

Report to the U.S. Congress on the
National Oceanographic Partnership Program

Fiscal Year 2010

March 2011

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I. Executive Summary

The National Oceanographic Partnership Program (NOPP) marked its 13th year in 2010 – a significant year for the ocean. Since its inception, NOPP has forged interagency and intersector cooperation through a multitude of cross-cutting research and education projects supported by the federal government. In accordance with its enabling legislation, NOPP promotes the objectives of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean. As demonstrated by its achievements, NOPP is an effective forum for development of new interagency initiatives and priorities that transcend single agency agendas.

NOPP has grown and transitioned over time in regards to the ocean governance structure within which it operates. During fiscal year (FY) 2010, the National Ocean Policy was released through Executive Order and the National Ocean Council was established. Looking ahead to FY 2011, the National Ocean Council will incorporate the mandate of the National Ocean Research Leadership Council (NORLC), the NOPP governing body, and will replace the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI) and its subcommittees, including the Joint Subcommittee on Ocean Science and Technology (JSOST). The JSOST will convert to the Ocean Science and Technology Interagency Policy Committee, but NOPP will continue to serve as a mechanism for implementing ocean partnerships among federal agencies. The National Ocean Policy outlines nine priority objectives that are consistent with the current and historical activities and objectives of NOPP and which NOPP will support the implementation of in the upcoming year. As the interagency ocean community transitions to a new ocean governance structure led by the National Ocean Council during FY 2011, NOPP will continue to serve as a well-practiced mechanism for implementing ocean partnerships among federal agencies. New interagency ocean initiatives can be effectively implemented through the NOPP model, which has 13 years of experience and lessons learned from which to draw.

For FY 2010, the JSOST's Interagency Working Group on Ocean Partnerships (IWG-OP, formerly the NOPP Interagency Working Group) continued to serve as an oversight and guidance body to NOPP. Under the guidance of the IWG-OP, NOPP will continue to make progress on these four strategic goals:

1. Continue and expand ocean partnership dialogues;
2. Sponsor ocean partnership activities;
3. Identify and remove obstacles and disincentives to ocean partnerships; and
4. Facilitate opportunities for dialogue with the nation's leadership.

Overall fiscal investment in NOPP has increased significantly since the program's inception to a total of approximately \$350 million; the FY 2010 contribution totaled \$24.7 million. By issuing proposal solicitations from FY 1997 to FY 2010, NOPP has funded 163 projects, including 21 renewal projects. Thirteen new projects were funded in FY 2010 focusing on:

- A) *Improving Attachments of Electronic Data Loggers to Cetaceans;*
- B) *Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship;* and
- C) *Exploration and Research of Mid-Atlantic Deepwater Hard Bottom Habitats and Shipwrecks with Emphasis on Canyons and Coral Communities.*

In FY 2010, the Ocean Research and Resources Advisory Panel (ORRAP) continued to serve as the primary ocean-focused federal advisory panel and provided additional guidance to NOPP. Beginning in FY 2011, the ORRAP will also provide independent advice and guidance to the National Ocean Council, as indicated by the National Ocean Policy,

A central tenet of NOPP is interagency partnerships, as seen in the many activities of the IWG-OP and its interaction with other interagency entities. NOPP will continue to complement and support national ocean research objectives and anticipates playing an important role in the implementation of the National Ocean Policy because partnerships and collaboration will be critical to the achievement of the national priority objectives. The program will maintain its pursuit of exciting and novel areas of ocean research, with an emphasis on partnerships.

II. Introduction

Fiscal year (FY) 2010 was a powerful year for the ocean with many challenges and opportunities being presented. In July, the [final recommendations of the Ocean Policy Task Force](#), convened by President Obama, were adopted as the National Ocean Policy under an executive order. The framework for interagency ocean governance includes a stronger mandate and direction, as well as sustained high-level engagement. Also included in the governance structure is continued guidance from the Ocean Research and Resources Advisory Panel (ORRAP) to the highest level of the proposed structure, the National Ocean Council (NOC). The NOC will assume the duties of the National Ocean Research Leadership Council (NORLC), tying this new governance structure closely with NOPP; NOPP will continue to serve as an existing mechanism for implementing ocean partnerships between and among federal agencies. The structure utilized during FY 2010 is described more fully in a notice posted in the Federal Register on 29 June, 2007 (Volume 72, Number 125, p. 35708-35709) and is reflected in the headings of this report to Congress. The NOPP committees and their functions will transition to the structure described in the National Ocean Policy during FY 2011.

Throughout the history of the program, NOPP has transitioned through several governance frameworks, including this most recent transition to the National Ocean Council. The program began through the 1997 Defense Authorization Act (Public Law 104-201), which directed the Secretary of the Navy to establish the NOPP (www.nopp.org). Supplemental legislation for appointments to the NOPP oversight body, the NORLC, and to the Ocean Research Advisory Panel (now ORRAP), is contained in P.L. 105-85, the FY 1998 Defense Authorization Act.

During FY 2010, the ORRAP maintained marine resources under its purview to better reflect the connectivity between ocean research, decision-making, and societal benefits. The working groups of the Joint Subcommittee on Ocean Science and Technology (JSOST), a subcommittee under the National Science and Technology Council structure which also reports to the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI – Under/Assistant Secretary-level body established in response to the U.S. Commission on Ocean Policy report and functionally serving as the NORLC during FY 2010), continue to reflect the core activities of the historical NOPP committees.

NOPP is well positioned to help implement the National Ocean Policy; as illustrated in Figure 1, the past and current activities of NOPP and the priority objectives outlined in the National Ocean Policy overlap, making NOPP a highly effective and appropriate tool for implementing the priorities identified.

Priority Objectives of the Ocean Policy Task Force									
Historic and Current NOPP Activities	Ecosystem-Based Management	Regional Ecosystem Protection and Restoration	Water Quality and Sustainable Practices on Land	Inform Decisions and Improve Understanding	Coordinate and Support	Resiliency and Adaptation to Climate Change and Ocean Acidification	Coastal and Marine Spatial Planning	Changing Conditions in the Arctic	Ocean, Coastal, and Great Lakes Observations and Infrastructure
Achieve and sustain an Integrated Ocean Observing System (IOOS)				Design studies for the Ocean Observatories Initiative					
				Argo Float Array					
	FY 2011 Funding Opportunity on Coordinated Regional Efforts that Further the U.S. IOOS								
Promote lifelong ocean education	National Ocean Sciences Bowl (NOSB)								
		COAST Internship		Ocean Science, Technology and Operations Workforce Study					
Modernize ocean infrastructure and enhance technology development	Sensor development and commercialization			Four FY 2010 multi-institution projects on Improving Attachments of Electronic Data Loggers to Cetaceans				Joint Workshop on Interagency Ocean and Coastal Interests in the Arctic	
Foster interagency partnerships to increase and apply scientific knowledge	LOPHELIA I and II: Deep water coral research			Four FY 2008 multi-institution projects on Atlantic Meridional Overturning Circulation	Six FY 2009 multi-institution projects on Improving Wind Wave Predictions: Global to Regional Scales	Ocean modeling from the Global Ocean Data Assimilation Experiment (GODAE)	One FY 2010 multi-institutional project on Exploration and Research of Mid-Atlantic Deepwater Canyons and Coral Communities	Four FY 2007 multi-institution projects on Coastal Effects of a Diminished-ice Arctic Ocean	
	IWG-OP Biodiversity Ad Hoc group activities			Six FY 2009 multi-institution projects on Improving Tropical Cyclone Intensity Forecasting	IWG-OP Federal Renewable Ocean Energy Working Group activities		FY 2010 funding opportunity on Ocean Renewable Energy and Stewardship		
	Multi-disciplinary and multi-sector partnerships between basic and applied researchers								

Figure 1. Examples of NOPP investments and projects in ocean science, technology and education that intersect with the priority objectives described in the *Final Recommendations of the Interagency Ocean Policy Task Force*.

