

**COMMERCE, JUSTICE, SCIENCE, AND RE-
LATED AGENCIES APPROPRIATIONS FOR
FISCAL YEAR 2009**

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

[The following testimonies were received by the Subcommittee on Commerce, Justice, Science, and Related Agencies for inclusion in the record. The submitted materials relate to the fiscal year 2009 budget request for programs within the subcommittee's jurisdiction.]

DEPARTMENTAL WITNESSES

DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PREPARED STATEMENT OF VICE ADMIRAL CONRAD LAUTENBACHER, JR. (U.S. NAVY, RET.), UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE AND ADMINISTRATOR

Madam Chairwoman and members of the Committee, before I begin my testimony I would like to thank you for your leadership and the generous support you have shown the National Oceanic and Atmospheric Administration (NOAA). Your continued support for our programs is appreciated as we work to improve our products and services for the American people. Thank you for the opportunity to testify on the President's fiscal year 2009 budget request for NOAA.

The fiscal year 2009 President's budget supports NOAA's priority to advance mission-critical services. The fiscal year 2009 request is \$4.1 billion, which represents a \$202 million or 5.2 percent increase over the fiscal year 2008 enacted level. This request includes the level of resources necessary to carry out NOAA's mission, which is to understand and predict changes in the Earth's environment, and conserve and manage coastal and marine resources to meet our nation's economic, social and environmental needs. At NOAA we work to protect the lives and livelihoods of Americans, and provide products and services that benefit the economy, environment, and public safety of the nation. Before I discuss the details of our fiscal year 2009 budget request, I would like to briefly highlight some of NOAA's notable successes from the past fiscal year (2007).

FISCAL YEAR 2007 ACCOMPLISHMENTS

NOAA is Major Contributor to Nobel Prize-Winning Intergovernmental Panel on Climate Change Reports

Scientists from NOAA's Earth System Research Laboratory were among those sharing in the 2007 Nobel Peace Prize. The scientists were recognized for their contributions to the Intergovernmental Panel on Climate Change (IPCC). The IPCC was created in 1988 by the World Meteorological Organization and the United Nations Environment Program to provide regular assessments for policymakers of the scientific, technical and socio-economic aspects of climate change. IPCC has produced its major assessments every five to six years since 1990.

NOAA scientists served as contributors to and government reviewers of the Fourth IPCC Assessment Report. NOAA's Geophysical Fluid Dynamics Laboratory provided model runs that enhanced the projections used in the IPCC report.

Magnuson-Stevens Act Implementation

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2007 was signed into law on January 12, 2007. The reauthorized Act contains significant new provisions to end overfishing, promote market-based approaches to fisheries management, improve the science used in fisheries management, improve recreational data collection, enhance international cooperation in fisheries management, and address illegal, unreported, and unregulated fishing, as well as bycatch of protected living marine resources. Especially notable is the requirement to establish an annual catch limit for each fishery, which for the first time creates a mandate with a timetable to end overfishing.

Progress on Next Generation Geostationary Satellite Program

Geostationary satellites remain the weather sentinels for NOAA. The next-generation geostationary satellite series, GOES-R, will provide new and improved atmospheric, climatic, solar, and space data. In 2007, NOAA revised the management and acquisition strategy for the GOES-R program, partnering more closely with NASA to take advantage of each agency's technical expertise. In February 2007, the Advanced Baseline Imager, the main instrument on GOES-R, completed a key milestone, enabling the contractor to begin building the first instrument. Throughout 2007, NOAA awarded the three remaining instrument contracts for the Solar Ultraviolet Imager, Extreme Ultra Violet and X-Ray Irradiance Sensors, and Geostationary Lightning Mapper. These instruments will help us to understand and forecast solar disturbances as well as track lightning strikes from space.

NOAA's National Weather Service Provides More Specific Warning Information for Severe Weather

NOAA's National Weather Service (NWS) began issuing more geographically specific warnings for tornadoes, severe thunderstorms, floods, and marine hazards on October 1, 2007. The new "storm-based warnings" allow forecasters to pinpoint the specific area where severe weather threats are highest, thereby reducing the area warned by as much as 70 percent when compared to the previously used county-by-county warning system. Storm-based warnings are displayed graphically and are extremely adaptable to cell phones, PDAs, and the Internet. The Emergency Alert System (EAS) is geared toward counties and NOAA Weather Radio (NWR) All Hazards will still sound an alarm if there is a warning anywhere in a county. However, text and audio messages will provide more specific information about the location of the storm in the county, and the direction in which it is moving. Storm-based warnings will reference landmarks such as highways, shopping centers, and parks, and will use directional delimiters to indicate county location.

Fleet Modernization Moves Ahead

In June 2007, NOAA celebrated the keel laying of NOAA ships BELL M. SHIMADA and FERDINAND R. HASSLER in Moss Point, Mississippi. This marked the first time NOAA has celebrated this important construction milestone for two ships simultaneously. HENRY B. BIGELOW, second of the four fisheries survey vessels of the same class being built by VT Halter Marine, was commissioned into the fleet in July before beginning operations in New England. In September, Phase I of conversion of NOAA Ship OKEANOS EXPLORER (formerly USNS CAPABLE) to an ocean exploration ship was completed. NOAA ship PISCES was christened in December and subsequently launched in Moss Point, Mississippi.

New State-of-the-Art Satellite Operations Facility Officially Opened

In June 2007, NOAA and the General Services Administration officially opened the new state-of-the-art NOAA Satellite Operations Facility (NSOF). NSOF is the new home for NOAA's around-the-clock environmental satellite operations, which provides data critical for weather and climate prediction. NSOF supports more than \$50 million of high technology equipment, including 16 antennas monitoring the operations of 16 on-orbit satellites.

National Water Level Observation Network Upgraded to Real-time Status

The National Ocean Service (NOS) completed a three-year effort to upgrade the technology of its National Water Level Observation Network (NWLON). NWLON stations provide mariners, first responders, and the public with real-time tide and water-level information. A major benefit of the upgrade is that network stations normally equipped to transmit water-level and other environmental data at hourly in-

crements via NOAA Geostationary Operational Environmental Satellites now transmit data every six minutes, thus enabling users to access data more quickly.

NOAA Aids in the Recovery of Fisheries and Fishing Communities Damaged by Hurricanes

NOAA funded and conducted a number of activities aimed at helping Gulf Coast fisheries recover from the devastating impacts of Hurricanes Katrina, Rita, and Wilma, which struck the Gulf Coast in 2005. The states are using these funds to restore and rehabilitate oyster, shrimp, and other marine fishery habitats damaged or destroyed by hurricane events, and to conduct cooperative research and monitoring and other activities designed to recover and rebuild Gulf of Mexico fisheries and fishing communities.

NOAA Weather Radio All Hazards Activities: Meeting the Expectations of the Nation for Weather and All Hazard Warning Information

NOAA's National Weather Service added 16 broadcast stations to the NOAA Weather Radio (NWR) All Hazards network in 2007. In addition to achieving 100 percent coverage of high-risk areas, NOAA refurbished 62 broadcast stations with technology upgrades that significantly improved reliability and availability, while decreasing maintenance costs. This allows the network to meet expectations of availability as the nation's weather and all hazard warning system.

NWR is a reliable and inexpensive means of communicating weather, hazard, and emergency information directly to the public. The network infrastructure consists of 986 broadcast stations covering 98 percent of the nation's population and has the ability to deliver messages to individuals monitoring their own receivers as well as the ability to reach millions of listeners and viewers through the Emergency Alert System, which is monitored by television and radio license holders. The network is required to broadcast to all areas of the United States identified as being at high risk of experiencing severe weather and to sustain a high level of reliability and maintainability in those areas.

Marine Reserves Established in Channel Island National Marine Sanctuary

In 2007, NOS established the Federal portion of the marine reserves and conservation area network within the Channel Islands National Marine Sanctuary. This is the largest network of marine reserves in Federal waters in the continental United States. This action complements the State of California's established network of marine reserves and conservation areas within the State waters of the sanctuary in 2003.

Expanding U.S. Tsunami Preparedness

NOAA's National Weather Service (NWS) is responsible for the expansion of the U.S. network of tsunami detection sensors. During 2007, 14 Deep-ocean Assessment and Reporting of Tsunamis (DART™) buoys were established: four in the Western Pacific Ocean, three off the Pacific Coast of Central America, five in the northwestern Pacific Ocean, and two in the North Atlantic Ocean, bringing the total number of U.S. DART™ stations to 34. The United States, with NOAA as lead agency, is currently working with approximately 70 countries, the European Commission, and over 50 non-governmental agencies in planning and implementing the Global Earth Observation System of Systems (GEOSS), which includes a global tsunami warning system. In addition, NWS works with communities to prepare for tsunamis through the TsunamiReady™ Program. As of December 12, 2007, there are 47 TsunamiReady™ sites in 10 states, Puerto Rico, and Guam. The National Weather Service reached its goal of recognizing 10 new TsunamiReady™ communities in fiscal year 2007.

First Buoy to Measure Acidification Launched

The first buoy to directly monitor ocean acidification was launched in the Gulf of Alaska. Ocean acidification is a result of carbon dioxide absorbed by the ocean. The new buoy, part of a National Science Foundation project awarded to PMEL and the University of Washington in Seattle, in collaboration with Fisheries and Oceans Canada and the Institute of Ocean Sciences in British Columbia, measures the air-sea exchange of carbon dioxide, oxygen, and nitrogen gas, in addition to the pH (a measure of ocean acidity) of the surface waters. The buoy is anchored in water nearly 5,000 meters deep and transmits data via satellite. Rising acidity in the ocean could have a detrimental effect on ocean organisms, with resulting impacts on ocean life and the food chain.

NOAA Ships Arrive at New Home Port in Hawaii

NOAA ships OSCAR ELTON SETTE, HI'IALAKAI, and KA'IMIMOANA relocated to their new home port at Ford Island, Pearl Harbor, Hawaii, heralding the permanent presence of NOAA on Ford Island. This was a major milestone in the multi-year, multi-phase construction of the NOAA Pacific Regional Center, a project to consolidate NOAA programs and operations on the island of Oahu into a single facility on Ford Island.

NOAA's Open Rivers Initiative Completes First Projects

In its first year, NOAA's Open Rivers Initiative completed three projects that restored over 30 miles of spawning and rearing habitat for migratory fish. The obsolete Brownsville Dam, located on the Calapooia River in Oregon, was removed in August 2007, effectively eliminating an obstruction to migratory fish and a safety hazard to the local human community. In California, two failing and undersized culverts were removed, allowing endangered salmon to reach their historic spawning and rearing grounds. In collaboration with local communities, NOAA's Open Rivers Initiative will continue to restore free fish passage to historic habitat by removing obsolete dams and barriers that dot the rivers of coastal states.

Delivering Real-Time Data to Help Shellfish Growers

Shellfish growers in the Pacific Northwest can now get near real-time water quality data from the System-wide Monitoring Program operating at National Estuarine Research Reserves in Alaska, Washington, and Oregon. The data are available through telemetering capabilities, which measure, receive, and transmit data automatically from distant sources. Water quality data can be viewed on a Web site jointly sponsored by NOS and the Northwest Association of Networked Ocean Observing Systems (<http://www.nanoos-shellfish.org/>). Water quality and weather data are transmitted every 30 minutes via satellite from monitoring stations at all 27 National Estuarine Research Reserves, providing information to the growing Integrated Ocean Observing System (IOOS).

Great Lakes Lab Recognized for "Green" Research Vessels

NOAA's Great Lakes Environmental Research Laboratory (GLERL) converted a fleet of research vessels from petroleum-based to 100 percent bio-based fuel and lubricants, earning a White House Closing-the-Circle Award in the green purchasing category. GLERL operates research vessels throughout the Great Lakes region as scientific platforms for ecosystems research and other NOAA interests in the area. The conversion was a result of a call for "greening" of Government agencies through waste reduction, recycling, and the use of environmentally friendly and sustainable products including bio-products.

FISCAL YEAR 2009 BUDGET REQUEST HIGHLIGHTS

Supporting the President's Ocean Initiative

Building on last year's investment in Ocean Initiative related activities, the fiscal year 2009 President's request includes new increases of \$49.1 million for NOAA over the fiscal year 2008 President's request to support the President's Ocean Initiative. This ocean initiative includes more funding to advance ocean science and research; protect and restore marine and coastal areas; and ensure sustainable use of ocean resources.

New investments in ocean science are aimed at monitoring and better understanding marine ecosystems. Increased funding of \$7.0 million is included for the Integrated Ocean Observing System (IOOS) to support Data Management and Communications, Regional Observations, and the Data Assembly Center (DAC), which delivers real-time, quality controlled data from NOAA and regional observing systems. An increase of \$1 million is requested to manage the escalating size and quantity of hydrographic datasets collected by NOAA and other providers. This increase in funding will help NOAA update the nautical charts provided to mariners navigating on U.S. waters in a more timely fashion. In addition, NOAA is requesting \$2 million in increased funding for the PORTS® program, to improve and expand the delivery of real-time and forecasted navigation information. A recent economic benefits study of the Houston/Galveston PORTS® program, released in May 2007, showed that the program brought the Houston/Galveston area significant economic benefits and has helped to achieve a 50 percent reduction in groundings.

Projects to protect and restore valuable marine and coastal areas include funding of \$4 million to implement the newly enacted Marine Debris Research, Prevention, and Reduction Act. This funding will allow NOAA to provide competitive grants and to develop the first Federal clearinghouse on marine debris. NOAA also requests increased funding of \$5.4 million for the Open Rivers program to restore stream miles

of fish habitat through watershed-level projects with multiple fish passage opportunities.

Finally, the budget provides support to ensure sustainable access to seafood through the development of offshore aquaculture and better management of fish harvests. In direct support of new provisions of the MSRA, and to provide better management of fish harvests, NOAA requests increased funding of \$31.8 million over the fiscal year 2008 enacted level. Of this amount, \$5.1 million is requested to enhance the independent peer-review process for scientific data required to appropriately set the annual catch limits for all managed fisheries; \$8.5 million will initiate and expand existing sampling programs and management procedures in order to end overfishing by 2011, as mandated by the MSRA; and \$3.0 million will complete the final implementation phase of a new registry system for recreational fishermen and for-hire fishing vehicles. An additional \$1.5 million increase is requested in support of deep sea coral research, allowing NOAA to begin identifying, understanding, and providing the information needed in order to protect deep coral habitats.

Sustaining Critical Operations

As always, I support NOAA's employees by requesting adequate funding for our people, infrastructure, and facilities. NOAA's core values are people, integrity, excellence, teamwork, ingenuity, science, service, and stewardship. Our ability to serve the nation and accomplish the missions outlined below is determined by the quality of our people and the tools they employ. Our facilities, ships, aircraft, environmental satellites, data-processing systems, computing and communications systems, and our approach to management provide the foundation of support for all of our programs. Approximately \$42.0 million in net increases will support our workforce inflation factors, including \$37.5 million for salaries and benefits and \$4.5 million for non-labor-related adjustments, such as fuel costs.

This year we have focused our increases on satellite continuity and operations and maintenance support for our aircraft and NOAA vessels. A funding increase of \$242.2 million is requested to continue support of the Geostationary Operational Satellites (GOES) program. GOES satellites provide critical atmospheric, oceanic, climatic, and solar products supporting weather forecasting and warnings, climatologic analysis and prediction, ecosystems management, and safe and efficient public and private transportation. This increase will be used for continued systems engineering, development of satellite instruments, risk reduction activities, and transition to the systems-level acquisition and operations phase of the program.

Funding of \$6.1 million is also requested in support of a Major Repair Period for the RAINIER, NOAA's most productive hydrographic vessel. At 39 years old, the RAINIER requires a major capital investment in its mechanical and electrical systems in order to maintain its current operational tempo and reduce risks to personnel, property, and mission capability.

Finally, NOAA requests an increase of \$4.0 million in support of additional flight hours and operations and maintenance for our aircraft. The requested funds will provide an additional 1,295 flight hours for hurricane research, surveillance, and reconnaissance, as well as for other research and forecasting requirements. NOAA also asks this year for restoration to several of our base programs, most notably in the National Weather Service and the National Marine Fisheries Service. These requested increases in our base accounts will allow NOAA to sustain on-going programs and projects at the levels recommended in the fiscal year 2008 President's budget.

Improving Weather Warnings & Forecasts

Severe weather events cause \$11 billion in damages and approximately 7,000 weather-related fatalities yearly in the United States. Nearly one-third of the U.S. economy is sensitive to weather and climate. Realizing this, NOAA seeks to provide decision makers with key observations, analyses, predictions, and warnings for a variety of weather and water conditions to help protect the health, life, and property of the United States and its economy. Landfalling hurricanes are one of the most physically destructive and economically disruptive extreme events that impact the United States, often causing billions of dollars of damage in their wake. In fiscal year 2009, NOAA will continue to improve our hurricane research and modeling capabilities with a requested increase of \$4.0 million for operational support and maintenance of the next-generation Hurricane Weather Research and Forecasting model and storm surge prediction system, as well as accelerated improvements to that system. Increased funding of \$3.0 million will support the operations and maintenance of 15 hurricane data buoys in the Caribbean, Gulf of Mexico, and the Atlantic Ocean, enhancing our real-time hurricane storm monitoring and observations.

NOAA also continues to improve and maintain our weather warning infrastructure, with requested funding of \$6.6 million to upgrade the Advanced Weather Interactive Processing System, the nation's weather and flood warning system. Increased funding of \$4.8 million will be used to upgrade twelve NOAA Wind Profilers and to perform a tech-refresh on this twenty-year-old radar system. Finally, NOAA is requesting \$2.9 million in increased funding for modernization of the NOAA Weather Radio network.

Climate Monitoring & Research

Society exists in a highly variable climate system, and major climatic events can impose serious consequences on society. Preliminary estimates of the impact of the severe drought which affected the Great Plains and the Eastern United States throughout 2007 are in the range of \$5 billion, with major reductions in crop yields and low stream and lake levels. Continued drought and high winds in the Western United States in 2007 resulted in numerous wildfires, with 3,000 homes and over 8.9 million acres burned, and at least 12 deaths. The fiscal year 2009 budget request contains investments in several programs aimed at increasing our predictive capability, enabling NOAA to provide our customers (farmers, utilities, land managers, weather risk industry, fisheries resource managers and decision makers) with assessments of current and future impacts of climate events such as droughts, floods, and trends in extreme climate events. NOAA continues to build a suite of information, products, and services that will enable society to respond to changing climate conditions. In fiscal year 2009, NOAA will support the critical National Integrated Drought Information System with increases of \$2 million to develop and bring into operation by fiscal year 2010 the next-generation Climate Forecast System, leading to improved climate forecasting products. An increase of \$74 million will be used to develop Clouds and the Earth's Radiant Energy System (CERES) and Total Solar Irradiance Sensor (TSIS) climate sensors to preserve decades long climate data records. The CERES sensor will measure the Earth's radiation budget, an essential measurement for determining the causes of climate variability and change. The TSIS sensor measures the total energy of the sun falling on the Earth, a measurement used to identify and isolate natural solar variations that impact climate in contrast to other factors, such as human influences on climate.

Critical Facilities Investments

The fiscal year 2009 President's budget request also includes important increases for critical facilities, necessary to provide a safe and effective working environment for NOAA's employees.

For fiscal year 2009, NOAA will concentrate their modernization efforts on three main projects. NOAA requests an increase of \$40.2 million for the continued construction of the new Pacific Region Center on Ford Island in Honolulu, Hawaii. This increase in funding will support the continued construction and renovation of two buildings, enabling NOAA to reduce expenditures for rent and relocate operations from their current location in the deteriorating Kewalo Basin and Dole Street Lab Facilities. An increase of \$12.1 million will complete the design and initial preparations for a replacement facility for the Southwest Fisheries Science Center. Finally, \$11.7 million is requested to support the installation of a semi-permanent replacement structure for the at-risk Operations Complex at the NESDIS Command and Data Acquisition Station in Fairbanks, Alaska. The current facility is at risk to experience a major structural failure in the next five years. The requested funding will ensure that NOAA maintains crucial mission operations support for the polar-orbiting satellites, as well as backup support for others.

CONCLUSION

NOAA's fiscal year 2009 budget request provides essential new investments in our priority areas while maintaining critical services, reflecting NOAA's vision, mission, and core values. The work NOAA accomplished in 2007 impacted every U.S. citizen. We will build on our successes from last year, and stand ready to meet the challenges that will surface in fiscal year 2009 and beyond. NOAA is dedicated to enhancing economic security and national safety through research and accurate prediction of weather and climate-related events, and to providing environmental stewardship of our nation's coastal and marine resources. That concludes my statement, Mr. Chairman. Thank you for the opportunity to present NOAA's fiscal year 2009 budget request. I am happy to respond to any questions the Committee may have.

QUESTIONS SUBMITTED BY SENATOR BARBARA A. MIKULSKI

NPOESS: CERES AND TSIS SENSORS

Question. Although the budget includes funding for the restoration of the CERES and TSIS climate sensors, it has not been decided whether TSIS would fly on NPOESS or another satellite.

When will a decision be made regarding which satellite TSIS will fly on?

Answer. NOAA is completing a study with NASA to recommend whether TSIS would fly on NPOESS or another satellite. The results will be briefed at the next NPOESS Executive Committee (EXCOM) meeting, currently planned for May 2008. A decision on the platform for TSIS will be made shortly thereafter.

If TSIS is placed back on NPOESS doesn't it just add more complexity and risk to NPOESS which was the very reason it was removed?

Answer. The NPOESS Integrated Program Office (IPO) has concluded a study which determined that integrating TSIS on the first NPOESS satellite (C1) would not pose an appreciably higher risk to the overall NPOESS program should the EXCOM decide to manifest TSIS on C1.

It is important to note that the 2006 decision to remove several sensors from NPOESS was made not only to reduce overall program risk, but also to address significant cost over-runs. The latter is not an issue since funding for building and adding TSIS would be coming from outside the NPOESS program. This helps make adding TSIS to (C1) a feasible option.

The study also determined that the data requirements to command the TSIS instrument, and to transport the data to the appropriate ground processing location, are well-understood and would not add risk to the NPOESS command and control and data handling systems. However, since the priority for C1 is operational weather data continuity, there is a clear understanding that if a decision is made to fly TSIS on C1, the TSIS instrument would have to be delivered with an adequate lead time for integration onto the C1 spacecraft to avoid jeopardizing the 2013 launch date. If TSIS were not delivered within this timeframe, C1 could potentially launch without TSIS in order to maintain operational weather continuity.

VIIRS CONTRACTOR DEFICIENCIES

Question. In discussing the recent delays caused by the VIIRS issues Admiral Lautenbacher stated that he was "extremely disappointed with the pace of the contractor in analyzing and closing potential quality, workmanship, and testing issues in the VIIRS program."

Could you provide specific examples of what he meant by those comments?

Answer. Vice Admiral Lautenbacher's comments were based on poor performance of the NPOESS contractors in resolving workmanship and design problems that arose during the initial phases of the test program, current technical issues, and independent assessments of future work required. A summary of the key issues is provided below:

- Insufficient time had been scheduled for test preparations;
- Insufficient time had been scheduled to review the data generated from the test program;
- Insufficient time had been scheduled to resolve problems highlighted by the test program;
- Excessive use of jumper (White) wires;
- Excessive number of Engineering Failure Reports (EFRs) remained open after completion of ambient phase; and
- Inability to determine the root cause of the power supply anomaly.

Question. What is NOAA doing to address these contractor deficiencies?

Answer. In addition to addressing potential quality and or workmanship deficiencies on a case by case basis, the NPOESS Program Executive Officer, a NOAA Senior Executive, is conducting bi-monthly senior executive level reviews with the prime contractor and the sub-contractor. These executives monitor progress and ensure corporate best practices and resources are being applied to the program. The NPOESS Executive Committee (EXCOM) directed the NPOESS contractors to increase management oversight at the VIIRS facility. In addition to the above actions that were given at the January 16, 2008 EXCOM meeting, the following steps are being taken by the Government team:

- In-plant oversight has been increased.
- Independent review of the test schedule for VIIRS has continued.
- Weekly reviews of all open/unresolved issues are being conducted.

OCEAN SURFACE VECTOR WINDS DATA

Question. I recently read in Space News that NOAA was in discussions with the Chinese and Indian government's to gain access to their satellite data for ocean surface winds.

Answer. That is correct. NOAA has enjoyed a longstanding working relationship with the Indian and Chinese space agencies. NOAA is working through our respective Embassies in Beijing and New Delhi to seek timely access to surface vector wind (both speed and direction) data from satellite scatterometers that the Chinese State Oceanic Administration and the Indian Space Research Organization plan to launch within the next two years.

Question. Why do we have to go overseas for our weather data?

Answer. NOAA leverages data from international partners wherever possible so that we can meet our higher priority needs for environmental observations within our budget constraints. Currently, there is no funded U.S. satellite in development that would carry a scatterometer capable of providing similar observations in the post-QuikSCAT era, so we are seeking access to any available observations from all sources.

Question. By relying on another government's satellite will we not have reliability and data quality concerns?

Answer. Our international partnership agreements include provisions to work with our foreign partners to achieve the greatest reliability and data quality possible. For example, NOAA is working with European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and has been processing and evaluating vector winds from EUMETSAT's MetOp mission since its launch in late 2006. MetOp is nearing the end of its post launch testing and will be providing wind data for operational use shortly. However, while the reliability and quality of the MetOp Advanced Scatterometer (ASCAT) data are not a concern, it only provides 60 percent of the coverage that QuikSCAT currently offers.

Additionally, QuikSCAT is approaching 10 years of operations. In light of these factors, NOAA is seeking other sources of ocean vector winds data. NOAA is in discussions with China and India seeking access to ocean vector winds data once the scheduled Chinese and Indian satellites have been launched. While neither China nor India have flown a scatterometer instrument in the past, we can anticipate a lengthy test and evaluation phase, during which there could be reliability and data quality concerns. However, since there are no funded U.S. satellites that would carry a scatterometer capable of providing observations similar to QuikSCAT in the post-QuikSCAT era, NOAA is seeking access to similar observations from all sources to help meet the need for these data.

Question. What would we do if after signing an agreement, the Chinese or Indians decide to renege and not provide the data? Can we afford this risk?

Answer. NOAA has had longstanding working relationships with China and India with full and open exchange of satellite data. NOAA will ensure that the agreements are directly related to protecting lives and property or advancing our understanding of science. NOAA will work closely with the U.S. Department of State to ensure that the necessary provisions are included in the agreements to ensure uninterrupted access to these data.

Since there are no funded U.S. satellites in development that would carry a scatterometer capable of providing observations similar to QuikSCAT in the post-QuikSCAT era, NOAA is seeking access to similar observations from all sources. Given this situation, NOAA will have to assume some risk associated with a dependence on foreign sources to help meet the requirement for these data.

Question. The fiscal year 2009 request includes \$3 million to study this issue but this seems like a critical component that deserves more than a study that once completed will likely tell us we need another satellite.

Answer. Within the President's fiscal year 2009 budget request for NOAA there is \$3 million to explore space and non space-based alternatives for these data and to conduct a comprehensive cost-benefit analysis on all of the alternatives. Results from the fiscal year 2009 studies will help us more clearly define the follow-on capabilities that we should invest in and the specific benefits of those investments.

Question. What are the current cost estimates for replacement Quikscat type satellite that relies on the same technologies (i.e. the exact same as we have)? What would a replacement cost that has newer technology (i.e. an Advanced Quikscat)?

Answer. The NOAA Office of Systems Development is conducting an analysis of alternatives for acquiring ocean surface wind vector measurements. This analysis is still being developed and will include an evaluation of cost, schedule, and performance trades for a number of options. NOAA expects this analysis to be completed by this summer.

VACANCY RATES AT THE NATIONAL WEATHER SERVICE

Question. What is the vacancy rate at the National Weather Service?

Answer. At the halfway mark through fiscal year 2008 (though March 31, 2008), the FTE lapse rate (job vacancy rate) for the NWS is 5.1 percent. However, the lapse rate for the Continental United States (CONUS) field positions, which includes Regional Headquarters (HQ), River Forecast Centers, and Weather Forecast Offices, is only 2.9 percent.

Question. What percentage of positions is being held vacant due to lack of funds?

Answer. For fiscal year 2008, approximately 113 additional positions are projected to be held due to a lack of labor funding, primarily by holding NWS HQ positions vacant.

Background: "Labor lapse rates" are a function of the time from when a field or HQ vacancy occurs to the time that position is filled. They can fluctuate based on job location, job requirements/duties, NOAA Workforce Management staffing workload and general job market conditions. Due to the current housing slump, the lapse rate for CONUS field positions is projected to be higher in fiscal year 2008.

