7. Conducting and supporting educational programs in the U.S. and wider Caribbean region, including graduate student and undergraduate training, professional training for teachers, hands-on learning experiences for students and the general public, and the development of educational materials.

In 1987 CMRC was designated a NURP Center with responsibilities for undersea research to assist with the enhancement of marine resources of the U.S. and adjacent waters of the West Indies and wider Caribbean region. Although CMRC uses submersibles and ROVs, scuba diving is the standard method for conducting research activities. During the past five years, CMRC supported scientists averaged nearly 4000 dives per year ranging in depth from 3 to 90 m. In addition to scuba support, CMRC provided additional support for this research using shipboard and shoreside scientific facilities and techniques.

CMRC's main research facility is located at **Lee Stocking Island (LSI)**, a privately owned island in the Exuma Cays of the Bahamas that is leased to the Perry Institute for Marine Science (see http://www.perryinstitute.org/forms/PIMS_Lab_Facilities_Guide.pdf). This facility includes 28 buildings (e.g., wet and dry laboratories geared towards biological and analytical experimentation and analyses, housing, workshop, power stations, dining hall, freshwater plant, dive locker), a 910 m (3000-ft) airstrip, large dock, 11 boats (13-22 ft), air and nitrox compressors to fill scuba tanks, trimix capabilities, and a hyperbaric chamber.

LSI was chosen as a research site because of the surrounding environment, which is characterized by relatively low human impact and high diversity of habitats that include shallow and deep water coral reefs, mangroves, seagrass beds, ooid shoals, tidal channels, and deep ocean, all within 10 minutes of LSI's dock. For FY2006, proposals will be accepted for use of the facilities at LSI and for research in other areas of the Caribbean. CMRC encourages proposals for comparative studies between impacted ecosystems and unimpacted sites such as LSI. CMRC presently has on-going research projects in the Bahamas and other parts of the Caribbean region.

CMRC GENERAL RESEARCH GOALS AND PRIORITIES

The two research themes and four general research priorities, described below, have been selected for FY2006 based on national research priorities outlined in the NOAA Strategic Plan and the **NURP Science Guidance Document** (<http://www.perryinstitute.org>), as well as, the recommendations of CMRC's Science Advisory Board consisting of experts in marine research in the Caribbean region. Proposals should address one or more of the research priorities described below as it relates to the programmatic research themes.

Provide the scientific basis to maintain healthy fisheries stocks and rebuild protected species (NOAA goal: Protect, restore, and manage the use of coastal and ocean resources through ecosystem management approaches)

1. Conduct studies to determine the effectiveness of Marine Protected Areas (MPAs) and marine zoning for conserving fish stocks, essential fish habitat, and for contributing new productivity to adjacent unprotected areas.
2. Provide new stock and habitat assessment technologies with needed tools for quantifying fisheries and other marine ecosystem responses to forcing functions such as climate change and variability, oceanographic events, and commercial harvest.
3. Develop information for better fisheries-oceanography models to predict future trends in stock status and to allow managers to predict effects of fishery management options.

4. Map essential habitats and habitat species relationships as they relate to fisheries and protected species.
5. Identify and quantify damage to fisheries resources and their habitat resulting from anthropogenic impacts such as fishing gear impacts and contaminant inputs and determine rates of impact recovery.
6. Identify the essential habitats of particularly important species or new species, and what physical, biological, and chemical processes are responsible for their survival and sustainability.
7. Define the relationship of habitat distribution and abundance to ecological function by determining the role of habitats and habitat linkages related to survivorship, movements and recruitment of marine fish and invertebrates.

Achieve sustainable use and conservation of coastal and marine ecosystems (NOAA goal: Protect, restore, and manage the use of coastal and ocean resources through ecosystem management approaches)

1. Perform research, monitoring, and comprehensive site characterizations (including assessment of patterns of biodiversity and the processes which maintain them) for key coastal habitats such as coral reefs and other critical habitats inside and outside Marine Protected Areas to allow for more efficient management of marine resources.
2. Understand the effects of anthropogenic stressors on processes that affect specific life stages of marine organisms, particularly processes critical to population maintenance, such as reproduction, recruitment, and disease.
3. Seek a better understanding of the role that coastal and deep water habitats play in maintaining the health of living marine resources (e.g. nurseries or spawning areas).
4. Define and quantify the key biological, physical and chemical processes that are necessary for the healthy maintenance of coastal marine resources.
5. Assess the physical and biological impacts of natural and anthropogenic-related disasters (e.g., hurricanes, tsunamis, pollutant spills), and develop methods to evaluate the economic costs of these impacts and recovery.

Improve assessment and prediction through development of improved technology and integrated observations (NOAA goal: Protect, restore, and manage the use of coastal and ocean resources through ecosystem management approaches)

1. Develop new technologies that promote *in situ*, long-term research, including autonomous underwater vehicles, underwater observatories, and chemical, physical and biological sensors that are needed to study critical elements and forcing factors in the marine environment.
2. Define new technologies to improve the observation and collection of information necessary to advance fisheries oceanography, prediction of fisheries, and surveillance/compliance requirements of regulatory regimes.
3. Develop methods and technologies for the quantitative assessment of alternate management strategies, including MPA site selection, boundary delineation and habitat classification strategies.
4. Implement research and technology developments for biological, physical, and chemical ocean observations as they relate to MPAs.

Develop new value from the sea through biotechnology and aquaculture (NOAA goal: Protect, restore, and manage the use of coastal and ocean resources through ecosystem management approaches)

1. Seek out, recover, isolate, and culture novel organisms from unique, extreme environments such as deep-sea ecosystems.

2. Identify unique bioactive compounds with commercial potential associated with marine organisms.
3. Study new candidate species for culture through their complete life cycle to determine which are economically and biologically suitable for commercial culture or wild stock enhancement.
4. Assess and predict environmental impacts related to the siting of aquaculture operations in coastal ecosystems.
5. Conduct studies of habitat preference, including ontogenetic shifts, for target species in order to optimize stock enhancement efforts.
6. Determine the effectiveness of stock enhancement efforts, including replenishment of wild populations with hatchery-reared juveniles.
7. Assess the effectiveness of habitat enhancements designed to improve the success of stock enhancement efforts.

CARIBBEAN CORAL REEF INSTITUTE (CCRI)

The Caribbean Coral Reef Institute (CCRI) supports scientific research and monitoring of Puerto Rico's coral reef ecosystems. These activities are directly aimed at understanding the natural and anthropogenic processes and stresses affecting coral reef ecosystems and to enhance Puerto Rico's capacity for science-based management. The CCRI is housed at the University of Puerto Rico and each year is allocated funds by Congress through the National Oceanic and Atmospheric Administration's (NOAA) Center for Sponsored Coastal Ocean Research (CSCOR). CCRI's Management Committee sets research priorities and final decisions concerning specific projects to fund.

CCRI Research Priorities

For the period covered by this RFP, the Management Committee has identified the following priorities.

Basic assessment of resources

Assessments provide a basic measure of the status of reef resources and reef health, usually on a broad geographic scale, and provide the basis for quantifying ecosystem change in response to natural processes, anthropological stresses and management intervention. Target areas for support under the CCRI include the following:

1. Habitat mapping of unmapped areas of the Puerto Rico shelf.
2. Assessing the health of Puerto Rico's coral reefs*
3. Assessing the status of Puerto Rico's commercial (foodfish, ornamental) and recreational reef-based fisheries resources.
4. Assessing the status of Puerto Rico's resources supporting boating and diving (scuba, snorkeling) activities.
5. Assessing water quality in areas of coral reefs.

*Basic assessments of reef and reef fish communities should follow standard CCRI monitoring protocols. Contact the CCRI Program Manager for details (Contact Lillian@cima.uprm.edu).

Understanding reef processes

Coral reefs are well known for their complex interactions among species and processes. Many of these are still not understood. For example, events such as overfishing and the *Diadema* die-off have had profound impacts on overall reef ecosystems as they involve removal of species, such as herbivores or predators, from the system. Such community changes may result in overgrowth of algae or an increase in coralivores, respectively. The basic physiology and energy budgets of corals are also poorly understood, yet it is at the physiological level that environmental stresses affect coral health. Knowledge of coral physiology and energy allocation could show how corals combat different stresses and may place limits on their ability to combat cumulative stress or the

ability to treat one stress (e.g., bleaching) by relieving the impact of another stress (e.g., pollution). The CCRI seeks to support research that enhances our understanding of the biology and ecology of coral reef resources relative to natural and anthropogenic threats/stresses and management needs.

Research to enhance the MPA process

Marine reserves and MPAs in general are considered potentially important tools for ecosystem-based management, and Puerto Rico has an extensive array of MPAs, including four no-take marine reserves. In addition, PR Law 308 calls for a 3% closure of coral reef areas. Success of MPAs can be related to complex biological and social design factors, fisher acceptance and enforcement. The successful implementation of MPAs requires balancing the biological and ecological processes pertinent to fisheries and marine ecosystems while also considering policy and legal frameworks, history, politics, etc. Biological and ecological aspects include an understanding of the area/system to be managed to insure that ecological functions are sustained and biological/conservation goals can be met, as well as follow-up assessments to verify expected ecosystem response. Social aspects target enhancing stakeholder acceptance and compliance and include understanding processes affecting resource utilization, pathways of information exchange, and determining alternate economic activities, among others. The CCRI seeks to support:

1. research addressing the impact of MPA designation on health of underlying coral reef ecosystem, and
2. research targeting the biological and social environments and processes that can facilitate MPA design, implementation and management, including the development of management plans.

Water quality and coral reef health

Parameters which affect coral reefs are numerous, and many land-based activities affect nutrient and sediment addition to near-shore waters. Elevated nutrient concentrations (particularly in concert with reduction in herbivory) promotes algal growth. Sediment in suspension reduces water clarity, which may impact photosynthetic activity of corals, and hence their nutrition. Sediments that fall out of the water column require removal from coral surfaces, a process requiring additional metabolic expense to the coral. Sediments may also play a role in recruitment processes to uncolonized substrata. In addition to sediment and nutrients, anthropogenic activities also increase levels of other water borne contaminants. These include both straight toxins and hormone mimics that disrupt essential physiological processes, such as reproduction or larval metamorphosis and settlement. The toxic and/or sublethal effects of most pollutants are largely unknown. The CCRI seeks to support research that will enhance our understanding of the extent and effects of reduced water quality (eutrophication, sedimentation, turbidity, pollutants) on the health of corals and coral reefs. Particularly desirable are those projects that can most directly impact the regulatory process. The CCRI is also interested in supporting research on identifying and quantifying the land-based activities that directly affect water quality and coral reef health.

Dynamics of coral diseases and syndromes

A variety of diseases and syndromes affecting both corals and other coral reef-associated organisms have been documented in the last several decades. These include in part bleaching, black band, white band, white pox, white plague, dark spots, yellow blotch as well as tumors. These all include death to coral tissue, but in most cases the causative organisms are not known nor are the methods of infection. Much of the microbial community inhabiting corals is undocumented and its role in the progression of various diseases and syndromes is unknown. It is very probable that stress caused by poor water quality and elevated temperatures may contribute to susceptibility, but these relationships are not known. Epizootic growth of algae and

cyanobacteria on living coral is also a significant impact, but the causes, temporal dynamics and ultimate fates are not sufficiently understood. The CCRI seeks to support research that will enhance our understanding of the extent, dynamics, causes and impacts of these threats/stresses and how they might be affected by other forms of stress.

Cost Information

General support of at sea operations, including facilities or systems (e.g., vessel and submersible) time, food and lodging, is provided by CMRC at no cost to participating investigators. Participants should be prepared to bear the remaining costs (e.g., travel, sample processing and analysis) associated with their project. The amount of scientific support is usually limited to a fraction of the total project cost. CMRC may provide funding for such items as technician salary, graduate student stipends, travel, equipment (especially that used undersea) and supplies. Limited principal investigator (PI) salaries will be considered; the maximum salary support allowable under NURP policy is three months. PIs are urged to seek co-funding for work outside the scope of data collecting. CMRC encourages investigators to obtain outside funds for science support costs. CMRC limits indirect costs to 10% of the total direct costs.