NOPP will continue to develop and coordinate its activities within the evolving ocean governance structure. The NOPP model of interagency collaboration has proven to be an effective and efficient method of maximizing and enhancing federal investments in ocean science, technology and education. The outlook for the future is promising, as NOPP continues to further the national agenda for ocean research, education and interagency cooperation.

This FY 2010 Report to Congress reflects the central role NOPP is playing in the implementation of the objectives of its enabling legislation and the ocean research priorities identified by participating agencies. The remainder of this report summarizes the NOPP Investment Strategy, the NOPP committees' activities and investments for FY 2010, and ongoing NOPP plans and activities for FY 2011.

III. Partnership Case Study

Since the implementation of NOPP in 1997, there are many examples of the program strengthening interagency partnerships. A recent example exemplifies the opportunities created by participation in NOPP.

Beginning in FY 2009 and continuing into FY 2010, the JSOST's Interagency Working Group on Ocean Partnerships (IWG-OP), the oversight body for NOPP, met with several agencies within the Washington, DC area to raise awareness of the IWG-OP and NOPP by presenting on the history of NOPP and the accomplishments and opportunities available through participation in the program. The objectives of the outreach were dual-purpose; the IWG-OP hoped to 1) excite new agency participants about partnering activities through the IWG-OP and NOPP, and 2) solicit feedback and information from agency program managers regarding ocean issues that require a partnership approach.

Through outreach to the Department of Energy (DOE), the IWG-OP was able to build a partnership between DOE, the Bureau of Ocean Energy, Management, Enforcement and Regulation (BOEMRE, formerly the Minerals Management Service) and the National Oceanic and Atmospheric Administration (NOAA) which resulted in a FY 2010 funding opportunity for *Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship*.

The funding opportunity resulted in the funding of eight joint research awards totaling nearly \$5M to support the responsible siting and permitting of offshore wind energy facilities and ocean energy generated from waves, tides, currents and thermal gradients. This vital/timely research will address key information gaps regarding the potential environmental effects of utilizing renewable ocean energy. This collaborative, interagency effort will help lay the foundation for a clean, renewable offshore energy industry that will diversify our nation's energy portfolio, enhance our energy security, create American manufacturing jobs, and reduce carbon emissions.

In addition, this funding opportunity provided the occasion for DOE to discover the benefits of NOPP participation. An interagency ad hoc group focused on ocean energy issues, coordinated by DOE, recently transitioned to an ad hoc group of the IWG-OP, called the Federal Renewable Ocean Energy Working Group. This transition allows the group to interface with the IWG-OP, enhances opportunities for interagency research funding through NOPP, contributes to information and data sharing efforts, and continues to elevate the importance of renewable ocean

energy issues within the federal interagency community.

This successful partnership, fostered by the IWG-OP and NOPP, has already proven its worth through the research funded in FY 2010 and will continue to be fruitful through the efforts of the Federal Renewable Ocean Energy Working Group. Marine renewable energy is a perfect example of a large-scale ocean issue that requires multiple agencies and sectors to make progress. The IWG-OP and NOPP will continue to encourage additional agency participation in the future.

IV. Strategies for the Future

The JSOST's IWG-OP has taken over the role of the NOPP Interagency Working Group (IWG) in providing the interagency forum for implementing and advancing NOPP. In FY 2010, the IWG-OP continued to follow its [Strategic Plan](#), which outlines the IWG-OP evolution from the NOPP IWG and lays out a path toward implementing goals for ocean partnerships. NOPP, working through the IWG-OP, will continue to pursue new strategic goals, which align with the Strategic Goals described below. The IWG-OP is currently exploring marine biodiversity, Arctic research, ocean acidification and effects of the 2010 Gulf Coast oil spill as areas of research for future consideration.

Each of the four Strategic Goals discussed below identifies three or more actions as specific targets for which partnerships may be necessary. These actions represent measures of sufficient progress for the Strategic Plan. The challenge for NOPP is to facilitate efforts through interagency and intersector partnerships to execute the listed actions.

New actions may be added, implementation plans prepared, and metrics developed and tracked as appropriate. The Strategic Plan will be updated periodically as needed, particularly to reflect adjustments in the priorities and implementation strategies of the National Ocean Policy and [Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy](#) (*Charting the Course*). Prepared by the JSOST as a national plan with significant input and review by the ocean community as a whole, *Charting the Course* is the first report to prioritize national ocean research by focusing on key interactions between society and the ocean. Plans to address actions and any associated metrics, will be documented separately and are intended for annual assessment and update.

The following is an excerpt from the IWG-OP Strategic Plan with accompanying examples of the accomplishments toward each goal that the IWG-OP and NOPP has made:

GOALS

Goal I – Continue and expand ocean partnership dialogues

Actions...

- 1 Build on the partnership successes of the National Oceanographic Partnership Program.
- 2 Serve as a point for dialogue on those tasks requiring interagency or intersector partnerships in order to realize success.
- 3 Form or foster partnerships necessary to support *Charting the Course*, in particular its four near-term priorities.
- 4 Work with the other interagency bodies as needed, form long-term strategic partnerships on emerging science and technology needs and opportunities (for example, the issue of anthropogenic sound in the marine environment and the scientific and mapping efforts necessary to address the interagency Extended Continental Shelf initiative).
- 5 Facilitate and participate in forums on ocean research and development priorities.

Accomplishments...

As discussed in the partnership case study, the adoption of the IWG-OP Federal Renewable Ocean Energy Working Group allows for an interagency forum on marine renewable energy technology, development and application. This strategic partnership between an existing ad hoc group, led by the DOE, and the IWG-OP focuses on an emerging ocean issue with a strong future and will help bring attention to this issue within and among federal agencies. This topic has also been taken up by the ORRAP Industry Sub-panel to make recommendations on specific improvements in the permitting processes affecting the timely implementation of ocean renewable energy projects.

Goal II – Sponsor ocean partnership activities

Actions...

- 1 Invest in critical topics (e.g., Broad Agency Announcements and Requests for Proposals in support of *Charting the Course* and other interagency activities).
- 2 Present awards for Excellence in Partnering to recognize the best examples of projects involving multiple sectors.
- 3 Support forums and reports on emerging ocean topics and develop priorities.

Accomplishments...