Question. Is the fiscal year 2009 request sufficient to eliminate these vacancies and fill all operational positions in a timely manner?

Answer. Yes. The fiscal year 2009 requested restoration of \$5.8 million in Local Warnings & Forecasts (LWF) funding and \$233,000 in Central Forecast Guidance (CFG), combined with full funding of our adjustments to base (ATBs) including the federal pay raise, will be sufficient to address these needs.

Question. How much additional funding would be necessary to accomplish that?

Answer. Please see response to the previous question; no additional funding is required.

COORDINATION OF OCEAN RESEARCH

Question. As the lead federal agency on oceans, how does NOAA coordinate its efforts with NSF's research program? With other federal agencies?

Answer. As evidenced by the President's establishment of the cabinet-level Committee on Ocean Policy (COP, created through Executive Order 13366 EO), the United States has an interagency approach to advancing ocean research. The COP provides a framework to coordinate the ocean and coastal related activities (including research) of over 20 federal agencies that administer 140 laws. In addition, the EO mandated coordination among federal agencies with coordination and consultation with state, tribal and local governments; the private sector; foreign governments; and international organizations. NOAA believes that this structure has demonstrated progress on ocean leadership and coordination. As directed by the Oceans Act of 2000, the U.S. Ocean Action Plan is the President's response to the Final Report of the U.S. Commission on Ocean Policy. The implementation of the Ocean Action Plan through the coordinated interagency structure has begun to improve federal capacity to integrate research across jurisdictions at the federal, state, and non-governmental level. This new governance structure is still young but the Administration is committed to its success.

NOAA continues to lead national ocean-related activities within the new, coordinated ocean governance structure outlined above. Specifically, NOAA has taken an active leadership role within the COP, the Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI), the Joint Subcommittee on Ocean Science and Technology (JSOST), and the Subcommittee on Integrated Management of Ocean Resources (SIMOR). NOAA serves as co-chair on both the JSOST and SIMOR. The National Science Foundation (NSF) also serves as a co-chair with NOAA on the JSOST, thereby increasing interagency coordination. NOAA and NSF leadership are engaged in numerous task teams under JSOST and SIMOR bodies to guide the successful execution of activities and to build strong collaboration with our sister agencies.

Together, as co-chairs of the JSOST, NOAA and NSF led the development of Charting the Course for Ocean Science and the Ocean Research Priorities Plan and Implementation Strategy (Charting the Course for Ocean Science), a major milestone in federal coordination of ocean research. Charting the Course for Ocean Science describes the first ever national ocean research priorities that focus on the most compelling issues in key areas of interaction between society and the ocean. After extensive public participation, including public workshops and public comments, Charting the Course for Ocean Science provides guidance on how the various ocean science sectors (government, academia, industry, and non-government entities) can and should be engaged, individually or through partnerships, to address the areas of greatest research priority and opportunity. Charting the Course for Ocean Science identifies 21 recommendations for science and research needed to

support six overarching societal objectives, and puts forward four near-term priorities.

The Administration is now actively engaged in implementing Charting the Course for Ocean Science. The fiscal year 2008 President's budget requested \$40 million (\$20 million for NOAA, \$17 million for NSF, and \$3 million for USGS) to begin implementation of the four near-term priorities identified in Charting the course for Ocean Science (Assessing Meridional Overturning Current Variability: Implications for Rapid Climate Change (AMOC); Comparative Analysis of Marine Ecosystem Organization (CAMEO); Sensors for Marine Ecosystems; and Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events). The fiscal year 2008 appropriations provided NOAA and other agencies a portion of the \$40 million (\$11.25 million). For NOAA in fiscal year 2008, the Office of Oceanic and Atmospheric Research has committed \$3 million to AMOC. NOAA's National Marine Fisheries Service (NMFS) issued a call for CAMEO proposals which will be completed at the end of the fiscal year 2008 and will result in projects available for funding by NMFS and NSF in fiscal year 2009. The administration believes that all four priorities are important and as such NOAA is taking steps to address the Sensors for Marine Ecosystems and Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events priority areas. Activities planned for the near-term priorities are consistent with the NOAA Five-Year Research Plan, and all of the near-term priorities are areas in which NOAA has significant programmatic responsibilities.

In the President's fiscal year 2009 budget, NOAA requests \$20 million to implement the four near-term priorities identified in Charting the Course for Ocean Science (\$5 million for each near-term priority). NOAA is committed to working with the NSF, other agencies, and our partners to implement the priorities in Charting the Course for Ocean Science.

Finally, the Under Secretary of Commerce for Oceans and Atmosphere and the Director of the National Science Foundation jointly submit a comprehensive annual report to the House Committee on Resources and Science and the Senate Committee on Commerce, Science and Transportation on how the oceans and coastal research activities of NOAA and NSF will be coordinated (in compliance with Section 9 of Public Law 107-299). The report describes in detail any overlapping ocean and coastal research interests between the agencies and specifies how such research interests will be pursued by the programs in a complementary manner. This year's annual report is currently under administrative review.

FUEL COSTS

Question. NOAA operates a fleet of 21 ships with the price of oil above \$100 a barrel. How has this increase in fuel costs impacted the amount of science that can be conducted? When you prepared your budgets what was your assumption for fuel costs?

Answer. Answer. At the time of our fiscal year 2009 budget development, NOAA projected fuel to cost \$2.47 per gallon. Today, fuel costs are averaging nearly \$3.17 a gallon. As an example of the challenges we are facing, in January 2008, one ship paid over \$4 per gallon to refuel at a foreign port under a DOD contract. Half way through fiscal year 2008, with diesel fuel reaching record highs and averaging over \$3 a gallon, our projection for fiscal year 2009 fuel prices shows a full-year average cost of \$3.66 per gallon.

At \$2.47 per gallon, we expected to perform 3,390 days of science in fiscal year 2009; at \$3.66, we can only perform 2,600 days of science—a reduction of 790 days or a 23 percent decrease.

Rising fuel prices have also impacted NOAA's ability to charter days at sea. The day rate to charter both UNOLS and commercial ships has increased due to the rise in fuel costs. For example, UNOLS' RV REVELLE's fiscal year 2007 day rate was \$26,200/day. As of March, 2008, this rate is now \$32,000/day, a 22 percent increase. Other UNOLS vessels of the same class have also correspondingly increased in their day rates.

QUESTIONS SUBMITTED BY SENATOR TED STEVENS

"JOHN C. COBB" DECOMMISSIONING

Question. I have been told that NOAA plans to decommission the NOAA fishery survey vessel JOHN C. COBB this year.

What are NOAA's plans to replace this vessel?

Answer. NOAA Fisheries Service is currently undertaking a comprehensive analysis of Southeast Alaska mission requirements that will address present and future MSRA mandated responsibilities. Potential procurement and/or long-term lease of suitable charter vessels to support NOAA's mission will be considered.

Question. If this vessel is decommissioned does the fiscal year 2009 budget request contain enough funding to contract out all of the surveys currently undertaken by the COBB in Alaska?

Answer. NOAA's base funding contains \$500,000 in fiscal year 2009 to charter vessels to meet survey requirements in Southeast Alaska. This funding would be used to charter a vessel (or vessels) with capabilities similar to the COBB for work primarily in Southeast Alaska.

PACIFIC COASTAL SALMON RECOVERY FUND

Question. The President's fiscal year 2009 budget calls for a drastic reduction in funding for the Pacific Coastal Salmon Recovery Fund.

This program has been valuable in my State to ensure the health of salmon populations, and to mitigate the impacts of harvest reductions imposed by the Pacific Salmon Treaty on Alaska fisheries and coastal communities.

How will the reduction in funding impact these efforts?

Answer. The President's fiscal year 2009 budget requests \$35 million for Pacific Coastal Salmon Recovery Fund activities. The funds will be distributed under a competitive process between the eligible States of Washington, Oregon, California, Idaho and Alaska and Coastal and Columbia River Tribes.

The funds will be distributed based on Congressional authorization direction for the funds—salmon habitat conservation and restoration, salmon stock enhancement, and salmon research and related activities—and the following three program priorities: (1) Recovery and conservation of salmon and steelhead that are listed as threatened or endangered, or identified by a state as at-risk or to be so-listed, (2) Maintenance of salmon and steelhead populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing, and (3) Habitat protection and restoration for salmon and steelhead. All funds distributed to State entities will require a 33 percent match of non-federal funds. Under the competitive process in fiscal year 2009 the State of Alaska will be eligible to receive funds. The amount Alaska will receive will depend on how the above listed criteria are addressed in grant applications.

QUESTION SUBMITTED BY SENATOR JUDD GREGG

CICEET

Question. VADM Lautenbacher, as you know, the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) is a partnership of the National Oceanic and Atmospheric Administration (NOAA) and the University of New Hampshire (UNH). CICEET is a valuable national resource that is making a difference in many coastal jurisdictions through its close coordination with the National Estuarine Research Reserve System.

With my support, CICEET was established in 1997 to develop tools for clean water and healthy coasts nationwide. Through its nationally competitive, peer reviewed program, CICEET has funded development and demonstration of dozens of field ready technologies—with many more in the pipeline—that address coastal resource problems in three ways: tools to detect pollution, tools to enhance recovery, and tools to prevent pollution impacts.

This year, the Office of Management and Budget elected to take CICEET out of the President's budget. Given the over ten years of Congressional support, an opportunity now exists for NOAA to make explicitly clear that CICEET is a core NOAA activity, and fund it directly out of its budget.

Could you please provide a plan for how CICEET will be funded in fiscal year 2009 and beyond?

Answer. The Administration has proposed a \$5.2 million competitive research program to develop new technology to monitor coastal and estuarine environments and address coastal management challenges through the National Estuarine Research Reserves System. CICEET/UNH as well as previous CICEET grant recipients will be eligible to compete for funding through the NERRS competitive research program.

NATIONAL SCIENCE FOUNDATION

PREPARED STATEMENT OF DR. ARDEN L. BEMENT, JR., DIRECTOR

Chairwoman Mikulski, Ranking Member Shelby, and Members of the Subcommittee, I am pleased to present the National Science Foundation's budget for the 2009 fiscal year.

The National Science Foundation (NSF) proposes a fiscal year 2009 investment of \$6.85 billion to advance the frontiers of research and education in science and engineering. Our budget request includes an increase of \$789 million—or 13 percent—over the current fiscal year 2008 amount. This increase is necessary to put NSF back on the course that was charted by the President's American Competitiveness Initiative (ACI) and by the America COMPETES Act. This year's budget reflects the Administration's continued resolve to double overall funding for the ACI research agencies within 10 years.

An investment in the National Science Foundation is a direct investment in America's economic security. In fact, without a solid basic research foundation for our high-tech economy, no economic security is possible. Basic research underpins all of the technology that constitutes the lifeblood of today's global market. America's sustained economic prosperity is based in part on technological innovation resulting from previous fundamental science and engineering research. Innovation and technology are engines of the American economy, and advances in science and engineering provide the fuel.

While the United States still leads the world in its level of public and private R&D investment, our counterparts around the globe are well aware of the importance of funding R&D. A string of recent reports have found evidence that China is rapidly accruing global technological standing, including an OECD finding that China was set to become the second-highest investor in R&D among world nations in 2006, behind only the United States.^{1 2 3} Over the last two decades, U.S. federal support of research in the physical sciences, mathematics, and engineering has been stagnant when adjusted for inflation. As a percentage of GDP, the U.S. federal government has halved its investment in physical science and engineering research since 1970. Conversely, the Chinese government has more than doubled its GDP percentage expenditure in R&D since 1995.³

More than a dozen major studies have now concluded that a substantial increase in federal funding for basic scientific research is critical to ensure the preeminence of America's scientific and technological enterprise.

Just recently, Norman Augustine, former CEO of Lockheed Martin, released a follow-up to "The Gathering Storm" report entitled, "Is America Falling Off the Flat Earth?" His message is clear: "Unless substantial investments are made to the engine of innovation—basic scientific research and development—the current generation may be the first in our country's history to leave their children and grandchildren a lower sustained standard of living."⁴

For over fifty years, NSF has been a steward of the nation's science and engineering enterprise. NSF investments in discovery, learning, and innovation have been important to increasing America's economic strength, global competitiveness, national security and overall quality of life.

With its relatively small size, NSF delivers an enormous "bang for the buck" of federal government research and development (R&D) investment. NSF represents just four percent of the total federal budget for research and development, but accounts for a full fifty percent of non-life science basic research at academic institutions. NSF is the research funding lifeline for many fields and emerging interdisciplines at the frontiers of discovery. In fact, NSF is the only federal agency that supports all fields of basic science and engineering research.

NSF relies on a merit-based, competitive process that is critical to fostering the highest standards of excellence and accountability—standards that have been emulated at other funding agencies around the world.

NSF SUPPORTS AMERICAN INNOVATION

The Foundation of Innovation

NSF often funds a technology in its earliest stages, frequently before other agencies or industries get involved. NSF funding was involved in the developmental phase of the technology used in magnetic resonance imaging (MRI) now ubiquitous

¹ http://www.oecd.org/document/26/0,2340,en_2649_201185_37770522_1_1_1_1,00.html.

² http://www.tpac.gatech.edu/hti2007/HTI2007ReportNSF_012208.pdf.

³ <http://www.nsf.gov/statistics/nsf07319/pdf/nsf07319.pdf>.

⁴ Augustine, Norman. *Is America Falling off the Flat Earth?* National Academies Press.

in diagnostic medicine, the research that led to the development of silicon-coated glass used in flat panel displays, and the early investigations that led to green and blue light-emitting diodes used in cell phone displays and traffic lights. In 1952, Caltech professor Max Delbruck used one of NSF's first grants to invent molecular biology techniques that enabled one of his students, James Watson, to discover the molecular structure of DNA, and another Nobel laureate, David Baltimore, to unravel some of its mysteries.

In a more recent example, NSF CAREER awardee Jay Keasling, now the head of the NSF-sponsored Synthetic Biology Engineering Research Center at the University of California-Berkeley, and two postdoctoral researchers from his lab founded Amyris, a company that is taking a revolutionary approach to chemical manufacturing by harnessing metabolic processes in microorganisms. Through genetic engineering, the researchers "program" the microbes to churn out useful chemicals, bypassing traditional, more expensive methods. Amyris has engineered a strain of yeast that can produce large quantities of artemisinic acid, a precursor to a compound found naturally in a plant that fights malaria but is currently in short supply. Amyris is also developing a fermentation process to deliver a biofuel gasoline substitute. NSF funding of the early research conducted at Berkeley enabled the discoveries that led to this promising new company, named 2007 "Business Leader of the Year" by Scientific American magazine.

NSF as an agency is itself the origin of transformative practices. One new NSF innovation is Research.gov, which is fulfilling our vision of a seamless interface between government funding agencies and the investigators we support. Research.gov is a one-stop shop, where researchers can go to manage their existing portfolio of grants and explore new opportunities. Research.gov is a tool that streamlines the process of applying for federal grants, making it easier and more cost-effective for the federal government to serve its customers.

Educating Tomorrow's Workforce

Beyond all of our efforts to advance the frontiers of knowledge and spur innovation, NSF is dedicated to educating and training the nation's skilled labor force. NSF plays a role in science, technology, engineering, and math (STEM) education at every educational level. Our contribution to education may ultimately be NSF's most profound and meaningful legacy.

The scientists, technologists, engineers, and mathematicians trained through NSF's integration of research and education transfer the latest scientific and engineering concepts from universities directly to the entrepreneurial sector when they enter the workforce.

Our graduate research fellowship (GRF) program has supported several notable technologists and scientists early in their professional training. Prominent economist Steven Levitt, co-author of the popular book *Freakonomics*, was an NSF GRF recipient from 1992 to 1994. Sergey Brin, co-founder of Google, was an NSF graduate research fellow in the mid-1990s when he began thinking about how to create an internet search engine. NSF's GRF program is as old as the foundation itself, and gives young scientists an early career charge, allowing them to go on to greatness. At least three Physics Nobel Prize winners are former NSF GRF recipients. We are extremely pleased with the proposed \$29 million increase in the GRF program's funding for fiscal year 2009 which will enable us to fund an additional 700 promising young American investigators. A recent article from the National Bureau of Economic Research suggests that an increase in the number of GRF awards would help to supply an increased demand for talented individuals in the American science and technology workforce that will result from an increase in R&D spending.⁵

At some point in their careers, nearly 200 Nobel Prize-winning scientists received NSF funding for research in chemistry, physics, medicine, and economics. And scores of NSF-supported scientists shared a measure of the 2007 Nobel Peace Prize as members of the United Nation's Intergovernmental Panel on Climate Change.

To strengthen the educational institutions that benefit from NSF awards, the Directorate for Education and Human Resources (EHR) program, Innovation through Institutional Integration (I3), challenges institutions to think strategically about the creative integration of NSF-funded awards. This provides the opportunity for NSF-grantees at particular institutions to cooperate and share a common vision for improved educational excellence at their institution.

⁵Freeman, Richard. The Market for Scientists and Engineers. *NBER Reporter*, 2007 No. 3, pp. 6-8.

AMERICA COMPETES ACT COMPLIANCE

The America COMPETES Act contains several requirements for NSF. We are actively processing those directives and devising plans to implement them in a timely manner. In the fiscal year 2009 request, activities that overlap with the President's American Competitiveness Initiative receive top priority. These priority areas do include strong links to other fields, and our request includes across-the-board increases for all directorates.

We are currently evaluating how to best ramp up the Robert Noyce Teacher Scholarship Program to bring an infusion of talented teachers into the nation's K-12 education system. To launch such a large-scale program, we will carefully evaluate what we need to do to maximize its societal impact and success. We will apply what we have learned from our other successful scholarship programs to ensure the program is administered in the best possible way.

We are also working how best to evaluate grant applicants' plans for training undergraduates, graduate students, and postdocs in responsible and ethical conduct of research. A number of our programs including our Centers and the Integrative Graduate Education and Research Traineeship (IGERT) program already contain ethics components. We will add a new certification requirement for institutions, which will require the institution to have a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research for all undergraduates, graduate students, and postdocs participating in the NSF-funded research project.

Open access to research results is an essential component of a strong and healthy scientific enterprise. We currently make available the citations of NSF-funded research on both the NSF website and on Research.gov. To further the goal of disseminating the results of NSF-funded research, we will develop revised reporting guidelines for NSF principle investigators (PIs). These guidelines will enable the PIs to summarize the key accomplishments of their NSF-funded work, including scientific findings, student training, and professional development activities. This information will be made available on the NSF website.

2009 BUDGET REQUEST HIGHLIGHTS

At NSF, we understand that new discoveries are the main driving force behind societal progress. As the nation's premier funding agency for basic research, our mission is to advance the frontiers of knowledge, where high-risk, high-reward research can lay the foundation for revolutionary technologies and tackle complex societal problems. The NSF budget for 2009 reflects this vital agenda, and I'm pleased to present it to you today.

Let me begin with the big picture. As noted earlier, the President is requesting \$6.85 billion for the NSF in fiscal year 2009. That's an increase of almost \$789 million, or 13 percent above the current 2008 appropriated amount. While it seems like a large increase, this level is necessary to fulfill the President's vision for physical science and basic research set forth in the American Competitiveness Initiative. The fiscal year 2009 request is squarely in line with the goal of doubling of ACI research agency budgets over 10 years. This increased investment will reinforce NSF's leadership in basic science and engineering and allow us to preserve America's preeminence in the global technology economy.

In this year's proposed budget, funding levels increase for every major NSF appropriations account. Research and Related Activities investments increase by 16 percent, and our Education and Human Resources account is increased by 8.9 percent. We need rapid progress in these areas to stimulate the discoveries in research we need to maintain our standing in the global marketplace, and to keep our students engaged and ready to perform in the global workforce. Our budget includes increases for every Directorate and Office within NSF.

Here are highlights of some of the key investments we are emphasizing in our 2009 budget.

Cyber-enabled Discovery and Innovation

Cyber-Enabled Discovery and Innovation (CDI) is expected to create revolutionary science and engineering research results using "computational thinking"—thinking that encompasses all possible computational concepts, methods, models, algorithms, and tools. Computational thinking is relevant to all fields of science, engineering and education, and promises to have a profound impact on our nation's ability to generate and apply new knowledge. We expect CDI research to produce paradigm shifts in our understanding of a wide range of science and engineering phenomena, and we anticipate socio-technical innovations to create new wealth and enhance the national quality of life. By investing in CDI, NSF continues its leadership in ena-

bling the United States to preserve its role as the world leader in information technology.

Requested Funding Level: \$100 million.

Science and Engineering Beyond Moore's Law

"Moore's Law" refers to the empirical observation made in 1965 by Intel co-founder Gordon Moore that the speed of computer processing based on semiconductor integrated circuits doubles about every 18 months. With current silicon technology, we expect to reach the physical and conceptual limits of Moore's Law within 20 years. If we are ever to solve the computational challenges inherent in today's great scientific questions, we must find a way to take computing power and communications beyond Moore's Law. To get there, we'll need entirely new scientific, engineering, and conceptual frameworks. Fundamental research across many disciplines will be called upon to deliver the new hardware, architectures, algorithms, and software of the computers of tomorrow.

Requested Funding Level: \$20 million.

Adaptive Systems Technology

Recent progress in probing the secrets of biological systems has been explosive. We are only just beginning to see the application of these new and transformational discoveries to the development of engineered systems, especially at the interface between human and machines. We call our new interdisciplinary endeavor—research at the convergence of human and mechanical systems—Adaptive Systems Technology (AST). New applications and technologies resulting from AST have already demonstrated substantial economic potential. Artificial retinas and cochlea, electronic language translators, and smart hand-held electronics are just a handful of the products that have already come to market at the human-machine interface. NSF's broad portfolio encompasses the diverse research areas involved in this new interdisciplinary effort. Biologists uncover nature's progression from simple to complex nervous systems; physicists and chemists explain the fundamental processes underlying complex neural organization and communication pathways; mathematicians, computer scientists and cognitive scientists explore how systems compute; learning and behavioral scientists provide insights into how organisms learn and adapt to their environment; while engineers allow the design, analysis and construction of systems that mimic living nervous system networks. By working together, these scientists and engineers can benefit from the knowledge and experience of experts in other fields, developing new concepts through collaboration and idea-sharing.

Requested Funding Level: \$15 million.

Dynamics of Water Processes in the Environment

This activity will build upon NSF's considerable track record on fundamental water research, while utilizing our unique ability to cross disciplinary boundaries to bring together the separate communities of researchers working on the varying aspects of water science. Water is fundamental to every economic activity in the country, and yet, we do not have a full understanding of the effects of human interventions and changing environmental conditions on the availability and quality of fresh water. The economic driving forces for understanding water processes are compelling: droughts alone cause average damages of \$6 to \$8 billion annually in the United States. Understanding water dynamics is also essential to understanding climate and environmental change. NSF's investment in Dynamics of Water Processes in the Environment will enhance our ability to understand complex freshwater systems at regional and local levels, taking advantage of advanced observation networks, cyberinfrastructure, and integrated databases.

Requested Funding Level: \$10 million.

National Nanotechnology Initiative

NSF leads the U.S. nanotechnology research effort, and we remain strongly committed to supporting this vital emerging industry. Our goal is to support fundamental research and catalyze synergistic science and engineering research and education in emerging areas of nanoscale science and technology. We are also committed to research directed at the environmental, health, and safety impacts of nanotechnology. Novel materials, devices, and systems—with their building blocks designed on the scale of nanometers—open up new directions in science, engineering, and technology with potentially profound implications for society. With the capacity to control and manipulate matter at this scale, science, engineering, and technology are realizing revolutionary advances in areas such as individualized pharmaceuticals, new drug delivery systems, more resilient materials and fabrics, catalysts for industry, and order-of-magnitude faster computer chips.

Requested Funding Level: \$397 million.

Climate Change Science Program

Scientists predict that the climate of the earth is changing rapidly, and we have much to learn about how climate affects human activities, how human activities affect climate, and what we can do to protect human life and health in the face of disruptive climate events. The Climate Change Science Program (CCSP) was established in 2002 in response to the challenge of understanding climate and climate variability. Science-based knowledge is absolutely essential to our ability to predict the changes that are likely to take place, and devise informed plans to mitigate the negative impacts of climate change on humanity. The CCSP engages thirteen U.S. agencies in a concerted interagency program of basic research, comprehensive observations, integrative modeling, and development of products for decision-makers. Consistent with the fiscal year 2009 Interagency Implementation Priorities memo, NSF provides support for the broad range of fundamental research activities that form a sound basis for other mission-oriented agencies in the CCSP, and the nation at large.

Building on our agency's particular strengths, NSF encourages interdisciplinary activities and focuses particularly on Earth system processes and the consequences of change. Our priorities include the management of enormous amount of data necessary for accurate global change modeling and research, the refinement and improvement of computational models, and the development of new, innovative earth observing instruments and platforms.

Requested Funding Level: \$221 million.

International Science and Engineering

International collaboration is essential to the health of the nation's research enterprise. The importance of international partnership continues to increase as globalization "shrinks" our world. Consequently, our funding request for the Office of International Science and Engineering is increased by nearly 15 percent to \$47.4 million. A major focus in our budget is the Partnerships for International Research and Education (PIRE) program, which increases by \$3.0 million to \$15.0 million. This program funds innovative, international collaborative research projects that link U.S. institutions and researchers at all career levels with premier international collaborators to work at the most promising frontiers of new knowledge.

Broadening Participation

NSF remains a leader in efforts to broaden participation in science and engineering, so that America's science and engineering enterprise is as diverse as the nation from which it draws its workforce. Our 2009 request for the Experimental Program to Stimulate Competitive Research (EPSCoR) program increases to \$113.5 million. We are also increasing our request for several programs designed to reach out to underrepresented groups, including Alliances for Graduate Education and Professoriate (AGEP), the Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP), the Louis Stokes Alliances for Minority Participation (LSAMP), and Centers of Research Excellence in Science and Technology (CREST).

Enhancing Opportunities for Beginning Researchers (CAREER)

The 2009 request provides an increase of approximately \$14 million for funding of the CAREER program. This increase will allow us to award some 34 more CAREER awards than in fiscal year 2008. CAREER awards support exceptionally promising college and university junior faculty who are committed to the integration of research and education. Our experience with previous CAREER awardees has proven that these faculty become the research leaders of their respective fields, and this program is vital to fostering the success of emerging science and technology leaders.

Requested Funding Level: \$182 million.

Stewardship

NSF's Stewardship goal, to support excellence in science and engineering research and education through a capable and responsive organization, remains a priority in the 2009 budget, with a 13 percent increase to \$404.3 million. Our request increases the NSF workforce by 50 staff to enable us to manage our growing and increasingly complex workload. Investments in information technology (IT) increase by 32 percent to \$82.0 million, with an emphasis on increasing the efficiency, productivity, and transparency of NSF's business processes. In this request, NSF's IT portfolio is realigned to tie funding for mission-related activities more directly to NSF's programs.

Requested Funding Level: \$404 million.

Major Research Equipment and Facilities Construction (MREFC) account

NSF will continue to support a portfolio of ongoing projects in the Major Research Equipment and Facilities Construction account (MREFC), including the Atacama Large Millimeter Array, Ice Cube, and Advanced LIGO.

The Foundation continues to be committed to the Alaska Regional Research Vessel (ARRV), the National Ecological Observatory Network (NEON), and the Ocean Observatories Initiative (OOI). However, in keeping with new NSF policies, Administration and Congressional mandates, and guidance from the National Science Board, NSF has adopted more stringent budget and schedule controls to improve our stewardship of taxpayer dollars. We are postponing requests for additional funding for those projects until they have undergone a final design review, completed a risk management plan, and developed a rigorous baseline budget, including carefully considered contingencies.

NSF's MREFC portfolio includes late-stage design-phase funding for the proposed Advanced Technology Solar Telescope (ATST), which if carried into the construction phase would be the first large U.S. solar telescope built in the past 30 years. ATST would reveal critical information needed to explore crucial mysteries such as: What are the mechanisms responsible for solar flares, coronal mass ejections and space weather, with their associated impact on satellites, communications networks, and power grids? What are the processes that cause solar variability and its impact on the Earth's climate and evolution? The ATST project is managed by the National Solar Observatory, which administers the world's leading collection of solar telescopes.

Requested Funding Level: \$2.5 million.

CONCLUDING REMARKS

Madam Chairwoman, I've touched on just a handful of programs found in NSF's diverse and vibrant portfolio. NSF's research and education activities support the nation's innovation enterprise. America's present and future strength, prosperity and global preeminence depend directly on fundamental research. This is not merely rhetoric; the scientific and economic record of the past 30 years is proof that an investment in R&D is an investment in a secure future.