The CMRC project year begins on 1 February, at which time funds will become available and an award agreement (subcontract) will be administered. No preaward costs will be honored. Funding for all projects, even though approved for multiple years, is limited to one year at a time. No expenses incurred after 31 January of the following year will be reimbursed. There will be a 45-day grace period for invoicing of expenses incurred prior to 31 January.

Support of research by the CCRI is dependent upon the availability of yearly funding by Congress. It is expected that the total funding available to support research will be approximately \$300,000 per year. The CCRI will support one or two-year proposals. However, funding of the second year of a two-year proposal is dependent on demonstrable satisfactory progress during the first year and availability of funds for the second year and is not guaranteed. Therefore, two-year proposals must have milestones and delivered products scheduled for each year that meet program specifications. One-year proposals will be scheduled for funding in the first or second year at the discretion of the CCRI. Anticipated start dates for CCRI funded projects would be October 1 of 2006 and 2007. CCRI does allow for indirect costs, but these should be no greater than stipulated under the federal indirect cost agreement for respective institutions.

Please be sure your Institutional Representative understands these conditions before signing the Proposal Cover Sheet.

Contacts

This document contains information useful to those wishing to submit proposals to participate in NURP / NCRCP / CCRI activities. For additional information concerning proposal submission, the applicant should contact:

Center Director
Caribbean Marine Research Center
100 N. US Highway 1
Suite 202
Jupiter, FL 33477
Voice: 561-741-0192
Fax: 561-741-0193
Email: pims@perryinstitute.org

For facilities use at Lee Stocking Island and information on available hardware, scientific or technical aspects of the proposal, or where best to direct a proposal the applicant should contact CMRC's **Science Director** at the email and/or telephone numbers given below.

Science Director
Caribbean Marine Research Center
100 N. US Highway 1
Suite 202
Jupiter, FL 33477
Voice: 561-741-0192 x 117
Fax: 561-741-0193
Email sciencedirector@perryinstitute.org

Also visit our web site for more information on CMRC's program and facilities:
<http://www.perryinstitute.org>

OPERATIONAL CONSIDERATIONS

Geographic Limits

For NURP funds, CMRC gives priority to proposals for studies in the wider Caribbean region, particularly in the Exuma Cays, Bahamas, where the Lee Stocking Island (LSI) marine laboratory is located. Given the complex nature of shared resources in this multi-nation region however, we support collaborative work with other island nations and U. S. holdings in the Caribbean. CMRC encourages comparative studies between impacted ecosystems in the U.S. Caribbean, Florida Keys and Gulf of Mexico and unimpacted sites, such as LSI, however, CMRC cannot provide NURP support for projects in the Florida Keys or Gulf of Mexico.

For NCRCP funds, proposals will be accepted for work at any site in the U.S. Caribbean, including Puerto Rico and the U.S. Virgin Islands. CMRC encourages comparative studies between impacted ecosystems in the U.S. Caribbean and unimpacted sites, such as LSI.

For CCRI funds, proposals are limited to Puerto Rico.

Seasonal Limits

Year round operating conditions are typical of the Caribbean. Hurricane season runs from June through November. Intense storms of relatively short duration are most frequent during the period from late August to early October. Winter at Lee Stocking Island is typically windy, limiting offshore small boat activities. At other Caribbean locations, summer may be the windy season. Please consider the local conditions when planning your project.

Facilities Limits

Due to considerable competition for available facilities, including field stations, ships, and submersibles, operations should be planned as efficiently and as early as possible (usually several months in advance). For at-sea operations, principal investigators should plan to be aboard for the entire time requested. If it is necessary to revisit dive sites, scheduling may be considered relative to other studies being conducted nearby.

UNDERSEA PLATFORMS

Although use of the submersibles or remotely operated vehicles (ROVs) requires no special certification or training, familiarity with their use is a distinct asset. CMRC operates a scientific dive program with an exceptional safety record, in part due to its rigorous diving and medical requirements. As an organizational member of the American Academy of Underwater Sciences (AAUS), divers must meet CMRC diver requirements or have reciprocity through another AAUS institutional member. For example, CMRC requires that all divers be Divers Alert Network (DAN) members and that they obtain the “standard” level of DAN insurance. Divers wishing to use Enriched Air Nitrox at CMRC must be certified by an agency recognized in the United States. Nitrox certification and other advanced or technical diving certification is available through CMRC at Lee Stocking Island. Contact the Science Director (sciencedirector@perryinstitute.org) or the Diving Safety Officer (dso@perryinstitute.org) for details on the scientific diving program and other undersea research platforms.

System Characteristics

Several manned submersibles and ROVs are currently available for use by NURP funded projects by lease or ownership. Their characteristics and capabilities are described below. Contact NURP headquarters for information on other system capabilities, limitations, options, costs and availability.

Manned Submersibles

NURP-supported investigators have used the following underwater vehicles. The first five are civilian and the last is operated by the U.S. Navy. Use of Navy vehicles is limited, but they are available to the scientific community through the memorandum of agreement between NURP and the U.S. Navy.

The *Delta* is a two person (one scientist) submersible owned and operated by Delta Oceanographics. It has 10 viewing ports. The *Delta* can be outfitted with externally mounted still and video cameras, manipulators, and other instrument packages. The *Delta* has conducted operations from ships of opportunity from the Arctic to the Tropics. Its maximum operating depth is 370 m (1,200 fsw).

The *Johnson-Sea-Link* submersibles (JSL I and II) are four person (two scientists) submersibles with two manned pressure hulls: a two-person bow mounted acrylic sphere and a two-person stern chamber with two viewports. These vehicles, operated by Harbor Branch Oceanographic Institution (HBOI), have multiple sampling capabilities, still and video cameras, and a hydraulic manipulator arm. Maximum operating depth is 920 m (3,000 fsw).

HBOI also operates the *Clelia*, a three-person (two-scientist) vehicle with ten viewports, a seven-function manipulator arm, external video, and a maximum operating depth of 304 m (1,000 fsw).

Alvin is a three person (two scientist) vehicle operated by Woods Hole Oceanographic Institution. It has four viewing ports, video and still cameras; one six function and one seven function manipulator, scanning sonar, and can be fitted with a variety of other specialized equipment. Maximum operating depth is 4,000 m (13,100 fsw). NOAA investigators have priority for NURP supported use of the vehicle.

Navy Vehicles: *NR-1* is a two scientist (11 crew) nuclear powered vehicle with the capability to remain submerged for 210 man-days or more. It has three 10-cm viewing ports, video and still cameras, a seven-function manipulator, and other specialized equipment. Maximum operating depth is 724 m (2,375 fsw).

Remotely Operated Vehicles

Over the past several years the science community has used ROVs to conduct undersea research for a variety of specialized applications. ROV size and capability range from the low cost ROV (LCROV) to much larger, more elaborate systems.

LCROVs are small tethered vehicles that can generally operate to depths of approximately 230 m (750 ft) from ships of opportunity. They typically have color still photographic and/or video systems and can be equipped with a manipulator arm. The NURP Centers at UCAP and UNCW operate both PHANTOM and MINI-ROVER LCROVs. CMRC can make arrangements for use of LCROVs on projects in the Caribbean.

Larger ROVs have been developed for scientific use by Monterey Bay Aquarium Research Institute (MBARI) and HBOI. The NURP Center at UHM is modifying a Hydro Products 150 to operate down to

2,000 m (6,560 ft). Also, under a memorandum of agreement between NURP and the U.S. Navy, the SCORPIO (610 m, 2,000 ft), SUPER SCORPIO (1,524 m, 5,000 ft) and the Advanced Tethered Vehicle (ATV) (6,093 m, 20,000 ft) are available for research.

Scuba, Nitrox and Trimix Wet Diving

CMRC provides extensive scuba support for scientists at their Lee Stocking Island marine laboratory. NURP also supports Enriched Air Nitrox (EAN) and trimix wet diving through its CMRC program. Nitrox diving provides for more efficient data collection and use of resources in the 60 to 130 fsw scuba diving range with increased safety as opposed to air diving. Trimix diving affords researchers routine access to generally unexplored environments (130-300 fsw). For details on this program, including nitrox and trimix certification and field support, please contact the CMRC Science Director.”

Facilities at Lee Stocking Island, Bahamas

Table 1 lists facilities available at CMRC's marine laboratory at Lee Stocking Island, Bahamas. Contact the Science Director for more details.

Table 1. Facilities available at Lee Stocking Island, Bahamas	
<p><u>SHORE FACILITIES</u></p> <p>Private Airstrip - (910 m x 23 m)</p> <p>Power-generators: (2) 110 kW, (2) 20 kW</p> <p>Freshwater Plant – reverse osmosis; 3000 gal/day; Cisterns</p> <p>Communications – multiple line VOIP – PBX system and internet & email access via 128K satellite connection, stand alone satellite telephone; Batelco cellular telephone, VHF, UNICOM, single sideband radio</p> <p>Housing – permanent residents: 9; visitors: up to 40</p> <p>Dining Hall - commercial kitchen, seating for up to 40 persons</p> <p>Machine Shop - drill press, table saw, bandsaw, Welding machine, cutting torch, complete power and hand tools</p> <p>Construction Equipment – trucks, crane, skid loader</p> <p>Main Laboratory - (30x60 ft) office space, computer Room, one dry lab, two wet labs, Dissecting and compound microscope with fiber Optic light source, electronic balance, centrifuge, Fume hood, ultralow temp. freezer, vacuum pump Spectrophotometer</p>	<p>Wet Laboratory – environmentally controlled, salt and Freshwater systems, aquaria, tanks of various sizes, indoor and outdoor facilities</p> <p>Seawater Tanks - (4) 18-ft diameter tanks; (4) 26x36-ft ponds</p> <p>Analytical Laboratory – 2400 sq. ft. clean laboratory, computer facilities and office space, dry storage, chemical storage, 190 sq.ft. countertop space, various scientific equipment.</p> <p>Dive Locker – scuba gear, HP compressors (2), compressed air storage bank, two portable HP compressors, nitrox systems and equipment</p> <p>Shipyard - ramp for boats to 35 feet</p> <p>Dock space for 10 boats</p> <p>Differential GPS base station</p> <p><u>BOATS</u></p> <p>22-ft center console w/115-hp OB (3) 20-ft center console w/115-hp OB 19-ft center console w/115-hp OB (4) 17-ft Boston Whaler w/85-hp OB 13-ft Boston Whaler w/35-hp OB (all boats equipped with VHF radios and other safety equipment)</p>

SUBMITTING PROPOSALS

WHERE AND HOW TO SUBMIT

Preproposal Requirements

Investigators are encouraged to further discuss their projects by phone or email with CMRC (pims@perryinstitute.org) or CCRI (as appropriate – lillian@cima.uprm.edu or rappeldo@uprm.edu) before submission. **Pre-proposals are required** in order to: 1) minimize costs incurred in developing a full proposal, 2) confirm that appropriate research guidelines are addressed, and 3) to permit operations staff to evaluate feasibility. The deadline for submission of pre-proposals is **May15, 2005 via email**.

NURP/NCRCP pre-proposals should be <3 pages and give a summary of the proposed research, describe research goals and facilities/equipment requirements, outline time or logistic constraints, give area of operations including depths, and estimate the level of support required. CCRI pre-proposals should be <3 pages and give a summary of the proposed research, describe research goals, and address the methodological approach and potential management applications. This will ensure that appropriate research guidelines are addressed, and permit operations staff to evaluate feasibility.

Multi-year Projects

Scientifically justified, multi-year proposals are encouraged. When preparing the study plan, pay greatest attention to year one. Succeeding years for accepted proposals will require a summary of results to date and any planned modifications. Each year's tasks must be accomplishable within the year with no guarantee of future funding. Second year support is provided based on the success of the previous year's work and available funds. During the review process it may be recommended that two-year projects be reduced to one with full proposal resubmission necessary for further support.