The IWG-OP continues to develop annual extramural funding opportunities through NOPP and fund selected ocean research projects. The FY 2010 funding opportunities and funded research are discussed in depth in Chapter V of this report. During FY 2010, the NOPP Excellence in Partnering Award was presented to the *Toward a Predictive Model of Arctic Coastal Retreat in a Warming Climate, Beaufort Sea, Alaska* project, led by Dr. Robert Anderson of the University of Colorado Institute for Arctic and Alpine Research in collaboration with three academic and government partners.

Goal III – Identify and remove obstacles and disincentives to ocean partnerships

Actions...

- 1 Improve partnership flexibility among federal agencies (financial and staffing resources) by:
 - encouraging interagency personnel rotations
 - enabling interagency transfer of resources
 - developing shared interagency objectives for complementary missions
- 2 Develop mechanisms to link federal and non-federal resources especially in the context of regional alliances, consortia and other regional partnerships.
- 3 Raise awareness of obstacles and disincentives external and internal to the federal government.

Accomplishments...

During FY 2010, seven agencies and one industry partner funded research through NOPP. The IWG-OP built on an existing partnership to include industry and non-profit co-sponsorship of the *Improving Attachments of Electronic Data Loggers to Cetaceans* projects. The industry involvement in this research represents a strong, unique partnership between government and industry, working towards a common goal, and continues to lay the groundwork for future partnership opportunities.

Goal IV – Facilitate opportunities for dialogue with the nation’s leadership

Actions...

- 1 Achieve recognition as the leading resource on ocean partnership activities.
- 2 Facilitate/host educational forums or updates to members of Congress and their staff on ocean partnership matters, (e.g., *Charting the Course* and its four near-term priorities).
- 3 Sponsor forums on emerging ocean science and technologies for government leaders specifically regarding needs, opportunities, and benefits of multi-agency and multi-sector relationships.
- 4 Report annually to Congress on partnership activities.

Accomplishments...

During FY 2010, the IWG-OP’s Biodiversity Ad Hoc group hosted a NOPP workshop on *Attaining Operational Marine Biodiversity Observations* with sponsorship from seven federal sponsors and 40 community participants. Discussion at the workshop centered on determining the status of current marine biodiversity observational capabilities and scoping future solutions to operationally monitor the status and trends of biodiversity, in order to create a national biodiversity observation network and allow the nation to determine status and trends of biodiversity in a changing environment. The workshop recommendations have been vetted with the scientific community and presented at several academic conferences and will be taken under consideration for implementation by the IWG-OP and other appropriate interagency bodies.

In order to ensure wise use of the ocean and maintenance of their health, individual agencies pursue scientific and technical information on which to base management decisions. Advancement toward appropriate stewardship of the ocean, and associated societal gains, can be more rapidly and efficiently realized through collaborative partnerships. The IWG-OP, through NOPP, will continue to focus on ocean research objectives which are too large for single agencies to undertake but satisfy multiple agency missions and would benefit from partnerships between government, private industry, and academia.

V. NOPP Investment Profile

NOPP-Funded Activities are those that are either solicited or managed by NOPP and involve support *from two or more agencies*. NOPP-Related Activities are those that are funded primarily *by a single agency* in response to plans produced by NOPP entities. Both types of activities have grown since the inception of NOPP.

NOPP-FUNDED ACTIVITIES

The growth of NOPP-Funded Activities from FY 1997-2010 is shown in Figure 3, which also includes the breakdown by subcategories for Solicited Projects and Managed Activities. In FY 2010, total funding reached \$24.7M.

NOPP-Solicited Projects

NOPP-Solicited Projects are the direct result of a formal NOPP Broad Agency Announcement (BAA) or Request For Proposals (RFP). The process of developing these funding opportunities is fully described in Appendix 1. The funding level for solicited projects has grown from \$10.8M in FY 1997 to \$22.3M in FY 2010 (does not account for inflation, Figure 2). The cumulative investment from FY 1997-2010 is \$315M. Through FY 2010, there have been 165 funded projects, including 21 renewal projects. On average, 11 new projects are initiated each year, with a typical duration of between three and five years.

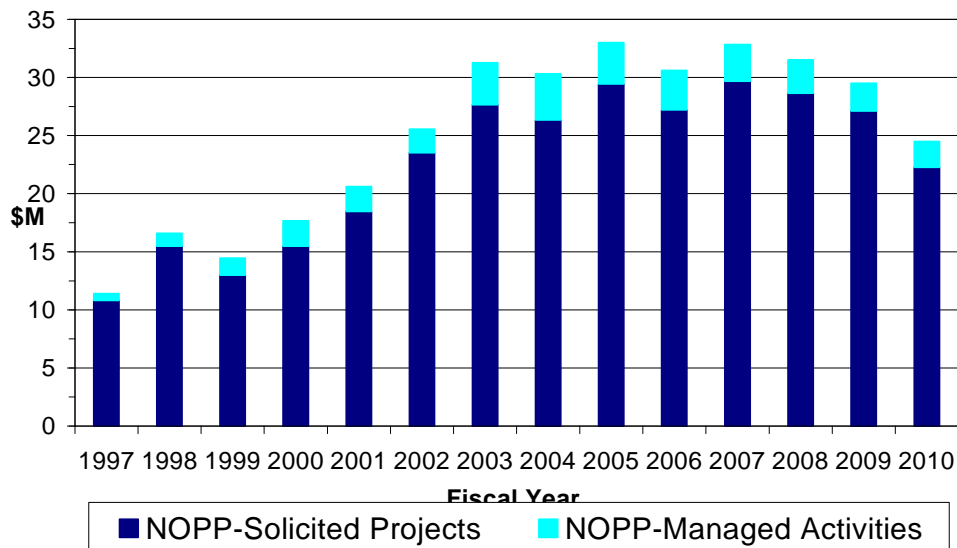


Figure 3. FY 1997-2010 investment in NOPP-Funded Activities, including both NOPP-Solicited Projects and NOPP-Managed Activities. Note that the dollar amounts shown are those spent each year; out-year commitments are not shown.

One of the primary functions of NOPP is to promote partnerships within the federal government and between the federal government and other members of the ocean sciences community, including academia, industry, and non-governmental organizations (NGOs). Figure 4 shows the annual distribution of funding for new awards across sectors within the ocean sciences community. When averaged over NOPP’s thirteen-year history, approximately 59 percent, 22 percent, and 19 percent of the funds have been awarded to academic, government, and industry partners (including NGOs), respectively.