NSF may not be the largest agency that funds science and engineering research, but our size serves to keep us nimble. Our portfolio is continually evolving as we identify and pursue new research at the frontiers of knowledge. An essential part of our mission is to constantly re-think old categories and traditional perspectives. This ability is more important than ever, as conventional boundaries constantly shift and disappear—boundaries between nations, between disciplines, between science and engineering, and between what is basic and what is applied. NSF, with its mandate to support all fields of science and engineering, is uniquely positioned to meet the needs of researchers exploring human knowledge at these interfaces, whether we're organizing interdisciplinary conferences, enabling cyber-sharing of data and information, or encouraging new collaborations and partnerships across disciplinary and national borders. No other government agency comes close to our flexibility in STEM education and basic research.

In today's high-tech economy, the supply of new jobs is inextricably linked to the health of the nation's innovation endeavor. NSF is involved in all aspects of innovation; NSF not only funds the discoveries that directly become the innovations of tomorrow, we also fund discoveries that lead to still more discoveries that lead to the innovations of tomorrow, and, perhaps most critically, we train the technologists who dream up the discoveries that lead to the discoveries and innovations of tomorrow.

Industry increasingly relies on government support for high-risk, high-reward basic research. If we fail to provide adequate support of the technological sector now, we may well reduce our own economic security. It is no accident that our country's most productive and competitive industries are those that benefited the most from sustained federal investments in R&D—including computers and communications, semiconductors, biotechnology, and aerospace.

As we look to the century ahead of us, we face the reality that the other nations in this world are eager to create jobs and robust economies for their citizens. In this context, "globalization" is shorthand for a complex, permanent, and challenging environment that calls for sustainable, long-term responses, not just short-term fixes. Regardless of our action or inaction as a nation, the world is full of highly motivated and increasingly skilled workers who are working hard to improve their economic standing and well-being. We can either innovate, and keep our economic prosperity, or stagnate, and suffer the consequences of inaction.

Despite some of the more pessimistic forecasts of some observers, I believe that America can continue to be on the leading edge of ideas and research. Through strong federal leadership, we can maintain the standing of our businesses and universities. We must not only maintain our position, we must actively seek to increase our strengths: leadership in fundamental discovery, including high-risk, high-reward transformational research, state-of-the-art facilities and infrastructure, and a world-class S&E workforce. With a firm commitment to these fundamental building blocks of our high-tech economy, we can solidify America's role as the world leader in innovation.

Madam Chairwoman and members of the Committee, I hope that this brief overview has given you a taste of just how very important the National Science Foundation and its activities are to the future prosperity of the United States. I look forward to working with you in months ahead, and I am happy to answer any questions you may have.

QUESTIONS SUBMITTED BY SENATOR BARBARA A. MIKULSKI

STEM EDUCATION

Question. Statistics show that women earn half of the bachelors degrees in science and engineering, yet continue to be significantly underrepresented in academic science and engineering careers (constituting 29 percent of doctoral science and engineering faculty in four-year colleges and universities and only 18 percent of full professors).

Why was ADVANCE the one program at NSF designed specifically to increase the participation and advancement of women in academic science and engineering careers cut in the fiscal year 2009 request?

Answer. The ADVANCE Program is an integral part of NSF's multifaceted strategy to broaden participation to help realize a diverse science and engineering (S&E) workforce. The program supports the critical role of the Foundation in advancing the status of women in academic S&E. ADVANCE is an NSF-wide activity and its success depends upon the cooperation, dedication, and coordinated action of directorates and offices from across the Foundation. EHR, where the ADVANCE Program now resides, supports several of the Foundation's flagship broadening participation programs and is well positioned to undertake this coordination. EHR's increased investment in fiscal year 2009 in ADVANCE serves to offset slightly the reduction from the Research and Related Activities account.

Question. NSF requests an overall increase in its fiscal year 2009 budget of 13 percent, yet the six primary programs that it utilizes to advance the goal of increasing diversity in the science and engineering workforce are only increased a combined 7 percent.

Why isn't NSF prioritizing the advancement of women and minorities in the fields of science and engineering as much as research grants?

Answer. A seven percent increase—far higher than the average increase for discretionary programs—shows NSF's strong support for these programs. NSF remains committed to broadening participation in science, technology, engineering and mathematics (STEM) disciplines. While the following six programs are flagship efforts within the HRD Division in support of diversity, there are other programs at NSF that support this goal. Alliances for Graduate Education & the Professoriate (AGEP); Centers for Research Excellence in Science and Technology (CREST); Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP); Louis Stokes Alliances for Minority Participation (LSAMP); Research on Gender in Science and Engineering (GSE); and Tribal Colleges & Universities Program (TCUP).

Other programs located in the EHR Directorate that focus on diversity entirely or include it as a key component. They are: Research in Disabilities Education (RDE); Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM); Scholarships in Science, Technology, Engineering and Mathematics (S-STEM); Graduate Teaching Fellows in K-12 Education (GK-12); Robert Noyce Teacher Scholarship Program (NOYCE); and Math and Science Partnerships (MSP) Program.

Finally, several NSF programs focus on diversity as key components of workforce development: ADVANCE; Opportunities for Enhancement of Diversity in the Geosciences; Integrative Graduate Education Research Traineeship Program (IGERT); Graduate Research Fellowships (GRFs); EPSCoR (which focuses on broadened geographic diversity); Broadening Participation in Computing; and Broadening Participation in the Biological Sciences.

In addition, many NSF-supported centers conduct education and outreach efforts to increase interest in STEM. Some of these are aimed specifically at groups underrepresented in science and engineering.

Given the scope and complexity of Foundation-wide programs, NSF is currently developing a plan to coordinate ongoing STEM efforts to increase the participation of underrepresented groups as a core practice.

Question. The fiscal year 2008 omnibus urged NSF to begin focus on broadening Hispanic participation rates in science and engineering. What is NSF doing to increase Hispanic participation?

Answer. NSF appreciates the omnibus conference language encouraging the agency to broaden Hispanic participation throughout STEM disciplines. In response to the America COMPETES Act, NSF established an internal study group to determine the most effective ways to serve Hispanic-serving institutions (HSIs) through our existing programs and to consider the creation of a designated HSI program. We are in the process of gathering best practices from existing programs and scholarly research to complement current NSF program investments and to inform future programmatic directions regarding HSIs.

STEWARDSHIP

Question. How does the new “no-cost over run” policy impact the Alaska Research Vessel, NEON, and the ocean observatory initiative?

Answer. NSF expects the lead organizations for these projects to develop firm plans, budgets, risk assessments, and schedules for accomplishing the proposed activities prior to making any further request to Congress for construction funding. NSF will conduct Final Design Reviews (FDR) for all three projects, utilizing experts in all of the major technical, management, and administrative areas, to assure that these plans, budgets, risk assessments, and schedules are credible. Only after successful completion of these reviews will NSF make a request for further construction funding. The impact to these projects is that there will be confidence that they will accomplish what they propose within the envelope of requested construction funding, recognizing that required funding and schedules will be different than was previously presented in NSF budget requests.

Question. Will NSF submit a revised budget if the University of Alaska presents an acceptable schedule and budget for the Alaska Research Vessel under the new policy?

Answer. As is noted above, all future funding requests for the ARRV construction depend on the project successfully completing the final design review. Now that the FDR is a requirement, the current ARRV project plan is to complete the FDR process in time for consideration by the next Administration in the fiscal year 2010 budget request.

Question. Congress provided total appropriations of \$115 million between fiscal year 2005 and fiscal year 2007 for the Scientific Ocean Drilling ship. The ship is currently under construction in Singapore as no U.S. shipyard bid on the project.

What special steps has NSF done to maintain oversight of this project given that it is on the other side of the world?

Answer. NSF has taken a number of specific steps to maintain oversight of the SODV project. These steps are intended to ensure ongoing communication with the project team in Singapore and to address the rapidly changing climate in the shipbuilding industry.

NSF has overseen the installation in Singapore of an experienced on-site project team, skilled in all aspects of ship construction and outfitting, to oversee, facilitate, and monitor progress. The on-site personnel are in daily communication with their stateside counterparts, and report regularly to NSF.

NSF staff members have made many visits to Singapore to confer with those directly involved in the refit of the ship, and to see first-hand the activity and progress that have occurred. Except for the greater travel distances involved, these oversight activities are similar to what would be done if the work were done at a closer location.

In addition to issues related to the location of the SODV refit, other issues relate to difficulties in managing the rapidly changing business climate in the shipbuilding industry. With a budget profile that allowed the SODV to enter the shipyard in 2007, rapid cost escalations meant that the original plan to extend the SODV was not financially feasible. The project team, led by the Joint Oceanographic Institutions’ (JOI) Division of the Consortium for Ocean Leadership (COL) did not have ready a robust design for a refit within the existing hull, and time was needed to prepare one. In response to NSF concerns, COL has ensured involvement of, and buy-in from, the scientific ocean drilling community in the rescope plans for the

SODV refit; overseen augmentation of, and changes to, the senior on-site project management team; and led planning for the final stages of construction and outfitting. NSF has requested and received from COL a Corrective Action Plan to ensure maximum efficiency and benefit to NSF in these final stages of the project.

Question. Has the weakness in the U.S. dollar adversely impacted the completion of the ship?

Answer. The effect of the weak U.S. dollar has been relatively small compared to the overall project budget of \$115 million. The shipyard work is being done under a fixed price contract in U.S. dollars, and much of the ancillary science equipment is of U.S. origin. There have been negative impacts, however, due to the roughly 9 percent decline in the United States vs. the Singapore dollar, which has made it somewhat more expensive to maintain the necessary U.S. oversight team in Singapore during the refit activity.

Question. In the latest Semiannual Report to Congress, the NSF Inspector General notes that the Large Facilities Office is not adequately staffed to handle its increasing responsibilities for oversight.

Do you plan to hire additional staff for this office?

Answer. NSF was able to add one additional person to the Large Facilities Office (LFO) in the last year, which has been very helpful. With a large number of ongoing and upcoming MREFC projects, we recognize the need to have the necessary internal resources available. The fiscal year 2009 budget includes funding for at least one additional FTE for the LFO, and we will allocate additional FTEs and financial resources as needed. We also engage outside project management expertise on a contract basis as needed.

Directorates involved in detailed planning or implementation for MREFC projects are also expected to provide the more specialized technical expertise that is closely matched to the needs of individual MREFC projects. This complements the capabilities of the LFO.

Question. If not, what other methods will you use to provide the additional oversight that is needed?

Answer. NSF continues to provide training opportunities to Program Officers to inform them of project management issues, and NSF and NSB are also examining ways that earlier NSB review and analysis of potential future large projects could strengthen NSF's oversight.

CLIMATE RESEARCH

Question. A recent GAO study of federal climate research at DOE, NASA, NSF, and NOAA examined how to make research data more widely available to research community. While some of the data generated by this research are stored in online archives most remains in a less accessible format with individual researchers. GAO recommended that agencies develop additional archiving strategies.

What is the current policy with regard to the sharing of data at NOAA and NSF?

Answer. Data-sharing plans are an important consideration during both the peer review of proposals and subsequently in the award decision process. The NSF has a standing agency-wide data policy requiring free (other than duplication costs) and open access to data collected with NSF support. Most directorates have more detailed guidelines and terms designed specifically for the types of data normally collected in the research disciplines they support and may include specific requirements as part of their formal proposal solicitations.

Question. What are NSF and NOAA doing to address these GAO recommendations?

Answer. A large portion of the data collected routinely that is relevant to the Climate Change Science Program is obtained by various mission agencies (National Oceanic and Atmospheric Administration—National Oceanographic Data Center and National Climate Data Center, U.S. Geological Survey, United States Department of Agriculture, National Aeronautics and Space Administration, etc.), which support national archives, and much of the data collected as part of NSF's research efforts is ultimately stored in such archives. For example, much of the paleoclimate data are stored in the World Data Center for Paleoclimatology run by NOAA in Boulder, CO, although some resides in the National Lacustrine Core Repository at the University of Minnesota. Data from process studies may be stored at agency archives or at facilities serving the broader community such as the National Center for Atmospheric Research (NCAR). In addition, data are stored in personal archives maintained by NSF Principal Investigators at their home institutions.

QUESTIONS SUBMITTED BY SENATOR TED STEVENS

POLAR ICEBREAKERS

Question. Does the funding arrangement for the polar icebreakers allow for adequate maintenance of the polar ice breaking fleet and the training/proficiency of Coast Guard crews?

Answer. Yes, assuming that our budget requests are fully appropriated. Under the terms of the USCG–NSF Memorandum of Agreement, the USCG provides budget estimates for inclusion in the President’s budget request. NSF and USCG develop the annual program plan that supports operation and maintenance of the icebreakers.

Question. Did the National Science Foundation request funding this year to keep the *Polar Star* in care-taker status? Why did NSF opt to lease a foreign icebreaker rather than use the *Polar Sea* for this year’s Antarctic mission?

Answer. NSF did not request funding to keep the *Polar Star* in caretaker status. The Swedish icebreaker *Oden* was used instead of *Polar Sea* for several reasons. The *Oden* offers far superior capabilities for scientific research and the deployment enabled U.S. scientists to conduct research in the Southern Ocean that would otherwise have been impossible. In addition, using the *Polar Sea* for the Antarctic mission would have mandated subsequent dry dock maintenance and repair costs of approximately \$5 million. Under our agreement for the *Oden*, our costs were strictly limited to those for operations. Finally, using *Oden* in Antarctica enabled us to keep *Polar Sea* in reserve in the North for any emergency Arctic duty. We should note also that the arrangement for use of the *Oden* was a government-to-government agreement and not an arrangement between NSF and a foreign firm.

Question. Do you see a strategic national interest in the Arctic beyond your science mission?

Answer. Other federal agencies are more qualified than NSF to address needs beyond those required to support scientific research. With decreasing ice cover in the Arctic there would seem to be a strong potential for an increased range of activities in the Arctic Ocean, including shipping and resource exploration, but a better understanding of why climate change is affecting different parts of the Arctic differently, and differently in different seasons, will be needed before these activities can proceed with confidence.

Question. Does the National Science Foundation intend to fund a *Polar Sea* Arctic mission this year in order to allow the Coast Guard icebreaking crew to maintain its competency?

Answer. Yes. The *Polar Sea* is currently underway in the Arctic, conducting crew training, USCG missions (including community liaison and law enforcement), and science of opportunity.

ALASKA REGION RESEARCH VESSEL

Question. I understand construction funding for the Alaska Region Research Vessel was not included in the President’s fiscal year 2009 budget.

This vessel will replace NSF’s recently de-commissioned R/V *Alpha Helix* and offer great opportunities to study the coastal and open ocean waters of the Alaska region.

What are your goals for completing construction of the vessel and what can we do to assist you in expediting the process?

Answer. NSF’s goals for completing construction are:

—NSF will conduct a Final Design Review (FDR) this fall to validate the technical design, budget, and proposed schedule for the ship. The FDR’s validated cost and schedule will be used to formulate the fiscal year 2010 budget request under the next Administration.

—The shipyard evaluation and bidding process will commence following FDR.

—We expect shipyard construction to require 30 months or more, followed by 6–12 months of sea trials and commissioning, overlapping with the first scientific activities.

We appreciate your offer of assistance and you and your colleagues’ continued support for the Foundation’s programs. In particular, your efforts to date with the University of Alaska to convey NSF’s policies and the need for a rigorous pre-construction planning process have been especially valuable. We look forward to continuing to work with you as the fiscal year 2009 and subsequent budgets are considered.

NONDEPARTMENTAL WITNESSES

PREPARED STATEMENT OF THE REGIONAL INFORMATION SHARING SYSTEMS (RISS) PROGRAM

The Regional Information Sharing Systems (RISS) Program respectfully requests that Congress appropriate \$52.7 million for fiscal year 2009 to continue RISS's support in combating violent crime, criminal gangs, terrorist activity, illegal drug trafficking, organized criminal activity, human trafficking, identity theft, and other regional criminal priorities and promoting officer safety.

RISS has been at the forefront in paving the way so that law enforcement, public safety, and private sector partners can share information and receive critical investigative and technical assistance. The fiscal year 2008 budget request to Congress stated that RISS has emerged as one of the Nation's most important law enforcement intelligence sharing networks and continues to support efforts to expand and improve information sharing.

RISS, which dates back to the 1970s, not only offers secure communications, access to intelligence databases, and investigative resources to law enforcement and public/private partners but also provides services to enhance and improve the ability to detect crime, apprehend offenders, and successfully prosecute individuals. These services include information sharing, analytical support, equipment loans, confidential funds, field staff support, technical support, training, research, publications, and officer safety. In many cases, these are services that criminal justice agencies would not have access to without the support of RISS.

RISS is a federally funded, nationwide program supporting local, State, Federal, and tribal law enforcement and prosecution efforts with membership in all 50 States, the District of Columbia, United States territories, Australia, Canada, and England. RISS operates on a national basis but provides support regionally through its six intelligence centers, which support and serve the unique needs of their regions. The six RISS centers and the areas that they serve are:

- Middle Atlantic-Great Lakes Organized Crime Law Enforcement Network (MAGLOCLEN)*.—Delaware, District of Columbia, Indiana, Maryland, Michigan, New Jersey, New York, Ohio, and Pennsylvania, as well as Australia, Canada, and England.
- Mid-States Organized Crime Information Center (MOCIC)*.—Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin, as well as Canada.
- New England State Police Information Network (NESPIN)*.—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, as well as Canada.
- Regional Organized Crime Information Center (ROCIC)*.—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia, as well as Puerto Rico and the United States Virgin Islands.
- Rocky Mountain Information Network (RMIN)*.—Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming, as well as Canada.
- Western States Information Network (WSIN)*.—Alaska, California, Hawaii, Oregon, and Washington, as well as Canada and Guam.

RISS acts as a force multiplier, enhancing the ability of criminal justice agencies to identify, target, and remove criminal conspiracies and activities spanning multi-jurisdictional, multistate and, sometimes, international boundaries. RISS facilitates the seamless exchange of information among agencies pertaining to known suspected criminals or criminal activity and enhances the coordination and communication among agencies that are in pursuit of criminal conspiracies determined to be interjurisdictional in nature.

There is an increasing communications sophistication by criminal networks and a rising presence of organized and mobile narcotics crime as well as a resurgence of gang activity occurring across the nation. Interagency cooperation in sharing information has proven to be the best method to combat this increasing criminal activity. The RISS centers fill law enforcement's need for rapid, but controlled, sharing of information and intelligence through their unique structure, versatility, flexibility, and diverse services. Congress funded the RISS Program to address this need, as evidenced by its authorization in the Anti-Drug Abuse Act of 1988.

The Bureau of Justice Assistance (BJA) administers RISS and has established guidelines for the delivery of RISS services. RISS is subject to oversight, monitoring, and auditing by the United States Congress; the United States Government Accountability Office; the United States Department of Justice (DOJ), BJA; and local and State governmental units. BJA also monitors RISS for 28 Code of Federal Regu-

lations (CFR) Part 23 compliance. The 28 CFR Part 23 regulation emphasizes adherence to individual constitutional and privacy rights and places stricter controls on the RISS intelligence databases than those placed on most local, State, or Federal agencies. Evaluation of RISS continues to be positive. RISS supports and has fully operated in compliance with 28 CFR Part 23 since its inception. RISS firmly recognizes the need to ensure that individuals' constitutional rights, civil liberties, civil rights, and privacy interests are protected throughout the intelligence process. In this regard, RISS officials adopted a Privacy Policy to further strengthen their commitment and support of 28 CFR Part 23 and protection of individual privacy rights.

In 1997, well before the attacks of September 11, 2001, RISS began building a national system, a secure intranet known as RISSNET. Through funding from Congress, RISS was able to develop RISSNET, thereby creating a gateway for disparate systems to connect while providing users with the ability to quickly query, analyze, and research data. Today, RISSNET is used as the system of choice for numerous law enforcement entities. RISSNET links thousands of law enforcement, criminal justice, and public safety agencies and uses state-of-the-art technology, such as DOJ's Global Justice Extensible Markup Language (XML) Data Model, to connect existing systems and networks. RISSNET provides the communications backbone and infrastructure for bidirectional sharing of investigative and intelligence information, offers secure sensitive but unclassified electronic communications, and provides controlled access to a variety of sensitive information resources. Over 80,000 access officers, representing hundreds of thousands of law enforcement officers from around the globe, are able to access RISSNET resources.

Currently, more than 80 agencies are connected or pending connection to RISSNET. Examples include the El Paso Intelligence Center; the National White Collar Crime Center; Nlets—The International Justice and Public Safety Network; DOJ Criminal Division; information/intelligence networks from California, Colorado, Oregon, Utah, and Wyoming; and numerous other local, State, and Federal systems. In addition, the Executive Office for United States Attorneys has connected staff to RISSNET, and RISS continues to expand its partnership with the High Intensity Drug Trafficking Areas (HIDTA). Currently, 18 HIDTAs are electronically connected to RISSNET.

In this world of changing technology and with the increased need to provide timely, accurate, and complete information to law enforcement and public safety professionals, the ability to connect systems and streamline the capacity to house, share, inquire, and disseminate information and intelligence is paramount. Through RISSNET, RISS provides valuable collaboration with others who have experienced similar crime problems or who are investigating the same or similar crimes. In addition, RISS offers resources and tools to additional users beyond the typical bounds of the law enforcement realm, which vastly enhances the information exchange. After 9/11, RISS recognized the need to expand communications to public safety entities and developed the Automated Trusted Information Exchange (ATIX). ATIX is a communications system that provides first responders, critical infrastructure personnel, and other public safety personnel involved in prevention and response efforts with the ability to share terrorism and homeland security information in a secure, real-time environment. In 2007, ATIX was expanded to serve as a communications resource for both State sex offender registries and fusion centers.

In 2007, RISS expanded its RISS National Gang Program, known collectively as RISSGang, to include a criminal intelligence database, a Web site, a bulletin board, secure e-mail, and gang-specific resources. The RISSGang database provides law enforcement agencies with access to gang suspects, organizations, weapons, locations, and vehicles, as well as visual imagery of gang members, gang symbols, and gang graffiti. The Web site contains valuable information, research, tools, and other resources, including an anonymizing filter that is automatically applied when a user clicks on one of the links to published criminal gang Web sites. This tool removes the ability of the target Web sites to identify officers.

RISS is currently in the process of developing RISSafe, an officer safety event deconfliction system. RISSafe will store, maintain, and monitor information on planned law enforcement events—such as raids, controlled buys, and surveillances—with the goal of identifying and alerting affected agencies of potential conflicts. Over 18,000 law enforcement officers have been killed in the line of duty; RISSafe will make a significant contribution towards enhancing officer safety and supporting criminal investigations.

RISS partners with a number of criminal justice organizations and fosters a collaborative information sharing environment. RISS partnered with the United States Drug Enforcement Administration and HIDTAs to create the National Virtual Pointer System (NVPS). NVPS is an automated system that connects existing

deconfliction pointer databases into one virtual pointer system. RISS also partnered with Project Safe Neighborhoods, which submits data to the RISS intelligence databases for the purpose of reducing gun violence. The Operation Respond Institute electronically connected its Operation Respond Emergency Information System, which provides critical information on railroads and other transportation industries, to RISSNET.

RISS is working with DOJ and the United States Department of Homeland Security (DHS) on the Counterterrorism Collaboration Interoperability Project (CCIP), which provides participating systems with the ability to publish documents for access by authorized users of other participating systems via Really Simple Syndication (RSS) feeds. This project has been recognized as a model for agencies to share information, as required by Presidential Executive Order 13388, Strengthening the Sharing of Terrorism Information to Protect Americans.

Throughout 2007, RISS continued to support a number of initiatives to enhance information sharing, including the Dru Sjodin National Sex Offender Public Website and the National Criminal Intelligence Resource Center. RISS represents the core of collaboration and constantly seeks out and fosters new and existing partnerships in order to maximize the Nation's information sharing environment.

RISS's partnerships and efforts have resulted in an unprecedented level of information and intelligence sharing. As a result, it is critical to ensure that the information is secure and available only to authorized users. RISSNET protects information through encryption, Internet protocol security standards, and firewalls to prevent unauthorized access. In addition, the criminal intelligence information accessed through RISSNET is controlled by its local, State, Federal, and tribal law enforcement member agency owners. RISS continues to evolve and expand, utilizing the latest technology to meet the needs of law enforcement member agencies.

In 2006, RISS embarked on the RISSNET 2007 initiative to streamline RISS users' access to RISSNET resources. This project enhances the security and accessibility of RISSNET and allows for compatibility and interoperability of existing systems' infrastructures to leverage and expand information and intelligence sharing systems. RISSNET 2007 consists of three main components—the RISSNET Portal, Secure Sockets Layer (SSL) authentication technology, and the Trusted Credential Project (TCP). The RISSNET Portal was launched in 2007 and provides authenticated users with one entry point for RISSNET, providing access to all RISSNET resources from one location. In addition, the Portal creates additional security layers that protect RISSNET resources and provides ease of access by RISS members to permitted resources. SSL is a widely implemented Internet browser-based technology used to transmit encrypted data between a Web server and a Web browser by creating a secure virtual connection between the browser and the server. SSL technology is supported by all major Internet browsers and is a maturely developed standard for the secure transmission of sensitive information. Finally, TCP seeks to identify industry-leading technologies for user authentication and access control and will develop, test, and demonstrate methods to recognize and accept credentials in addition to those currently used on RISSNET. These three projects work in unison and represent the natural next steps for enhancing RISS technology and service to its members.

The RISSNET architecture is referenced and recommended in the General Counterdrug Intelligence Plan (GCIP) and is endorsed by the National Criminal Intelligence Sharing Plan (NCISP). RISS has embraced and integrated the recommendations contained in the NCISP and continues to foster similar integration among its member agencies. In addition, RISS has embraced the Fusion Center Guidelines developed by DOJ and DHS and continues to build relationships with fusion centers. RISS developed a Fusion Center Partnership Strategy that integrates RISS services and tools into fusion center operations and has signed a Resolution in support of fusion centers. RISS has provided analysts to fusion centers, participated on fusion center advisory boards, provided RISSNET connectivity to fusion centers, and continues to work with fusion center leadership to tailor RISS services to their needs.

RISS is one of three systems promoted by DOJ's Law Enforcement Information Sharing Program (LEISP) Strategy and is the only nonfederal entity participating in the LEISP process. RISS has also begun exploring opportunities to meet the needs of the recently published National Information Sharing Strategy.

RISS's services and tools directly benefit detectives and investigative units within local, State, regional, Federal, and tribal criminal justice entities, making RISS a comprehensive and universal program. RISS delivers more than 20,000 analytical products annually and trains more than 68,000 officers each year. RISS's field staffs conducted over 27,000 on-site visits to member agencies last year to train, support, and help integrate RISS services. This one-on-one support has resulted in trusted

relationships and a network prized among its members. These services are what make RISS a unique and valued program.

The success of RISS has been acknowledged and vigorously endorsed by the International Association of Chiefs of Police as well as other national law enforcement groups, such as the National Sheriffs' Association and the National Fraternal Order of Police.

In view of today's increasing demands on local, State, Federal, and tribal law enforcement budgets, requests for RISS services have risen. RISS's support has had a dramatic impact on the success of numerous investigations. By providing timely and accurate intelligence information, the RISS centers have greatly enhanced law enforcement's ability to more effectively dismantle criminal organizations. The results of these successes can be measured in the number of violent career criminals that are removed from our communities and the reduction of illicit drugs that are available to our young people. During the 3-year period of 2005–2007, RISS generated a return by member agencies resulting in 15,000 arrests, narcotics seizures valued over \$113 million, and seizures of over \$51 million in currency and/or recovered or seized property.

It is respectfully requested that Congress appropriate \$52.7 million for fiscal year 2009 to continue RISS's efforts in combating crime and terrorism. Local and State law enforcement depend on RISS for information sharing, investigative support, and technical assistance and are increasingly competing for decreasing budget resources. It would be counterproductive to require local and State RISS members to self-fund match requirements, as well as to reduce the amount of BJA discretionary funding. Local and State agencies require more, not less, funding to fight the Nation's crime problem. RISS cannot make up the decrease in funding that a match would cause, and it has no revenue source of its own. Cutting the RISS appropriation by requiring a match should not be imposed on the program.

Funding is requested to support the increased needs of law enforcement and public safety entities, to maintain RISSNET, and to meet the demand for RISS services and resources. These funds will enable RISS to continue services to law enforcement agencies to identify, target, prosecute, and remove criminal conspirators involved in terrorism and other crimes that span multijurisdictional boundaries. In addition, RISS will utilize increased funds to:

- Deploy RISSafe on a nationwide scale and integrate RISSafe with intelligence systems and other deconfliction systems.
- Expand the existing RISSGang Program by developing and implementing online gang-related training programs and minimum standards for such training programs.
- Develop and implement a gang deconfliction system.
- Coordinate and host a regional/and or national gang conference.
- Expand fusion center partnerships by connecting fusion centers, providing bidirectional sharing, and offering technical on-site assistance.
- Expand RISS ATIX to accommodate the growing number of public and private sector entities requiring secure communications.
- Upgrade and maintain the RISSNET infrastructure. Upgrade hardware, operating systems, and portal framework software for the RISSNET Portal.
- Implement the Trusted Credential Project.