PROPOSAL FORMAT

To provide a fair and equitable evaluation of proposals, reviewers are instructed to rely *solely* on the content of the final proposal. Therefore, it is extremely important that all final proposals are complete and follow the format specified in this document. Proposals that are incomplete (e.g., lack detailed maps of the proposed dive area, curriculum vitae, budgets, or references), too long, or do not follow the required format may be returned to the PI without review. The completed proposal checklist must be included with the final proposal. Companion proposals, whether they are pending before a granting institution or already have been funded, should be appended to the NURP submission. Companion proposals may not be substituted for the NURP proposals.

Proposal Submission and Acceptance

Final proposals must be signed by an official representing the applicant's employer and **twenty copies** must arrive at the CMRC Administrative Office in Florida, attention: Center Director, **no later than August 1**. The original (signed) copy must be single sided; the remaining *copies should be double sided*. In addition to twenty hard copies, an electronic copy should be submitted in MS Word or pdf format to pims@perryinstitute.org.

For CCRI proposals, **eight copies** must arrive at the CMRC Administrative Office in Florida, attention: Center Director, no later than August 1. The original (signed) copy must be single sided; the remaining *copies should be double sided*. In addition to eight hard copies, an electronic copy should be submitted in MS Word or pdf format to pims@perryinstitute.org.

Announcement of NURP/NCRCF proposal acceptance will be made by February 2006. Cost of proposed work started before February 1, 2006 will not be reimbursed. Announcement of CCRI proposal acceptance will be made by December 2005.

Proposal Evaluation Criteria

All proposals will be evaluated on the basis of the following criteria:

1. Scientific merit.
2. Applicability of the proposed research to CMRC's current research themes, relevance to NOAA's mission, or an overriding national responsibility with broad benefit to the U.S. (or NCRCP or CCRI's current research themes)
3. Applicability and availability of the *in situ* approach and/or technology requested to conduct the proposed research. (not applicable for CCRI)
4. Actual or potential application to the management of Puerto Rico's coral reef resources (for CCRI projects only).

Each proposal submitted for participation in the NURP science program will be evaluated by peer mail review and panel review. Mail reviews include written comments and numerical ranking using a standard evaluation form. Mail reviews will be used by the panel in proposal evaluation.

POST MISSION REQUIREMENTS

Results and Deliverables

As part of the NURP Management Information System (MIS), three types of reports are required from each principal investigator:

- A. ***Quick Look Report.*** **Due within seven (7) days of the end of each mission (or cruise leg).** This report highlights the mission's accomplishments in terms of both the PIs and NOAA's goals. Summarize results of the mission and discuss the significance of the mission in relation to your specific research goals. Describe general scientific contribution of the mission in terms of organisms and processes observed or measured, methodology, and technology utilized; specific advantages of NURP to your research investigations; plans for use of the data gathered on this mission and the applications, products and/or benefits to NOAA. Include any comments on the following operational details, where applicable: weather and water conditions affecting operations, safety problems and concerns, dive management and personnel cooperation, logistics and support activities.
- B. ***Progress Reports,*** to be submitted twice per year until analysis is completed. **Due 15 days after the end of the 2nd(July 15) and 4th (February 15th) quarters of each year of award. Additional reports may be required in the 1st and 3rd quarters.** The PI should submit an updated project summary form briefly describing problems, procedures, results (presentations, publications, reports, etc.) to date, continuing projects, and a description of future plans. Any additional details, descriptions, or procedures should be appended to the updated project summary. An annotated list of all photographic documentation should be included. The annual status report should be updated yearly (in the case of multi year programs) until analysis is completed.
- C. ***Final Report.*** **Due within 60 days of the completion date specified on the project summary form.** The final update of the project summary should be submitted to complete the project. The final report should include the last update of the project summary form with any new additional information. Append details of the results and accomplishments to the updated project summary.

These reports include updated information for the project summary forms with additional information where pertinent.

Deliverables for CCRI Funded Research

- A. *PowerPoint presentations* highlighting project's activities, to be given at CCRI Quarterly Meetings.
- B. *Two (2) Progress Reports* per year and a Final Report. The latter must include a separate section that summarizes the major findings and details the management applications and implications of the results.
- C. *Data and metadata* (electronic copy) to be archived with NOAA's Coral Reef Information System (CORIS).
- D. *Three copies of any publications, abstracts, videos and other materials* resulting in whole or in part, from project related work.
- E. *Organize and conduct a workshop or seminar*, as requested, in order to deliver information on the results and methodologies developed, and provide technical training for managers, resource trustees, scientists, and/or the general public.

Photographic Documentation

CMRC reserves the right to request and keep original motion picture films, video, and photographs and to distribute them on loan or as acceptable copies as necessary. However, CMRC usually allows these original materials to be kept by the PI, who shall provide a list of photographic documentation in the annual status report. If requested, duplicate copies of representative slides or prints, movies, or video footage will be furnished to CMRC at cost by the PI.

Public Relations

An official press release on the overall program and on specific missions may be prepared by CMRC or NOAA and reviewed by the PI, if applicable. This may be used by all program participants for distribution to the news media at an agreed upon date. In a similar manner, official program photographs, videos, and movies may be developed. When local news stories and releases occur, it is essential that proper credits and acknowledgments be given to program participants and funding or operator institutions. Notification of any such interviews and releases should be provided to CMRC within one week of the event.

Publications

Three reprints of any abstract, article or other publication or presentation resulting from program support shall be forwarded to CMRC. The status of potential publications also must be updated every year in the annual report.

Authors are expected to acknowledge the support from NOAA's Undersea Research Program and the Caribbean Marine Research Center in all publications resulting entirely or in part from sponsored activities. For example, an appropriate acknowledgement is:

"This [report/publication/video/website] was prepared by [recipient / author name] pursuant to subcontract CMRC-03-NRMH-04-04A from the Perry

Institute for Marine Science, Caribbean Marine Research Center, through support provided by the National Oceanic and Atmospheric Administration, US Department of Commerce Award No._____. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of U.S. Department of Commerce, National Oceanic and Atmospheric Administration or The Perry Institute For Marine Science/Caribbean Marine Research Center."

Any publication, video or similar project should acknowledge the support given by the CCRI. Suggested wording for such acknowledgement is as follows:

"This work was supported by the Caribbean Coral Reef Institute, University of Puerto Rico – Mayagüez (Project No, _____), through support provided by the National Oceanic and Atmospheric Administration, US Department of Commerce (Award No. _____). The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of U.S. Department of Commerce, National Oceanic and Atmospheric Administration or the Caribbean Coral Reef Institute, University of Puerto Rico – Mayagüez."

INSTRUCTIONS FOR PROPOSAL PREPARATION

Format and Contents for Full Proposal

A. Conformance with instructions for proposal preparation

It is important that all proposals conform to the instructions provided in this section. **Conformance is required and will be strictly enforced unless a deviation has been approved in writing by CMRC.** Proposals that are not consistent with these instructions will be returned without further consideration. Particular attention will be given to proposal page limits, content, and formatting, including the page limit on the Project Description and Curriculum Vitae.

Critical Items (see appropriate sections for more information)

1. **Type size no smaller than 12 pt** (*for project summary and biographical sketches; fonts on forms may be smaller to accommodate the constraints of the form*)
2. **Project Description less than or equal to 15 pages (12 pt font)**
3. **Biographical sketches no longer than 2 pages each**
4. **2.5 cm or 1 inch margins** (*top, bottom, both sides for project description, literature cited, budget justification, supplementary documentation, and appendices – CMRC supplied form margins may vary*)
5. **3-ring binder format (3-hole punched)**
6. **8½" x 11" paper size**
7. **Proposals must be stapled or clipped in the upper left-hand corner, but otherwise unbound**
8. **1 electronic copy in MS Word format or PDF (send on diskette or by email to pims@perryinstitute.org)**

PIs may deviate from these instructions only to the extent authorized. If you wish to obtain permission to deviate from this format, permission must be obtained in writing (see section B2 below). Proposals must identify the deviation by including one copy of the written deviation authorization with the single-copy (original) document.

B. Special instructions for single-copy documents

Proposers are strongly encouraged to include a single copy of the following:

1. **Lists of Suggested Reviewers and Reviewers Not To Include**

Proposers may include, in a cover letter or separate sheet of paper (so that it can be easily removed), a list of suggested reviewers that the PIs believe are especially well qualified to review the proposal. PIs may also designate persons they would prefer not review the proposal, indicating a reason why. These lists are strongly recommended.

2. **Deviation Authorization (if applicable)**

Written permission must be obtained prior proposal submission. Requests for permission to deviate from the requirements should be addressed to:

Center Director
Perry Institute For Marine Science
Caribbean Marine Research Center
100 N. US Highway 1, Suite 202
Jupiter, FL 33477

561-741-0192 (Voice)
561-741-0193 (Fax)
pims@perryinstitute.org

C. Sections of the proposal

Each section of the proposal may be paginated separately and include both the section and page number on the bottom center of each page (e.g., C-1, C-2). The proposal must be assembled in the following sequence:

Separate Forms (one copy only):

- a) List of suggested reviewers, or reviewers not to include (original signature copy only)
- b) Deviation Authorizations (original signature copy only) (if applicable)
- c) Applicant Agreement (original signature copy only)¹
- d) Project Key Words (one copy only)

Full Proposal Forms (to be included with each copy)::

- 1) Cover Sheet for Proposal (page 1 - all copies)¹
- 2) NURP System Time Request Form (page 2 in all copies)¹ (*not applicable for CCRI*)
- 3) Lee Stocking Island Facilities Request (in all copies)¹ (if applicable) (*not applicable for CCRI*)
- 4) Project Summary¹
- 5) Table of Contents¹
- 6) Project Description (including Results From Prior NURP (CCRI) Support and tables & figures)²
(15 page limit)
- 7) Literature Cited²
- 8) Biographical Sketch¹ **(2 pages per PI)**
- 9) Budget (cumulative and annual budgets, including subcontract budgets, if any)¹ **and** Budget Justification **(3 page limit)**²
- 10) Current and Pending Support¹
- 11) Special Information and Supplementary Documentation
- 12) Appendices (**optional but inclusion is not recommended**) (*not applicable for CCRI*)

Codes: ¹ = Use of format required; ² = No required format

1. Cover Sheet for Proposals to NOAA's Undersea Research Program

The required format of the *Cover Sheet for Proposal to NOAA's Undersea Research Program*, is provided in the *Required Forms* document, downloadable at the CMRC website (http://www.perryinstitute.org/funding_opportunities.htm). Should the project be performed at a place or by a subgroup other than where the award is to be made, that should be identified in the block entitled, "Name of Performing Organization." Examples are as follows:

Awardee Organization

Performing Organization

Northern Virginia University

Northern Virginia University Health Center

Southern Virginia University

Southern Virginia University Research Foundation

Central Nevada State University

Institute of Marine Sciences

The title of the proposed project should be brief, scientifically or technically valid, intelligible to a scientifically or technically literate reader, and suitable for use in the public press.

The proposed duration for which support is requested should be consistent with the nature and complexity of the proposed activity. Grants may be awarded for periods up to two years, with approval of the 2nd year contingent on 1st year results and funding.

Specification of a desired starting date for the project is important and helpful to the Program; however, requested effective dates cannot be guaranteed. Should unusual situations, such as long lead time on procurements, create problems regarding the proposed effective date, the investigator should consult the proposing organization's business office.

Proposals must be cleared through the organizational officer having responsibility for Government business relations. One copy of the proposal must be signed by the PI(s) and an official authorized to commit the organization in business and financial affairs. All copies must include facsimiles of the signed cover sheet.

Unsigned proposals will not be accepted.

2. NURP System Time Request Form *(not applicable for CCRI)*

Summarize all of your facility requirements on the *NURP System Time Request Form* (see *Required Forms*). In particular, include the total number of operation days, e.g., number of days in the field and/or number of days of boat/ship/submersible use, number and size of small boats required each day, number of field trips, and number of people in the science party for each field trip in as much detail as possible. Attach a separate sheet to the form if necessary. System support provided by CMRC should not appear in your proposal budget.