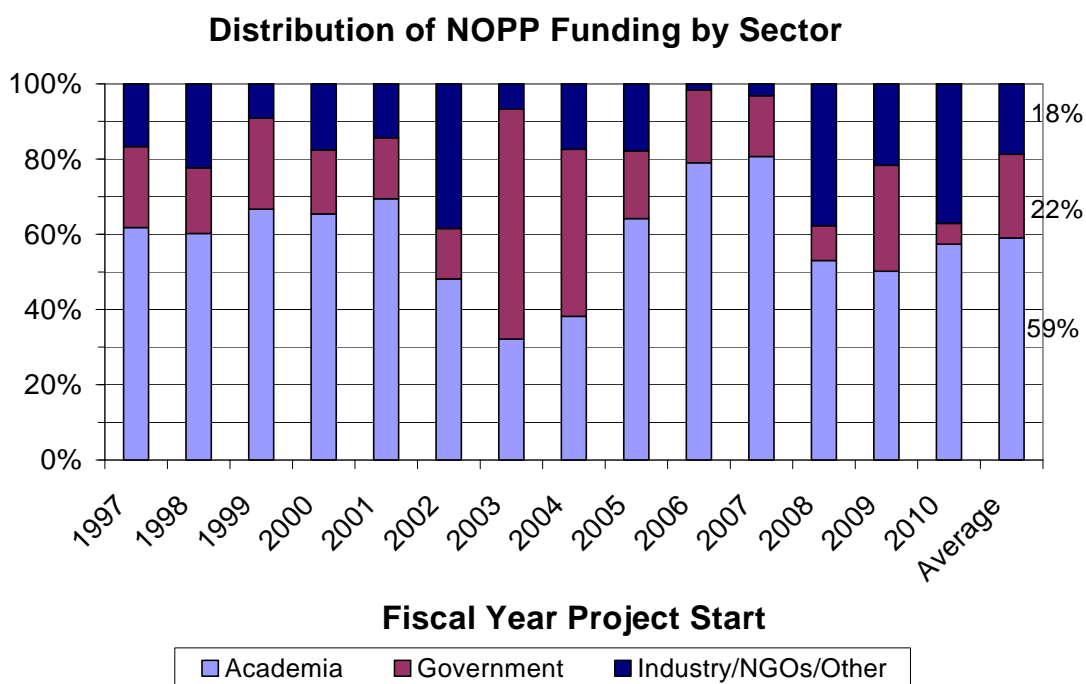


Figure 4. The distribution of annual NOPP funding for new solicited project awards by sector from FY 1997-2010 for academia, government, and industry (includes NGOs/others). The bar on the far right indicates the thirteen-year sector averages.

NOPP-Managed Activities

FY 2010 NOPP-Managed Activities include single agency expenditures for the NOPP Office and the National Ocean Sciences Bowl (NOSB). Funding for managed activities has grown from \$0.6M in FY 1997 to \$2.4M in FY 2010 (Figure 3). The cumulative expenditure for these activities is \$35 M over the history of the program.

NOPP-RELATED ACTIVITIES

NOPP-Related Activities include new investments in activities overseen by NOPP entities. These investments fulfill the broad cross-cutting oceanographic goals and partnerships embraced by NOPP, but they are primarily single-agency expenditures.

VI. Fiscal Year 2010 Activities

Overall fiscal investment in NOPP has increased since its inception in 1997 and can best be described in terms of NOPP-Funded Activities and NOPP-Related Activities.

NOPP-FUNDED ACTIVITIES

NOPP-Solicited Projects

NOPP agencies invested approximately \$17.2M in new NOPP-Solicited projects in FY 2010 in response to three solicitations: a BAA issued in August 2009 through the Office of Naval Research (ONR), a BAA issued in January 2010 through the Minerals Management Service (now the Bureau of Ocean Energy Management, Regulation, and Enforcement, BOEMRE), and a RFP issued through BOEMRE in April 2010. Research topics included: 1) *Improving Attachments of Electronic Data Loggers to Cetaceans*, 2) *Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship*, which included eight subtopics,

and 3) *Exploration and Research of Mid-Atlantic Deepwater Hard Bottom Habitats and Shipwrecks with Emphasis on Canyons and Coral Communities*. In response to the solicitations, 76 proposals were received that included collaborations across academia, industry, and government. The proposals underwent a peer review process in February, April through July, and August 2010, respectively, to determine which proposals would be funded; overall, 13 projects were approved for funding by the IWG-OP on behalf of the ICOSRMI. Detailed information on these solicitations is included in Appendix 2, and summaries of the funded projects are provided in Appendix 3.

BAA Topic (Issuing NOPP Agency; Funding Partners; Release Date)	Approximate Funding Available	Number of Awards Issued
<i>Improving Attachments of Electronic Data Loggers to Cetaceans</i> (ONR; NSF, BOEMRE, NOAA, ExxonMobil, National Fish and Wildlife Foundation; August 2009)	\$2.8M over three years	Four
<i>Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship</i> (BOEMRE; DOE, NOAA; January 2010)	\$5M over three years	Eight
<i>Exploration and Research of Mid-Atlantic Deepwater Hard Bottom Habitats and Shipwrecks with Emphasis on Canyons and Coral Communities</i> (BOEMRE; NOAA, USGS; April 2010)	\$9.4M over four years	One

Table 1. Summary of NOPP BAA issuance and results for FY 2010.

NOPP-Managed Activities

National Ocean Sciences Bowl

The NOSB[®] was created in 1998 through funding from NOPP. The NOPP agencies, committed to increasing ocean literacy, continue to sponsor the program. FY 2010 proved to be an exciting year for the NOSB, as the theme of the 2010 competition was *Marine Technology*. Scientists from around the country contributed to the theme by being guest speakers, presenting in a virtual seminar, and writing questions placed in the competitions. The 2010 NOSB Finals competition was held in St. Petersburg, FL on 23-25 April 2010 at the University of South Florida. Media coverage of the 2010 competitions had over 17 million media hits, an increase from 3 million in 2009. Articles on the NOSB Finals competition appeared in top media outlets, such as the *Miami Herald*, *USA Today* and the *San Francisco Examiner*.

NOSB Finals competition Winners:

- 8th Place: Arcadia High School – Arcadia, CA
- 7th Place: Thomas Jefferson High School for Science & Technology – Alexandria, VA
- 6th Place: Neah-Kah-Nie High School – Rockaway Beach, OR
- 5th Place: Punahou School – Honolulu, HI
- 4th Place: La Jolla High School – La Jolla, CA
- 3rd Place: Mission San Jose High School – Fremont, CA
- 2nd Place: Marine Academy of Science and Technology – Highlands, NJ
- 1st Place: Marshfield High School, Marshfield, WI

In FY 2010, NOSB also hosted its second annual *Living on the Ocean Planet* video contest to engage additional students in NOSB opportunities. The contest is designed to reach beyond established NOSB teams and allow students the opportunity to showcase their passion for the ocean in a more creative manner. The students were required to highlight an important marine

technology and relate it to one of the seven Ocean Literacy Principles. Will and Gwyn Welch, from Contoocook Valley Regional High School (NH) won the contest with their video, *Ocean Exploration: The Future*. The [winning video](#) was posted on the Smithsonian's Ocean Today Kiosks and the NOSB, Census of Marine Life, and National Marine Educators Association web sites. Their video was also premiered and a trophy was presented to the team at the 2010 NOSB Finals competition.

In addition, NOSB has continued with its longitudinal study. This year, a current career path element was added to the survey; as many NOSB alumni are graduating and entering the workforce. A separate study was also done on the impact the program has on scientific volunteers and their attitudes toward being engaged in the NOSB program. Current and past study reports can be found on the NOSB website: <http://www.nosb.org/alumni-2/alumni-study-archives/>.