RISS is grateful for this opportunity to provide the committee with this testimony and appreciate the support this committee has continuously provided to the RISS Program. (See Attachment A)

ATTACHMENT A.—THE REGIONAL INFORMATION SHARING SYSTEMS

Each RISS center offers basic services to member agencies. Traditional services include information sharing, analysis, investigative support, equipment loans, confidential funds, training, and technical assistance.

Information Sharing.—The operation of RISSNET and its various applications enhances information sharing and communications among RISS members by providing various secure databases and investigative tools. Each RISS center develops and provides access to specialized information sharing systems for use by its member agencies.

Analysis.—RISS center personnel create analytical products for investigative and prosecutorial use. These products include highly complex and specialized flowcharts, link-analysis charts, crime scene diagrams, telephone toll analysis reports, and financial analysis reports and provide computer forensics analysis. Staff members also provide video and audio enhancement services.

Investigative Support.—Each center maintains a staff of intelligence technicians that support member agencies with a variety of investigative assistance. Staff mem-

bers conduct database searches, utilize all RISS applications, and process batch uploads. Intelligence technicians respond to thousands of requests and questions.

Equipment Loans.—Pools of specialized and surveillance equipment are available for loan to member agencies for use in support of multijurisdictional investigations.

Confidential Funds.—Member agencies may apply for funds to purchase information, contraband, stolen property, and other items of an evidentiary nature or to provide for other investigative expenses related to multijurisdictional investigations. The availability and use of confidential funds are strictly controlled by Federal guidelines, and internal policies and procedures are developed by each center.

Training and Publications.—RISS centers sponsor or cosponsor meetings and conferences that build investigative expertise for member agency personnel. Subject areas include anti-terrorism, crime-specific investigative and surveillance techniques, specialized equipment, officer safety, and analytical techniques. In addition, each center researches, develops, and distributes numerous publications, such as bulletins, flyers, and criminal intelligence publications.

Technical Assistance.—RISS field service coordinators provide technical assistance to member agencies to facilitate delivery of RISS services. This personal interaction with member agencies significantly improves information sharing and ensures that member agencies are provided with quality and timely service.

Centers also offer additional services based on regional and member agency needs.

PREPARED STATEMENT OF THE NORTHWEST INDIAN FISHERIES COMMISSION

Thank you for the opportunity to submit our testimony to this Committee to provide our funding requests on the Department of Commerce fiscal year 2009 appropriations. My name is Billy Frank, and I am the Chairman of the Northwest Indian Fisheries Commission (NWIFC). The NWIFC is made up of the twenty Tribes party to the *United States vs. Washington* litigation. The NWIFC supports an increase in funding over that proposed by the Administration for both the NOAA Fisheries and the NOAA-National Ocean Service (NOS) budgets. These budgets should, at a minimum, be that of the fiscal year 2006 enacted levels, with additional monies as described below that support key Federal and State partnerships with the twenty (20) Treaty Indian Tribes in Western Washington.

SUMMARY OF FISCAL YEAR 2009 APPROPRIATIONS REQUEST

NWIFC SPECIFIC REQUESTS

\$110 million for the Pacific Coastal Salmon Recovery Fund with a \$9 million allocation for the twenty affected Treaty Tribes and the Northwest Indian Fisheries Commission in Western Washington for their management responsibilities (NOAA/National Marine Fisheries).

\$3.17 million for the Tribal Ocean Ecosystem Initiative (NOAA/National Ocean Service).

JUSTIFICATION OF REQUESTS

\$110 million for the Pacific Coastal Salmon Recovery Fund with a \$9 million allocation for the twenty affected Treaty Tribes in Western Washington and the Northwest Indian Fisheries Commission

The Pacific Coastal Salmon Recovery Fund (PCSRF) is a multi-state, multi-tribe program established by Congress in fiscal year 2000 with a primary goal to help recover wild salmon throughout the Pacific Northwest and Alaska. The PCSRF seeks to aid the conservation, restoration and sustainability of Pacific salmon and their habitats by financially supporting and leveraging local and regional efforts. Recognizing the need for flexibility among Tribes and the States to respond to salmon recovery priorities in their watersheds, Congress earmarked the funds for salmon habitat restoration, salmon stock enhancement, salmon research, and implementation of the 1999 Pacific Salmon Treaty Agreement, as well as related agreements. PCSRF is making a significant contribution to the recovery of wild salmon throughout the region.

The Tribes' objectives for use of the PCSRF is to restore and protect essential habitat that promotes the recovery of ESA listed Puget Sound Chinook, Hood Canal Summer chum, Puget Sound steelhead, Lake Ozette sockeye, and other salmon populations in the Puget Sound and Washington Coast. These species are essential for Western Washington Tribes to exercise their treaty-reserved fishing rights consistent with *U.S. vs. Washington* and *Hoh vs. Baldrige*. These funds will support

policy and technical capacities within Tribal resource management departments to plan, implement, and monitor recovery activities.

Since the program's inception, Pacific Coastal Tribes, including the 20 Treaty Tribes in Western Washington, have used PCSRF monies to remove 79 fish passage barriers—open access to 47 stream miles; restore 282 miles of instream habitat; restore 747 acres and 113 stream miles of riparian habitat; restore 129 acres of wetland habitat and protect 288 acres of habitat through land acquisition, easement or lease. The Tribes are also using these funds to implement the recovery plan for ESA-listed Puget Sound Chinook recently approved by NOAA.

Unfortunately, the PCSRF monies have decreased over the past few years from the original amount of \$110 million that was appropriated in 2000 to \$67 million in 2008. In the fiscal year 2009 budget proposal the Administration seeks to further decrease funding to \$35 million for this very important program. The Tribes originally were slated to receive 10 percent of the overall amount, but with the declining base, the Tribal amount has dwindled precipitously. Restoration of these monies to the \$110 million level will support the original intent of Congress and enable the Federal government to fill its obligations to salmon recovery and the Tribes.

\$3.17 million for Tribal Ocean Ecosystem Initiative from the National Ocean Service

The Hoh River Tribe, Makah Tribe, Quileute Tribe, and the Quinault Indian Nation have deep connections to the marine resources off the coast of Washington. They have pioneered cooperative partnerships with the State of Washington and the Federal government in an effort to advance the management practices in the coastal waters. However, to be an effective partnership, the Tribes and their partners need additional funding. These requests are as follows:

Intergovernmental Policy Council (IPC) \$1.10 million

The four Tribes, the State of Washington and NOAA National Ocean Service, through the Marine Sanctuary Program, have formed the Intergovernmental Policy Council (IPC). The IPC is intended to strengthen management partnerships through coordination and focus of work efforts. Through this partnership, the entities hope to maximize resource protection and management, while respecting existing jurisdictional and management authorities. While the IPC has received some funding from the Marine Sanctuary Program, the current funding does not provide for full participation in activities that will build the partnerships necessary to coordinate management and research activities within the Olympic Coast National Marine Sanctuary.

For the IPC to continue to expand its capacity for program operations, technical staff participation and development of collaborative research efforts, long-term program funding is needed. The four coastal treaty Indian Tribes, the State of Washington and the Olympic Marine Sanctuary needs \$1.10 million in fiscal year 2009 to support their IPC efforts to transition into an ocean ecosystem-based management system.

As existing marine resource management transitions to an ecosystem-based management approach a forum and coordinating body such as the IPC will need the capacity to collect and organize information that will propel discussions and recommendations into decisions and actions.

Rockfish Assessment and Habitat Mapping \$2.07 million

The Hoh River Tribe, Makah Tribe, Quileute Tribe, Quinault Indian Nation and the state hope to conduct a five-year ocean monitoring and research initiative to support and transition into an ecosystem-based management of rockfish. The proposal would augment the National Oceanic and Atmospheric Administration existing Northwest Science Center trawl survey data with additional State and Tribal survey data from areas currently not sampled on the continental shelf and slope. It would also expand the existing groundfish port sampling program for the region. Both of these data sources are essential to evaluate stock status and abundance. Finally, it would accomplish a comprehensive assessment of the coastal ecosystem and its associated species groups.

Effective management of the ocean ecosystem and its associated resources requires the development of baseline information against which changes can be measured. This initiative will expand on and complement existing physical and biological databases to enhance ecosystem-based management capabilities. In turn, this will support ongoing efforts by the State and Tribes to become more actively engaged in the management of offshore fishery resources. Transition to ecosystem-based management requires expansion of the current resource assessment surveys and ocean monitoring systems off the Olympic coast.

Effective conservation actions for rockfish and other groundfish species will depend on accurate knowledge and distribution of sea-floor habitat types and species found within the region. The establishment of this finer-scale biological database is

an essential step toward improving the region's forecasting capability of stock status and abundance.

The partners hope to:

- Conduct a comprehensive stock assessment of rockfish resources found along the continental shelf and slope off the Olympic coast and enhance the existing groundfish port sampling efforts.
- Convene a State, Tribal and Federal technical workgroup to develop the sampling protocols and assessment methodologies necessary to incorporate this additional survey information into the annual Federal stock assessment and forecasting process.
- Increase biological sampling through the expansion of State and Tribal port sampling in Westport, La Push and Neah Bay to ensure complete coverage of all groundfish fisheries (such as sablefish, flatfish and lingcod), of which rockfish are a component of the catch.
- Complete multi-beam side-scan sonar mapping and surveying of the seabed off the Olympic coast in cooperation and partnership with the Olympic Coast National Marine Sanctuary.
- Collaborate on a research plan with the Olympic Coast National Marine Sanctuary and assist in completing the sonar mapping of seafloor relief and substrate.
- Develop a State and Tribal collaborative effort to address emerging ecosystem management concerns such as the status and abundance of deep-water coral and sponge communities that benefit the entire region.

The economic value associated with effective marine resource protection is huge. Not only are marine areas crucial for our natural resources and those that use them; they are bridges of commerce between nations and continents. Healthy oceans are essential if we value stable climates that will sustain our economies and our lives. Tribes must be partners in the efforts to research, clean up and restore the environs necessary to deal with identified problems.

BACKGROUND

When our ancestors signed treaties, ceding millions of acres of land to the United States government, they reserved fishing, hunting and gathering rights in all traditional areas. These Constitutionally-protected treaties, the Federal Trust Responsibility and extensive case law, including the *U.S. vs. Washington* Decision of 1974, all consistently support the role of Tribes as natural resource managers, on and off reservation. In Washington State, these provisions have developed into a generally successful co-management process between the Federal, State and Tribal governments. The co-management route is the one and only path that leads to true sustainability in our region, and is the tool that must be used to meet the many environmental challenges we face, such as polluted and over-appropriated waters, species decline and climate change. Treaties are nation-to-nation accords, and Tribes have always been outstanding natural resource managers and stewards of the land.

However, the Federal government has chosen to cut funding to natural resource management programs over the past six years. There is no question that this jeopardizes the bond of trust between our governments. It also jeopardizes management programs and infrastructure critically important to co-management and to the health and vitality of natural resources, and the Tribal and non-tribal people they sustain. The timing of funding cuts could not have been worse. We are facing many environmental and natural resource management challenges in the Pacific Northwest, caused by human population expansion and urban sprawl, increased pollution problems ranging from storm water runoff to de-oxygenated or "dead" areas in the Hood Canal, parts of Puget Sound and in the Pacific Ocean. The pathway to the future is clear to us. The Federal, State and Tribal governments must strengthen our bond and move forward, together, with the determination and vigor it will take to preserve our heritage. Together, we must focus on the needs of our children, with an eye on the lessons of the past.

OUR MESSAGE

Our message to you now is that achieving such objectives requires adequate funding. The Tribes strive to implement their co-management authority and responsibility through cooperative and collaborative relationships with the State and local communities. We constantly seek ways to restore and manage these precious natural resources in a manner that can be supported by all who live in this area. The work the Tribes do benefits all the citizens of the State of Washington, the region and the nation. But the increasing challenges I have described and the growing demand for our participation in natural resource/environmental management requires

increased investments of time, energy and funding. Restoring and protecting these natural resources is essential to the economy and the quality of life that is so valued by those who live in the Northwest.

We are sensitive to the budget challenges that Congress faces. We recognize that this Administration has greatly reduced the allocation to discretionary domestic spending during the last several years, which makes it increasingly difficult to address the many requests you receive. Still, we urge you to maintain and increase the allocation and appropriations for priority ecosystem management initiatives. The need for an ecosystem-based management approach for Washington's marine waters have come into sharp focus in recent years with major studies by the U.S. Commission on Ocean Policy and the Pew Charitable Trust. In its report, "An Ocean Blueprint for the 21st Century," the Ocean Commission essentially concluded that the oceans are sick, and estimated the costs for reversing declines and restoring coasts and oceans nationwide at about \$4 billion annually. Follow through on that report has obviously not approached that level of investment—and it might not for some time. But, for the sake of sustainable health, economies and the natural heritage of this resource, it is critically important for Congress to do more than it has, and to direct Federal agencies to do even more to coordinate their efforts with State and Tribal governments.

As frequently attributed to Chief Seattle (Sealth), Tribes believe all things are connected. That is why we believe only through a holistic ecosystem management approach can we find success in achieving a healthy environment and robust natural resources. However, all of this requires adequate funding.

CONCLUSION

Clearly, Western Washington Tribes are leaders in the Northwest salmon recovery effort. The Tribes possess the legal authority, technical and policy expertise, and effective programs to address impacts on wild salmon from harvest and hatcheries.

The Tribes are strategically located in each of the major watersheds, and no other group of people is more knowledgeable about the natural resources than the Tribes. No one else so deeply depends on the resource for their cultural, spiritual and economic survival. Tribes seize every opportunity to coordinate with other governments, and non-governmental entities, to avoid duplication, maximize positive impacts and emphasize the application of holistic ecosystem management. We continue to participate in resource recovery and habitat restoration on an equal level with the State of Washington and the Federal government because we understand the great value of such cooperation.

We ask that the Senate help us in our efforts to protect and restore our great natural heritage and support our funding requests. Thank you.

PREPARED STATEMENT OF THE UNITED STATES SECTION OF THE PACIFIC SALMON COMMISSION

Mr. Chairman, my name is W. Ron Allen and I serve as an Alternate Commissioner on the Pacific Salmon Commission (PSC) and as the Chair of the Budget Committee for the U.S. Section of the Commission. The Pacific Salmon Treaty (Treaty) between the United States and Canada was established in 1985. An Agreement was concluded in June of 1999 (1999 Agreement) that established new abundance-based fishing regimes under the Treaty and made other improvements in the Treaty's structure. During fiscal year 2009, the PSC will implement new Treaty fishing regimes that are currently being renegotiated. The U.S. Section recommends that Congress:

- fund the Pacific Salmon Treaty Line Item of the National Marine Fisheries Service at \$8,000,000 for fiscal year 2009, restoring \$1,000,000 previously provided by Congress in fiscal year 2005. This funding provides the technical support for the states of Alaska, Washington, Oregon and Idaho and the National Marine Fisheries Service to implement the salmon stock assessment and fishery management programs required to implement the Treaty fishing regimes. Included within the total amount of \$8,000,000 is \$400,000 to continue a joint Transboundary River Enhancement Program as required by the Treaty.
- fund the Pacific Salmon Treaty Chinook Salmon Agreement line item of the National Marine Fisheries Service for fiscal year 2009 at \$1,844,000, level funding from what was provided by Congress for fiscal year 2008. This funding continues to be necessary to acquire the technical information to implement abundance-based Chinook salmon management program provided for under the Treaty.

The base Treaty implementation projects include a wide range of stock assessment, fishery monitoring, and technical support activities for all five species of Pacific salmon in the fisheries and rivers from Southeast Alaska to those of Washington, Oregon, and Idaho. The states of Alaska, Washington, Oregon, and Idaho, and the National Marine Fisheries Service (NMFS), are charged with carrying out a major portion of the salmon fishery stock assessment and harvest management actions required under the Treaty. Federal funding for these activities is provided through NMFS on an annual basis. The agency projects carried out under PSC funding are directed toward acquiring, analyzing, and sharing the information required to implement the salmon conservation and sharing principles of the Treaty. A wide range of programs for salmon stock size assessments, escapement enumeration, stock distribution, and catch and effort information from fisheries, are represented. The information from many of these programs is used directly to establish fishing seasons and harvest levels.

Congress increased this funding in fiscal year 2005 to a total of \$8,000,000 to provide for programs needed to implement the new abundance-based fishing regimes established under the 1999 Agreement, but the level was reduced in subsequent years. The U.S. Section recommends that \$8,000,000 be restored in fiscal year 2009 to allow full implementation of Treaty provisions. The 1999 Agreement and the fishery regimes currently being renegotiated, include fishing arrangements and abundance-based management approaches for Chinook, southern coho, Northern Boundary and Transboundary River fisheries. The \$400,000 that has been provided since 1988 for a joint Transboundary River enhancement program with Canada is included in this amount.

In 1996, the United States adopted an abundance-based approach to managing Chinook salmon fisheries in Southeast Alaska. Under this approach, Chinook harvest levels are based on annual estimates of Chinook abundance. This system replaced fixed harvest ceilings agreed to in 1985, which did not respond to annual fluctuations in Chinook salmon populations. Under the 1999 Agreement, this abundance-based management approach was expanded to all Chinook fisheries subject to the Treaty. Beginning in fiscal year 1998, Congress provided \$1,844,000 to allow for the collection of necessary stock assessment and fishery management information to implement the new approach. Through a rigorous competitive technical review process, the states of Alaska, Washington, Oregon, and Idaho, and the twenty-four treaty tribes are using the funding to support research and data collection needed to implement abundance-based Chinook salmon management coast-wide under the new Agreement. The U.S. Section recommends level funding of \$1,844,000 for fiscal year 2009 to support the implementation of abundance-based Chinook salmon management.

The United States and Canada agreed in 1988 to a joint salmon enhancement program on the Transboundary Rivers, which rise in Canada and flow to the sea through Southeast Alaska. Since 1989, Congress has provided \$400,000 annually for this effort through the National Marine Fisheries Service International Fisheries Commission line item under the Conservation and Management Operations activity. Canada provides an equal amount of funding and support for this bilateral program. This funding is included in the \$8,000,000 the U.S. Section is recommending for the fiscal year 2009 NMFS Pacific Salmon Treaty line item.

This concludes the statement of the U.S. Section of the PSC submitted for consideration by your Committee. We wish to thank the Committee for the support that it has given us in the past.

SUMMARY OF PROGRAM FUNDING FOR THE U.S.-CANADA PACIFIC SALMON TREATY

	Amount
Department of Commerce: Pacific Salmon Treaty Line Item:	
Fiscal year 2007 appropriation	\$7,000,000
Fiscal year 2008 appropriation ¹	5,592,000
Fiscal year 2009 administration request	5,616,000
Fiscal year 2009 U.S. Section recommendation	8,000,000
Pacific Salmon Treaty—Chinook Salmon Agreement Line Item:	
Fiscal year 2007 appropriation	1,844,000
Fiscal year 2008 appropriation	1,844,000
Fiscal year 2009 administration request	1,844,000
Fiscal year 2009 U.S. Section recommendation	1,844,000

¹The recommended fiscal year 2008 amount includes \$400,000 provided for the Joint Transboundary River Enhancement Program previously funded under the NMFS International Fisheries Commission account.

PREPARED STATEMENT OF THE INDEPENDENT TRIBAL COURTS REVIEW TEAM

Thank you and I am honored for the opportunity to submit this testimony on behalf of the Independent Tribal Court Review Team. I would like to address the serious funding needs of Tribal Courts and our requests and recommendations for the fiscal year 2009 budget for the Office of Tribal Justice in the Department of Justice.

For the past two years, our Independent Review Team, under a commercial contract by the BIA, has been traveling throughout Indian Country reviewing 25 Tribal and CFR Courts. The scope of our research project, the first of its kind, was to: (1) Provide assistance to Tribes by performing an assessment of their Tribal Courts; and (2) provide information to the BIA and Office of Management and Budget (OMB) regarding the status of Tribal Courts.

We are confident that this is the most comprehensive information compilation effort ever undertaken, and completed, regarding Tribal Courts and it is the strong recommendation of the Independent Tribal Courts Review Team that the Federal Tribal Courts budget be substantially increased in the fiscal year 2009 budget. Our Team has been to 25 Tribal Courts and we feel safe in saying that there is no one with more awareness of the current needs of Tribal Courts than our Review Team.

Budget Priorities, Request and Recommendations—\$70.0 Million

+ \$58.4 million authorized under the Indian Tribal Justice Act of 1993, Public Law 103–176, 25 USC 3601 and re-authorized in year 2000 Public Law 106–559 (no funds to date).

+ \$11.6 million above the fiscal year 2008 enacted level for Tribal Courts.

Support the continuance of set-asides in the Office of Tribal Justice Programs.

Justification

There are approximately 299 tribal judicial systems in Indian country and 156 of these tribal and BIA Courts of Indian Offenses, commonly referred to as CFR Courts (Code of Federal Regulations), are BIA funded. All Tribal Court operational costs are funded under contracts, which provide less than 74 percent of need.

The President's fiscal year 2008 enacted levels are inadequate to support the operations and utility of the Tribal Justice Systems. We respectfully request Congress to take a close look at these funding levels. Our research did not identify any area that could withstand a decrease without causing harm to Tribal Court systems and Indian people. Specifically, we request the following funding in the fiscal year 2009 budget above the fiscal year 2008 enacted levels:

Line Items	Fiscal Year 2008 Enacted	Fiscal Year 2009 Tribal Requests
Tribal Courts	\$8.630 million	+ \$11.6 million
Tribal Grants:		
Youth Programs	14.1 million	+ 10 million
Indian Alcohol & Substance Abuse	5.180 million	+ 10 million
Construction	8.630 million	+ 10 million
Sex Offender	940,000	+ 5 million
Indian Country Detention Centers	8.630 million	+ 10 million

The Justice Department has developed grants for a variety of current Tribal Courts programs. Unfortunately, those grants will eventually run out and it is doubtful that most Tribes will have the funds to continue to provide those services. Some Tribes, unfortunately, do not place a priority on seeking grant funds for exactly this reason. In addition, some of those grants fund what are generally considered to be permanent Court needs, such as Judge or clerk. As Examiners, we mention to Tribes that they should not rely on grant funds as permanent funding. However, most Tribes have few other means to fund permanent positions. Federal resources used for temporary grant-funded Tribe Court initiatives too often turn out to be temporary programs. (We also note that the Tribes who need the most assistance tend to be the Tribes least able to acquire grant funds.) We wonder if it would be better if such funding were placed into a permanent Tribal Court funding account.

It is a positive thing if a Tribe has recognized some Court needs and used its grant writers to find grant money to address those needs. To decrease the potential for harm when those funds are discontinued, those programs should contain or require the Tribe to develop formal plans for when the funds no longer exist. This would include, for example, redistribution of a caseload, records transfer and seeking new continuation funding. We general recommend the Court develop formal plans to address what will happen to projects in planning for the eventual loss of

grant funds, particularly for those projects and positions, which would otherwise be considered permanent.

It is to the credit of many Tribes that they do seek and have had success in obtaining grant funds for the Courts. Grant funds enable the Court to supplement staff or develop programs needed by the Tribe. Several areas, funded through grants, have proven to be successful, regardless of how brief the grant is and regardless of the relative size and wealth of the Tribe. This includes Computerization, Staff Development and Training, Code Development and grants curbing Methamphetamine Abuse.

Tribes are expected to make do with money from the Bureau of Indian Affairs (BIA). The elimination of these funds will be catastrophic to the Tribal Courts and Judicial Systems. The remaining funds will only assist a small number of Tribes, hardly the intent of the Indian Tribal Justice Act. It was the intent of all involved to examine and determine the adequacy of the current Federal funding levels for Tribal Courts. Our research indicates that Tribal Courts are at a critical stage in terms of need. Tribal Court systems have Trial and Appellate Courts, conduct jury trials, within Courthouses that need improvements, and Tribal Bar listings and fees. Nationwide, there are 156 Tribes with Courts that receive Federal Funding. These Tribes divide a mere \$11.4 million in Federal funds. Tribal Courts must deal with the very same issues state and Federal Courts confront in the criminal context, including, child sexual abuse, alcohol and substance abuse, (namely Methamphetamine), gang violence and violence against women just to name a few. Tribal Courts, however, must address these complex issues with far less financial resources than their Federal and state counterparts.

It is clear that Tribal Courts and justice systems are vital and important to the communities where they are located. Tribes value and want to be proud of their Court systems. There are many positive aspects about Tribal Courts. After decades of existence, many Tribal Courts, despite minimal funding, have achieved a level of experience and sophistication approaching, and in some cases surpassing, local non-Indian Courts. Tribal Courts, through the Indian Child Welfare Act, have mostly stopped the wholesale removal of Indian children from their families. Indian and Non-Indian Courts have developed formal and informal agreements regarding jurisdiction. Tribal governments have recognized the benefit of having law-trained Judges, without doing away with Judges who have cultural/traditional experience. Judicial training that addresses the existing problems in Indian Country, while also being culturally sensitive, is essential if our efforts are to be effective in deterring and solving crime in Indian communities.

With the passage of the Indian Tribal Justice Act, Public Law 103-176, 25 U.S.C. § 3601 et seq. (the "Act"), Congress found that "[T]ribal justice systems are an essential part of tribal governments and serve as important forums for ensuring public health, safety and the political integrity of tribal governments." 25 U.S.C. § 3601(5). Congress found that "tribal justice systems are inadequately funded, and the lack of adequate funding impairs their operation." 25 U.S.C. § 3601(8). In order to remedy this lack of funding, the Act authorized appropriation of base funding support for tribal justice systems in the amount of \$50 million for each of the fiscal years 1994 through 2000. 25 U.S.C. § 3621(b). An additional \$500,000 for each of the same fiscal years was authorized to be appropriated for the administration of Tribal Judicial Conferences for the "development, enhancement and continuing operation of tribal justice systems . . ." 25 U.S.C. § 3614.

Our research also indicates that grant programs at Justice were only moderately effective. Tribes often did not have funding to maintain grant funded programs after the conclusion of the grant. These programs were often eliminated after the conclusion of the grant. We did, however, identify several areas where grants were, or could be effective. These are grants providing for:

—*Computer Upgrade, Training and Court Management Software.*—Tribes generally do not have available funds to upgrade their use of computer technology. Increased use of computer technology improves the function of the Court and even may result in Court staff savings due to the decreased staff time needs.

—*Digitizing of Tribal Codes.*—Tribes most often collect their Codes in very large three ring binders. Everyone does not always receive new law. It is difficult to obtain a copy of the Code. If Codes are digitized, they can be easily distributed on CD and even be placed on the Tribal website. The result is a more efficient system

—*Development of MOU/MOAs with Local Non-Indian Jurisdictions.*—There is a large and growing problem resulting from the Oliphant Case. Tribal jurisdictions have no control over unlawful acts committed by non-Indian offenders. This has specifically resulted in drug dealers and methamphetamine labs moving on to Indian lands. Many Tribes and non-Indian jurisdictions have devel-

oped MOU/MOAs that provide for jurisdictional compromise between Law Enforcement and Courts. More of these agreements should be encouraged.

—*Administration of Tribal Courts.*—Tribal legislatures and Administration generally have several areas of relationship; including hiring, payroll, and financial administration of the Court. Often, Tribal governments are confused and very concerned about where to draw the line regarding the relationship with the Court. They do not want to violate the Courts independence. Tribes need help to formally develop the relationship between the Courts and other governmental entities. This may include such things as development of an over-site committee and a judicial employment contract.

Independent Tribal Court Review Team Report Findings

The Independent Tribal Court Review Team completed the Tribal & CFR Court Reviews Project Fiscal Year 2006 Final Report. The Report contains 132 findings regarding all areas involving Tribal Courts. Many of the findings support the recommendations made above, including several indicating that Tribal Courts are under-funded. We list some of these below:

—*Finding #38.*—The Federal Funds are inadequate to fund most Court needs. Other Court needs such as technology, supplies, travel and training, are usually assumed by the Tribe. These needs are often provided by decreasing available funds for Tribal Programs. Or, the needs are simply not provided and the Courts must make due without these services.