3. Lee Stocking Island Facilities Request Form *(not applicable for CCRI)*

If you plan to utilize the facilities at CMRC's Lee Stocking Island Field Station, you are required to detail your proposed facilities use in terms of number of visits, number of people on each visit, length of stay for each person, and number of boats and boat-days needed to conduct the research on the *Lee Stocking Island Facilities Request Form*. Facilities support (boat days, room and board at Lee Stocking Island, lab use) requested should not appear in your project's budget. If your project will entail shipping large amounts of equipment and supplies or if you require especially large pieces of equipment not already in place at the field station, please so indicate in as much detail as possible. PIs should include shipping charges of \$2.25 per pound (one way) between Fort Lauderdale and LSI if using a scheduled CMRC cargo flight to LSI. Other facilities use charges are found at http://www.perryinstitute.org/forms/PIMS_Rates_Fees.pdf

4. Project Summary

The “Summary of Research” of the proposed activity must be suitable for publication and not more than one page in length. It should not be an abstract of the proposal, but rather a self-contained description of the activity that would result if the proposal is funded. The summary should be written in the third person and include a statement of objectives, methods to be employed, and the significance of the proposed activity to the advancement of knowledge. It should be informative to other persons working in the same or related fields and, insofar as possible, understandable to a scientifically or technically literate lay reader. Please complete the *Project Summary Form* (see *Required Forms*). Do not include literature citations in the Project Summary. Summaries are included in the Center’s Omnibus Proposal and may be provided to congressional delegations and the press, upon request, by the NOAA/NURP National Office.

5. Table of Contents

The *Table of Contents* should include the following:

1. Cover Sheet for Proposals
2. NURP System Time Request Form (*not applicable for CCRI*)
3. Lee Stocking Island facilities Request form (if applicable) (*not applicable for CCRI*)
4. Project Summary
5. Table of Contents
6. Project Description
 - 6.1. Introduction
 - a. Situation and Need
 - b. Objectives
 - c. Applications, Benefits and Importance
 - d. Significance of Research
 - 6.2. Methods and Approach
 - a. Description of Methods
 - b. Description of Major Tasks
 - c. Diagram (including map of research area)
 - d. Proposed Dive Schedule (*not applicable for CCRI*)
 - 6.3. Alternative Approach (*not applicable for CCRI*)
 - 6.4. Description of Facilities, Systems and Equipment (*not applicable for CCRI*)
 - 6.5. Program Management
 - 6.6. Results from Prior NURP (CCRI) Support
7. Literature Cited
8. Biographical Sketches
9. Summary Proposal Budget and Budget Justification
10. Current and Pending Support
11. Special Information and Supplementary Documentation
12. Appendices (*not applicable for CCRI*)

6. Project Description Including Results from Prior NURP (CCRI) Support

Pages submitted must be of standard size. 8½” x 11” (216 mm x 279 mm) is required. Pages must conform to the formatting instructions (in particular, 2.5-cm margins and type size limitations) described in Section C above.

The Metric Conversion Act of 1975 and Executive Order 12770 of 1991 encourages Federal agencies to use the metric system in procurement, grants and other business-related activities. Proposals for grants, cooperative agreements, and contracts submitted to NURP are encouraged to use the Metric System of weights and measures. Reports, publications, and correspondence relating to proposals are also encouraged to use metric units.

Brevity will assist reviewers and NURP staff in dealing effectively with proposals. Therefore, the Project Description (including Results From Prior NURP (CCRI) Support, which is limited to five pages) **may not exceed 15 pages**. Visual materials, including charts, graphs, maps, photographs, and other pictorial presentations, ARE INCLUDED in the 15-page limitation. Conformance to the 15-page limit will be strictly enforced and may not be exceeded unless the deviation has been specifically authorized (see above Sections A and C).

The main body of the proposal should be a clear statement of the work to be undertaken and should include the elements described below under 6.1, 6.2, 6.3. Outline the general plan of work, including the broad design of activities to be undertaken, an adequate description of experimental methods and procedures and, if appropriate, plans for preservation, documentation, and sharing of data, samples, physical collections and other related research products.

Any substantial collaboration with individuals not included in the budget should be described and documented with a letter from each collaborator, which should be provided as supplementary documentation and included in Proposal Section H.

6.1 *Introduction*

Situation and Need -- review past and continuing significant work by yourself or by others in the proposed area of interest (include reference citations) and its relationship to present state of knowledge in the field, discuss notable gaps in knowledge or capabilities, why the proposed project is significant and should be performed.

Objective(s) -- state what is to be studied, measured, observed, assessed, modified, or developed and the anticipated results. State the null and alternate hypotheses the proposed research is designed to test. For equipment development or modification, describe the proposed technical and operational characteristics of the device.

Applications, Benefits, and Importance -- describe how the anticipated results relate to NOAA and NURP's science goals, the expected benefits, and their utility. If the research will be conducted outside of U.S. territorial waters describe how the project addresses NOAA and national research priorities and explain why the project needs to be conducted at the proposed site rather than in U.S. waters. CCRI projects to describe how the anticipated results relate to CCRI goals, the expected benefits, and their utility. CCRI projects must occur in Puerto Rico.

Significance of Research -- list scientific products and future applicability of mission results, why this research is important, and how information generated during the mission will be used.

6.2 *Methods and Approach*

Description of Methods – describe the research tools and techniques, including statistical analyses that will be used to meet mission objectives. Experimental design must be described with statistical tests, if applicable, for hypotheses proposed

Description of Major Tasks -- divide the proposed effort into a meaningful set of tasks that must be performed to accomplish the objective and describe each task. Emphasize quantitative *in situ* methodology to be used. State the tasks in the same order as the hypotheses they are designed to test. .

Diagram -- if applicable, pictorially illustrate and briefly describe the total operations or the layout of facilities and special sampling equipment. A detailed map of the mission area is necessary.

Proposed Dive Schedule -- list number of dives, number of divers, and bottom time needed to accomplish mission objectives. (*not applicable for CCRI*)

6.3 *Alternate Approach* (not applicable for CCRI)

Justify your request for *in situ* support. Describe realistic alternate methods and locations, if any exist, for accomplishing the proposed work. This should answer questions such as “Why not use a surface-based system?” and “Why not conduct this project at a different location?”

6.4 *Description of Facilities, Systems, and Equipment* (not applicable for CCRI)

Primary -- describe primary instruments, apparatus, equipment, systems, and facilities required for achieving your objectives and how they will be used. Provide a realistic estimate of maximum working depth for system and substantiate this with an attached map/chart.

Support -- describe the support needed to accomplish mission objectives (e.g., ships, diving gear, laboratory equipment, etc.).

6.5 *Program Management*

Project Team

Administration -- describe the administrative responsibilities and authority of the Team Leader or Principal Investigator.

Roles/Assignments and Participation Time -- describe the team composition (including names of key individuals) and the assignments of team members to major tasks. Provide specific estimates of the time (in hours, days, etc., not percent) that each member will work on the program.

Qualifications -- Be explicit about experience using submersibles or ROVs; provide vehicle names, number of dives or deployments, etc. If scuba diving is planned, also list for each: highest level of training, certifying organization, experience, and attach a copy of the latest diving physical examination.

6.6 *Results from Prior NURP (CCRI) Support*

If the PI(s) has received NURP funding in the past five years, information on the prior award is required. If the proposer has received *more than one prior award* (amendments to an award are not considered separate awards), the PI should provide the information requested for the award most closely related to the proposal:

1. The NURP (CCRI) project number, NURP Center, amount and period of support
2. The title of the project
3. A summary of the results of the completed work
4. List of publications resulting from the NURP award
5. A brief description of available data, samples, physical collections, and other related research products not described elsewhere

Reviewers will be asked to comment on the quality of the prior work described in this section of the proposal. Please note that a Principal Investigator with prior support may use **up to five pages of the 15 page total** to describe prior results. The results from prior support may be summarized in *fewer* than five pages, which would give the proposer more of the allowed 15 pages for the Project Description.

7. **Literature Cited**

Use of a specific format is not mandatory, but a list of literature cited is required. Citations must be complete (including all authors, title, and location in the literature). There is no page limitation for this section of the proposal.

8. **Biographical Sketches**

The required format is provided in the *Required Forms* section of this document. Biographical sketches are required for all senior personnel and must be no longer than two pages. (see Section 9 for definition of Senior Personnel) The instructions provided on the form must be followed. If additional forms are required, you may visit our website at http://www.perryinstitute.org/funding_oportunities.htm.

For the personnel categories listed below (see Section 9 for definitions), the proposal may also include information on exceptional qualifications of the individuals that merit consideration in the evaluation of the proposal. No more than one page per individual may be provided.

- a. Postdoctoral associates
- b. Other professionals
- c. Students (research assistants)

9. **Budget**

The required format for a *Summary Proposal Budget* is shown in the *Required Forms* section of this document. Each proposal must contain a budget for each year of support requested **and** a cumulative budget for the full term of requested NURP support. The proposal may request funds under any of the categories listed so long as the item and amount are considered necessary to perform the proposed work and is not precluded by specific program guidelines or applicable cost principles. In addition to the forms,

the proposal **MUST** include a budget justification of **less than three pages**. The need for each item must be explained clearly.

Salaries and Wages (Lines A and B on the Summary Proposal Budget form)

(i) **Policies:** As a general policy CMRC (and CCRI) does not provide salaries for PI(s). However, a maximum of three (3) months of PI salary will be considered. NURP strongly encourages researchers to seek and obtain other research support for project co-funding. Salaries for technicians, graduate student stipends, and support for other personnel associated directly with the project constitute appropriate direct costs and also may be requested in proportion to the effort devoted to the research.

(ii) **Procedures:** The names of the PI(s), faculty, and other senior associates and the estimated number of academic-year, summer, or calendar-year person months for which NURP funding is requested **MUST** be listed. For postdoctoral associates and other professionals, each position must be listed, with the number of full-time-equivalent person-months and rate of pay (hourly, monthly, or annual). For graduate and undergraduate students, secretarial, clerical, technical, etc., only the total number of persons and total amount of salaries per year in each category is required. Salaries requested must be consistent with the institution's regular practices. (see below for definitions of personnel categories.)

The budget may request funds for support of graduate or undergraduate research assistants to help carry out the proposed research. Compensation classified as salary payments should be requested in the salaries and wages category. Any direct costs requested for tuition remission should normally be listed under "Other Direct Costs" except for organizations that have negotiated treatment of these costs as "Fringe Benefits" with their cognizant audit agency.

DEFINITIONS OF CATEGORIES OF PERSONNEL

The personnel categories listed on parts A and B of the proposal budget are defined as follows:

A. Senior Personnel

(1 - 5) *(Co)Principal Investigator(s)* so designated by the grantee institution.

Faculty Associate (faculty member) -- an individual other than the PI who is considered by the performing institution to be a member of its faculty or who holds an appointment as a faculty member at another institution and will participate in the project being supported.

B. Other Personnel

1. *Postdoctoral Associate* -- an individual who received a Ph.D., M.D., D.Sc., or equivalent degree less than five years ago, who is not a member of the faculty at the performing institution and is not reported under Senior Personnel above.

2. *Other Professional* -- a person who may or may not hold a doctoral degree or its equivalent, is considered a professional, and is not reported as a PI, faculty associate, postdoctoral associate, or student. Examples of persons included in this category are

doctoral associates not reported under B1, professional technicians, mathematicians, physicians, veterinarians, system experts, computer programmers, and design engineers.

3. *Graduate Student* (research assistant) -- a part-time or full-time student working on the project in a research capacity that holds at least a bachelor's degree and is enrolled in a degree program leading to an advanced degree.

4. *An Undergraduate Student* -- a student who is enrolled in a degree program (part-time or full-time) leading to a bachelor's degree.

5. and 6. These categories include persons working on the project in a non-research capacity, such as secretaries, clerk-typists, draftsmen, animal caretakers, electricians, and custodial personnel, regardless of whether they hold a degree or are involved in degree work.

Any personnel category for which NURP funds are requested should indicate in parentheses the number of persons expected to receive some support from those funds and, where called for in the budget format, the full-time equivalent (FTE) person-months to the nearest tenth.