NOPP Office

The NOPP Office, sponsored through a contract from ONR to the Consortium for Ocean Leadership, supported many interagency activities during FY 2010. All meetings and intercessional activities of the IWG-OP, the IWG-OP's Biodiversity Ad Hoc Group, the Interagency Working Group on Facilities and Infrastructure (IWG-FI), the IWG-FI's Task Force on Unmanned Systems and the ORRAP were supported by NOPP Office staff. The IWG-OP adopted an additional ad hoc group focused on renewable ocean energy coordination, called the Federal Renewable Ocean Energy Working Group and the NOPP Office hosted the group's meetings. In addition to supporting interagency coordination, the NOPP Office coordinated the peer review of 76 proposals, resulting in 13 funded research projects. Outreach efforts undertaken in FY 2010 include: hosting exhibit booths at the MTS/IEEE Oceans '09 and Oceans '10 conferences, highlighting NOPP at the American Geophysical Union's 2009 Fall Meeting, exhibiting and holding a town hall at the Ocean Sciences 2010 conference, presenting a poster at the 22nd International Conference of the Coastal Society, and developing new outreach materials. During FY 2010, a newly designed website, www.nopp.org, was launched. The new website features an interactive forum, which was used to collect community input on a draft workshop report on biodiversity. The NOPP Office staff members also serve as liaisons to other Interagency Working Groups and committees of the ocean governance structure.

NOPP INTERAGENCY INTERACTIONS

A central tenet of NOPP is interagency partnership. The most recent activities are described in the following two sections of this report.

Interagency Working Group on Ocean Partnerships

The IWG-OP met 11 times in FY 2010 in support of partnership efforts across the ocean community. The IWG-OP made progress on the goals and actions of their Strategic Plan, designed to complement the NOPP Strategic Plan, in order to achieve significant integrative value for the ocean science and resource management missions of the member agencies and partners.

The group developed solicitations on three topics: 1) *Improving Attachments of Electronic Data Loggers to Cetaceans*, 2) *Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship*, which included eight subtopics, and 3) *Exploration and Research of Mid-Atlantic Deepwater Hard Bottom Habitats and Shipwrecks with Emphasis on Canyons and Coral Communities*. Thirteen multi-year proposals were funded totaling \$17.2M in contributions from partner agencies.

The IWG-OP presented the annual NOPP Excellence in Partnering Award to *Toward a Predictive Model of Arctic Coastal Retreat in a Warming Climate, Beaufort Sea, Alaska* in July 2010. The long-term goal of this project is to understand the environmental drivers of extremely rapid coastal erosion in the Arctic, so that predictions can be made regarding how present and future climate change might influence coastal erosion. The project team monitored erosion processes using time-lapse photography, by collecting meteorological and oceanographic data from sites along the coast, and by analyzing climatic and geographic data from the past few decades to identify trends in coastline position through time.

The IWG-OP Biodiversity Ad Hoc Group met four times during FY 2010. The intent of the group is to develop actions and activities, including but not limited to NOPP BAAs and RFPs, starting with four categories: 1) biodiversity science and technology; 2) biodiversity metrics, indices and proxies; 3) applications and data sharing; and 4) international conventions and frameworks. At the request of the Ad Hoc Group, the National Oceanographic Data Center is in the process of developing standardized grant and contract language for potential adoption by agencies in upcoming awards. Using the available channels of the current ocean governance structure, the Ad Hoc Group and the IWG-OP have sent two letters of support to the JSOST and the Subcommittee on Integrated Management of Ocean Resources (SIMOR), one expressing the need for increasing the U.S. data-support infrastructure for biological resource data and one urging a coordinated U.S. response to the 2010 International Year of Biodiversity, as declared by the United Nations General Assembly. The group hosted a workshop on *Attaining Operational Marine Biodiversity Observations* in May 2010, which was listed as one of the 2010 International Year of Biodiversity activities and was attended by more than 35 experts in the marine science field. The goal of the workshop was to determine the status of current marine biodiversity observational capabilities and to scope future solutions to operationally monitor the status and trends of biodiversity. An online forum was available from June through November 2010 for public comment on the recommendations of the workshop.

The IWG-OP plans to continue and expand its outreach efforts to potential industry partners, so that members of industry are more involved in the NOPP program and process. In October 2009, representatives from the IWG-OP hosted a Visioning Round Table at the Oceans '09 Marine Technology Society / Institute of Electrical and Electronics Engineers Conference in Biloxi, MS. The round table discussion focused on furthering industry-government cooperation in ocean related research, specifically through NOPP. The session was an opportunity to identify and understand areas of common interest among a variety of sectors. In particular, the discussion was centered on increased participation by small businesses, building of educational partnerships, and critical areas of ocean research. Representatives of the offshore energy and technology industries, academia, research institutions, and U.S., Canadian and Japanese governments participated.

In early FY 2010, the IWG-OP and the IWG-FI conducted a workshop based on the committees' interest in pursuing topics related to the Arctic region. Discussions focused on operations, research, infrastructure, partnerships, and policy. The goal of the workshop was to identify areas where federal agencies might collaborate and coordinate resources in the Arctic. More information on the structure and outcomes of the workshop is available on page 16.

The IWG-OP began an initiative in February 2010 to increase communication amongst the various JSOST IWGs. Although each IWG has a distinct charter, there are shared interests, such as coastal and marine spatial planning, climate change and ocean education. Throughout FY 2011, NOPP and the IWG-OP will facilitate information exchanges designed to identify connections, overlapping issues, and challenges which create opportunities for interaction and collaboration amongst the IWGs.

Interagency Working Group on Facilities and Infrastructure

During FY 2010, the IWG-FI drafted a revised charter to include a broader definition of infrastructure based on communication with the JSOST; an update to the group's name was a component of the new charter. The IWG-FI met once in FY 2010 and will continue to meet as necessary. It continued to consider a long-term vision for the federal oceanographic research and operational facilities in the U.S. and focused on future interagency ocean facility, technology and infrastructure priorities.

In December 2009, the IWG-FI co-hosted a joint workshop with the IWG-OP, *Interagency Ocean and Coastal Interests in the Arctic*, to explore the capability and capacity of federal agencies in the Arctic. As the Arctic is increasingly open to research, tourism, and resource extraction, it is critical that federal agencies coordinate their activities in a cost effective manner, particularly considering the harsh environment (i.e. safety) and the environmental changes being observed. The IWG-OP and the IWG-FI identified the following three steps to pursue:

- a gap analysis of Arctic activities and investments by agency/department;
- an identification and prioritization of a concise list of interagency priorities, both short-term and long-term; and
- an assessment of current and future infrastructure requirements needed to achieve these priorities.

The above actions will address at least two of the priority objectives identified by the National Ocean Policy: the need for improved coordination / integration across the federal government and the need to address changing conditions in the Arctic. In FY 2011, the IWG-OP and the IWG-FI will continue to facilitate these collaborations by assisting in the assessment of capability and capacity, minimizing duplication, and maximizing joint, collaborative endeavors.