—*Finding #32.*—Almost all Courts are under-funded. Court budgets vary widely. When you get beyond the few Tribes with very successful economic development ventures, a substantial number of the Courts, approximately 90 percent, are under-funded. They are missing staff positions and common items such as a safe, a Court recording system, telephone systems, or security systems. Almost every Court that is under-funded is still mostly functional.

—*Finding #33.*—Many are under-funded at a critical level. Some contracted Courts are very poor. There are Courts with only a part-time Judge and a Clerk. They must rely on Administration for simple items, such as printer ink. There is no training. Salaries are below the poverty level. We have seen Courts that operate on less than \$25,000 per year. We have seen groups of Tribes with low Federal funding numbers joined into a single overworked Court system that can only provide limited service.

—*Finding #6.*—A very small number of Tribes have large amounts of available economic development funds. These Tribes (about 10 percent) are those few with very successful economic development ventures. These Tribes contribute 90 percent or more of the funding to their Courts. These Tribes pay well, they have several Attorneys on staff, including on the Court staff and have fully funded law enforcement. These Tribes are better trained and experientially and financially able to deal with Court matters, including criminal matters, than local city, county and state governments.

—*Finding #5.*—Most Tribal economic development funds provide jobs and pay for a modest amount of other governmental services. The biggest fallacy about Indian Nations is that gaming has made all Tribes rich. (This fallacy isn't always bad. It often encourages non-Indian governments and law enforcement to work with the Tribe.) The vast majority of Tribes has limited economic development that (1) funds itself and (2) can modestly assist Tribal programs and the Court budgets. A portion of Tribes has no economic development or economic development that only funds itself.

Finally, the Indian Civil Rights Act: A Report of the United States Civil Rights Commission, June 1991 found that “the failure of the United States Government to provide proper funding for the operation of tribal judicial systems . . . has continued for more than 20 years.” The Commission also noted that “[f]unding for tribal judicial systems may be further hampered in some instances by the pressures of competing priorities within a tribe.” Moreover, they opined that “If the United States Government is to live up to its trust obligations, it must assist tribal governments in their development . . .” More than sixteen years ago, the Commission “strongly support[ed] the pending and proposed Congressional initiatives to authorize funding of Tribal Courts in an amount equal to that of an equivalent State Court” and was “hopeful that this increased funding [would] allow for much needed increases in salaries for judges, the retention of law clerks for tribal judges, the funding of public defenders/defense counsel and increased access to legal authorities.”

We are still hopeful that these recommendations will come to fruition!

On behalf of the Independent Tribal Court Review Team: Charles D. Robertson Jr., Esquire, the Honorable Philip D. Lujan, Court Reporter Myrna Rivera and the

Honorable Elbridge Coochise, thank you again for your consideration of these requests. Should you have any questions, please feel free to contact Team Leader Elbridge Coochise at 602-418-8937 or Charles D. Robertson, Jr. at 605-390-0061.

PREPARED STATEMENT OF THE AMERICAN CHEMICAL SOCIETY

The American Chemical Society (ACS) appreciates the opportunity to submit public testimony to the Commerce, Justice, Science and Related Agencies Subcommittee on the fiscal year 2009 budget for the National Science Institute of Standards and Technology (NIST).

The ACS is a nonprofit scientific and educational organization, chartered by Congress in 1937, with more than 160,000 chemical scientists and engineers as members. The world's largest scientific society, ACS advances the chemical enterprise, increases public understanding of chemistry and science, and brings its expertise to bear on state and national matters.

Investments in NIST advanced research, measurement methods, and standards are vital to American industry as well as the nation's economic competitiveness and security. Increased funding is necessary to meet ongoing private sector needs for NIST measurements and standards, as well as the growing needs in homeland security, advanced manufacturing, climate, and nanotechnology. America's future competitiveness will be enhanced through sustained, predictable federal investments in science agencies like NIST.

Specifically, the ACS urges Congress to support the \$634 million funding level (5.5 percent increase over fiscal year 2008) for the NIST core programs as outlined in the President's fiscal year 2009 budget request. While this falls short of the level authorized to enhance U.S. innovation and competitiveness in the America COMPETES Act passed last summer with overwhelming bipartisan support, we hope that Congress will strive to return to this funding blueprint over time. Additionally, the ACS supports the \$535 million request for NIST laboratories (21.3 percent increase over fiscal year 2008). However, we strongly dissent from the proposed termination of the Technology Innovation Program (TIP) and urge Congress to fund the program at its authorized level of \$131.5 million.

NIST Laboratories

NIST laboratories serve as the technological nerve center for countless products and services across industries. By advancing research and extremely accurate measurement technology, NIST enables universal quality-control technologies that undergird industrial productivity, efficiency improvements, and faster product development. NIST also plays a critical role in advancing public health and safety, environmental progress, and national security. For example, NIST's calibration and related measurement methods are critical in areas such as emission control, fuel-composition control, laser eye surgery, smoke-detector sensitivity, electricity-meter readings, energy-efficiency measurement, and the operation of fiber optics. The ACS strongly supports the \$535 million request for NIST laboratories.

However, we remain concerned that recent cuts in standards-related programs have hampered NIST's ability to promote U.S. standards and to facilitate global trade. Without NIST's consensus-based measurement standards, companies would be less innovative, less efficient, and less competitive. Independent studies show that every dollar invested in NIST measurement and standards returns at least three dollars in national economic benefit.

Additionally, the ACS supports the request for \$99 million for NIST facilities. These funds support facility improvements and acquisition of cutting-edge equipment in Boulder, Colorado, and Gaithersburg, Maryland. In previous years, in excess of \$100 million was used annually to support projects peripheral to the NIST mission. As a result, NIST facilities are suffering to the point of becoming ineffective for cutting-edge research.

Technology Innovation Program

The ACS continues to support NIST's Technology Innovation Program (TIP), established to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need. This program enables small- and medium-sized businesses to work in joint ventures and with universities to commercialize high-risk technologies. Without this program, the United States would continue to be at a global competitive disadvantage if these businesses, the traditional incubators of innovation, could not pursue high-risk opportunities. ACS strongly opposes the administration's proposed termination of TIP. We urge Congress to fully fund TIP (as was the practice to restore funding to the

Advanced Technology Program—TIP's predecessor) at the \$131.5 million level authorized by the America COMPETES Act (Public Law 110–69) for fiscal year 2009.

PREPARED STATEMENT OF THE AMERICAN GEOLOGICAL INSTITUTE

To the Chairwoman and Members of the Subcommittee: The American Geological Institute (AGI) supports fundamental Earth science research sustained by the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the National Institute of Standards and Technology (NIST) and the National Aeronautics and Space Administration (NASA). Frontier research on Earth, energy and the environment has fueled economic growth, mitigated losses and sustained our quality of life. The Subcommittee's leadership in expanding the federal investment in basic research is even more critical as our nation competes with rapidly developing countries, such as China and India, for energy, mineral, air and water resources. Our nation needs skilled geoscientists to help explore, assess and develop Earth's resources in a strategic, sustainable and environmentally-sound manner and to help understand, evaluate and reduce our risks to hazards. AGI supports a total budget of \$7.32 billion for NSF (as authorized in the America COMPETES Act of 2007—Public Law 110–69); \$542 million for Scientific and Technical Research and Services at NIST (as authorized in America COMPETES Act); \$4.5 billion for NOAA (an increase of \$400 million over the request to maintain core programs and infrastructure), and \$4.869 billion for the Science Mission Directorate at NASA (an increase of about \$428 million over the request to maintain core research and missions).

The President's American Competitiveness Initiative and the America COMPETES Act of 2007 supports a doubling of physical science research at NSF and NIST, while noting the importance of robust research and science education programs at NASA and NOAA. AGI strongly supports both initiatives and the inclusion of Earth science in such efforts.

AGI is a nonprofit federation of 44 geoscientific and professional societies representing more than 100,000 geologists, geophysicists, and other Earth scientists. Founded in 1948, AGI provides information services to geoscientists, serves as a voice for shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources and interaction with the environment.

NSF

We applaud the President's request for a 13 percent increase for an overall budget of \$6.854 billion for NSF and the Administration's commitment to the American Competitiveness Initiative. We hope that the Subcommittee can strengthen our research and science education initiatives by funding NSF at an overall budget of \$7.32 billion which is consistent with the amount authorized in the America COMPETES Act of 2007. NSF remains under funded and would benefit from an increase of about \$466 million over the request in fiscal year 2009. AGI believes that such a forward-looking investment in tight fiscal times will pay important dividends in future development and innovation that drives economic growth, especially in critical areas of sustainable and economic natural resources and reduced risks from natural hazards.

NSF Geosciences Directorate.—The Geosciences Directorate is the principal source of federal support for academic Earth scientists and their students who are seeking to understand the processes that ultimately sustain and transform life on this planet. The President's budget proposal requests an increase of about 13 percent (about \$96 million) for a total budget of about \$849 million, which AGI strongly supports.

The President's request for fiscal year 2009 asks for \$260.58 million for Atmospheric Sciences, \$177.73 million for Earth Sciences, \$353.5 million for Ocean Sciences and \$56.82 million for Innovative and Collaborative Education and Research (ICER) within the Geosciences Directorate. Much of the geosciences research budget is for understanding that is critical for current national needs, such as climate change, water and mineral resources, energy resources, environmental issues and mitigation of natural hazards. AGI asks the Subcommittee to strongly support these essential investments and requests that these investments be used for research.

A significant concern for NSF and GEO is the rising costs of materials, infrastructure, and operations and maintenance. Costs for drilling, ships, instrumentation and raw materials are sky-rocketing as the supply and demand for these has increased in the public and private sector. Unexpected shortages, increasing competition and growing demand is significantly increasing the cost of basic research in GEO. This

is one reason for NSF's decision to defer the Alaska Region Research Vessel (ARRV) and the Ocean Observatories Initiative (OOI) which would receive no funding from the Major Research Equipment and Facilities Construction (MREFC) account, but would instead receive about \$7.5 million from the GEO Research and Related Activities account for planning.

Infrastructure and operation and maintenance costs for facilities are coming directly from the research budget within GEO. Among the major facilities, the Academic Research Fleet would receive \$87.96 million, EarthScope Operation would receive \$26.29 million, Incorporated Research Institutions for Seismology (IRIS) would receive \$12.2 million, Ocean Drilling Activities would receive \$47.4 million, Ocean Observatories would receive \$10.5 million and the National Center for Atmospheric Research would receive \$95.42 million. These facilities are essential for not only basic research but also for addressing critical issues facing the nation, such as climate change, energy and mineral resources, water resources and hazards mitigation. Funding for these facilities, many of which have been operating for decades, must remain robust and require an infusion of funds approaching \$300 million. Therefore AGI strongly supports the congressionally mandated budget of \$7.32 billion for NSF in fiscal year 2009 and asks that a significant fraction of the \$466 million increase relative to the President's request be used to support facilities, whose operating funds are coming from the research budget of GEO.

We would encourage the general increase for GEO to focus on funding research, which means providing essential support to the faculty, staff, post-doctoral researchers, graduate students and undergraduate students at universities and other educational/research institutions across the nation. The outstanding facilities being maintained by GEO require investments in outstanding human capital through competitive research grants. Now is the time to boost Earth science research and education to fill the draining pipeline of skilled geoscientists and geo-engineers working in the energy industry; the construction industry, particularly on levees and dams; the environmental industry; the academic community, particularly on understanding natural hazards and the sustainability of our natural resources; the primary federal Earth science agencies, such as the United States Geological Survey; and in all areas of education.

NSF Support for Earth Science Education.—Congress can improve the nation's scientific literacy by supporting the full integration of Earth science information into mainstream science education at the K–12 and college levels. AGI supports the Math and Science Partnership (MSP) program, a competitive peer-reviewed grant program that funds only the highest quality proposals at NSF. The NSF's MSP program focuses on modeling, testing and identification of high-quality math and science activities whereas the Department of Education MSP program does not. The NSF and Department of Education MSP programs are complementary and are both necessary to continue to reach the common goal of providing world-class science and mathematics education to elementary and secondary school students. AGI opposes the transfer of the MSP from NSF to the Department of Education.

NOAA

AGI appreciates the President's request for increased funding for NOAA for a total budget of \$4.1 billion. Unfortunately, NOAA's funding has remained flat, at \$3.9 billion since fiscal year 2005 and based on an annual inflation rate of 3 percent a budget of \$4.4 billion in fiscal year 2009 would leave the agency's budget level in constant dollars. NOAA cannot support its core mission services including weather and severe storm forecasting, spill response, ocean observing, habitat restoration and conservation, and research on climate change, fisheries, and coastal and marine ecosystems without a more robust budget. We ask that the Subcommittee provide small increases (about 10 percent increases to their total budgets) rather than proposed cuts to the National Ocean Service, the National Marine Fisheries Service and the Office of Atmospheric Research following the recommendations of the U.S. Commission on Ocean Policy. AGI also supports the additional increased funding for the National Weather Service for analysis, modeling and upgrading of observing systems and additional increases for the National Environment Satellite, Data and Information Service for the development of the Geostationary Operational Environmental Satellite (GOES-R) and the National Polar-Orbiting Operational Environmental Satellite System (NPOESS). Both satellite systems will maintain a global view of the planet to continuously watch for atmospheric triggers of severe weather conditions such as tornadoes, flash floods, hailstorms, and hurricanes.

NIST

We applaud the President's request for a 22 percent increase in research and related funding for NIST in fiscal 2009. Basic research at NIST is conducted by Earth

scientists and geotechnical engineers and used by Earth scientists, geotechnical engineers and many others on a daily basis. In particular, we strongly support increases for Measurements and Standards for the Climate Change Science Program (\$5 million), Disaster Resilient Structures and Communities (\$4 million) and the National Earthquake Hazards Reduction Program (NEHRP) (\$3.3 million). The climate change research will improve the accuracy of climate change measurements, may reduce satellite costs and may help to guide climate change policy. The hazards research will help to reduce the estimated average of \$52 billion in annual losses caused by floods, fires and earthquakes. NIST is the lead agency for NEHRP, but has received only a small portion of authorized and essential funding in the past. AGI strongly supports a doubling of the NIST budget over 5 to 7 years as authorized in the America COMPETES Act of 2007, so that core research functions at NIST are maintained, while needed funding for climate change and hazards are protected.

NASA

AGI supports the vital Earth observing programs within NASA. Currently the topography of Mars has been measured at a more comprehensive and higher resolution than Earth's surface. While AGI is excited about space exploration and the President's Vision for Exploration, we firmly believe that NASA's Earth observing program is effective and essential to solving global to regional puzzles about Earth systems, such as how much and at what rate is the climate changing. AGI strongly supports the requested increase for Earth Science and Planetary Science programs within the Science Mission Directorate.

The Science Mission Directorate, which includes Earth Science, Planetary Science, Astrophysics and Heliophysics, would receive \$4.441 billion in the fiscal year 2009 proposal, a decline of 6 percent or \$265 million compared to fiscal year 2008 enacted levels. The President's fiscal year 2009 budget request would provide \$1.3675 billion for NASA's Earth Science program, a 6.8 percent increase over the fiscal year 2008 appropriation to continue with current missions and begin development of new missions. AGI is very grateful to see an increase for Earth science. Unfortunately, about \$570 million of the increase created for the decadal survey missions is funded through the transfer of funding from other science divisions, resulting in reductions in the Mars Exploration Program, a delay to the Solar Probe mission and other programmatic cuts. In addition the funding outlook does not come close to meeting the \$500 million annual increase recommended by the National Academies decadal survey report to bring the program back to its fiscal year 2000 funding level and enable the decadal recommendations.

AGI asks for a budget of \$4.869 billion for the Science Mission Directorate at NASA or an increase of about \$428 million over the President's request. The increase would eliminate the \$265 million deficit compared to fiscal year 2008 enacted budget for the Science Mission Directorate in the President's proposal and would include an additional \$163 million for the Earth Science program (for a total of \$1.530 billion in fiscal year 2009). This would bring the Earth Science program up to an increase of \$250 million about half of what is needed to meet the priorities of the decadal survey, but enough to keep key missions on track under tight fiscal constraints. We strongly urge the Subcommittee to return spending levels for Earth science within NASA to fiscal year 2000 levels (eliminating a 30 percent cut over the past 6 years) and implement the priorities of the National Academies Earth Science and Applications from Space Decadal Survey.

I appreciate this opportunity to provide testimony to the Subcommittee and would be pleased to answer any questions or to provide additional information for the record. I can be reached at 703-379-2480 ext. 228 (voice), 703-379-7563 (fax), rowan@agiweb.org, or 4220 King Street, Alexandria VA 22302-1502.

PREPARED STATEMENT OF THE AMERICAN MUSEUM OF NATURAL HISTORY

Overview

Recognizing its potential to support NASA in its goals to pioneer the future in space exploration, scientific discovery, and aeronautics research; to develop a balanced overall program of science, exploration, and aeronautics; and to establish new and innovative programs to enhance understanding of our Earth, other planets, asteroids, and comets in our solar system, as well as the search for life around other stars, the American Museum of Natural History (AMNH) seeks \$3.5 million to advance its successful multi-year collaboration with NASA to contribute its unique science, education, and technological capacity to helping the Agency to meet these goals.

About the American Museum of Natural History

The American Museum of Natural History (AMNH) is one of the nation's pre-eminent institutions for scientific research and public education. Since its founding in 1869, the Museum has pursued its joint mission of science and public education. It is renowned for its exhibitions and collections of more than 32 million natural specimens and cultural artifacts. With some 4 million annual on-site visitors—approximately half of them children—it is one of the largest, fastest growing, and most diverse museums in the country. Museum scientists conduct groundbreaking research in fields ranging from all branches of zoology, comparative genomics, and informatics to Earth science, biodiversity conservation, and astrophysics. Their work forms the basis for all the Museum's activities that seek to explain complex issues and help people to understand the events and processes that created and continue to shape the Earth, life and civilization on this planet, and the universe beyond.

The American Museum—NASA Partnership

NASA and the AMNH for many years engaged in a partnership founded on a joint commitment to cutting-edge research and the integration of that research into unique educational tools and resources. The AMNH has worked with the Agency to develop innovative technologies and resources that provide an unparalleled platform for interpreting, displaying, and distributing NASA content to audiences nationwide.

- The Museum has built a set of singular national resources that bring cutting-edge science and integrated NASA content to total audiences of more than 16 million in New York City, across the country, and around the world. In the New York area alone, the Museum reaches nearly four million annual visitors, including more than 450,000 children in school groups and more than 5,000 teachers, with millions visiting online.
- We have created Science Bulletins—technologically innovative, immersive multimedia science encounters, presenting space, Earth, and life science news and discoveries in visually stunning feature documentaries, data visualizations, and weekly updates.
- We have launched a successful program to disseminate project resources to informal learning venues nationally and internationally, with Science Bulletins already on view in 40 locations across the country (including eight NASA visitor centers), with more being added.
- The Museum has made numerous technological breakthroughs—it has established leadership in science visualization and high resolution renderings of massive data sets; it has converted its Space Shows to digital format, making the AMNH the only full planetarium dome content provider that crosses all major platforms; it has pioneered a unique online distribution network that each week streams new science content in HD MPEG2 encodes to partners across North America and most recently, has simplified the technical requirements of the network, including new server and/or lower bandwidth for downloading, so that content is more accessible to more venues.
- AMNH routinely hosts major events celebrating NASA's mission highlights and milestones. Recent events have included live, large-scale events of broadcasts of the New Horizons launch, Stardust sample return, and Mars Reconnaissance Orbiter arrival at Mars.
- The Museum's educational mission is fueled by and reflects cutting-edge science, including the work of our scientists in collaboration with NASA centers and researchers.

Building on this foundation, the Museum seeks in fiscal year 2009 to advance the AMNH-NASA collaboration—with a particular focus on scaling up to reach even larger audiences—with a program for communicating current science content, and content about NASA science and missions in particular, to diverse national audiences. The Museum's activities will include the development of current NASA science education resources, such as Science Bulletins, and continuing to scale up their national distribution for presentation in public spaces and for classroom use.

Science Bulletins (SB) is a nationally distributed, multimedia science exhibition program targeted to informal learning settings. It presents cutting-edge research and discoveries in visually compelling feature documentaries and updates in flexible, large-screen, high-definition video and interactive kiosk versions, as well as in a free online version adapted for classroom use. Our SB program for the following year includes expanding dissemination significantly, developing new visualization methods for use in the development and distribution of SB, and reaching out in diverse ways to the formal education sector to maximize access to the Science Bulletins at the K-12 level.

Museum activities for the next year also include R&D on new techniques for visualizing massive space science data sets, creating visualization tools for presenting

NASA missions and other dynamic science stories, and for advancing innovative solutions to technical challenges in presenting digital planetarium shows. AMNH will conduct extensive internal and external evaluation of this program's activities.

PREPARED STATEMENT OF THE AMERICAN MUSEUM OF NATURAL HISTORY

Overview

Recognizing its potential to support NOAA in its goals to understand and predict changes in the Earth's environment; to conserve and manage coastal and marine resources; and to protect, restore, and manage the use of coastal and ocean resources to meet our Nation's economic, social, and environmental needs, the American Museum of Natural History (AMNH) seeks \$2 million to advance a partnership with the agency to promote the environmental education, outreach, and research so pivotal to the health of our nation and our planet.

About the American Museum of Natural History

The AMNH is one of the nation's preeminent institutions for scientific research and public education. Since its founding in 1869, the Museum has pursued its mission to "discover, interpret, and disseminate—through scientific research and education—knowledge about human cultures, the natural world, and the universe." It is renowned for its exhibitions and collections of more than 32 million natural specimens and cultural artifacts. With nearly four million annual visitors, its audience is one of the largest, fastest growing, and most diverse of any museum in the country. Museum scientists conduct groundbreaking research in fields ranging from zoology, comparative genomics, and informatics to Earth, space, and environmental sciences and biodiversity conservation. Their work forms the basis for all the Museum's activities that seek to explain complex issues and help people to understand the events and processes that created and continue to shape the Earth, life and civilization on this planet, and the universe beyond.

The Museum's Center for Biodiversity and Conservation, founded in 1993, is dedicated to enhancing the use of scientific data to mitigate threats to global biodiversity, and to integrating this information into the conservation process and disseminating it widely. It conducts conservation-related field projects around the world, trains scientists, organizes scientific symposia, presents public programs, and produces publications geared toward scientists, policy makers, and the lay public. Each spring, the CBC hosts symposia that focus on conservation issues. The 2007 symposium, *Small Matters: Microbes and Their Role in Conservation*, brought together a diverse group of microbiologists and conservation biologists to explore broad questions of the planet's microbial diversity and how conservation practices take microbial life into account. The 2008 symposium, *Sustaining Cultural and Biological Diversity in a Rapidly Changing World: Lessons for Global Policy* will seek to bridge gaps, address challenges and opportunities, and help to forge a long-term multi-dimensional vision for sustaining biological and cultural diversity.

The Museum's renovated Hall of Ocean Life, reopened in spring 2003, is a major focal point for public education on marine science issues. Drawing on the Museum's world-renowned expertise in Ichthyology as well as other areas of Vertebrate as well as Invertebrate Zoology, the Hall is pivotal in educating visitors about the oceans' key role in sustaining life on our planet. The renovated Hall of Ocean Life, together with the new Halls of Biodiversity, Planet Earth, and the Universe and the rebuilt Hayden Planetarium (part of the new Rose Center for Earth and Space) provide visitors with a seamless educational journey from the universe's beginnings to the formation and processes of Earth to the extraordinary diversity of life on our planet.

Common Goals of NOAA and AMNH

The National Oceanic and Atmospheric Administration (NOAA) is committed to understanding and predicting changes in the Earth's environment and to conserving and managing coastal and marine resources to meet the nation's needs. NOAA's Education Plan outlines a broad vision for reaching various audiences to build awareness and knowledge of issues related to the world's atmosphere, climate, oceans, and coastal ecosystems. Addressing the needs of teachers, students, and policy makers as well as the general public, the agency's goals include enhancing environmental literacy and knowledge, application of NOAA science, and development of a capable and diverse workforce for environmental science.

The American Museum of Natural History shares NOAA's commitment to these environmental goals and to the scientific research and public education that support them. Since its founding in 1869, the American Museum has pursued its mission of scientific investigation and public education. Its exhibitions and collections serve

as a field guide to the entire planet and present a panorama of the world's cultures. Museum collections of some 32 million specimens and cultural artifacts provide an irreplaceable record of life. More than 200 Museum scientists conduct groundbreaking research in fields as diverse as systematic and conservation biology, astrophysics, and Earth and biodiversity sciences. The work of scientific staff fuels exhibitions and educational programming that reach annually an on-site audience of nearly four million visitors—nearly half of them children.

Environmental Literacy Initiative

In fiscal year 2004, as a result of Congressional leadership, the Museum entered into a partnership with NOAA that launched a multi-year marine science and education initiative. Support for this initiative, which encompassed a broad range of education and research activities closely aligned with NOAA goals and purposes, was continued in fiscal year 2005 (and recommended in the fiscal year 2007 Senate report), and further leveraged by Museum scientists who successfully secured competitive NOAA education and research funding.

Building upon this strong foundation, and in concert with the strategic priorities of NOAA and the Museum, we seek \$2 million in fiscal year 2009 to join with NOAA in education, outreach, and research activities that promote environmental literacy, particularly concerning climate. Over a one-year period, the Museum will seek to advance the nation's climate literacy by carrying out a rich agenda of public education and outreach activities, many in conjunction with a major national exhibition on climate change. These activities will include presenting current climate-related issues and news in the Museum's nationally distributed Science Bulletins program; developing advanced visualization tools and techniques for presenting environmental data to the public in varied formats; developing on-site and online professional development offerings, exchanges, and resources for teachers, children, families, and students; presenting programs for the general public; and carrying out research that advances conservation of marine ecosystems systems.

PREPARED STATEMENT OF THE AMERICAN PHYSIOLOGICAL SOCIETY

The American Physiological Society (APS) thanks the Subcommittee for its commitment to scientific research at the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). Scientific research plays an important role in technological innovation and economic development and therefore is critical to the future of our nation. The APS recognizes that the NSF has benefited from recent budget increases, but is disappointed that the agency has fallen behind the budget levels endorsed by Congress and the Administration in the America COMPETES Act passed in 2007. The APS recommends that the NSF be funded at the authorized level of \$7.33 billion in fiscal year 2009, which will keep the agency on track to double its budget over the next several years. While the overall budget for NASA continues to grow, the APS remains concerned about the lack of consistent funding for research into the effects of spaceflight on humans. The APS recommends that funding for NASA's Human Research Program (HRP) be reinvigorated with increased funds in fiscal year 2009.

The APS is a professional society dedicated to fostering research and education as well as the dissemination of scientific knowledge concerning how the organs and systems of the body work. The Society was founded in 1887 and now has more than 10,000 members who do research and teach at public and private research institutions across the country, including colleges, universities, medical and veterinary schools. Many of our members conduct physiology research that is supported by funds allocated through the NSF and NASA. In this testimony, the APS offers its recommendations for fiscal year 2009 funding for both agencies.

NSF

The basic science initiatives funded by the NSF are driven by the most fundamental principles of scientific inquiry. Although at times NSF-funded research may seem to be exploring questions that lack immediate practical application, we have learned again and again that the relevance of the knowledge gained becomes apparent over time. The NSF provides support for approximately 20 percent of federally funded basic science and is the major source of support for non-medical biology research, including integrative, comparative, and evolutionary biology, as well as interdisciplinary biological research.

The majority of the funding NSF provides is awarded through competitive, merit-based peer review, which ensures that the best possible projects are supported. NSF has an excellent record of accomplishment in terms of funding research endeavors

that have produced results with far-reaching potential. Listed below are just a few of NSF's most recent advances in biological research.¹

- Scientists have developed computational methods to catalog genes involved in memory and learning.
- Research into the molecular characteristics of degenerative neurological diseases such as Alzheimer's, Parkinson's and the human version of Mad Cow disease has revealed similar molecular pathology underlying all three diseases.
- Novel imaging techniques have been developed that could aid in the earlier diagnosis of pancreatic cancer, a disease that is especially deadly due to delayed detection.
- Studies of abnormally developed frogs led to the discovery that nutrient runoff from agriculture fuels parasitic infections that lead to developmental deformities in amphibians.
- Researchers studying flatworms (planaria) found that the connections between cells play a role in regulating how adult stem cells contribute to injury repair.

In addition to funding innovative research in labs around the country, the NSF also fosters the next generation of scientists through education programs. The APS has benefited from this support which allows us to provide training opportunities and career development activities to enhance the participation of underrepresented minorities in science. The APS was recognized for its efforts in 2003 with a Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM), funding for which was provided by NSF and was reinvested in our education programs. We believe that NSF is uniquely suited to administer science education programs of the highest quality, and we recommend that Congress continue to provide federal funds for science education through the NSF.