(i) ***Confidential Information:*** The proposing organization may request that salary data on senior personnel not be released to persons outside the Government during the review process. In this case, the item for senior personnel salaries in the formal proposal may appear as a single figure and the person-months represented by that amount omitted. If this option is exercised, however, senior personnel salaries and person-months must be itemized in a separate statement, two copies of which should accompany the proposal. This statement must include all of the information requested in the Summary Proposal Budget for each person involved. NURP will not forward the detailed information to reviewers and will hold it privileged to the extent permitted by law. The information on senior salaries will be used as the basis for determining the salary amounts shown in the grant budget.

C. Fringe Benefits

If the grantee's usual accounting practices provide that its contributions to employee benefits (social security, retirement, etc.) be treated as direct costs, NURP grant funds may be requested to defray such expenses as a direct cost, but only in proportion to salaries and wages requested in the budget.

D. Permanent Equipment

NURP defines equipment as an item of property that has an acquisition cost of \$500 or more and an expected service life of two or more years. Items of needed equipment costing \$1,000 or more should be listed individually by description and estimated cost, including tax, and adequately justified. Allowable items will ordinarily be limited to research equipment and apparatus not already available for conduct of the work. General-purpose equipment, for example, Acoustic Doppler Profiler equipment, is not eligible for support unless exclusively used in the actual conduct of scientific research. Note that equipment purchased on NURP grants is the property of CMRC and shall be returned at the end of the project or may be loaned to the PI as needed. Title to

equipment is commonly vested in the government (NOAA) or its designated agent (CMRC).

E. Travel

(i) Domestic Travel: NURP defines domestic travel as travel in the United States, its possessions, Puerto Rico, and to Canada. Travel and its relation to the proposed activities should be specified. Funds may be requested for the field work, attendance at meetings and conferences, other travel associated with the proposed work, and subsistence. In order to qualify for support, however, attendance at meetings or conferences must enhance the investigator's ability to perform the work, plan extensions of it, or disseminate its results. Consultants' travel costs may also be requested.

(ii) Foreign Travel: Travel in the United States and its possessions, to Puerto Rico and Canada is considered domestic. All other travel, including Mexico, is foreign. The proposal should include relevant information, including countries to be visited (also enter names of countries on the budget form) and dates of visit, if known, and justification for any foreign travel planned in connection with the project. Allowance for air travel normally will not exceed the cost of round trip, economy air accommodations. Persons traveling under NURP grants or contracts must travel by U.S. flag carriers, if available. Travel support for dependents may not be requested.

(iii) Travel to Lee Stocking Island: Travel to Lee Stocking Island is considered *foreign travel*. Airline tickets should be booked to and from George Town, Great Exuma, Bahamas (GGT). Investigators should also budget for land & water taxi fare from the airport to LSI (\$100 each way for up to 5 people). There is also a \$15 departure tax for all people leaving the Bahamas. Charter flights may also be available to take researchers directly to Lee Stocking Island. Please consult with CMRC staff before making arrangements for any charter flights.

F. Other Direct Costs

Any costs charged to a NURP award must be reasonable and directly relevant to the supported activity. The budget should itemize other anticipated direct costs not included under the headings above, including materials and supplies, publication costs, computer services, and consultant services. Other examples are: boat and space rental at research establishments (other than Lee Stocking Island) away from the grantee institution; payments to human subjects; service charges; and construction of equipment or systems not available off the shelf. Boat, laboratory, and accommodation fees at Lee Stocking Island are covered by CMRC and are included in the operations portion of each grant award. **Reference books, periodicals, and memberships may NOT be charged to the grant.**

(i) Materials and Supplies

The budget should indicate in general terms the type of expendable materials and supplies required, with their estimated costs. The breakdown should be more detailed when the cost is substantial.

(ii) Publication Costs/Documentation/Dissemination

The budget may request funds for the costs of documenting, preparing, publishing, or otherwise making available to others the findings and products of the work conducted under the grant. This generally includes the following types of activities: reports, reprints, page charges or other journal costs (except costs for prior or early publication); necessary illustrations; cleanup, documentation, storage, and indexing of data and data bases; development, documentation, and debugging of software; and storage, preservation, documentation, indexing, etc., of physical specimens, collections, or fabricated items.

(iii) Consultant Services

Anticipated consultant services should be justified and information furnished on each individual's expertise, primary organizational affiliation, daily compensation rate, and number of days of expected service. Consultants' travel costs and per diem allowances (or meals provided in lieu of per diem) should be listed separately under travel in the budget. Payment for a consultant's services, exclusive of expenses, may not exceed the daily maximum rate established by NURP annually.

(iv) Computer (ADPE) Services

The cost of computer services, including computer-based retrieval of scientific, technical, and educational information, may be requested. A justification based on the established computer service rates at the proposing institution should be included. The purchase of computers or associated hardware and software should be requested as items of supplies or equipment as necessary.

(v) Subcontracts

Subcontracts should be disclosed in the proposal so that there is a clear delineation of the work to be performed by each organization. There should be a complete budget, in the prescribed NURP format or facsimile, for each subcontract. The total amount for proposed subcontracts should appear as a line item under "Other Direct Costs" in the master budget for the project.

G. Total Direct Costs

The total amount of direct costs requested by the proposer for support, to include Lines A through F, should be entered on Line G.

H. Indirect Costs

With few exceptions, CMRC does not provide indirect costs. Science support is often transferred to PI(s) by cost reimbursable agreements (subcontracts). Since the PI's institution must administer the agreement administrative fees may be considered, however, high overhead rates reduce funds available for science. Because the total level of support is limited and CMRC provides field coordination and logistical support for most projects, PIs are encouraged, to keep administrative costs to a minimum. A maximum of 10% indirect costs will be considered. This figure is calculated based on total direct costs

minus permanent equipment and consulting fees. *CCRI does allow for indirect costs, but these should be no greater than stipulated under the federal indirect cost agreement for respective institutions.*

I. Total Direct and Indirect Costs

The total amount of direct and indirect costs (addition of Lines G and H) requested for support by the proposer should be entered on Line I.

J. Amount of This Request

The total amount of funds requested by the proposer will be the same as the amount entered on Line I.

K. Cost-Sharing

NURP strongly encourages each grantee to provide partial project support from other sources. Total amount of those funds should be entered here. The estimated value of any in-kind contributions should be included and an explanation of the source, nature, amount, and availability of any proposed cost-sharing should also be provided. All cost-sharing amounts are subject to audit.

If another state, federal, or private agency is contributing to or is expected to contribute to the support of your program (including salaries for PIs), please describe the extent of the commitment and provide the name and telephone number of the other agency's representative. When completing the budget summary form, indicate the level of co-funding for this project from other sources, if any.

Projects already receiving, or that will receive, any support from other institutions or agencies must report such support. This includes funds provided from other sources that cover costs of salaries, laboratory facilities, computer time, supplies, equipment, etc.

The purpose of identifying co-funding is to determine the amount of leverage derived from NURP funding. Co-funding is considered in evaluating the importance to other funding agencies of the research proposed. These funds are considered parallel funding and are *not* matching funds. Co-funding information should be entered on the project summary form (see Appendix B, #4 for information on completing project summary forms) *only*, and on the cover page. Matching funds are encouraged for NURP funding and a 100% match is required for NCRCP funding. Matching Funds should be listed in the budget (under the appropriate budget category) separately from federal funds.

L. Unallowable Costs

Proposers should be familiar with the complete list of unallowable costs that is contained in the applicable cost principles. Because of their sensitivity, the following categories of unallowable costs are highlighted:

(i) Entertainment: Costs of entertainment, amusement, diversion, and social activities and any costs directly associated with such costs (such as tickets to shows or sports

events, meals, lodging, rentals, transportation, and gratuities) are unallowable. Expenses of awardee employees who are not on travel status who are serving as hosts, or otherwise participating at meals that are primarily social occasions involving speakers or consultants, are not allowable even if the costs of the speaker or consultant are allowable. Costs of employees on travel status are limited to those allowed under the governing cost principles for travel expenses.

(ii) Meals and Coffee Breaks: No funds may be spent on meals or coffee breaks for intramural meetings of an institution or any of its components, including, but not limited to, laboratories, departments, and centers.

(iii) Alcoholic Beverages: No funds may be spent on alcoholic beverages.

10. Current and Pending Support

The required format for *Current and Pending Support* is provided in the *Required Forms* section of this document. If additional forms are necessary, they are able to be downloaded at http://www.perryinstitute.org/funding_opportunities.htm. PIs must report all current and pending support for ongoing projects and proposals, including subsequent funding in the case of continuing grants. All current project support from whatever source (for example, federal, state or local government agencies, private foundations, industrial or other commercial organizations) must be listed. The list must include the proposed project and all other projects requiring a portion of time of the Principal Investigator and other senior personnel, even if they receive no salary support from the project(s). The number of person-months to be devoted to the projects must be stated, regardless of source of support. Similar information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including NURP.

If the project now being submitted has been funded previously by a source other than NURP, the information requested in the paragraph above should be furnished for the last period of funding.

If the proposal is being submitted to other possible sponsors, all of them must be listed. Concurrent submission of a proposal to other organizations will not prejudice its review by NURP.

11. Special Information and Supplementary Documentation

Except in the areas indicated below, special information and supplementary documentation should be included in the proposal as part of the 15-page project description (or as part of the budget justification) where it is relevant to determining the quality of the proposed work. Information in the following areas should be included in Section I of the proposal and not counted as part of the 15-page Project Description limitation. This Special Information and Supplementary Documentation Section is not considered an appendix. Specific guidance on the need for additional documentation may be obtained from NURP.

1. Documentation of collaborative arrangements of significance to the proposal through letters of commitment.
2. Environmental impact statement for activities that have an actual or potential impact on the environment. State and explain any possible impact that your program will have on the

environment. Also indicate the type and duration of such changes. Are any special permits required to undertake the proposed research?

Projects involving the following are subject to supplemental documentation:

1. Cooperation From Other Organizations -- if a clearance or permit from any government agency or other domestic or foreign government is required for execution of the program, please provide the name of the body, the method of obtaining the clearance or permit, and the time required or state "none."
2. Data or Facility Access -- if access is required to data or facilities held by another organization, please identify the data or facility, the nature and type of access required, the methods of obtaining such access, and the effect of being denied access or state "none."
3. Proposals Involving Vertebrate Animals -- all proposals involving vertebrate animals must have approval from the organization's Institutional Animal Care and Use Committee (IACUC) before funding. NURP recommends inclusion of this approval form with the submission of the proposal.
4. Research in a location designated, or eligible to be designated, a registered historical place.
5. Research involving field experiments with genetically engineered organisms.
6. Research involving the use of human subjects, hazardous materials, vertebrate animals, or endangered species.
7. Projects that involve technology utilization/transfer activities require a management plan that should identify special reports or final product.

In addition, Section H should alert NURP officials to unusual circumstances that require special handling, including, for example, proprietary or other privileged information in the proposal, matters affecting individual privacy, required intergovernmental review under E.O. 12372 for activities that directly affect state or local governments, or possible national security implications.

12. Appendices *(not applicable for CCRI)*

All information necessary for the review of a proposal should be contained in Sections 1 through 12 of the proposal. Appendices may not be included unless a deviation has been authorized.

PROPOSAL PROCESSING AND REVIEW

Proposals received by NURP are reviewed carefully by a scientific staff member and by 3 to 10 other individuals who are experts in the particular field represented by the proposal. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Science Director's discretion. Comments are obtained from mail reviewers and assembled review panels before recommending final action on proposals. Recommendations for awards

are further reviewed by senior NURP staff for conformance with NOAA policy and may be further reviewed by a National Review Panel.

For CCRI, proposals and mail reviews are sent to the CCRI Management Committee, which makes final determinations of proposal acceptance.

In the event of a significant development that might materially affect the outcome of the review of a pending proposal, the PI should contact the Center's Science Director to discuss the finding or changed circumstances. The possibility of submitting the additional information must not be used as a means of circumventing page limitations or stated deadlines, but is intended to provide an opportunity to communicate unexpected and significant breakthroughs or other developments.