Based upon a recommendation from an IWG-OP led workshop on the *Consideration of a National Implementation Plan on Gliders, Autonomous Underwater Vehicles (AUV) and Unmanned Aerial Systems (UAS)*, a terms of reference for the IWG-FI Task Force on Unmanned Systems was created and a kick-off meeting was held in January 2010. The scope of the Task Force includes AUVs, gliders, UASs, unmanned surface vessels and Lagrangian platforms. A request for data is currently being developed to gather information on agency inventories, activities, topical interest, requirements, current gaps and future needs. The results from the data call will provide starting points for discussion and actions during FY 2011. The Task Force plans to communicate with existing coordination bodies to gain knowledge about their activities and reduce duplication of effort.

Ocean Research and Resources Advisory Panel

The ORRAP, the nation's only Federal Advisory Committee Act (FACA) committee whose scope covers the full spectrum of ocean science, education and resource management topics, continued its trend of meeting three times annually in order to provide advice and guidance on NOPP and other matters to the NORLC/ICOSRMI. The FY 2010 ORRAP meetings took place on 17-18 November 2009 in Orlando, FL, 15-16 March 2010 in Washington, DC, and 27-28 July 2010 in Seward, AK. During FY 2010, the terms for five ORRAP members expired, and eight new members were welcomed, bringing ORRAP membership to 14.

The November 2009 meeting featured strategy sessions on public education efforts, increasing the prominence and impact of ORRAP's work within the recommendations of the Ocean Policy Task Force, contributing to the refresh of *Charting the Course*, and various aspects of ocean

observing. The meeting was accompanied by a workshop focused on designing a revised ORRAP strategy on education. ORRAP's recommendations in 2010 focused on national priority topics including marine spatial planning, the Arctic and ocean acidification.

The ORRAP currently operates four sub-groups to address four priority areas: 1) education, 2) industry, 3) ocean observing, and 4) ocean acidification (through a Task Force created in early 2010). The Education Sub-panel focused on three areas of interest: 1) ways to collaborate on ocean education initiatives; 2) how to encourage more participation by the Department of Education; and 3) a better means to set priorities in the ocean education community. The Education Sub-panel convened a workshop in November 2009, in conjunction with the leadership of the JSOST/ Subcommittee on Integrated Management of Ocean Resources Interagency Working Group on Ocean Education (IWG-OE), to develop revisions to the ORRAP's Education Strategy, originally written in 2002. The Sub-panel will continue to interact with the IWG-OE and meet as necessary in FY 2011.

The Industry Sub-panel developed principles, approved by ORRAP, for environmentally responsible offshore energy development. This effort will continue in FY 2011, as the Sub-panel considers hosting a forum to gather community experts to strategize on ways to accelerate development of ocean renewable energy projects.

Recognizing the increasing relevance of ocean acidification to the health of the oceanic system and increasing efforts among federal agencies to address this issue, the ORRAP formed an Ocean Acidification Task Force to enable ORRAP to provide expert advice and recommendations to the federal government. The OATF reviewed federal ocean acidification plans and worked to enhance the coordination and implementation of ocean acidification efforts among academic, state, private, federal, and other stakeholders, including diverse industry groups and foundations.

Ocean Observing Sub-panel activities have been put on temporary hold as the ORRAP reviews the Sub-panel's membership for the proper breadth of expertise to address priority ocean observing topics in the future. ORRAP will discuss the future direction of the Sub-panel at ORRAP's 8-9 December 2010 meeting.

All ORRAP recommendations, meeting materials, and information on ORRAP sub-groups are accessible via the ORRAP website: www.nopp.org/committees/orrapp.

VII. Fiscal Year 2011 Activities and Plans

Interagency science and technology priorities for FY 2011 have been articulated via an interagency priorities memo prepared by the JSOST and sent from Director of the Office of Science and Technology Policy to the heads of executive departments and agencies; NOPP agencies may use the NOPP BAA process to implement corresponding collaborative research activities in response to these guidance memos. NOPP, working through the IWG-OP, plans to investigate innovative research areas to help inform future implementation of the ocean policy priority areas articulated by the National Ocean Policy and national ocean research priorities set by the JSOST.

NOPP-FUNDED ACTIVITIES

Agency contributions for NOPP activities, both solicited and managed, are anticipated for FY 2011. NOPP activities for FY 2011 are currently underway and are discussed further in the following section.

NOPP-Solicited Projects

A BAA was issued in July 2010 for funding in FY 2011. Research was requested for projects addressing four topics: *Continued Development of Regional Coastal Ocean Observing Systems; National-Scale Efforts Toward Verification and Validation of Observing Technologies; Improved and Routine Production, Stewardship, and Application of the Group for High Resolution Sea Surface Temperature Data; and Observational Data for Migratory Species on the Outer Continental Shelf to Inform Permitting and Licensing for Offshore Renewable Energy Facilities and to Contribute to Basic Knowledge of Marine Mammal Behavior and Ecology in this Habitat.* The proposal reviews will take place in December 2010 and funding announcements are anticipated in early 2011. More information regarding the solicitation is included in Appendix 2.

NOPP-Managed Activities

National Ocean Sciences Bowl

The fourteenth annual NOSB Finals competition will be held 30 April – 2 May in Galveston, TX, hosted by Texas A&M University Galveston. The theme for this year is *Human Responses to Ocean Events*- how humans respond, react, and adapt to events that occur in the ocean. As in the past, the theme will play a significant role in the development of questions, prizes, field trip destinations, and keynote speakers. Also unique for this year, one of the field trips offered to participants will include performing community service and will have the students planting sea grass to help improve the local habitat.

In order to enhance the students' use of more critical thinking skills, a new policy briefing component has been implemented for the Finals competition in 2011. Prior to the Finals competition, teams will receive a relevant topic which they will research and each team member will be responsible for presenting the views of one of five chosen stakeholders. The team will also have to present a unified recommendation on how current policy could be improved to take into account all of their stakeholder's views. A prize will be awarded to the team that the panel of judges feel has done the best job. In the future, the scores will be incorporated into the overall academic competition scores.

NOSB will also be hosting its third annual *Living on the Ocean Planet* video contest to engage additional students that may not be interested in participating in a structured academic competition, but are interested in the ocean. For this year's contest, students will need to highlight an example of human response to a specific ocean event, and relate it back to one of the seven Ocean Literacy Principles. The winning national video will once again be posted on the Smithsonian's Ocean Today Kiosks and the websites of NOSB and regional NMEA chapters. The team will also premiere their video at the 2011 NOSB Finals Competition.

NOSB is planning to implement a web-based professional development training for coaches to better familiarize them with the theme. This training was offered in 2010 for the marine technology theme and went very well, with many coaches appreciating the extra resources and materials. The "webinar" will include activities, reading material, and guest presenters on issues related to this year's theme, such as ocean energy, ocean drilling, harmful algal blooms, fishery population collapses and the Ocean Policy Task Force. This project will be done in partnership with Deep Earth Academy, the educational component of the U.S. Integrated Ocean Drilling Program.

For additional information on NOSB, please visit www.nosb.org.