Passage of the America COMPETES Act showed that Congress is committed to fostering the NSF not only through increased appropriations, but also through explicit support for the agency's respected education programs. We thank Congress for the passage of the America COMPETES Act and join the Federation of American Societies for Experimental Biology (FASEB) in recommending that the NSF be funded at the full authorized level of \$7.33 billion in fiscal year 2009.

NASA

The Human Research Program (HRP) at NASA conducts research and develops countermeasures with the goal of enabling safe and productive human space exploration. During prolonged space flight, the physiological changes that occur due to microgravity, increased exposure to radiation, confined living quarters, and alterations in eating and sleeping patterns can lead to health problems and reduced ability to perform tasks. APS scientists are actively engaged in research that explores the physiological basis of these problems, with the goal of contributing to the development of countermeasures.

Given NASA's current focus on manned space exploration, it is critical that resources be devoted to research into the health effects of prolonged space flight. NASA is the only agency whose mission includes addressing the biomedical challenges of manned space exploration. Over the years, the amount of money available for conducting this kind of research at NASA has dwindled, and this year the budget request for the Human Research Program stands at only \$151.9 million. The cuts are especially troubling given the Administration's commitment to returning humans to space. NASA and the National Institutes of Health signed a memorandum of understanding in 2007 that provides a framework for the two agencies to work together and move health research forward. While the agreement does not involve any funding obligations, we are hopeful that the agencies will develop plans to take advantage of the opportunities for collaboration. The APS joins FASEB in applauding Congress' call in the fiscal year 2008 Omnibus bill for NASA to "establish and ongoing relationship" with the National Academies for the purpose of "independent project review." Independent review will help ensure that resources are appropriately directed towards critical research programs.

The APS urges Congress and NASA to increase support for peer-reviewed research into the health risks of long-term space flight and development of appropriate countermeasures at a rate that meets or exceeds the biomedical research and development price index (BRDPI).

¹ Research examples from <http://www.nsf.gov>, accessed March 18, 2008.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF AGRONOMY, CROP SCIENCE SOCIETY OF AMERICA, SOIL SCIENCE SOCIETY OF AMERICA

The American Society of Agronomy, Crop Science Society of America, Soil Science Society of America (ASA-CSSA-SSSA) are pleased to submit the following funding recommendations for fiscal year 2009. ASA/CSSA/SSSA understand the challenges the Senate Commerce, Justice, Science, and Related Agencies Appropriations Subcommittee faces with the tight agriculture budget for fiscal year 2009. We also recognize that the Commerce, Justice, and Science Appropriations bill has many valuable and necessary components, and we applaud the efforts of the Subcommittee to fund mission-critical research through the National Science Foundation.

With more than 25,000 members and practicing professionals, ASA-CSSA-SSSA are the largest life science professional societies in the United States dedicated to the agronomic, crop and soil sciences. ASA-CSSA-SSSA play a major role in promoting progress in these sciences through the publication of quality journals and books, convening meetings and workshops, developing educational, training, and public information programs, providing scientific advice to inform public policy, and promoting ethical conduct among practitioners of agronomy and crop and soil sciences.

Biological Sciences Directorate

Molecular and Cellular Biosciences (MCB)

The Molecular and Cellular Biosciences division of NSF Biology directorate provides funding for critical research that contributes to the fundamental understanding of life processes at the molecular, subcellular, and cellular levels. Programs such as the Microbial Observatories increase the understanding of microbial distribution in a variety of ecosystems—the first step in evaluating microbial impact on ecosystem function. ASA-CSSA-SSSA support the proposed increase for MCB to \$126 million, yet, disagree with the proposed change in priorities. Historically, the division focused on understanding living networks and complex molecular and cellular systems, microbial biology, and fundamental plant biology research. However, priorities for fiscal year 2009 focus on metagenomics, theoretical and mathematical modeling, synthetic biology, small RNA biology, and the role of intracellular environment on the dynamic structure and function of complex biomolecules. We agree that considerable advances investigating interactions between microbial communities and plants have been made, however critical gaps do remain requiring additional study to understand the complex, dynamic relationships existing between plant and microbial communities.

Integrative Organismal Systems (IOS)

The emergence of a bioeconomy requires greater reliance on plants and crops, further expanding their use into the energy sector. To meet the increased demands and develop more robust crops, additional fundamental understanding regarding the basic biology of these crops is needed. The Plant Genome Research Program (PGRP) accomplishes these objectives by supporting key NSF projects. The Developing Country Collaborations in Plant Genome Research program links U.S. researchers with partners from developing countries to solve problems of mutual interest in agriculture and energy and the environment. Additionally, in collaboration with the U.S. Department of Energy and the U.S. Department of Agriculture, the Plant Genome Research Program has financed the Maize Genome Sequencing Project—a sequencing project for one of the most important crop grown globally. Finally, the International Rice Genome Sequencing Project, published in 2005 the finished DNA blueprint for rice, a crop fundamental to populations worldwide. To continue the discovery of new innovative ways to enhance crop production for a growing population, sustained funding is needed for similar projects. It is therefore critical the fiscal year 2009 decision to transfer the Plant Genome Research Program to IOS does not adversely impact PGRP. ASA-CSSA-SSSA are concerned that dedicated funding for the Plant Genome Research Program may be directed towards other programs, such as the Arabidopsis 2010 Program. ASA-CSSA-SSSA recommend that the Plant Genome Research Program continue to receive the funding intended for it. To ensure adequate funding for all of the programs under IOS, we recommend that it receive an overall 10 percent increase to \$220.86 million.

Emerging Frontiers (EF)

The Emerging Frontiers division supports multidisciplinary research opportunities and networking activities whereby new initiatives will be fostered and subsequently integrated into core programs. The Plant Science Cyberinfrastructure Collaborative is a critical program funded under EF. Established in fiscal year 2008, this center

establishes multi-disciplinary teams of computational science experts and plant science experts to address evolving critical questions in plant science. ASA-CSSA-SSSA offer full support for the President's proposed \$2.48 million increase (37.4 percent) over fiscal year 2008 funding levels for the Plant Science Cyberinfrastructure Collaborative.

Geological Sciences Directorate

Atmospheric Sciences (ATM)

Changes in terrestrial systems will have great impact on biogeochemical cycling rates. The Atmospheric Sciences division funds critical programs, such as Atmospheric Chemistry, that increase understanding of biogeochemical cycles. Soils and plants make up one of the largest sinks and sources for several environmentally important elements. ASA-CSSA-SSSA support the President's proposed 13.6 percent increase in funding for the Atmospheric Science division to \$260.58 million.

Earth Sciences (EAR)

The Earth Sciences division supports research emphasizing improved understanding of the structure, composition, and evolution of the Earth, the life it supports, and the processes that govern the formation behavior of the Earth's materials. Fiscal year 2009 priorities will support theoretical research, including the biological geosciences, the hydrologic sciences, and the study of natural hazards. Important programs funded within this division are the Critical Zone Observatories, which focus on watershed scale studies that advance understanding of the integration and coupling of Earth surface processes as mediated by the presence and flux of fresh water. ASA-CSSA-SSSA support the \$750,000 increase to this project.

Engineering Directorate

Chemical, Bioengineering, Environmental and Transport Systems (CBET)

CBET supports research that enhances the protection of U.S. national health, energy, environment, security, and wealth. CBET supports programs, such as the Biotechnology, Biochemical, and Biomass Engineering, which offer critical solutions to global environmental problems associated with climate change. The continual funding of the Biotechnology, Biochemical, and Biomass Engineering program is essential if we are to develop genetically engineered biofuel feedstocks that are more feasible for conversion into biofuels. ASA-CSSA-SSSA agree with the President's recommend \$42.34 million increase for CBET to \$173.34 million in fiscal year 2009.

Directorate for Education and Human Resources

Division of Graduate Education

ASA-CSSA-SSSA are dedicated to the enhancement of education, and concerned about recent declines in enrollment for these sciences. To remain competitive, scientific fields need to find new, innovative ways to reach students. The programs offered in the Education and Human Resource Directorate accomplish this goal. The Graduate Teaching Fellows in K-12 Education offers graduate students interested in teaching, an opportunity to get into the classroom and teach utilizing new innovative ways of teaching the material. ASA-CSSA-SSSA support the \$2 million increase to \$49 million in the President's budget for this program, but request a 10 percent increase over fiscal year 2008 funding levels to \$51.7 million. Graduate students are the next crop of scientists, therefore opportunities for study must be increased with increasing demands of science. Global problems rely on scientific discovery for their amelioration; therefore it is critical that the United States continue to be a leader in graduate education. The ASA-CSSA-SSSA recommend an increase to the Integrative Graduate Education and Research Traineeships (IGERT) from no change from fiscal year 2008 to an increased level of \$30 million (20 percent increase) in fiscal year 2009. Education is the key for our future competitiveness; therefore it is essential increases in education funding remain on par with goals set forth by ACI, so ASA-CSSA-SSSA recommend an overall increase of 15 percent in fiscal year 2009 over fiscal year 2008 to \$832.44 million.

Division of Undergraduate Education

Advanced Technological Education (ATE) program focuses on the education of technicians for the high-technology fields that drive our nation's economy. We support continued funding for this program. ASA-CSSA-SSSA recommend that this program receive a 20 percent increase over fiscal year 2008 to \$62 million in fiscal year 2009.

*NSF-Wide Programs**Dynamics of Water Processes in the Environment*

Providing an adequate supply and quantity of water for human use, while maintaining the integrity of natural ecosystems, is one of the greatest challenges facing the country. ASA-CSSA-SSSA support the creation of the multi-disciplinary, multi-scale research program, Dynamics of Water Processes in the Environment with \$10 million in fiscal year 2009.

Climate Change Science Program

The Climate Change Science Program, initiated in 2002, provides the Nation and the world with the science-based knowledge to predict, change, manage risk, and take advantage of opportunities resulting from climate change and climate variability. Biological systems are critical to mitigating the impacts and effects of climate change. Additional research is needed to examine potential crop systems, plant traits, wetland properties, and other ecosystem adaptations to help manage climate change. The basic sciences of agro-ecosystems, plant improvement, soils, and riparian and wetland ecology need support. Therefore while ASA-CSSA-SSSA maintain the importance of the President's proposed increase to CCSP funding to \$220.6 million in fiscal year 2009; however additional funding is needed for the Biological Sciences. Therefore, ASA-CSSA-SSSA recommend a 10 percent increase in the current funding level from BIO to \$16.6 million.

As you lead the Congress in deliberation on funding levels for the National Science Foundation, please consider American Society of Agronomy, Crop Science Society of America, Soil Science Society of America as supportive resources. We hope you will call on our membership and scientific expertise whenever the need arises.

Thank you for your thoughtful consideration of our requests. For additional information or to learn more about the American Society of Agronomy, Crop Science Society of America and Soil Science Society of America (ASA-CSSA-SSSA), please visit www.agronomy.org, www.crops.org or www.soils.org or contact ASA-CSSA-SSSA Director of Science Policy Karl Glasener (kglasener@agronomy.org, kglasener@crops.org, or kglasener@soils.org).

 PREPARED STATEMENT OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

The National Science Foundation (NSF) Task Force of ASME's Technical Communities is pleased to provide comments on the NSF fiscal year 2009 budget request, in support of this year's proposed funding level of \$6.85 billion for the NSF. Founded in 1880 as the American Society of Mechanical Engineers, ASME is a worldwide engineering society of over 127,000 members focused on technical, educational and research issues. It conducts one of the world's largest technical publishing operations, holds approximately 30 technical conferences and 200 professional development courses each year, and sets many industry and manufacturing standards.

NSF Fiscal Year 2009 Budget Request Overview

With its commitment to broad-based, cross-cutting programs that advance the boundaries of science and engineering, the NSF is essential in guiding the nation's non-defense-related research and education. As recognized by the Administration and Congress, in order for the United States to remain competitive in the integrated global marketplace, the nation must "support and promote innovation research in the United States through high-risk, high-reward projects that meet fundamental scientific and technological challenges." To implement this vision, the America COMPETES Act, which was signed into law in August 2007, includes the NSF as one of three key federal science and engineering agencies targeted for budget doubling over 10 years. To this end, ASME strongly endorses the NSF's investments in the requisite acquisition of new knowledge and in the development of talent whereby transformative research is supported and a world-class science and engineering workforce is built, inciting innovation, encouraging economic growth, addressing critical national needs, and establishing our nation's role as a global leader.

The total fiscal year 2009 NSF budget request is \$6.85 billion representing an \$882 million or 13.6 percent increase over the fiscal year 2008 estimate of \$6.03 billion. It is worth noting that the original fiscal year 2008 request was \$6.43 billion, which was reduced to \$6.03 billion (representing only a 2 percent increase over fiscal year 2007) in the final fiscal year 2008 omnibus spending measure. Thus, after setbacks in fiscal year 2007 and fiscal year 2008, the present budget request places NSF back on the path of budget doubling set forth in the President's American Competitiveness Initiative (ACI) and the America COMPETES Act.

Research and Related Activities (RRA) comprises the dominant portion of the total NSF request at \$5.6 billion, representing a 16 percent increase over the fiscal year 2008 estimate of \$4.8 billion. After flat funding in fiscal year 2008, all of NSF's research directorates would receive considerable increases in fiscal year 2009, recovering from post-2004 NSF budget cuts to reach all-time highs in inflation-adjusted dollars. Funding for the Engineering Directorate (ENG) would increase by 19.2 percent over the current year estimate to \$759 million, of which \$127 million is budgeted (through mandate) for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs that ENG administers for all of NSF.

ENG consists of the following disciplinary-area divisions: Chemical, Bioengineering, Environmental, and Transport Systems (CBET), up 32.3 percent to \$173 million; Civil, Mechanical and Manufacturing Innovation (CMMI), up 26.3 percent to \$202 million; Electrical, Communications and Cyber Systems (ECCS), up 13 percent to \$94 million; Industrial Innovation and Partnerships (IIP), up 15.8 percent to \$141 million; Emerging Frontiers in Research and Innovation (EFRI), up 16 percent to \$29 million; and Engineering Education and Centers (EEC), up 3.4 percent to \$120 million.

A portion of the ENG budget (allocated from the constituent divisions) will continue to support research and education efforts related to broad, Foundation-wide investments in a number of areas, including the Administration's interagency R&D priorities. Under ENG, three new priority areas are funded in fiscal year 2009, i.e. Adaptive Systems Technology (\$3.49 million), Dynamics of Water Processes in the Environment (\$0.53 million), and Science and Engineering Beyond Moore's Law (\$4 million). The following continuing areas also receive increases: National Nanotechnology Initiative (up 2.2 percent to \$140 million), Cyberinfrastructure (up 7.1 percent to \$60 million), and Networking and Information Technology R&D (up 45.9 percent to \$28 million—\$16.8 million of which is Cyber-enabled Discovery and Innovation). Climate Change Science Program (\$1 million) funding remains level, and the Human and Social Dynamics initiative concluded in fiscal year 2008, with funds returning to core programs for continued support.

The ASME NSF Task Force Position

Affirmation and Endorsement

The ASME NSF Task Force maintains its high endorsement of NSF's crucial role in directing the fundamental research and education that keeps America at the leading edge of science, engineering, and technology. NSF has an outstanding record of supporting a broad range of high-quality research, from "curiosity-driven" science to targeted initiatives. This achievement has been made possible only through strict adherence to the independent peer review process for merit-based awards. ASME recognizes the significance and relevance of NSF's investment areas that address major national needs for the 21st century. The increases proposed under the America COMPETES Act would allow NSF to properly sustain and expand these efforts and commitments, honing the nation's competitive edge.

The fiscal year 2009 budget request represents a 13.6 percent increase over the fiscal year 2008 estimate. Over three-quarters of the total \$882 million increase for NSF is in R&D funding, totaling \$5.6 billion, a gain of \$772 million or 16 percent over the fiscal year 2008 estimate. After flat funding in fiscal year 2008, this request would bring R&D investment to an all-time high in inflation-adjusted dollars, allowing the research directorates to recover from the budget cuts that occurred after 2004. In a competitive, multifaceted, and ever-changing global setting, adequate investment in basic science and engineering research, that involves both established and emerging areas, is essential in recognizing and nurturing innovation, in preparing the next generation of scientific talent and leaders, and in producing the products, processes, and services that improve health, living conditions, environmental quality, energy conservation, and national security for all Americans.

Overall, the Task Force also supports and commends activities within ENG. NSF's vision of "advancing discovery, innovation, and education beyond the frontiers of current knowledge" is exemplified within ENG. It is important to recognize that it is through such fundamental science and engineering research by which next generation technologies are frequently engendered. Examples of successes emerging from ENG include the fabrication of nanowires for optical applications, presenting the potential to miniaturize microphotonic devices and transform telecommunications. ENG's SBIR program has developed lightweight, flexible, low-cost, and more efficient solar cells—plastic reels coated with layers of dye-sensitized titania nanoparticles, enabling capture of larger portions of the visible spectrum and absorption of more energy. ENG has also funded pioneering work on embedding transistors into microcantilevers, where deflections resulting from the binding of target

molecules in a specific environment, create measurable changes in drain current of the transistor. This technique allows for a unique sensor system that could potentially detect the presence of heart disease from a person's drop of blood or detect the presence of chemicals used for explosives.

NSF leads the U.S. nanotechnology research effort, and ENG is the focal point within NSF for this key national research endeavor. ASME has strongly supported the National Nanotechnology Initiative (NNI) since its inception as an NSF investment area in fiscal year 2000. Increased funding amounts are requested for research at the fundamental level, as well as in environmental, health, and safety aspects. Within the total NSF-wide investment for NNI, ENG's contribution will increase by \$3 million to a total of \$140 million.

Finally, ASME continues to support NSF's vision to "empower future generations in science and engineering." In coordination with the Department of Education, NSF will continue funding for the Math and Science Partnership program (at \$51 million), aimed at improving K-12 science, technology, engineering, and mathematics (STEM) education and teaching. Funding for the Faculty Early Career Development (CAREER) awards, which support exceptionally promising college and university junior faculty who are most likely to become the academic leaders of the 21st century, will increase \$14.2 million to \$181.9 million. The fiscal year 2009 request provides \$245.9 million for NSF's three flagship graduate fellowship and traineeship programs: \$124.8 million for the Graduate Research Fellowship (GRF) program, \$63.8 million for the Integrative Graduate Education and Research Traineeship (IGERT) Program, and \$57.3 million for the Graduate Teaching Fellowships in K-12 Education (GK-12) program. This funding will enable NSF to support an estimated 5,450 graduate students. NSF supports the Research Experiences for Undergraduates program (REU) at \$61.6 million, and the Research Experiences for Teachers program (RET) at \$9.7 million. NSF continues to broaden participation in science and engineering, with support totaling \$674.4 million. This includes efforts to reach all states and regions, e.g. the Experimental Program to Stimulate Competitive Research (EPSCoR), which increases to \$113.5 million, as well as efforts that focus on underrepresented groups.

Questions and Concerns

ASME's key questions and concerns arising from the fiscal year 2009 budget request center on: the need to fund NSF at the appropriate level as specified in the America COMPETES Act; a more even funding distribution for ENG with respect to other Directorates within NSF; a balance between manufacturing and services R&D within ENG; and increased funding for non-priority-area core disciplinary research within ENG.

NSF is the only federal agency mandated "to strengthen the health and vitality of U.S. science and engineering and support fundamental research and education in all scientific and engineering disciplines." While comprising only 4 percent of the total federal budget for R&D, NSF provides 45 percent of the federal support given to academic institutions for non-medical basic research. Moreover, while NSF does not directly support medical research, its investments do provide the technologies in diagnosis, medicine, manufacturing pharmaceuticals, and drug delivery that are essential for the medical sciences and related industries. Given recent budget cuts at the appropriations stage, the ASME NSF Task Force believes that NSF is severely under funded, with the immediate and future welfare of our nation at stake.

Recognizing the urgency in preserving the nation's past success in leading-edge discovery and innovation, Congress and the Administration enacted the America COMPETES Act in August of 2007, laying out a bold path toward revitalizing basic research in the physical sciences and engineering. Beginning with the release of the National Academies' report, *Rising Above the Gathering Storm*, the America COMPETES Act was the culmination of a growing consensus among policy makers, engineers, and scientists that substantial national efforts related to R&D funding in the physical sciences and engineering are needed to preserve the nation's competitiveness. The America COMPETES Act was a bipartisan bill supporting the doubling of funding over ten years at three key federal science agencies (NSF, the Department of Energy's Office of Science, and the Department of Commerce's National Institute of Standards and Technology). However, despite an increase for NSF and the other two agencies, the proposed fiscal year 2008 increase for NSF was far from met in the final appropriation. As a result, the ASME NSF task force urges Congress to recommit to the ideals of the America COMPETES Act, and to fund NSF at the level of the fiscal year 2009 President's request, i.e. \$6.85 billion, which is commensurate with the intended doubling plan.

ENG is the single largest source of federal funding for university-based, fundamental engineering research—providing 40 percent of the total federal support in

this area. However, ENG (less SBIR/STTR) is still only fifth in total funding (at \$632 million) of the six Directorates within NSF, despite receiving the second largest percentage increase of the Directorates at 19.6 percent and matching CISE for the second largest total amount increase at \$104 million. At the same time, ENG supports 23 percent of the total NSF REUs, which give U.S. undergraduates research experience to encourage them to pursue doctoral studies. ENG also supports over 50 percent of the total NSF RETs, which give K-12 teachers and community college faculty research experience so that they can extend their experience into classrooms. It's important to note that ENG supports these two activities at the highest percentages among the Directorates within NSF. Our Nation's long-standing global prominence in technological innovation may be at risk, if such investments in basic engineering research and education are constrained by lack of federal funding in engineering.

Driving new innovation, knowledge-intensive industries comprising both services and manufacturing are critical in surviving in the worldwide economy. However, since 2002, the nation's decades-long comparative advantage in the trade balance of high-technology products has shifted from surplus to deficit. Of concern is the transformation of the United States from a sustainable "making products" economy to an unsustainable "selling products" economy. As found in a study by the World Technology Evaluation Center, Inc. (WTEC) on American Manufacturing, globalization of manufacturing and the low level of government investment in manufacturing R&D have stripped the United States of its position as the recognized leader in manufacturing innovation and the commercialization of new technologies. Given the need for local manufacturing for national security, wealth generation, and quality of life (e.g. health care products compromised by unknown sources), the portfolio balance of manufacturing versus services R&D within ENG should be examined.

Encouragingly, the 16 percent growth in RRA allows for the support of 1,370 additional research grants NSF-wide. For ENG, 454 additional grants are anticipated, along with a funding-rate increase from 16-20 percent and a \$2,000 increase in average annualized award size, for unsolicited fundamental research proposals for individual investigators and small group activities. Although we are moving in the right direction, the total funding for non-priority-area core disciplinary research (from which new priority areas and even new disciplines are often conceived) within ENG should still be examined. Not counting the SBIR/STTR program, the funding for investment priority-areas constitutes over 40 percent of the budget request for ENG. The Task Force does not advocate for the redistribution of monies from investment priority-areas into non-priority core areas, but rather significant increases for completely flexible core funds in order to develop the creative and novel ideas that feed the comprehensive fundamental Science, Engineering, and Technology knowledge base, which serves as a foundation for this nation's greatness.

Closure

The ASME NSF Task Force urges Congress to support the Administration's request at a minimum of \$6.85 billion for fiscal year 2009, and enthusiastically commends the National Science Foundation's leadership in projecting the nation's basic research and development vision. We applaud Congress for its recent passage of the House budget resolution, which includes significant increases that would bring NSF into full compliance with the America COMPETES Act. A substantial increase in the NSF's budget, by increasing both the number and size of its awards, especially in core disciplinary research and education, will enable the NSF to better position itself to fulfill its leadership responsibility in directing the nation's research and development activities. As Congress considers the fiscal year 2009 appropriations bills, we hope that the aforementioned resolution is effected, ensuring that the necessary basic R&D funding is secured for future U.S. competitiveness in science and technology.

This testimony represents the considered judgment of the NSF Task Force of ASME's Technical Communities and is not necessarily a position of ASME as a whole.

PREPARED STATEMENT OF BELL INCORPORATED

On behalf of Bell Incorporated, a global packaging manufacturer, located in Sioux Falls, South Dakota, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and

Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America's manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer's global competitiveness is supported by those companies who receive benefit. In South Dakota, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. Several years ago, our company began our commitment to continuous improvement with the assistance of Dakota MEP.

As a Dakota MEP Director, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who've partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Dakotas exporting over \$2 billion. Manufacturing brings new wealth to our country, our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry better compete. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP continues to be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND
LAND-GRANT COLLEGES (NASULGC)

On behalf of the NASULGC Board of Natural Resources (BNR), we thank you for your support of science and research programs within the National Science Foundation. As members of the scientific academic community we encourage you to support an appropriation of at least \$6.85 billion for the National Science Foundation, including at least \$675 million for the Directorate of Biological Sciences (BIO). The fiscal year 2008 enacted level for NSF is \$6.07 billion. The administration's fiscal year 2009 request is \$6.85 billion for NSF and \$675 million for BIO. Furthermore, within BIO, we ask that you support the President's budget request for the National Ecological Observatory Network (NEON) at \$26 million in fiscal year 2009.

While we are pleased that the NSF received an increase (3 percent) in fiscal year 2008 over fiscal year 2007 enacted level, we are concerned that when adjusted for inflation, the NSF is still receiving less funding than in previous years. The BNR supports a 13 percent increase for the NSF over the 2008 enacted level to keep it above the level of inflation over the past several years and fulfill the promises of the America COMPETES Act.

State universities and land-grant colleges truly welcome and are excited by the passage of the America Competes Act and the renewed national focus on scientific research and education. Education and scientific research have served as the infrastructure and foundation for much of Nation's economic and national security. We are also extremely pleased with the administration's proposal to double funding in the physical sciences at NSF over the next 10 years; however, we feel that biological sciences are equally important to America's competitiveness.

Better support for the BIO Division of Environmental Biology is a very serious need. NSF's BIO support represents 63 percent of all federal funding for basic research in environmental biology. Of the non-medical aspects of the biological sciences, BIO is the dominant federal supporter of basic research at academic institutions—providing 66 percent of all support. NSF's contribution to a broad array of the biological sciences is critically important—particularly in such areas as environmental biology and plant sciences.

If continued increased investments are not made in environmental biology, the younger generation of ecological scientists at our universities will be shut out of graduate study, and the contributions they should be making to our improved understanding of the environment will never happen. These young scientists need to

be empowered to help us recognize the value of our natural capital, better equipping us to protect the America's long term economic and environmental interests.

Using the University of Alabama as one example out of many BIO-supported universities, BIO's Division of Environmental Biology has been the major source of funding that has supported research and education associated with the Aquatic Biology Program and the Center for Freshwater Studies for the past 15 years. The Ecosystem Science, Ecological Biology, and the Systematic Biology and Inventories clusters have been especially important in supporting individual investigator and interdisciplinary, collaborative projects. These funded projects have been instrumental in furthering our understanding of the important Mobile River System, the largest river system that drains into the Gulf of Mexico, east of the Mississippi River. Additionally, these projects have also supported over 100 undergraduate, graduate, and post-doctoral students at our institution.

Many recent graduate students that received support from the NSF Division of Environmental Biology are already greatly contributing to the field, especially in recovery efforts in the Gulf Coast. The knowledge gained from their NSF funded projects is especially valuable at a time when both coastal and inland areas along the Gulf coast are increasingly being affected by major hurricanes such as Katrina and Rita. An understanding of the roles of river floodplains and wetlands in mediating major floods and storm surges is critical to effective management and restoration of these environments.

Another program that deserves much support is the NSF-National Ecological Observatory Network (NEON), which is envisioned as a continental-scale research and infrastructure platform that will provide unprecedented advances in ecological forecasting and prediction. NEON will transform the way we conduct science by enabling the integration of research and education from natural to human systems, and from genomes to the biosphere. NEON will address many issues critical to the nation's environmental and economic health, including land use and climate change, invasive species, and hurricane effects. We support the current NSF budget request for funding for NEON in the Directorate for Biological Sciences (e.g., Division of Biological Infrastructure and Emerging Frontiers).

Issues of national importance related to the environment, economy, agriculture, and human welfare require an understanding of how living organisms function and interact with nonliving systems. Advancing fundamental scientific discovery in all aspects of life—from molecules to whole ecosystems—is supported within NSF, where the ability to integrate the range of biological sub-disciplines is unique.

About NASULGC

NASULGC is the nation's oldest higher education association. Currently the association has over 200 member institutions—including the historically black land-grant institutions—located in all fifty states. The Association's overriding mission is to support high quality public education through efforts that enhance the capacity of member institutions to perform their traditional teaching, research, and public service roles.