When a decision has been made, verbatim copies of reviews, excluding the names of the reviewers, and summaries of review panel deliberations are mailed to the Principal Investigator/Project Director. Proposers may also request and obtain any other releasable material in NURP's file on their proposal. Everything in the file except information that directly identifies either reviewers or other pending or declined proposals is usually releasable.

Proposers are cautioned that only an appointed Grants Officer may make commitments or obligations on behalf of the Government or authorize the expenditure of funds. No commitment on the part of the Government to fund preparation of a proposal or to support research or education should be inferred from technical or budgetary discussions with NURP. A PI or institution that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NOAA Grants Officer does so at its own risk.

A. WITHDRAWALS

A proposal may be withdrawn at any time before a final decision is made. A request for withdrawal must be signed by both the PI and the authorized institutional representative. If funding for the proposal is accepted from another sponsor, upon notification, if appropriate, NURP will send a withdrawal confirmation letter to the PI and the authorized institutional official without waiting for the official withdrawal request. NURP does not normally return the copies of withdrawn proposals to the proposer. NURP retains a file copy. Copies of reviews received by NURP before a proposal is withdrawn will be provided to the investigator.

B. DECLINATIONS

An investigator whose proposal for NURP support has been declined will receive information and an explanation of the reasons for declination from the cognizant scientific staff member. If that explanation does not satisfy the investigator, he/she may request additional information from that staff officer.

C. RECONSIDERATION

If the explanation provided above does not satisfy the PI, he/she may request that the cognizant NURP Program Officer reconsider the action to determine whether the proposal received review that was fair and reasonable, both substantively and procedurally. The request for reconsideration must be in writing and be received within 90 days of the date of the declination letter. If the proposing institution is still not satisfied after reconsideration by the responsible Assistant Director, it may, within 60 days of the determination by the Assistant Director, request further

reconsideration by the NURP Director. An investigator whose proposal has been returned because it is inappropriate for consideration by NURP may also request reconsideration of this determination.

D. RESUBMISSION

A declined proposal may be resubmitted only after it has undergone substantial revision. Resubmittals that have not clearly taken into account the major comments resulting from the prior review may be returned without further review. NURP will treat the revised proposal as a new one subject to the standard review procedures.

III. Program Development Proposals *(not applicable for CCRI)*

Program Development (PD) proposals are primarily applicable to work at Lee Stocking Island.

CMRC will provide facility use time at our Lee Stocking Island Marine Laboratory through a competitive Program Development proposal process. A Program Development proposal is a short proposal requesting only facilities support. These facilities include room and board, small boat use, scuba diving support (i.e., tanks and dive weights; all other scuba equipment must be provided by the investigator) for short projects (one or two weeks maximum). Information on research themes and guidelines for proposal preparation are available on the CMRC web site (www.perryinstitute.org)



NURP – NOAA’s Undersea Research Program



FY 2006 SCIENCE GUIDANCE

This document outlines NURP’s Science Guidance to the NURP Centers and NIUST for FY 2006.

INTRODUCTION

NOAA’s Undersea Research Program (NURP) is a comprehensive underwater research program that supports NOAA’s mission by providing scientists with the tools and expertise they need to conduct scientific research of regional, national, and global importance. Of special interest to NURP is research focused on NOAA’s management responsibilities – corals, fisheries, and ecosystems – and on advancing underwater technologies to conduct this research. Additionally, NURP is keenly interested in furthering the field of marine biotechnology research through its *National Institute for Undersea Science and Technology’s* (NIUST) National Repository of marine natural products. This repository represents the first intensive survey/sampling of U.S. coral reef organisms that are screened in-house for biomedical and agrochemical potential; and is available to qualified researchers for further biotechnology studies.

NURP works with scientists to use advanced underwater technologies and methods including: scuba diving, mixed-gas diving, advanced technical diving, human-occupied submersibles, remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), sea floor observatories, *Aquarius* – the world’s only underwater laboratory, and other cutting edge technologies. By using advanced underwater technologies, NURP helps scientists make observations, collect samples, and conduct experiments that would otherwise be unobtainable.

About 90 percent of the funding appropriated to NURP by the U.S. Congress is spent extramurally (outside NOAA) on undersea research. NURP supports high-quality, peer-reviewed research through 6 regional NURP Centers and NIUST. The quality of NURP-supported research is ensured through a competitive process with high standards of peer-review patterned after the National Science Foundation.

ABOUT NURP

NURP is part of *NOAA Research* and is headquartered in Silver Spring, MD. NURP consists of six regional NURP Centers and one Institute that maintain responsibility for soliciting and supporting research and technology development.

- **North Atlantic and Great Lakes NURP Center**
at the *University of Connecticut, Avery Point*
- **Mid-Atlantic Bight NURP Center**
at *Rutgers University*
- **Southeast and Gulf of Mexico NURP Center**
at the *University of North Carolina at Wilmington*
- **Caribbean NURP Center**
at the *Caribbean Marine Research Center*
- **West Coast and Polar Regions NURP Center**
at the *University of Alaska Fairbanks*
- **Hawai’i and the Western Pacific NURP Center**
at the *University of Hawai’i, Manoa*
- **NIUST – National Institute for Undersea Science and Technology**
at the *University of Mississippi* and the *University of Southern Mississippi*

See Table 1 for NURP Contact Information.

The following research directions constitute the NURP FY 2006 Science Guidance. These guidelines are based upon the *NOAA Strategic Plan for FY 2005-2010*, the five-year *NOAA Research Plan for fiscal years 2005-2009*, the twenty-year *NOAA Research Vision*; and research needs as defined by NOAA resource managers. These directions are meant to serve as an initial guide to the NURP Centers and NIUST in forming their approach to FY 2006. The NURP Centers and NIUST should continue to consider their individual capabilities, expertise, and unique regional priorities in developing their scientific and programmatic approaches.

STRATEGIES

In response to the changing needs of society and the environment, NOAA has adopted a new strategic plan for FY 2005-2010. The new plan responds to changes in climate, demographics, globalization, economies, and stressors to the environment. *NOAA's Strategic Plan* can be downloaded from www.spo.noaa.gov.

NOAA's Mission:

To understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet the Nation's economic, social, and environmental needs.

NURP responds to NOAA's mission by using its expertise in undersea *in situ* research and technology.

NURP's Mission:

To support NOAA's mission through advanced undersea research.

NURP's mission directly supports NOAA by

providing an *improved understanding of the Nation's underwater resources to enable effective ecosystem-based management*. NURP supports targeted research that enables NOAA to achieve its Ecosystem Mission Goal to "protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management".

The NOAA Strategic Plan identifies five fundamental *activities* by which the Ecosystem Goal can be met:

1. ***Monitor and observe*** the land, sea, atmosphere, and space and create a data collection network to track Earth's changing systems.
2. ***Understand and describe*** how natural systems work together through investigation and interpretation of information.
3. ***Assess and predict*** changes in natural systems and provide information about the future.
4. ***Engage, advise, and inform*** individuals, partners, communities and industries to facilitate information flow, assure coordination and cooperation, and provide assistance in the use, evaluation, and application of information.
5. ***Manage*** coastal and ocean resources to optimize benefits to the environment, the economy, and public safety.

NURP supports primarily the activity to ***Understand and Describe***; and also contributes information to support activities to ***Monitor and Observe, Assess and Predict, Engage, Advise, and Inform***, and ***Manage***.

REGIONS OF INTEREST FOR FY 2006

NURP supports research in all waters and their habitats within the U.S. Exclusive Economic Zone and waters under U.S. jurisdiction including, the Great Lakes, territorial seas, and adjacent waters of the United States; U.S. Territories; and the Freely-Associated States.

Habitats of Interest

NURP encourages research to be conducted in specific habitats including:

- ◆ Coral ecosystems
- ◆ Deep coral reefs (e.g., insular slope reefs at the edge of scuba limits)
- ◆ Deep-sea coral ecosystems
- ◆ Essential Fish Habitat
- ◆ Seamounts and other hard bottom structures (pinnacles, outcrops, etc.)
- ◆ Hydrothermal vents and cold seeps

Marine Managed Areas

NURP encourages and supports research in areas that are managed for specific uses. The development and evaluation of management strategies is also encouraged. These marine managed areas include:

- ◆ Marine Protected Areas
- ◆ Habitat Areas of Particular Concern
- ◆ National Marine Sanctuaries
- ◆ National Estuarine Research Reserves
- ◆ National Wildlife Refuges
- ◆ National Parks

RESEARCH PRIORITIES FOR FY 2006

NOTE: For organizational purposes, research directions are divided into five categories – Corals, Fisheries, Ecosystems, Management Strategies, and Technology Development. These categories are for reporting convenience and are not meant to be mutually exclusive. Additionally, some research directions are repeated because of their applicability to multiple categories.

These priorities were established using the research foci documented in the five-year *NOAA Research Plan*, the twenty-year *NOAA Research Vision*, and discussion with NOAA resource managers. These plans may be found on www.spo.noaa.gov.

Corals

The use of novel and emerging technologies to...

- ◆ Define the roll of keystone species within coral communities and determine how they sustain such roles through studies of their trophic and behavioral webs, physiological metrics in comparison to other guild members (including reproductive physiology), recruitment dynamics, and population dynamics.
- ◆ Study the life histories of economically important marine organisms associated with shallow and/or deep-sea coral ecosystems.
- ◆ Conduct research to better understand how ecosystems function, including interrelationships between environments, populations, species, and individual organisms to predict how such systems will react to change.
- ◆ Conduct research to better understand the threats faced by shallow coral reefs, including, but not limited to, coral bleaching, coral diseases, land-based pollution, and invasive species.

- ◆ Determine the effects of environmental and climatic factors to organismal infectivity and susceptibility to disease, as well as on the health of corals.
- ◆ Conduct research to develop methods for restoration of damaged coral reefs.
- ◆ Conduct studies to increase the understanding of deep-sea corals, including knowledge of the corals themselves, the factors that influence their growth, reproduction, distribution, recruitment, and how communities of corals may function as habitat for fish and invertebrates.
- ◆ Model and predict future environmental changes (e.g. shifts in major water masses) on decadal and centennial time scales using past environmental conditions as recorded in fossil and living deep-sea coral skeletons.
- ◆ Develop models to accurately predict the effects of environmental changes (including natural events) on habitats of interest and marine managed areas (See the section entitled Regions of Interest for more information on critical habitats and marine managed areas).
- ◆ Evaluate, model, and predict the effects of anthropogenic stressors on shallow and deep-sea coral habitats and/or ecosystems and estimate rates of impact recovery.

Fisheries

NOTE: *Fisheries includes commercially important fish and invertebrates (e.g., Queen Conch, Spiny Lobster, American Lobster, King Crab, Tanner Crab, etc.)*

The use of novel and emerging technologies to...

- ◆ Determine how spatial and temporal patterns of diversity are regulated and relate spatial patterns to phenotypic and genetic variation in key taxa in critical

habitats and marine managed areas. (See the section entitled Regions of Interest for more information on critical habitats and marine managed areas).

- ◆ Conduct research to better understand how ecosystems function, including interrelationships between environments, populations, species, and individual organisms to predict how such systems will react to change.
- ◆ Conduct studies to assess the effectiveness of management strategies for conserving fish stocks, essential fish habitat, biological diversity, and productivity.
- ◆ Use advanced underwater technology to develop improved techniques for stock assessment of fish populations, and to determine the effectiveness of stock or habitat enhancement efforts.
- ◆ Model and predict the effects of anthropogenic stressors on fish populations, habitats or ecosystems, and estimate rates of impact recovery.
- ◆ Identify, characterize, and understand essential fish habitat to determine requirements for healthy fish populations.
- ◆ Assess long-term changes in oceanographic or climatic parameters that may affect the abundance of fish populations.
- ◆ Determine the relationships of oceanographic and climatic parameters to the abundance and diversity of economically important fishery populations.
- ◆ Conduct research on life histories of commercially or ecologically important fish and invertebrate stocks.
- ◆ Develop models to accurately predict the effects of environmental changes (including natural events) on habitats of interest and marine managed areas (See the section entitled Regions of Interest for more information on critical habitats and

marine managed areas).