NOPP Office

In FY 2011, the NOPP Office plans to continue their support of its interagency committees, including the IWG-OP, the IWG-OP Biodiversity Ad Hoc Group and Federal Ocean Energy Working Group, the IWG-FI, the IWG-FI Task Force on Unmanned Systems, and the ORRAP. The NOPP Office has begun to coordinate the reviews for 29 proposals submitted under the FY 2011 call for *Implementation of the U.S. Integrated Ocean Observing System (IOOS)*. Additional plans for FY 2011 include the publication of the *Attaining Operational Marine Biodiversity Observations* workshop report, coordination of the peer review process for all FY 2011 NOPP funding solicitations, and supporting NOPP in helping to implement the National Ocean Policy priority objectives.

NOPP-RELATED ACTIVITIES

Individual agencies will continue to invest in NOPP-Related Activities in FY 2011. For example, various agencies of the IWG-OP will continue to support infrastructure activities for biological data, such as the U.S. Geological Survey's (USGS) continued role in the development of the Ocean Biogeographic Information System-USA (OBIS-USA). OBIS-USA is meant to fill the role of a national open data-sharing-portal, providing comprehensive data coverage for U.S. and global marine biodiversity information needs. The USGS has declared that OBIS-USA is the marine component of its National Biological Information Facility, and is the U.S. marine contribution to the Global Biodiversity Information Infrastructure. The IWG-OP has become more active in biological data issues through the Biodiversity Ad Hoc Group, where synergies between OBIS-USA and the IWG-OP can be explored. As partnership opportunities focused on biological data infrastructure arise, the IWG-OP will support and coordinate as appropriate through the Biodiversity Ad Hoc group.

NOPP INTERAGENCY INTERACTIONS

In FY 2011, NOPP will continue to work with and through the appropriate ocean governance channels, including interaction with the National Ocean Council. Below are the specific plans for three bodies that are intimately involved with NOPP.

Interagency Working Group on Ocean Partnerships

The IWG-OP will continue to meet monthly in FY 2011. Efforts will continue along its strategic planning and implementation process, specifically in support of the nine priority objectives of the National Ocean Policy and the revised *Charting the Course*. The IWG-OP will also continue working toward improved interagency partnership flexibility, specifically in the area of transferring funds between agencies through the authority of the Economy Act. The following forums allow the IWG-OP to explore innovative areas of ocean research and develop new partnership opportunities.

The IWG-OP has developed and announced two FY 2011 funding opportunities to date. A federal funding opportunity invited proposals on *Implementation of the U.S. IOOS* and received 29 submissions. Funding announcements for this topic are expected in early 2011. An additional BAA on *Marine Mammal Detection and Monitoring* contains four subtopics and the deadline for submission is 23 November 2010. Approximately \$3.8M over three years is anticipated for projects selected for funding under this BAA. Additional funding solicitations are being developed for FY 2011, with research topics such as: sensor development for measuring ocean acidification and oil spill research related to the Gulf of Mexico oil spill.

The IWG-OP Biodiversity Ad Hoc Group has met once in FY 2011 and will continue to meet quarterly. The IWG-OP Biodiversity Ad Hoc Group will continue working to increase the effectiveness of federal biodiversity data management to enable better tracking of biodiversity

status and trends. In FY 2011, the group will focus on the utility of animal-borne sensors in monitoring the ocean, the creation of a federal marine mammal database and a national marine biodiversity observation network, and the establishment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.

Interagency Working Group on Facilities and Infrastructure The IWG-FI has not yet met in FY 2011, but is the leadership of the group in fostering inter-IWG discussions to begin drafting a strategic action plan for the National Ocean Policy Priority Objective, *Ocean, Coastal and Great Lakes Observations, Mapping and Infrastructure*. The IWG-FI Co-Chairs have met with the Co-Chairs of the IWG on Ocean and Coastal Mapping, as well as the leadership of the Interagency Ocean Observations Committee.

The IWG-FI Task Force on Unmanned Systems met in December 2010 to continue the development of a strategic plan for unmanned systems. This plan will focus on enhancing mission capability of agencies, respond to critical needs, mature science and technology advances and increase the autonomy, performance and affordability of the federal unmanned vehicle systems.

Ocean Research and Resources Advisory Panel

The ORRAP met on 8-9 December 2010 in Washington, DC, and, to date, has made progress on the following: Approving a new statement on education principles and priorities; developing strategy to implement the National Ocean Policy's framework for Coastal and Marine Spatial Planning; producing recommendations on maximizing the impact of the ocean acidification effort nationally; engaging early with NOC staff; reviewing Arctic observing needs for the nation; advising on the JSOST's refresh of *Charting the Course*; and continuing to promote the recommendations contained in its transition document to the Obama administration.

Prominent items for the ORRAP's FY 2011 work load and meeting agendas will likely include:

- a. Providing high-level recommendations to the NOC to advance the National Ocean Policy.
- b. Reviewing NOPP-funded projects and their selection process.
- c. Implementing education priorities.
- d. Assessing federal progress and opportunities regarding the establishment of IOOS®.
- e. Improving the processes for nationwide development ocean renewable energy projects.
- f. Reviewing and advising on federal progress regarding ocean acidification.
- g. Assessing priorities and opportunities for research and resource management in the Arctic.

The ORRAP Education and Ocean Observing Sub-panels will meet as necessary in FY 2011. The Industry Sub-panel is planning to host a forum in FY 2011 to accelerate the development of ocean renewable energy projects. The forum is intended to consolidate common issues among participants, propose solutions that fit within legal and jurisdictional frameworks, and illustrate how those solutions would better attract investors and put projects in the water more quickly.

As the effect of ocean acidification on oceanic systems and human well-being continues to come into focus, and as federal agencies continue to direct efforts toward this issue, the Ocean Acidification Task Force will continue its work. The group will meet on 6-7 December 2010 to fulfill its charge, thus enabling ORRAP to provide expert recommendations to the federal government on diverse ocean acidification matters.

The ORRAP stands ready to return to briefing the highest levels of the ocean governance structure, offering advice and recommendations as required by legislative mandate and as needed by the nation.

VIII. Fiscal Year 2012 Plans

Agency-specific budget requests for the FY 2012 Administration's Budget have recently been submitted; therefore, precise funding levels and associated programmatic issues are not yet firmly established. The IWG-OP agencies anticipate contributions to NOPP to be comparable to those of both FY 2010 and FY 2011 and anticipate supporting interagency collaborations and extramural research partnerships.

IX. Conclusion

In the past, NOPP has contributed to the implementation of national ocean research priorities, such as the Near-Term Priorities of *Charting the Course* and the annual funding memos to the Office of Science and Technology Policy. NOPP will continue to complement and support such efforts in the future and anticipates taking a strong role in the National Ocean Policy priority objectives. NOPP will continue to pursue novel areas of research by cultivating an increased emphasis on partnership solicitations that facilitate the integration of science and technology with resource management.

Appendix 1. Development and Process for NOPP-Funded Research

Two or more agencies typically collaborate on funding NOPP research. Funded NOPP projects require multi-sector partnerships between academia, industry (including non-government organizations), and government (including state and local).