About the Board on Natural Resources

The Board's mission is to promote university-based programs dealing with natural resources, fish and wildlife, ecology, minerals and energy, and the environment. Most NASULGC institutions are represented on the Board. Present membership exceeds 500 scientists and educators, who are some of the nation's leading research and educational expertise in environmental and natural-resource disciplines.

This testimony was developed for the BNR by the Chair of the BNR's Ecology Section, Dr. Amy Ward, Professor of Biological Sciences, University of Alabama.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES (NASULGC)

On behalf of the National Association of State Universities and Land-Grant Colleges' Board on Oceans and Atmosphere, thank you for the opportunity to provide recommendations for the fiscal year 2009 budgets for the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautic and Space Administration (NASA), and the National Science Foundation (NSF). All three agencies support research at our member institutions that provides critical information to policy-makers and communities across the country. That is why we strongly recommend \$4.5 billion for NOAA; \$380.6 million in the NASA Earth Science Research Account; and \$6.85 billion for NSF. Furthermore, within NOAA, we recommend \$471 million for the Ocean and Atmospheric Research (OAR), including \$72 million for the National Sea Grant Program; \$930.7 million for the National Weather Service (NWS);

\$29.5 million for the National Ocean Service (NOS) Ocean and Coastal Research Program and the NOS Oceans and Human Health Initiative; \$96 million for the Integrated Ocean Observing Systems (IOOS); and \$1.2 billion for the National Environmental Satellite, Data and Information Service (NESDIS). Within NSF, we recommend \$848.7 million for the Geosciences Directorate; \$98 million for the Academic Research Fleet; and \$244.74 million for the Major Research Equipment & Facilities Construction account, including \$38 million for the Integrated Ocean Drilling Program (IODP), and \$31 million for the Ocean Observatories Initiative (OOI).

About NASULGC

NASULGC is the nation's oldest higher education association. Currently the association has over 200 member institutions—including the historically black land-grant institutions—located in all fifty states. The Association's overriding mission is to support high quality public education through efforts that enhance the capacity of member institutions to perform their traditional teaching, research, and public service roles.

About the Board on Oceans and Atmosphere

The BOA's primary responsibility is to advance research and education in the marine and atmospheric sciences through a federal relations program. The board currently has approximately 200 regionally distributed members, including some of the nation's most eminent research scientists, chief executive officers of universities, marine and atmospheric scientists, academic deans, and directors of Sea Grant programs.

NOAA

In order to maintain our country's homeland security, scientific leadership, and economic competitive edge, we must have a diverse portfolio of federally supported science research and programs. Consequently, we are concerned about the significant cuts made to NOAA in fiscal year 2006, 2007, and 2008. The science-based work of NOAA protects and impacts every American citizen, everyday. NOAA is the third largest source of funds for academic marine research in the federal government. As a member of the Friends of NOAA Coalition, NASULGC strongly recommends \$4.5 billion for NOAA in fiscal year 2009.

BOA recommends a portion of the \$4.5 billion be used to support the following programs:

\$471 million for Oceanic and Atmospheric Research (OAR), including \$72 million for the National Sea Grant College Program (Sea Grant). The fiscal year 2008 enacted level is \$380 million while the President's fiscal year 2009 request is \$382 million. The research conducted through OAR and partnering universities helps us understand climate variability, provide better protection for coastal resources, contribute to our Nation's commerce, and support our transportation systems. OAR supports such important programs as the Ocean Exploration, the National Undersea Research Program, U.S. THORPEX medium-range forecast improvement research program, transition research for new operational forecast models, Climate Operations and Sea Grant.

For Sea Grant, the fiscal year 2008 enacted is \$57.1 million while the President's fiscal year 2009 request is \$55 million. In constant dollars, the program is at its lowest funding levels since its inception four decades ago. Sea Grant is the flagship program between NOAA and the academic community, supporting the work of 31 colleges located in coastal and Great Lakes states and serving as the core of a national network of more than 300 institutions involving more than 3,000 scientists, educators, students, and outreach experts.

BOA supports the President's request of \$930.7 million for the National Weather Service (NWS). The fiscal year 2008 enacted is \$805.3 million. NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, academia, the private sector, the public, and the global community.

\$29.5 million for the extramural portions of both the NOS ocean and coastal research program and the Oceans and Human Health Initiative (OHHI). The fiscal year 2008 enacted level is \$3 million while the President's fiscal year 2009 request is \$1 million. Within the NOS, BOA supports restoration of the drastic cuts in competitive extramural research, bringing funding back to the more sustainable and effective level provided in fiscal year 2005. In addition, we support the appropriation of sufficient funds for full NOAA participation in collaborative NOS science programs, particularly OHHI. NOS support for extramural research conducted in cooperation with NOAA scientists is leading to improved knowledge and forecasts to

address complex problems such as harmful algal blooms, hypoxia, coastal stressors and ecosystem-based management of fisheries.

\$96 million for the Integrated Ocean Observing System (IOOS), (including \$50 million for Regional Ocean Observing Systems (ROOS), \$10 million for data management and communications, \$30 million for IOOS enhancements and \$6 million for global ocean observing system enhancements). Fiscal year 2008 enacted is \$26.4 million while the President's fiscal year 2009 request is \$6.5 million for NOAA IOOS and \$14.6 million for IOOS Regional Observations (competitive funding). IOOS is critical to improving predictions of climate change and weather, improving the safety of maritime operations, and reducing public health risks. While BOA is supportive of NOAA's inclusion of IOOS in its budget request, funding still falls short of last year's funding by \$5 million, and we prefer placing the vast majority of funding for IOOS into competitive funding for the ROOS.

BOA supports the President's fiscal year 2009 request of \$1.2 billion for NESDIS. BOA strongly supports the building and strengthening of NOAA's satellite systems, because these programs are extremely important to timely and accurate weather forecasts that directly affect public safety, protection of property, and economic health and development. In supporting this request, however, BOA is concerned that the increase in satellite budget for the Geostationary Operational Environmental Satellite not come at the expense of other programs within NOAA. Money directed to satellite programs should be in addition to funding of other NOAA programs.

NASA

Last year, the National Research Council released its report, "Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond." The report found that between 2000 and 2006, funding for Earth Sciences (ES) has fallen from \$2 billion to \$1.5 billion annually. ES research is absolutely critical to understanding global climate change, such as the decline of Earth's ice sheets or the health of the global oceans. BOA generally supports the findings of this report, and we urge the committee to increase the ES funding levels consistent with the report's recommendations so that future missions as well as research and analysis (R&A) are supported. It is also critical to continually evaluate the scientific priorities of future missions so that mission priorities can be adjusted to provide the most benefit and imminent gaps in capabilities and systematic observations can be addressed. For this reason, BOA recommends additional funding to support a gap analysis of critical systematic and emerging science priorities and to adjust mission strategies as appropriate, including the development of new mission plans where appropriate.

ES activities currently fall within the agency's Science Mission Directorate. We continue to see ES activities, such as R&A in the past five years, being cut because of other agency priorities. ES investments in university-based research have resulted in valuable advances in weather forecasting, improved climate projections, and understanding of Earth ecosystems. Furthermore, the R&A program within ES is the primary mechanism for funding to the academic community. Through its support for young scientists and graduate students, the R&A program supports innovation in ES and technology using NASA's satellite missions. New sensor concepts, new data processing algorithms, and new approaches to global-scale ES are the legacy of the research funded by the R&A program. In view of the rapid changes taking place in global climate, weather, ice cover, carbon cycle science and ecosystems, it is essential that NASA maintain a strong level of R&A funding to derive maximum benefit from today's missions as well as to support the innovation needed to develop the missions of tomorrow. To ensure the viability and effectiveness of our ES R&A programs, BOA supports restoring Earth Sciences funding to fiscal year 2000 levels, an increase of approximately 33 percent.

NSF

BOA welcomes the renewed national focus on scientific research and education as illustrated by the passage of the American COMPETES Act. BOA supports the President's NSF fiscal year 2009 budget request of \$6.85 billion. The fiscal year 2008 enacted is \$6.06 billion.

BOA recommends that a portion of that \$6.85 billion be used to support the following program:

BOA supports the President's request of \$848.7 million for the Geosciences Directorate. No specific numbers for the Geosciences Directorate were enacted for fiscal year 2008. As the principal source of federal funding for university-based fundamental research in the geosciences, GEO addresses the Nation's need to understand, predict, and respond to environmental events and changes. GEO-supported research also advances our ability to predict natural phenomena of economic and human sig-

nificance, such as climate changes, weather, earthquakes, marine ecosystem change, and disruptive events in the solar-terrestrial environment.

\$244.74 million for the Major Research Equipment & Facilities Construction Account, (MREFCA) and within MREFCA, \$31 million for the Ocean Observatories Initiative (OOI) and \$38 million for the Integrated Ocean Drilling Program (IODP). The fiscal year 2008 enacted for MREFCA is \$220.74 million, while the President's fiscal year 2009 request is \$147.51 million. No specific fiscal year 2008 numbers were enacted for OOI or IODP. The President's fiscal year 2009 request is \$10.50 million for OOI and \$47.74 million for IODP.

The OOI will provide the oceanographic research and education communities with continuous, interactive access to the ocean. Through a global-scale array, a regional-scaled cabled network, and a network of coastal observatories, scientists will be able to study real-time data transmission and visual images from the seafloor multiple, interrelated processes over variable timescales. OOI will also provide the ideal platform for training a new generation of oceanographers skilled in the use and manipulation of large, oceanographic, time-series datasets, a necessity given the planned establishment of the National Integrated Ocean Observing System (IOOS).

The IODP is an international partnership of scientists, research institutions, and agencies using ocean drilling to explore the evolution and structure of Earth as recorded in the ocean basins. As part of its co-leadership of IODP with Japan, NSF will provide a light drillship and science support services for high-resolution studies of environmental and climate change, observatory and biosphere objectives. The contracting, conversion, outfitting and acceptance trials of a new Scientific Ocean Drilling Vessel will enable NSF to move forward with its portion of IODP.

\$98 million for the Academic Research Fleet (ARF). Finally, to optimize the potential of these ocean research infrastructures, operating and maintenance funding will be required. No specific funding was enacted for ARF in fiscal year 2008. The administration's fiscal year 2009 request is \$83.96 million.

PREPARED STATEMENT OF THE CALIFORNIA STATE COASTAL CONSERVANCY

SUMMARY

On behalf of the California State Coastal Conservancy, I want to thank the Subcommittee for this opportunity to present our priorities for fiscal year 2009. The Conservancy respectfully requests the following funding levels needed from the listed NOAA accounts for the implementation of the California Seafloor Mapping Program (CSMP). Our requests during fiscal year 2009 are as follows: \$1,000,000 for the Office of Coast Survey; \$300,000 for the NOAA National Marine Fisheries Service Southwest Fisheries Service Center and \$3,500,000 for the NOAA Coastal Services Center. The Conservancy is also seeking a \$1 million appropriation for the NASA Ames Research Center located in the Silicon Valley section of California in support of our efforts with the South San Francisco Bay Salt Ponds Restoration. In totaling our requests the Conservancy is asking for \$5.8 million in funding during fiscal year 2009 from accounts under the subcommittees jurisdiction.

CONSERVANCY BACKGROUND

The California State Coastal Conservancy, established in 1976, is a state agency that uses entrepreneurial techniques to purchase, protect, restore, and enhance coastal resources, and to provide access to the shore.

To date, the Conservancy has undertaken more than 950 projects along the 1,100 mile California coastline and around San Francisco Bay. Through such projects, the Conservancy: protects and improves coastal wetlands, streams, and watersheds; works with local communities to revitalize urban waterfronts; assists local communities in solving complex land-use problems and protects agricultural lands and supports coastal agriculture to list a few of our activities.

Since its establishment in 1976, the Coastal Conservancy has: helped build more than 300 access ways and trails, assisted in the completion of over 100 urban waterfront projects, joined in partnership endeavors with more than 100 local land trusts and other nonprofit groups and completed projects in every coastal county and all nine San Francisco Bay Area counties.

CALIFORNIA SEAFLOOR MAPPING PROGRAM

The California State Coastal Conservancy, in conjunction with numerous state and federal partners, is ambitiously pursuing the mapping of the entirety of the seafloor directly off the coast of the state of California. This project will produce de-

tailed bathymetric maps of some of the most productive ocean waters in the United States and the world and as such is critical for a multitude of reasons.

A large number of ocean management decisions can be made more effectively with accurate statewide mapping of seafloor substrate, marine habitat types, and bathymetry (underwater topography) of California's coastal and nearshore waters. This information will inform the designation of new marine reserve areas as well as the monitoring of all reserve areas along the California Coast. High resolution sea floor maps will distinguish underwater habitats and highlight faults, chasms, fissures, crevices and pinnacles and will help identify and understand known and unknown fault dynamics along the seismically active California Coast. This information will then be utilized by scientists and resource managers to identify potential biological hot spots to aid their understanding of the highly productive and diverse ecosystem along the California Coast. Further, information concerning the size and extent of activity associated with known and unknown underwater fault lines will allow our communities to better prepare for the possibility of cataclysmic seismic activity of the California Coast.

In addition, the project will provide extensive navigational benefits as it will identify hidden reefs, sunken obstacles and other navigation hazards in California's near and offshore waters. This information is essential for the safety of maritime commerce vessels, and subsequently the economies of California and the nation. These maps will provide greater knowledge and understanding of navigational channels and hazards surrounding the Ports of Los Angeles, Long Beach, and Oakland, the nations 1st, 2nd and 4th busiest port facilities respectively, which collectively are responsible for 50 percent of the nation's total container cargo volume.

Examples of some additional applications that would benefit from marine mapping and data include: understanding sediment transport and sand delivery, identifying dredging and dumping sites, regulation of offshore coastal development, and illuminating the dynamics of fisheries and other marine species. Detailed bathymetric maps are also critical in the development of an ocean circulation model that will allow us to better predict ocean response to natural and human-induced changes.

We are committed to the success and completion of the project and have secured \$12.5 million from the State of California Ocean Protection Council (OPC) for the advancement of the project to date. The OPC also intends to appropriate an additional \$7.5 million in fiscal year 2009 if funds become available. We are also working with the Packard Foundation to determine the potential of financial support.

In support of the project the California Coastal Conservancy is seeking \$1,000,000 from the Office of Coast Survey (OCS) in the National Oceanographic and Atmospheric Administration. OCS has been surveying the coastal waters of the United States and producing navigational charts for our nation's ports and waterways for nearly two centuries. Federal funds would be used to augment state funds to collect remaining data in California's state waters. OCS committed \$2,000,000 to the program in fiscal year 2008.

In addition, we are seeking \$300,000 in funding from the National Marine Fisheries Service Southwest Fisheries Science Center. Habitat differences of biological and geological significance cannot always be discerned from remotely sensed data. Some physical (grab samples) or visual (video) sampling is required to meet International Hydrographic Organization standards. Working in cooperation with the USGS and the CA Department of Fish and Game, federal funds and staff time for NMFS are needed to assure biological accuracy of the mapping effort. An additional \$1.5 million will be requested from the U.S. Geological Survey Coastal and Marine Geology Program for scientific data collection (hydrographic surveys of the seafloor, video ground-truthing of remotely collected data to verify habitats and geologic structure, and seismic profiling to determine geologic stability) and for final map production. Although most of the hydrographic survey data will be collected by private industry, the Coastal and Marine Geology Program of the USGS is uniquely qualified to ground truth the accuracy of the data, and in coordination with the CA Geological Survey, create finished map products.

We are also seeking \$3,500,000 in funding for the establishment of a NOAA West Coast Coastal Services Center. This is essential as the CSMP will produce vast amounts of data and maps. An established Coastal Service Center in this region will allow NOAA to work with the state to ensure managers have access to essential data and to develop decision-making tools for resource managers. These tools will help local and state managers make connections between coastal land use and marine resources and better understand climate change and sea level rise impacts on our coastal and ocean resources. The establishment of the West Coast Services Center will also enhance the federal support for the West Coast Governors' Agreement on Ocean Health such as the development of social economic baselines for coastal

communities and West Coast-wide mapping products, tools, and technical training through the Digital Coast effort.

Finally, the subcommittee should know that the CSMP enjoys broad support from a multitude of local, state, and federal agencies. These entities include: NOAA, USGS, Mineral Management Service, U.S. Coast Guard, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, CA Department of Fish and Game, CA State Lands, CA Coastal Commission, and CA State Water Resources Control Board. The CSMP is also supported by the federal Integrated Ocean Observing Program and the two regional associations within California, the Central and Northern Coastal Ocean Observing System (CeNCOOS) and the Southern CA Coastal Ocean Observing Program (SCCOOS). Seafloor mapping is included as a major priority in the OPC's strategic plan and in the West Coast Governor's Agreement on Ocean Health. Furthermore, the Interagency Working Group on Ocean and Coastal Mapping, established by the Joint Subcommittee on Ocean Science and Technology, is currently drafting a National Ocean and Coastal Mapping Strategic Action Plan that will highlight the state-federal partnerships developed for CSMP as a model for the country.

SOUTH SAN FRANCISCO BAY SALT PONDS RESTORATION—NASA AMES RESEARCH CENTER

The California State Coastal Conservancy in conjunction with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, NOAA, the Santa Clara Valley Water District and Alameda County Flood Control and Water Conservation District is pursuing the restoration of over 15,100 acres of salt ponds formerly owned by the Cargill corporation. The project, known as the South San Francisco Salt Ponds Restoration Project, is the largest wetlands restoration initiative on the west coast of the United States and the 2nd largest restoration project in the nation, trailing only the Comprehensive Everglades Restoration Program in size and scope.

The project will provide dramatic benefits to the region, state and nation by transforming 15,100 acres of salt ponds formerly owned by the Cargill Corporation into a vibrant wetlands area that will provide extensive habitat for federally endangered birds, fish and wildlife. In addition, the project will improve wildlife oriented recreational opportunities including fishing, hunting, environmental education and bird-watching.

In addition, the project will provide increased public access to areas of the South San Francisco Bay that were previously unreachable through the creation of new bay trails and other associated undertakings. The construction of one particular segment of bay trail runs adjacent to the NASA Ames Research facility. The facility, currently well removed from public access, will need upgraded security features to safeguard its personnel and contents in advance of increased public access to the area. As such, we are seeking a \$1 million in increased funding for the facility for the construction of this fence. Of this amount \$661,800 will be for 13,236 linear feet of fencing, \$50,000 for 10 double swing gates valued at \$5,000 per gate and \$60,000 is required for the installation of closed circuit monitoring technologies.

This request is supported by the center and all our project partners. Specifically, the South San Francisco Bay Salt Ponds Project is supported by a great number of respected organizations including: the San Francisco Bay Joint Venture, the City of San Jose, The Bay Institute, Save the Bay, the Bay Trail Program, the National Audubon Society, and many other local governments, environmental groups, community groups, businesses, and recreation organizations.

PREPARED STATEMENT OF THE POPULATION ASSOCIATION OF AMERICA/ASSOCIATION OF POPULATION CENTERS

Introduction

Thank you, Chairwoman Mikulski, Ranking Member Shelby and other distinguished members of the Subcommittee, for this opportunity to express support for the Census Bureau and the National Science Foundation (NSF), two agencies important to the Population Association of America and the Association of Population Centers (PAA/APC). PAA and APC request that you support the administration's budget for the Census Bureau at \$2.6 billion and for NSF at \$6.8 billion.

Background on the PAA/APC and Demographic Research

The PAA is an interdisciplinary, scientific organization comprised of over 3,000 research professionals, including demographers, economists, sociologists, and statisticians. The APC is a similar organization comprised of over 30 universities and research groups that foster collaborative demographic research and data sharing,

translate basic population research for policy makers, and provide educational and training opportunities in population studies.

Demography is the study of populations and how and why they change. Demographers, as well as other population researchers, collect and analyze data on trends in births, deaths, immigration and disabilities as well as racial, ethnic and socio-economic changes in populations. Among the major policy issues, population researchers study the demographic causes and consequences of population aging, trends in fertility, marriage, divorce and their effects on the health and well being of children, and immigration and migration and how these patterns affect the ethnic and cultural diversity of our population and the nation's health and environment.

PAA/APC members rely on a number of federal agencies charged with funding demographic research and generating reliable, accessible data. The ability of our members to produce meaningful research, often used to inform policy decisions, requires the use of substantial data sets and support for research projects and research training. Both the Census Bureau and National Science Foundation (NSF), which are under your subcommittee's jurisdiction, are key to the success of our field.

The Census Bureau

The Census Bureau is the most comprehensive source of demographic and economic data on every facet of our nation's population and communities. PAA and APC members rely on accessible data produced by the Census Bureau to conduct their research. Thus, we support the Administration's request of \$2.6 billion for the Census Bureau in fiscal year 2009 and hope the Subcommittee will as well. This funding is necessary to support the significant ramp-up activities in the final preparation year for the 2010 decennial census and to support the agency's ongoing survey operations, too.

We recognize the fiscal year 2009 request is double the fiscal year 2008 appropriation of \$1.3 billion. However, as you know, the Census Bureau's budget is cyclical and must increase dramatically in the years immediately preceding the decennial census to pay for necessary preparations. In fiscal year 2009, these activities include:

- Opening and staffing 150 "early" local census offices;
- Canvassing all neighborhoods and rural areas to verify addresses (on the Master Address File) and geographic locations (in the TIGER system);
- Finalizing data capture, data processing, and telecommunications systems;
- Printing hundreds of millions of census questionnaires and other forms; and
- Conducting promotional activities, including the Regional Partnership Program, to assure the greatest possible level of participation in 2010.

The groundwork done in the final year before the census will, to a large extent, determine the success of the 2010 Census. The Census Bureau must receive, at a minimum, the President's requested funding level, to ensure vital preparations are thorough and timely.

Fiscal year 2009 is also a pivotal year for the American Community Survey (ACS), which has replaced the traditional census long form. In 2010, the ACS will provide the first demographic, economic, and housing characteristics data for areas as small as census tracts and block groups, based on five years worth of data collection for households (2005–2009). To assure the data collected in the last year are as accurate as in previous years, the Census Bureau needs sufficient funding to continue sampling three million households that receive the ACS annually.

The Administration's request also will enable the agency to continue its other ongoing surveys, which measure changes in individual and household demographic and economic conditions. For example, in fiscal year 2009, the Census Bureau will tabulate and publish data from the 2007 Economic Census, launch an initiative to improve the collection of economic statistics on the growing service sector, and continue the Survey of Income and Program Participation. Continuation of these activities is particularly important in the current difficult economic climate, as these data provide a basis for key economic indicators and help Congress assess the prudence of fiscal policy proposals.

National Science Foundation (NSF)

PAA and APC, as members of the Coalition for National Science Funding, support the President's fiscal year 2009 budget request for NSF of \$6.8 billion. This budget will enable the NSF Social, Behavioral and Economic Science Directorate (SBE) to continue its support of social science surveys and a rich portfolio of population research projects.

The mission of NSF is to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense. The demography of our population directly impacts the health, prosperity, welfare, and security of our

nation. NSF's support of demographic research, particularly its support of large-scale longitudinal surveys, such as the General Social Survey and Panel Study of Income Dynamics, is central to the agency's mission and essential for the field of demographic research. NSF is the funding source for approximately 20 percent of all federally supported basic research conducted by America's colleges and universities, including basic behavioral and social research. Demographic research also depends on support from NSF for support of individual research projects and research centers.

The Census Bureau and the National Science Foundation support, indirectly and directly, the collection and availability of rich data sources important to PAA/APC members. Our demographers, economists, sociologists, and statisticians rely on federally supported data to conduct sound research and inform public policy. Investments in these data sets are investments in good policy.

Thank you for considering our requests and for supporting federal programs that benefit the field of demographic research.

PREPARED STATEMENT OF THE CONSORTIUM OF SOCIAL SCIENCE ASSOCIATIONS
(COSSA)

Mr. Chairman and Members of the Subcommittee: The Consortium represents over 110 professional associations, scientific societies, universities and research institutes concerned with the promotion of and funding for research in the social, behavioral and economic sciences. COSSA functions as a bridge between the research world and the Washington community. A list of COSSA's membership is attached.

Like you, COSSA was disappointed in some of the final numbers in the fiscal year 2008 Consolidated Appropriations Act. We had hoped the Administration and the Congress could agree on an overall number that would have allowed you to maintain some of the early promising increases for the National Science Foundation and other agencies. We hope the fiscal year 2009 process will work more smoothly.

We appreciate the opportunity to comment on the proposed fiscal year 2009 budgets for the National Science Foundation (NSF), for which we recommend at least \$6.85 billion; the Bureau of Economic Analysis, for which we support the proposed budget of \$86.9 million; the Census Bureau, for which we recommend whatever funds, both regular and "emergency" appropriations, that may be necessary to ensure a fair and accurate Census and protect the Bureau's other data collection activities; the National Institute of Justice (NIJ), for which we seek \$50 million in program funds, and Bureau of Justice Statistics (NIJ), for which we urge \$50 million in program funds. COSSA is well aware that each year you confront difficult choices among competing agencies under the Subcommittee's jurisdiction. We hope that you will give these agencies' needs generous consideration.

NATIONAL SCIENCE FOUNDATION (NSF)

COSSA strongly recommends that NSF receive at least the President's request of \$6.85 billion in fiscal year 2008. We recognize that this is below the authorized level of \$7.33 billion, that would double NSF's budget in seven years, but we are realistic. We also strongly support the Research and Related Activities request of \$5.594 billion.

We realize the NSF fiscal year 2009 budget proposal is driven by the Administration's American Competitiveness Initiative (ACI). And we know that the ACI grew out of the National Academies' Rising Above the Gathering Storm (RAGS) report. Both of these have asserted that reinvigorating the physical sciences and engineering are a national priority. Yet, there are admonitions from the RAGS report, from the language in the fiscal year 2008 appropriations report, for which we are grateful to this Subcommittee, and from the COMPETES Act, that the social, behavioral and economic (SBE) sciences should not be left behind. COSSA believes the NSF's fiscal year 2008 allocation and the fiscal year 2009 request suggest that is what is happening. There is no apparent increase in the fiscal year 2008 current plan for the SBE directorate and its fiscal year 2009 proposed increase of \$18 million pales in comparison to the \$235 million boost for the physical and mathematical sciences. NSF is extremely important for federal support for basic research in the SBE sciences. For some fields in these sciences, NSF is the only source of federal support for basic research and infrastructure development.

Now is also a time when advances in methodologies, computing power, and interdisciplinary cooperation are helping SBE scientists produce significant results. We need sustained support for the new modes of research, such as collaborations, economic and political laboratories, merged databases, functional MRIs, and virtual centers that have transformed SBE research.

The social and behavioral research portfolio is enormous and supports science of tremendous intellectual excitement and substantial societal importance. Let me list a number of areas, far from a comprehensive list, where social and behavioral research plays a significant role in addressing America's and the world's problems.

- The Brain/Behavioral Interface—neuroeconomics, law and neuroscience, biomarkers
- Ethical, Legal and Social Implications (ELSI)—
 - Information Technology—privacy, human-machine interfacing
 - Nanotechnology—regulatory and safety considerations
- Climate Change
 - Human Dimensions, International Politics, Land Use, Coupled Natural and Human Systems
- Energy
 - Behavior Changes for Conservation
 - Biofuel Impact on Rural America
- Developing Human Capital
 - Language and Other Learning, Skill Formation, Changing Workforce.
- Social Networks—terrorism, teen sexual behavior
- Decision Making—under uncertainty, risk taking and risk aversion
- Organizational Change—virtual organizations, flat pyramids, telecommuting
- Public Health—obesity, health disparities, lifestyle choices
- A Fair Society—broadening participation and enhancing diversity
- A Safe Society—crime and criminal justice
- Changing Demographics
 - International Aspects—global aging, migration, birth and death Rates
 - U.S.—internal shifts, immigration
 - Changing Family Structure
- Global Issues—Conflict and Cooperation, Terrorism, Differential Economic Growth, Compatibility of Economic and Political Freedom

As you can recognize, many of these are issues the Congress deals with constantly. Social and behavioral research provides you with answers to many of these vexing problems. Yet, at budget time, we are relatively poor orphans.

Admittedly, not all of these issues are related to NSF's agenda. However, basic research on individual, group, and societal behavior is the underpinning for much of the knowledge and insight that policy makers bring to coping with these issues. Of course, we understand, as political science studies have shown, that research results are not the only consideration used by policy makers.

Some specific SBE-related programs continue, such as the initiative on the Science of Science and Innovation Policy (SciSIP). These studies examine how national research and development systems work, how to measure and nurture innovation, and how to direct the nation's investments. Two major competitions have been solicited, generating high demand, and more will follow. Unfortunately, the fiscal year 2008 lack of a spending increase affected the ability of this program to fund some excellent proposals.