- ◆ Assess the influence of trophic interactions and oceanographic conditions on recruitment success.
- ◆ Document and assess the effects of fishing on trophic structures.

Ecosystems

The use of novel and emerging technologies to...

- ◆ Develop models to predict the succession of hydrothermal vent/cold seep communities as a response to changes in chemical flux.
- ◆ Seek out, recover, and culture novel organisms from unique, extreme environments, such as deep-sea vents and cold seeps, for the purpose of identifying unique bioactive compounds with commercial potential.
- ◆ Investigate the relationships between vent or seep geochemistry and the associated vent and seep communities.
- ◆ Understand the role that methane hydrate degassing plays in the carbon cycle.
- ◆ Characterize, assess, and analyze the spread of alien and invasive species.
- ◆ Collect, analyze, and archive marine samples for biomedical and commercial applications.
- ◆ Evaluate, model, and predict the effects of anthropogenic stressors and/or environmental changes hydrothermal vent and cold seep ecosystems, and estimate rates of impact recovery.

Management Strategies

The use of novel and emerging technologies to...

- ◆ Conduct studies to assess the effectiveness of management strategies for conserving fish stocks, essential fish habitat, biological diversity, and productivity.
- ◆ Conduct research to assess the effectiveness of marine managed areas.
- ◆ Conduct research to develop new management strategies or improve strategies in current use.

Technology Development

- ◆ Develop new technologies/methods to improve NOAA's ability to assess fish and invertebrate populations.
- ◆ Develop new technologies/methods for monitoring the dynamics and status of ecosystems and communities, including chemical, physical, and biological sensors.
- ◆ Develop new technologies for *in situ* long-term research and observations, including underwater vehicles for long-term immersion and remote control including, AUVs, ROVs, and chemical, physical, and biological sensors.
- ◆ Develop new technologies/methods to support technical diving and use of closed-circuit rebreathers.

GENERAL GUIDELINES

Eligibility

Eligible applicants are U.S. institutions of higher education, not-for-profit institutions, and federal, state, and local governments. Federal agencies may not charge salary or overhead.

Regions

NURP supports research in all waters and their habitats within the U.S. Exclusive Economic Zone and waters under U.S. jurisdiction including, the Great Lakes, territorial seas, and adjacent waters of the United States; U.S. Territories; and the Freely-Associated States.

Proposal Guidelines

Proposals for funding from NURP through its 6 regional NURP Centers and NIUST must meet rigorous scientific guidelines, including:

- Research subjects must support NOAA's and NURP's strategic goals.
- Research questions should be hypothesis-driven, and formulated in a way that is answerable by the proposed methodology. *"Look-and-see" explorations are generally not supported.*
- Hypotheses and methods should be economic - efficiently addressing the research problem with the least use of resources. *"Shotgun" approaches to problem solving are discouraged.*
- Proposed methodology must be adequate to address the problem, appropriate to the situation, and must be the most cost-effective. Alternative methods must be effectively eliminated.
- Research should address processes or relationships that will lead to explanatory knowledge that can be extrapolated to the larger world.
- Research should be innovative, and must produce new knowledge.
- Proposals to develop models to predict the impacts of environmental change, anthropogenic stressors, etc. should contain a field component that utilizes the assets and/or expertise of the NURP Centers and/or NIUST.
- Proposals for technology testing should utilize the new technology in novel scientific research.
- Principal Investigators must demonstrate that they have background knowledge and familiarity with the research subject and methodology proposed. Previous publications in related subjects are beneficial.

Table 1. NOAA's Undersea Research Program Contacts

Program	Director Contact Information	Address
<p>NOAA's Undersea Research Program Headquarters</p> <p>www.nurp.noaa.gov</p>	<p>Barbara Moore Barbara.Moore@noaa.gov Tel: (301) 713-2427 x127 Fax: (301) 713-1967</p>	<p>NOAA's Undersea Research Program 1315 East-West Hwy, R/NURP Silver Spring, MD 20910</p>
<p>North Atlantic and Great Lakes NURP Center at the University of Connecticut at Avery Point</p> <p>www.nurc.uconn.edu</p>	<p>Ivar Babb babb@uconn.edu Tel: (860) 405-9121 Fax: (860) 445-2969</p>	<p>North Atlantic Great Lakes National Undersea Research Center University of Connecticut – Avery Point 1084 Shennecossett Road Groton, CT 06340</p>
<p>Mid-Atlantic Bight NURP Center at Rutgers University</p> <p>marine.rutgers.edu/nurp/mabnurc.html</p>	<p>Michael DeLuca deluca@imcs.rutgers.edu Tel: (732) 932-6555 x512 Fax: (732) 932-8578</p>	<p>Mid-Atlantic Bight National Undersea Research Center Institute of Marine & Coastal Sciences Rutgers University 71 Dudley Road New Brunswick, NJ 08901-8521</p>
<p>Southeast U.S. and Gulf of Mexico NURP Center at the University of North Carolina at Wilmington</p> <p>www.uncwil.edu/nurc</p>	<p>Andrew Shepard sheparda@uncw.edu Tel: (910) 962-2440 Tel: (305) 451-0233 Fax: (910) 962-2410</p>	<p>Southeastern U.S. and Gulf of Mexico National Undersea Research Center University of North Carolina at Wilmington 5600 Marvin K. Moss Lane Wilmington, NC 28049</p>
<p>Caribbean NURP Center Caribbean Marine Research Center</p> <p>www.perryinstitute.org</p>	<p>John Marr jmarr@perryinstitute.org Tel: (561) 741-0192 Fax: (561) 741-0193</p>	<p>Caribbean Marine Research Center 100 North U.S. Highway 1 Jupiter, FL 33477</p>
<p>West Coast and Polar Regions NURP Center University of Alaska Fairbanks</p> <p>www.westnurc.uaf.edu</p>	<p>Jennifer Reynolds, Acting westnurc@guru.uaf.edu Tel: (907) 474-5870 Fax: (907) 474-5804</p>	<p>West Coast and Polar Regions Undersea Research Center University of Alaska Fairbanks P.O. Box 757220 213 O'Neill Building Fairbanks, AK 99775-7220</p>
<p>Hawai'i and the Western Pacific NURP Center Hawai'i Undersea Research Laboratory University of Hawai'i Manoa</p> <p>www.soest.hawaii.edu/HURL/</p>	<p>John Wiltshire, Acting johnw@soest.hawaii.edu Tel: (808) 956-6802 Fax: (808) 956-2136</p>	<p>Hawai'i Undersea Research Laboratory University of Hawai'i Manoa 1000 Pope Road, MSB 303 Honolulu, HI 96822</p>
<p>National Institute for Science and Technology University of Mississippi and the University of Southern Mississippi</p> <p>www.usm.edu/niust/</p>	<p>Ray Highsmith eniust@olemiss.edu Tel: (662) 915-6507 Fax: (662) 915-7026</p>	<p>National Institute for Undersea Science and Technology Department of Pharmacognosy University of Mississippi University, MS 38677-1848</p>

WHY WE DO THE RESEARCH?

NURP conducts hypothesis-driven research using novel and emerging technologies, through both the academic and federal research communities, directed at meeting the needs of NOAA resource managers responsible for managing corals, fisheries, and ecosystems. NURP also conducts research to: (1) advance underwater technologies and tools to conduct state-of-the-art research— such as ROVs, AUVs, human-occupied submersibles, undersea laboratories, advanced technical diving, and biological and chemical sensors; (2) evaluate management strategies, e.g., evaluate the effectiveness of marine protected areas; and (3) develop marine natural products.

NURP research is intended to provide NOAA managers with the necessary information to make well-informed decisions. NOAA's management responsibilities and research authorities for corals, fisheries, and ecosystems are derived in part from:

- ◆ Coral Reef Conservation Act of 2000
(16 U.S.C. §6401 *et seq.*)
- ◆ Magnuson-Stevens Fishery Conservation and Management Act
(as amended by the Sustainable Fisheries Act)
(16 U.S.C. §1801 *et seq.*)
- ◆ National Marine Sanctuaries Act
(16 U.S.C. §1440)
- ◆ Methane Hydrate Research and Development Act of 2000
(30 U.S.C. §1902)
- ◆ National Materials and Minerals Policy Research and Development Act of 1980
(30 U.S.C. §1601)
- ◆ Outer Continental Shelf Lands Act (1978)
(43 U.S.C. §1347)
- ◆ Executive Order 13158: Marine Protected Areas (2000)
- ◆ Executive Order 13089: Coral Reef Protection

GUIDELINES FOR PROGRAM DEVELOPMENT PROPOSALS

Funding is available for the development of research and education programs in the Wider Caribbean Region through the Caribbean Marine Research Center (CMRC) under the auspices of the NOAA's National Undersea Research Program (NURP). Investments of program development funds are used to stimulate nationally important scientific research at NOAA's marine laboratory in the Bahamas and throughout the Caribbean. These investments are intended to provide researchers the opportunity to strengthen future proposals. It is our intention that program development funds will focus on initiating projects that stimulate additional proposal submissions to other Federal, State, local, industry, or private institutions.

The goals of our program development efforts include:

- 1. developing new partnerships to work together on issues of national importance to the sustainability of marine resources,**
- 2. promoting strategic assets of CMRC's undersea research program and addressing priorities identified by NURP, and**
- 3. integrating programmatic efforts with those of the universities to advance the marine sciences and to produce greater benefits for communities being served.**

Proposals for program development must be discussed with CMRC first. If you have excellent ideas for a program development proposal please contact Dr. John Marr, Center Director of CMRC. Following discussion of your ideas, we may request a written proposal that meets competitive and high standards of peer review. Program Development proposals are selected based on scientific merit, applicability to CMRC's current research themes and NOAA's mission, and feasibility in terms of logistics and environmental considerations. Proposals must address both NOAA and NURP goals and guidelines and must be compatible with CMRC's established research and education programs.

CMRC operates a marine laboratory at Lee Stocking Island (LSI) in the Exuma Cays, Bahamas, and, although CMRC will consider funding work at any site in the Caribbean, we encourage investigators to first consider use of our excellent facilities at LSI. Accordingly, Program Development grants are awarded primarily to provide facility support at LSI. They provide funds for room and board, laboratory use, small boat use, and scuba diving support for short-term projects at LSI.

The CMRC program year begins on 1 February. Funds for Program Development grants are limited and although there is no deadline for submission, it is advisable to submit proposals as early in the program year as possible. When funds dedicated for Program Development support are expended, no more projects are considered for the year.