Research topics funded through NOPP are initiated via interactions among agency program managers, often at IWG-OP meetings. The partner agencies then informally propose the research topic to the IWG-OP for approval to proceed. At this point, interagency partnerships are formed, tentative levels of support are pledged on an as available basis, and draft solicitation (BAA or RFP) language is developed. The IWG-OP then approves the funding announcement language, which is then announced by a lead agency as a BAA or RFP on behalf of NOPP.

Once a funding opportunity is announced, all submitted proposals undergo a peer review process similar to that of the National Science Foundation (NSF). Proposals are reviewed based on:

- Relevance of the proposed research to NOPP objectives;
- Overall scientific and technical merits of the proposal;
- Level of support of critical research objectives or operational goals;
- Quality of proposed partnerships;
- The offeror's capabilities, related experience, and facilities that are critical to the proposal objectives;
- The long-commitment of the partners to the proposed objectives;
- The qualifications and experience of the proposed PI and key personnel; and
- Reasonableness of cost.

The rankings of the peer review panel are made available to and reviewed by the agency program managers, who make a recommendation for funding to the IWG-OP. After receiving IWG-OP approval, the funded research projects are announced.

Appendix 2. NOPP Solicitations

FY 2010 ONR BROAD AGENCY ANNOUNCEMENT #ONR-BAA-09-037

Topics:

- Improving Attachments of Electronic Data Loggers to Cetaceans
- Improvements in High-Resolution, Tide-Resolving Global Ocean Predictions

FY 2010 MMS BROAD AGENCY ANNOUNCEMENT #M10PS00152

Topics:

- Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship

FY 2010 BOEMRE Request for Proposals ANNOUNCEMENT #M10PS00206

Topics:

- Exploration and Research of Mid-Atlantic Deepwater Hard Bottom Habitats and Shipwrecks with Emphasis on Canyons and Coral Communities

Appendix 3. NOPP-Funded Projects Initiated in Fiscal Year 2010

IMPROVING ATTACHMENTS OF ELECTRONIC DATA LOGGERS TO CETACEANS

"Improving Attachments of Non-invasive (Type III) Electronic Data Loggers to Cetaceans"

Lead Principle Investigator (PI): Dr. Michael Moore, Woods Hole Oceanographic Institution

Funding Requested: \$899,000

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-1-improving-attachments-of-electronic-data-loggers-to-cetaceans/#Moore>

"Improving Attachments of Remotely-deployed Dorsal Fin-mounted Tags: Tissue Structure, Hydrodynamics, In Situ Performance, and Tagged-animal Follow-up"

Lead Principle Investigator (PI): Dr. Russell Andrews, Alaska SeaLife Center

Funding Requested: \$735,000

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-1-improving-attachments-of-electronic-data-loggers-to-cetaceans/#Andrews>

"Examination of Health Effects and Long-term Impacts of Deployments of Multiple Tag Types on Blue, Humpback, and Gray Whales in the Eastern North Pacific"

Lead PI: Dr. John Calambokidis, Cascadia Research Collective.

Funding Requested: \$450,000

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-1-improving-attachments-of-electronic-data-loggers-to-cetaceans/#Calambokidis>

"Evaluating Potential Effects of Satellite Tagging in Large Whales: A Case Study with Gulf of Maine Whales"

Lead PI: Dr. Jooke Robbins, Provincetown Center for Coastal Studies

Funding Requested: \$670,000

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-1-improving-attachments-of-electronic-data-loggers-to-cetaceans/#Robbins>

DEVELOPING ENVIRONMENTAL PROTOCOLS AND MONITORING TO SUPPORT OCEAN RENEWABLE ENERGY AND STEWARDSHIP

"Characterization and Potential Impacts of Noise Producing Construction and Operation Activities on the Outer Continental Shelf (OCS)"

Lead PI: Dr. Chris Clark, Cornell University

Funding Requested: \$499,903

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Clark>

"Protocols for Baseline Studies and Monitoring for Ocean Renewable Energy"

Lead PI: Mr. Steven Kopf, Pacific Energy Ventures

Funding Requested: \$499,705

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Kopf>

"Roadmap: Technologies for Cost Effective, Spatial Resource Assessments for Offshore Renewable Energy"

Lead PI: Dr. John Miller, University of Massachusetts-Dartmouth, Marine Renewable Energy Center

Funding Requested: \$748,035

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Miller>

"Evaluating Acoustic Technologies to Monitor Aquatic Organisms at Renewable Energy Sites"

Lead PI: Dr. John Horne, University of Washington

Funding Requested: \$746,617

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Miller>

"Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship"

Lead PI: Dr. Rebecca Smyth, University of Texas-Austin

Funding Requested: \$497,020

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Smyth>

"Visual Impact Evaluation System for Offshore Renewable Energy"

Lead PI: Dr. Jackson Cothren, University of Arkansas

Funding Requested: \$497,768

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Cothren>

"Bayesian Integration for Marine Spatial Planning and Renewable Energy Siting"

Lead PI: Mr. Kevin Halsey, Parametrix

Funding Requested: \$499,902

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#Halsey>

"Developing Environmental Protocols and Monitoring to Support Ocean Renewable Energy and Stewardship"

Lead PI: Dr. Jennifer McCann, University of Rhode Island

Funding Requested: \$745,000

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-2-developing-environmental-protocols-and-monitoring-to-support-ocean-renewable-energy-and-stewardship/#McCann>

EXPLORATION AND RESEARCH OF MID-ATLANTIC DEEPWATER HARD BOTTOM HABITATS AND SHIPWRECKS WITH EMPHASIS ON CANYONS AND CORAL COMMUNITIES

"Atlantic Deepwater Canyons"

Lead PI: Mr. Stephen Viada, CSA International, Inc.

Funding Requested: \$2,999,879

A project summary can be found at: <http://www.nopp.org/funded-projects/fy2010-projects/topic-3-exploration-and-research-of-mid-atlantic-deepwater-hard-bottom-habitats-and-shipwrecks-with-emphasis-on-canyons-and-coral-communities/>

Acronyms and Abbreviations

AUV	Autonomous underwater vehicle
BAA	Broad Agency Announcement
BOEMRE	Bureau of Ocean Energy Management, Enforcement and Regulation
<i>Charting the Course</i>	<i>Charting the Course for Ocean Science in the United States for the Next Decade: An Ocean Research Priorities Plan and Implementation Strategy</i>
DOE	Department of Energy
FACA	Federal Advisory Committee Act
FY	Fiscal Year
ICOSRMI	Interagency Committee on Ocean Science and Resource Management Integration
IOOS	Integrated Ocean Observing System
IWG	Interagency Working Group
IWG-FI	Interagency Working Group on Facilities and Infrastructure
IWG-OE	Interagency Working Group on Ocean Education
IWG-OP	Interagency Working Group on Ocean Partnerships
JSOST	Joint Subcommittee on Ocean Science and Technology
M	Million
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NOC	National Ocean Council
NOPP	National Oceanographic Partnership Program
NORLC	National Ocean Research Leadership Council
NOSB	National Ocean Sciences Bowl
OBIS	Ocean Biogeographic Information System
ONR	Office of Naval Research
ORRAP	Ocean Research and Resources Advisory Panel
RFP	Request for Proposals
UAS	Unmanned Aerial Systems
USGS	United States Geological Survey