Research Priorities

While we welcome inquiries about any area of research that falls under the NOAA/NURP research themes of *Sustainable Fisheries, Healthy Coastal Ecosystems, Predicting Environmental Change, and Developing New Value from the Sea*. There are several areas of particular interest to CMRC including:

Coral reefs

Coral reef degradation throughout the world has prompted CMRC to support a coral reef research program focused on the long-term study and understanding of shallow to deep coral reef ecosystems. Areas of particular interest include:

- a. coordinated field and laboratory research that establishes long-term studies to assess anthropogenic influences on physiology and ecology of coral reef systems. This includes establishing LSI as a sampling site for integrated monitoring programs (e.g. AGGRA, SEAKEYS, LTER, etc.)**
- b. the reproductive biology of coral reef fish and invertebrates (including mass spawning of coral species) and the importance of mid and deep water coral populations as reproductive refugia for shallower populations**
- c. development of a Coordinated Coral Sampling Program that utilizes a network of corals that are sampled in a consistent manner to maximize the quality and quantity of data necessary to manage coral reefs while minimizing impact to the reefs themselves**
- d. innovative techniques of coral aquaculture plus larval recruitment which may aid restoration efforts**

Sustainable Fisheries

CMRC has a long and continuing association with research on factors influencing the recruitment, reproductive biology, and population dynamics of commercially and ecologically important fish and invertebrates to tropical communities, particularly coral reefs. Much of this research has focused on the locally important species, for example queen conch, spiny lobster, Nassau grouper. Areas of particular interest include:

- a. identification and characterization of habitats essential for spawning, larval recruitment, survival and sustainability of commercially and ecologically important species of invertebrates and fishes**

- b. obtain information to aid in the management and prediction of mid and deep water commercial fish stocks including under utilized species and comparisons of heavily exploited to minimally exploited populations**
- c. research focused on the effectiveness and establishment of marine protected areas in increasing the abundance or reproductive ability of commercially important species (e.g. spiny lobster, grouper, snapper, conch) or modifying their distribution**

Biotechnology Research

Developing new and sustainable values from the sea, is a growing area for CMRC sponsored research. Although substantial gains have been made in the last several decades in our knowledge of the ocean and its resources, the economic potential for use of marine biomedical and biotechnological products has barely been tapped. CMRC's areas of particular interest are:

- a. research on the diversity, ecology, physiology, biochemistry, genetics, and evolutionary history of marine organisms found in the shallow to deep sea, and their sustainable use in the biomedical and biotechnology fields**
- b. identifying novel bioactive compounds for ultimate biomedical or industrial applications and determining the mechanisms of action and natural functions of these novel compounds. Also developing techniques to sustainably culture the living marine resources associated with these compounds.**

Aquaculture Research

CMRC is interested in a research program focused on the development of environmentally sound aquaculture. CMRC especially encourages proposals that deal with commercially valuable endemic species that are currently threatened by anthropogenic factors such as overfishing (e.g., Nassau grouper, queen conch, spiny lobster, and tropical ornamentals) as well as the culture of species of biomedical or industrial importance. Particular areas of interest include:

- a. study new candidate species for culture through their complete life cycle to determine which are economically and biologically suitable for commercial culture or wild stock enhancement**
- b. develop practical and efficient methodology for the release of captive bred species into the wild as a means of repopulating and/or enhancing populations in overfished or otherwise impacted habitats**

Underwater Observation and Technology

Many marine issues, such as fisheries management, the siting of reserves, protection and restoration of habitats require information acquired by submersibles, remotely operated vehicles, and *in situ* sensors. This information often enhances the ability to conduct research, manage resources, and educate the public. CMRC is interested in developing technological capabilities that establish our ability to observe and monitor biological, chemical, or physical processes in underwater tropical and subtropical ecosystems. Specific areas of interest include:

- a. define new technologies to improve the observation and collection of information necessary to advance fisheries oceanography, prediction of fisheries, and surveillance compliance requirements of regulatory regimes**
- b. use of marine technologies to automate or expand the sampling of biological, physical and/or chemical parameters to complement more traditional ecological studies**
- c. identify and implement more efficient ways to observe, monitor, and determine the ecological status of marine protected areas, essential fish habitats, and other critical (e.g., coral reefs) coastal habitats and their biodiversity.**

Predict Environmental Change

Key objectives for CMRC sponsored research relate to characterizing the role of the ocean in environmental change. The ultimate purpose of monitoring programs is to provide detection of change and as such CMRC has had an active environmental monitoring program for the past 15 years. Monitoring programs should trigger responsive actions of additional investigation when signs of change beyond normally anticipated levels are observed. Monitoring of biotic and abiotic resources can provide information relative to all of these information needs. Some specific areas of interest include:

- a. understand the linkages between forcing agents, climate variability and ecosystem change. Develop scenarios for regional climate and ecosystem change in a form suitable for various impact models.**
- b. improve our ability to monitor the physical, chemical, and biological parameters in subtropical habitats to provide information necessary for management and conservation.**

Use of Advanced Diving Techniques in Research

NURP is a recognized international leader in the use of mixed-gas scuba, saturation diving, and advanced breathing technologies (e.g., closed and semi-closed circuit rebreathers) in diving to support

scientific research. As a NURP Center, CMRC is acknowledged as a leading institution in support of scientific diving with thousands of dives supported annually. NURP annually supports nearly 10,000 air saturation and mixed-gas scuba dives that address NOAA high priority issues. CMRC will focus its safe diving research on improving nitrox, mixed gas, and rebreather procedures in the following areas:

- a. scientific diving advanced training and safety issues including treatment and management of nitrox diving-related accidents, gas mixing and handling, and certification requirements**
- b. assessing benefits and safety for the use of advanced technologies in scientific research for collecting behavioral or other biological data underwater**
- c. exploring new areas, including deep coral habitats**

Research-Education Initiatives

CMRC has a record of successful courses, seminars, and conferences that are held on Lee Stocking Island. We plan on continuing our dedication to education and have interest in developing the following programs:

- a. courses in Tropical Marine Biology, or other field intensive courses, that have long-term potential for developing into annual offerings at LSI (support is typically offered in the form of discounted rates for facilities use at LSI)**
- b. CMRC is soliciting interest in graduate and/or post-doctoral scholarships that support individuals in residence at LSI in exchange for part-time logistic and scientific assistance to CMRC. Research proposals should be developed with the involvement of CMRC scientific staff.**

Laboratory Facility Use

CMRC operates a marine field station at Lee Stocking Island, Exuma Cays, Bahamas. This laboratory is located in a tropical reef environment with near pristine conditions. A wide range of habitats including coral reefs, seagrass beds, mangroves, subtidal stromatolites, ooid shoals and shelf-edge drop-off are in close proximity and easily accessible for study. The relatively unimpacted nature of the environment allows for a unique opportunity for comparative studies with similar heavily impacted reefs in the Florida Keys. Facilities at Lee Stocking Island include scuba and nitrox support, 24-hr AC power, air-conditioned laboratory space, flow-through seawater system and vessel support. Investigators are strongly encouraged to consider use of these excellent facilities at Lee Stocking Island for their projects.

Further information regarding facilities, equipment and support available at Lee Stocking Island can be found at http://www.perryinstitute.org/forms/PIMS_Lab_Facilities_Guide.pdf for will be provided upon request to the CMRC Florida Office (see *also proposal development guide - facilities*).

Further information regarding the CMRC Diving Program and requirements for diving at Lee Stocking Island can be found at <http://www.perryinstitute.org/forms.htm> or will be provided upon request to the CMRC Florida Office.

Submitting Program Development Proposals

Investigators are encouraged to discuss their prospective projects by phone with the CMRC Center Director before submission and pending suitability, submit a short (5 page limit) proposal as described below.

Format and Content

All proposals must conform to the instructions provided in this section. Proposals that are not consistent with these instructions will be returned without further consideration, unless a deviation has been approved in writing by CMRC (see below). Please pay particular attention to the proposal page limits, content, and formatting requirements.

Critical Items (see appropriate sections for more information)

1. Type size no smaller than 12 pt.
2. Project Description less than or equal to 5 pages
3. Biographical sketch (PI only - 2 page limit)
4. 2.5 cm margins (top, bottom, both sides)
5. 8½" x 11" paper size

Proposers may deviate from these instructions only to the extent authorized. Deviation must be approved by CMRC in writing. If you wish to obtain such permission, contact the Center Director. Proposals must identify the deviation by including one copy of the written deviation authorization with the original (signed) document.

SECTIONS OF THE PROPOSAL

- 1) Proposal Cover Sheet
- 2) LSI Facilities Request Form
- 3) Project Description (**5 page limit**)
- 4) Literature Cited
- 5) Biographical Sketch (PI only - **2 page limit**)
- 6) Budget **and** Budget Justification

Proposals must be stapled in the upper left-hand corner, but otherwise unbound.

Five copies are required, including the original signed copy.

1. Proposal Cover Sheet

The cover sheet must accompany all 5 copies, only one needs to be signed originally. If the research is going to be conducted at a site other than Lee Stocking Island (LSI) indicate by checking the appropriate box and then specifically identify the proposed research site. If the research is going to be conducted exclusively at LSI, check the “LSI” box.

Starting and Ending Dates: Proposed start and end dates must fall within the CMRC grant year, which runs from February 1 to January 31 of the following year. If specific dates are not critical for the successful completion of the project, please supply preferred dates.

At least one copy of the proposal must be signed by the Principal Investigator (PI). Proposals submitted without at least one signed copy will not be accepted.

2. Lee Stocking Island Facilities Request Form

If you plan to utilize the facilities at CMRC’s Lee Stocking Island Field Station, you are required to detail your proposed facilities use in terms of number of visits, number of people on each visit, length of stay for each person, and number of boats and boat-days needed to conduct the research. If your project will entail shipping large amounts of equipment and supplies or if you require especially large pieces of equipment not already in place at the field station, please list these requirements in as much detail as possible. PIs should budget for shipping charges (rates per pound apply) for any supplies or equipment in excess of personal luggage (i.e., the amount of personal luggage permitted on commercial air carriers).

3. Project Summary

Summary - Provide a brief summary of the proposed project that is suitable for publication and not more than one paragraph in length. This summary should not be an abstract of the proposal, but rather a self-contained description of the activity that would result if the proposal is funded. It should be written in the third person and should include a statement of the objectives, methods to be employed, and the significance of the proposed research. It should be informative to other persons working in the same or related fields and, insofar as possible, understandable to a scientifically or technically literate reader. Summaries will be included in CMRC’s Omnibus Proposal and Annual Report to The National Undersea Research Program and may be provided to congressional delegations and the press, upon request, by the National Office.

Situation and Need - Briefly discuss the current state of knowledge or capabilities, or lack thereof, in the field and why the proposed project is significant and should be funded.

Objective(s) - State what is to be studied, measured, observed, assessed, modified, or developed, and the anticipated results. State the null and alternate hypotheses the proposed research is designed to test. For equipment development or modification, describe the proposed technical and operational characteristics of the device.

Relevance to CMRC, NOAA and NURP Themes - Describe how the anticipated results relate to CMRC and/or NOAA/NURP science goals as well as their expected benefits or utility. Specifically identify the CMRC and/or NOAA/NURP science goals addressed by the proposed research.

Methods and Approach - Describe the experimental design and the specific tasks that must be performed to accomplish the objective(s) of the proposed research. Emphasis should be placed on quantitative *in situ* methodology to be used. State the tasks in the same order as the hypotheses they are designed to test.

Proposed Dive Schedule - List the number of dives, number of divers, and bottom time needed.

Description of Facilities, Systems, and Equipment - Describe the instruments, apparatus, equipment, and facilities required for achieving your objectives and how they will be used. Also describe the undersea support needed (e.g., boats, scuba, nitrox, special diving gear, sampling gear, and *in situ* instrumentation).

Future Research - How will the expected results of the proposed research be used (e.g., data may be used to strengthen a future proposal to CMRC or other funding agencies, or data may be necessary for publication of a manuscript in a peer-review journal).

4. Literature Cited

A full citation, including all co-authors, date of publication, title, publication, and page numbers for all references cited in the Project Description must be listed. This section of the proposal will not be considered a part of the 5-page limitation set for the Project Description.

5. Biographical Sketch

A brief biographical sketch (2-page limit) is required for the Principal Investigator only. Biographical sketches of co-PIs may be included (2-page limit for each), but are not required.

6. Budget and Justification

(The required format for the *Proposal Budget* is provided at the end of this Program Development section.)

Program Development awards are limited to support for facilities and diving support (usually at LSI). Support for minimal supplies will be provided only under exceptional circumstances. Salaries, transportation, equipment, and other project expenses must be covered by other funding sources. The fees associated with facilities use at LSI (e.g., room and meal charges, boat fees, personnel support), and taxi fares (land and water taxi) are provided in the *LSI Rate Schedule*.

CMRC cannot provide Indirect Costs for Program Development projects.

If funds are requested for supplies, a detailed list of the proposed supplies, including prices, must be provided in the budget justification. The number of project personnel and the number of days requested at LSI must also be justified.

PROPOSAL EVALUATION CRITERIA

All Program Development proposals that satisfy the established format will be evaluated on the basis of the following criteria:

1. Scientific Merit
2. Applicability of the proposed research to CMRC's current research themes, relevance to NOAA's mission, or an overriding national responsibility with broad benefit to the U.S.
3. Applicability and availability of the *in situ* approach and/or technology requested to conduct the proposed research

A science review committee composed of CMRC staff and representatives from several academic institutions may evaluate each proposal submitted for participation in CMRC's science program. Final decisions regarding funding will be made by the Center Director.

CONTACTS

The CMRC Center Director is located at CMRC's Florida Office.

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