The Foundation-wide, SBE-managed, priority called Human and Social Dynamics (HSD) has come to an end. HSD supported projects that investigated the dynamics of human action and development, as well as knowledge about organizational, cultural, and societal adaptation and change. It utilized multidisciplinary research teams and comprehensive, interdisciplinary approaches across the sciences. Two major HSD foci will continue as part of the core programs within SBE: environmental research and the development of international, integrated, microdata sets to enhance analysis of both national and global attitudes and trends.

SBE maintains its support for major long-term data bases such as the Panel Study on Income Dynamics, the General Social Survey, and the American National Election Studies. These three extraordinary sets of time-series data continue to paint a portrait of American's economic, social, and political attitudes and behavior over five decades, while updating their methodology and expanding their scope.

With regard to the Education and Human Resources directorate (EHR), COSSA believes that broadening participation in science, across all the sciences, is a worthy endeavor. We support NSF's programs to ensure that all students get a chance to become scientists; including SBE scientists. COSSA recently organized and led a full-day retreat on Enhancing Diversity in the Sciences with the participation of representatives from professional associations, scientific societies, NSF, and NIH. Information about the retreat can be found at www.cossa.org.

We strongly support the 32 percent proposed budget increase for NSF's Graduate Education programs to provide more fellowships. These have been extremely important for budding scientists across all the disciplines. We also believe in programs that will enhance the quality of teaching in our K-12 system, not only for math and

science, but for all subjects. It is clear from NAEP and other tests that American students need help across-the-board.

We also strongly support funding for EHR research that evaluates the effectiveness of these programs and enhances their ability to get the job done right. We also believe that STEM education cannot be done in isolation from social, economic, and cultural factors that influence our education system and its students. The SBE sciences are in the forefront of providing research and evidence for improving how our children learn and survive in the modern, complex societies in which we live. NSF's Science of Learning Centers program is an important part of this and COSSA strongly supports the continued funding of these Centers found in the Integrated Activities account.

THE U.S. CENSUS BUREAU AND BUREAU OF ECONOMIC ANALYSIS

COSSA is a member of the 2010 Census Advisory Committee and as we move toward that redesigned short-form Census, the large increase proposed for the Bureau's fiscal year 2009 budget becomes imperative if we are to get the count right. We are aware that there are difficulties surrounding the preparations for 2010, particularly with regard to the use of handheld devices to verify addresses and to conduct the nonresponse follow up. We hope that Congress and the Bureau can cooperate to ensure that these problems are straightened out.

Nonetheless, the Census is constitutionally mandated and has an important impact on reapportionment, redistricting, and the distribution of federal and state funds. So we must make every effort and spend whatever is necessary to make sure we get a fair and accurate count.

In addition, the other regular activities at the Census Bureau should not suffer as a result of the difficulties with the preparations for 2010. The American Community Survey (ACS) has allowed the decennial to become a short-form census and ACS' annual data collections also provide timelier information for use by state and local governments and businesses. The other Bureau activities are also important to maintaining our economic statistical databases that play an important role in employment policy, housing policy, and economic policy and their funding should be sufficient.

COSSA also supports the increase proposed for the fiscal year 2009 Bureau of Economic Analysis (BEA) that continues the development of measures of investment in R&D and other knowledge-based activities in order to incorporate them into the nation's GDP. BEA also maintains the nation's current income accounts, an important tool for economic policy making.

NATIONAL INSTITUTE OF JUSTICE (NIJ) AND THE BUREAU OF JUSTICE STATISTICS (BJS)

At the House CJS Subcommittee hearing with the Office of Justice Programs there were many references to the studies and data collections of NIJ and BJS. The problem has been that these references do not necessarily translate into increased budget support. In recent years, these agencies have seen their budgets stagnate and in some years go down. We appreciate this Subcommittee's support of the fiscal year 2008 increase for BJS and the strong report language regarding the importance of the National Crime Victimization Survey (NCVS). We ask for enhanced resources for these agencies in fiscal year 2009, \$50 million in program funds for each agency. The cost of crime to victims and to society is far out of proportion to the budget for research studies and the collection and analysis of data that are essential to understanding how to effect change with regard to crime and criminal justice.

Recently, the National Academies' Committee on National Statistics has been reviewing BJS' programs. In early January they released their report *Surveying Victims: Options for Conducting the National Crime Victimization Survey*. In many years, NCVS takes up to 60 percent of the BJS budget.

The Committee found that "as currently configured and funded, the NCVS is not achieving and cannot achieve BJS' legislatively mandated goal to 'collect and analyze data that will serve as a continuous and comparable national social indication of the prevalence, incidence, rates, extent, distribution, and attributes of crime.'" They recommend that BJS needs additional funds to "generate accurate measures of victimization, which are as important to understanding crime in the United States as the UCR measure of crimes reported to the police." Additional resources will also permit NCVS to provide sub-national data, a sticking point for many practitioners regarding the NCVS.

Recent increases in crime are not uniform across America. Many large cities continue to show declines, while medium-size cities and rural areas are experiencing difficulties. There are many possible explanations and the sorting out process continues. But it is clear that strategies that worked in some places, "hot spots," com-

munity policing, crime mapping, are not working in others. The re-entry of former prison inmates into the general population creates more concerns. COSSA sponsored a session on April 4 on Violent Crime: What's Happening and Why in which distinguished criminologists and a former judge discussed these problems. NIJ needs more resources to support further explorations of this differentiation that now marks criminal activity.

The National Academies' has also begun a study of NIJ's research activities. COSSA testified to that panel in December of last year. The NIJ social science portfolio has been limited in recent years, as budgets have decreased and the fascination with technological fixes continues. COSSA has nothing against technology, but as has been proven in so many areas, human behavior and social conditions often thwart technology-driven solutions and thus the focus, we believe has to shift.

In July of each year, NIJ convenes a large R&D conference that examines major issues facing the criminal justice community. It is a special opportunity to bring together scientists, practitioners, and policy makers to interact and cooperate on setting research agendas.

Again, I understand that this is expected to be another difficult year for the appropriations' process. COSSA hopes that when you consider the fiscal year 2009 funding for the agencies I discussed, you will treat them as generously as you can.

Thank you for the opportunity to present our views.

CONSORTIUM OF SOCIAL SCIENCE ASSOCIATIONS

Governing Members

American Association for Public Opinion Research	American Statistical Association
American Economic Association	Association of American Geographers
American Educational Research Association	Association of American Law Schools
American Historical Association	Law and Society Association
American Political Science Association	Linguistic Society of America
American Psychological Association	Midwest Political Science Association
American Society of Criminology	National Communication Association
American Sociological Association	Rural Sociological Society
	Society for Research in Child Development

Membership Organizations

American Agricultural Economics Association	National Council on Family Relations
American Association for Agricultural Education	North American Regional Science Council
Association for Asian Studies	North Central Sociological Association
Association for Public Policy Analysis and Management	Population Association of America
Association of Research Libraries	Social Science History Association
Council on Social Work Education	Society for Behavioral Medicine
Eastern Sociological Society	Society for Research on Adolescence
International Communication Association	Society for the Psychological Study of Social Issues
Justice Research and Statistics Association	Society for the Scientific Study of Sexuality
Midwest Sociological Society	Sociologists for Women in Society
National Association of Social Workers	Southern Political Science Association
	Southern Sociological Society
	Southwestern Social Science Association

Colleges and Universities

Arizona State University	George Mason University
Brown University	George Washington University
University of California, Berkeley	University of Georgia
University of California, Davis	Harvard University
University of California, Irvine	Howard University
University of California, Los Angeles	University of Illinois
University of California, San Diego	Indiana University
University of California, Santa Barbara	University of Iowa
Carnegie-Mellon University	Iowa State University
University of Chicago	Johns Hopkins University
Clark University	John Jay College of Criminal Justice, CUNY
Columbia University	
Cornell University	Kansas State University
Duke University	University of Kentucky

University of Maryland	Rutgers, The State University of New Jersey
Massachusetts Institute of Technology	University of South Carolina
Maxwell School of Citizenship and Public Affairs, Syracuse	Stanford University
University of Michigan	University of Tennessee
Michigan State University	State University of New York, Stony Brook
University of Minnesota	University of Texas, Austin
Mississippi State University	Texas A & M University
New York University	Tulane University
University of North Carolina, Chapel Hill	Vanderbilt University
North Carolina State University	University of Virginia
Northwestern University	University of Washington
Ohio State University	Washington University in St. Louis
University of Oklahoma	West Virginia University
University of Pennsylvania	University of Wisconsin, Madison
Pennsylvania State University	University of Wisconsin, Milwaukee
Princeton University	Yale University
Purdue University	
<i>Centers and Institutes</i>	
American Academy of Political and Social Sciences	Institute for Social Research, University of Michigan
American Council of Learned Societies	Institute for the Advancement of Social Work Research
American Institutes for Research	Institute for Women's Policy Research
Brookings Institution	National Bureau of Economic Research
Center for Advanced Study in the Behavioral Sciences	National Opinion Research Center
Cornell Institute for Social and Economic Research	Population Reference Bureau
	Social Science Research Council

PREPARED STATEMENT OF CRARY INDUSTRIES INC.

On behalf of Crary Industries Inc., manufacturer of agricultural and outdoor equipment, located in West Fargo, North Dakota, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America's manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer's global competitiveness is supported by those companies who receive benefit. In North Dakota, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. We have worked on a variety of improvement projects with the assistance of Dakota MEP.

As a Dakota MEP Director, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who've partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Dakotas exporting over \$2 billion. Manufacturing brings new wealth to our country, our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry better compete. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP continues to

be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF THE SOCIETY FOR NEUROSCIENCE

Introduction

Mr. Chairman and members of the subcommittee, I am Eve Marder, Ph.D., President of the Society for Neuroscience (SfN) and the Victor and Gwendolyn Beinfeld Professor of Neuroscience at Brandeis University. It is my honor to submit this testimony on behalf of SfN in support of the National Science Foundation.

My research focuses on understanding how circuit function arises from the intrinsic properties of individual neurons and their synaptic connections. Of particular interest is the extent to which similar circuit outputs can be generated by multiple mechanisms, both in different individual animals, or in the same animal over its lifetime. To address this, my lab studies the central pattern generating circuits in the crustacean stomatogastric nervous system, such as those found in crabs and lobsters. Central pattern generators are groups of neurons found in vertebrate and invertebrate nervous systems responsible for the generation of specific rhythmic behaviors such as walking, swimming, and breathing. I am the recipient of federal support from the National Institutes of Health, and from the National Science Foundation for research and the training of the next generation of scientists.

Fiscal Year 2009 Budget Request

The Administration requests a budget of \$6.85 billion for NSF in fiscal year 2009, a 13 percent increase from fiscal year 2008. The administration's request for the Research and Related Activities (R&RA) account, where all NSF grant funding resides, is \$5.59 billion, an increase of 16 percent from fiscal year 2008. The scientific community applauds this strong support for the agency—it is a crucial step in keeping the United States competitive in science and technology.

SfN is advocating a budget of \$7.33 billion for NSF in fiscal year 2009, the amount authorized by the House in the America COMPETES Act. This represents a 20.8 percent increase for NSF. While this increase seems large, we ask that the Subcommittee consider the following:

- NSF accounts for nearly 25 percent of federal support of basic research at U.S. academic institutions.
- This is effectively a two-year increase. NSF received an increase of just 1.3 percent for fiscal year 2008 after Congress passed much larger amounts in their spending bills.
- In some cases, directorates not covered under the American Competitiveness Initiative actually saw funding decreases in the last fiscal year, including the Biological Sciences Directorate (–2.9 percent).

SfN supports such dramatic budgetary action because it represents a necessary step in the advancement of physics, computer science, mathematics, chemistry, engineering, as well as biology. These fields, and scientists trained in them, are crucial for us to understand the brain and the way it controls behavior. Through NSF grants and cooperative agreements with colleges, universities, K–12 school systems, and other research organizations throughout the United States, neuroscientists can continue to conduct the basic research that advances scientific knowledge and leads to tomorrow's treatments and cures. Additionally, SfN recognizes the leadership role that NSF plays in driving innovation in science education.

Basic Research—Fundamental Science

Continued investment in basic research at NSF is essential to laying the groundwork for discoveries that will inspire scientific pursuit and technological innovation for future generations. As reflected in the America COMPETES Act, aggressive investment in technology and scientific research is crucial to ensure America sustains its global leadership and competitiveness. Science is now a truly global enterprise that has the potential to revolutionize the human experience, health and activity—the question is whether America will maintain its role leading the next generation of scientific advances.

Future scientific progress requires the kinds of quantitative and interdisciplinary training that NSF fosters. NSF programs such as the Integrative Graduate Education and Research Traineeship Program (IGERT) are producing a cohort of scientists who have learned to work cooperatively, and have learned to learn across disciplinary boundaries, ensuring that the workforce is provided highly trained scientists who are unafraid of the challenges of the future.

NSF-funded biologists and neuroscientists are discovering fundamental mechanisms important to understanding how humans and other animals behave, develop, communicate, learn, and process information. Understanding the neuroscience of animal diversity is necessary as we confront environmental and agricultural changes in the future. NSF-funded physicists, mathematicians, computer scientists and engineers have done ground-breaking work that enables the analysis of EEG data, the development of brain prosthetic devices, and other technologies that will assist in the rapid diagnosis and treatment of epilepsy and stroke. NSF-funded statisticians are developing new methods for analysis of the large amounts of genome data, on humans and other organisms, and developing better statistical tools for looking at the effects of the environment on human and animal populations. NSF-funded chemists have developed new methods that allows for the extremely accurate measurement of very small amounts of brain hormones.

Indeed, many of the new findings in neuroscience can be traced back to fundamental work in these other fields that has contributed to new technologies of all kinds. This allows us to carry out new kinds of experiments not imaginable even 5–10 years ago. Consider these recent advances in neuroscience made possible by discoveries in other fields:

Artificial Cochlea.—NSF-funded researchers at the University of Michigan developed an artificial cochlea to assist the hearing-impaired. The device, made mainly of Pyrex glass, silicone oil and silicon nitride, works by converting vibrations into electrical pulses that the brain is able to process. Via cochlear implants, nearly 120,000 people have had partial hearing restored.

Brain Mapping.—Scientists at the College of William and Mary used NSF funding to create real-time, dynamic maps of patients' brains to be used during neurosurgery. Computers use images taken prior to surgery combined with live data feeds from the patient's brain during the procedure to show changes and assist neurosurgeons with quicker, more accurate medical procedures that will result in lives saved.

These discoveries have great potential to improve the lives of Americans and almost certainly would not have been made without the strong commitment to interdisciplinary research at NSF.

What is the Society for Neuroscience?

The Society for Neuroscience is a nonprofit membership organization of basic scientists and physicians who study the brain and nervous system. Recognizing the field's tremendous potential, the Society was formed in 1969 with less than 500 members. Today, SfN's membership numbers more than 38,000 and it is the world's largest organization of scientists devoted to the study of the brain. Neuroscience advances the understanding of human thought, emotion, and behavior. Our member neuroscientists work to understand animal and human nervous systems, how they develop, learn, and how they interact with their environment. Our membership includes investigators from backgrounds as diverse as physics, chemistry, engineering, mathematics, biology, biochemistry, and psychology, brought together to understand all aspects of brain function, from molecules and genes to cognition.

SfN is devoted to education about the latest advances in brain research, and to raising awareness of the need to make neuroscience research a funding priority. Many SfN members are committed to developing educational innovations that take advantage of new neuroscience research.

Conclusion

The scope of the challenge of understanding the human mind requires a bold approach and the ability to undertake high-risk, high-reward projects. With proper funding, the NSF can do both. By laying the groundwork for revolutionary discoveries and advances in neuroscience with interdisciplinary research, NSF is poised to keep the United States competitive in the 21st century and beyond.

We urge the subcommittee to support and approve a 20.8 percent increase to the NSF budget for fiscal year 2009. Thank you for the opportunity to submit this testimony.

PREPARED STATEMENT OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

Thank you, Mr. Chairman for the opportunity to present this testimony on behalf of the American Society of Plant Biologists (ASPB). Founded in 1924, ASPB is a non-profit society of 5,000 plant scientists. My name is Rob McClung. I am Associate Dean of the Sciences at Dartmouth College and President of ASPB. ASPB urges Subcommittee support for the fiscal year 2009 budget request of the National Science Foundation (NSF) of \$6.85 billion, including \$5.59 billion for NSF Research

and Related Activities and \$790 million for NSF Education and Human Resources. ASPB urges a 16-percent increase for the NSF Directorate for Biological Sciences, which is the average of increases for all directorates in the fiscal year 2009 request.

ASPB joined with 17 other science societies in a March 17 letter to the Chairman and Ranking Member expressing appreciation for your leadership in supporting NSF and comparable increases for all science disciplines. As noted in the letter, we are concerned that the NSF fiscal year 2009 budget request again tries to distinguish among the disciplines in its proposed increases for the research directorates.

The Consolidated Appropriations Act of 2008 indicates that the "Committees also believe the Foundation should maintain comparable growth in fiscal year 2008, to the extent possible for the biological sciences and social, behavioral, and economic sciences directorates. Each of the science disciplines is valuable in maintaining U.S. competitiveness." This reflects language in the House Report. Thank you, Mr. Chairman and Mr. Ranking Member for your leadership on this provision.

Your position is supported by the America COMPETES Act, which treats all disciplines as priorities. In addition, "Rising Above the Gathering Storm" said there should not be a disinvestment in such important fields as the life sciences and social sciences.

We join with 17 other science societies in asking that the Subcommittee include report language in the fiscal year 2009 Appropriations report that asks NSF to ensure that the biological sciences, geosciences and social, behavioral and economic sciences directorates receive increases in fiscal year 2009 that are comparable to the other directorates.

It is only through advances in all science disciplines that the nation will take advantage of the full range of innovation the science community has to offer.

Investment in world leading basic research sponsored by NSF contributes to U.S. leadership in the world in science and technology. U.S. leadership in a wide range of science disciplines is needed for U.S.-based development of new technologies that will help U.S. industries and workers compete and survive in the highly competitive global market.

Support for NSF is an investment in the knowledge base of our nation. Existence of a highly educated workforce is a major consideration for businesses in determining what part of the world they will start or expand their operations. Despite the attractions of lower costs for wages, land, buildings and related costs to companies considering moving jobs offshore, it is the highly skilled workforce in the United States that plays a major role in contributing to job starts and business expansions here at home.

The students, post doctoral students, assistant professors and professors supported at universities across the nation by NSF research and education grants make up a valuable talent pool highly prized by business and industry. In addition to the United States, other nations are aware of the contributions the science community can make to its economy.

Educating and training its citizens to be world leading scientists and providing a reasonable opportunity for success in a science academic career have been keys to success for the U.S. science community and its related industries. Support provided by NSF for research proposals selected based on the highest scientific merit as determined through peer review is essential to development of the nation's scientific talent base. We're concerned that the high rate of rejection of even the highly rated biology proposals by NSF, will discourage some talented young students from pursuing a career in science.

Grant approval rates at 21 percent for the NSF Directorate for Biological Sciences are below the average of 23 percent for all directorates in NSF Research and Related Activities. We appreciate the 10.3 percent increase in the budget request for the Directorate for Biological Sciences. We request that the Subcommittee increase funding for the Directorate for Biological Sciences to the 16-percent average increase for Research and Related Activities in the budget request. This would make possible the granting of more awards for a greater number of high quality research proposals.

The NSF Directorate for Biological Sciences is the major source of support for fundamental non-medical biology research conducted at universities across the nation. Increased support for non-medical biology research could strengthen the nation's world standing and competitive strength in this important area of research. This would in turn strengthen U.S.-based industries dependent upon basic biological research, including biotechnology, bioenergy, biosafety, biodefense and agriculture.

In concert with maintaining preeminence in science and technology, one of the keys to maintaining world leadership for the United States will be to assure a reliable and affordable energy supply for industry and consumers. Basic plant research supported by the NSF Directorate for Biological Sciences is providing knowledge

that is contributing to bioenergy research capabilities of the U.S. Department of Energy and U.S. Department of Agriculture. For example the Plant Genome Research Program (PGRP) and 2010 Project are producing a treasure trove of knowledge of plant gene structure and functions.

As projected in a report prepared by DOE and USDA in April 2005, advances in plant and related research will enable the United States to produce more than 1.3 billion tons of biomass “enough to produce biofuels to meet more than one-third of the current demand for transportation fuels.” The report is titled “Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply.” The report can be found at: http://www1.eere.energy.gov/biomass/pdfs/final_billionton_vision_report2.pdf.

A letter to the editor I wrote on “The next generation of biofuels” that was published in The Washington Times March 6, 2008 and is appended to my statement commends the Congress and President for initiating needed investments in new generation biofuels. We encourage additional investment in all phases of plant research. This will hasten the day when biofuels make up 33 percent instead of three percent of the transportation fuels used in the United States.

Plant genome research has helped propel plant science into a new modern era with far more capabilities in biology, bioinformatics, computational biology, modeling systems, systems biology and other areas. Findings in future years through the Plant Genome Research Program and 2010 Project will further enhance research capabilities with plants. As the primary source for food, fiber and feed and a promising clean alternative energy source, increased knowledge of plant structure and function is essential to meeting life-sustaining human needs.

A recent report of the National Academies found many important contributions from the NSF-sponsored National Plant Genome Initiative. The report found that basic plant genome research serves a wide diversity of agricultural and environmental purposes, as well as contributing to basic scientific discovery. For example, by increasing knowledge of how plants cope with extreme environmental stresses, plant genomics research can help scientists more precisely breed or engineer plants that can thrive as climates change. This knowledge is particularly important with respect to how water is used to grow crops. Economically viable production of fuels from plant biomass, in quantities that could contribute to a reversal of the world’s dependence on fossil fuels, will require increases in plant productivity and advances in plant biomass-to-fuel conversion.

A key to maintaining the health and security of the United States and its citizens is to continue to provide secure food supplies. NSF support for basic plant research contributes to the local economies nationwide, including rural areas, while helping to secure the food supply of all Americans. As the first step of every food chain, plants and research on plants plays an essential role in meeting the nutritional needs of people here and abroad.

The NSF Directorate for Biological Sciences sponsors examination of basic research questions on plants and other organisms that will lead to technologies to continue a secure supply of domestically produced food and bioenergy.

Thank you again for this opportunity to present our testimony before the Subcommittee.

[From The Washington Times, March 6, 2008]

LETTERS TO THE EDITOR

THE NEXT GENERATION OF BIOFUELS

Oil closed at \$100 a barrel Feb. 19 for the first time. The Washington Times reported on Feb. 20 (“Oil tops \$100 on refinery, OPEC,” Business) that fears that the Organization of the Petroleum Exporting Countries may cut production contributed to the price increase.

Some analysts see this \$100 mark as just a stop on the way to \$200-per-barrel oil, possibly by the end of this decade. The reason cited is similar to newspaper reports on the bump to \$100 per barrel—OPEC’s control of supply.

In addition to the economic and political challenges imposed by our reliance on foreign oil, we also need to be concerned that greenhouse gas (GHG) emissions associated with the use of fossil fuel contribute significantly to global warming, evident from observed increases in global air and ocean temperatures, widespread melting of snow and ice and a rising global average sea level. Is there a large-volume alternative to the use of increasingly costly oil with its high GHG emissions? There will be.

We are at the early stages of research on the next generation of biofuels using plant cellulose. Plant stems, stalks and leaves will become low-cost feedstocks for biofuels. A 2005 report from the U.S. Department of Agriculture and the U.S. Department of Energy projects that there will be enough biomass (cellulose) to meet more than one-third of the current U.S. demand in transportation fuels.

At the same time, next-generation biofuels will greatly lower emissions of stored carbon compared to gasoline. Biofuels will be better for Americans' pocketbooks and the environment.

The President and Congress are to be commended for initiating needed investments in new-generation biofuels research. Additional investment is needed in all phases of plant research. This will help hasten the day when biofuels make up 33 percent instead of 3 percent of the transportation fuels used in the United States.

PREPARED STATEMENT OF THE INSTITUTE OF MAKERS OF EXPLOSIVES

Interest of the IME

The IME is the safety and security association of the commercial explosives industry. The production, distribution, storage and use of explosives are highly regulated. ATF is one of the agencies that play a primary role in assuring that explosives are identified, tracked, and stored only by authorized persons. The ability to manufacture, distribute and use these products safely and securely is critical to this industry. We have carefully reviewed the Administration's fiscal year 2009 budget request for ATF and have the following comments about its impact on the commercial explosives industry.

Addressing Statutory Mandates

The commerce of explosives is one of the nation's most heavily regulated activities. As noted above, ATF plays a key role in this regulatory scheme through its implementation of Federal Explosives Law (FEL). Yet, ATF seems to have forgotten its statutory mandate to "protect interstate and foreign commerce"—which is the business of the commercial explosives industry—in its quest to be a lead terrorist/criminal agency.¹ ATF states that it is "dedicated to preventing terrorism, reducing violent crime, and protecting our Nation."² ATF's own data, however, suggests that commercial explosives are not a "preferred tool" of criminals or terrorists.³ While ATF claims to work "with . . . industry members . . . to make regulation less burdensome", the needs of the legitimate explosives industry are secondary to the agency's criminal enforcement interests.⁴ By statute, ATF is supposed to "take into consideration . . . the standards of safety and security recognized in the explosives industry" when issuing rules and requirements.⁵ But, our recommendations are increasingly bypassed—we believe to the detriment of safety and security. Finally, we see ATF reaching out to regulate in areas that are not the Bureau's primary area of responsibility at a time when ATF is not keeping up with the responsibilities already on its plate. With this perspective, we offer the following comments on ATF's budget request and program performance.

Adequacy of Budget Resources

As contrasted with the fiscal year 2008 budget justification, ATF's fiscal year 2009 budget request does not disclose the level of funding slated for its explosives regulatory program. Last year, the amount was \$63.6 million or 23 percent of its entire Arson and Explosives (A&E) budget.⁶ Inasmuch as the fiscal year 2009 budget request anticipates no increase to current services, we expect that the allocation to the explosives regulatory program is roughly the same or \$62.5 million of the \$267.2 million request for the A&E program.⁷ While the budget request anticipates an increase of four FTE for the A&E program, the justification indicates that the revised

¹Public Law 91-452, Sec. 1101.

²ATF Fiscal Year 2008 Budget Submission, page 1.

³Over half of substances used in illegal bombing incidents are not regulated by ATF. Only 18 percent involve explosives subject to FEL requirements, and of these, 91 percent are common fireworks or components. "Implementation of the Safe Explosives Act", OIG, DOJ, Report Number I-2005-005, page 59.

⁴ATF Fiscal Year 2009 Budget Submission, page 39.

⁵18 U.S.C. 842(j).

⁶ATF Fiscal Year 2008 Budget Submission, page 47 & 14, and ATF Fiscal Year 2009 Budget Submission, Exhibit G: Crosswalk of 2008 Availability.

⁷ATF Fiscal Year 2009 Budget Submission, page 39.

FTE is only to maintain current services.⁸ As discussed below, we are concerned that ATF has not directed additional FTE to address the regulatory needs of the commercial explosives industry. Absent a reprogramming of resources, however, the Bureau's ability to perform its regulatory functions in a timely manner is jeopardized.

Protect Commerce

Our industry relies on ATF to efficiently and effectively perform a number of functions to ensure that the legitimate commerce of explosives can go forward safely and unimpeded.⁹ In this regard, we support all necessary resources for these essential services. However, the budget justification contains information suggesting that ATF will fall short of its three-year statutory obligation to inspect 100 percent of its licensee/permittees as required by law.¹⁰ We are also disappointed not to see a performance measure concerning investigation of explosives thefts.

Industry Standards

We take seriously the statutory obligation that ATF take into account industry's standards of safety when issuing rules and requirements. We have endeavored to fulfill this obligation through the development of industry best practices for safety and security, participation in relevant standard-setting organizations, and forums for training. We have offered ATF recommendations that we believe will enhance safety and security through participation in the rulemaking process, in the Bureau's research efforts, and in other standard setting activities. Our interface with ATF in these settings prompts the following comments.

—*Rulemakings.*—Under the heading of “Explosives . . . Regulatory Programs,” ATF states that it has “issued three rulings.”¹¹ Two of these three rulings apply to the explosives industry.¹² While we are appreciative of these rulings, they are interpretive statements of agency policy and should not be confused with regulatory activity conducted pursuant to the Administrative Procedure Act (APA). Under the APA, ATF has six open rulemakings of interest and concern to the explosives industry, the same number of outstanding dockets as reported last year.¹³ The oldest of these was proposed in 2001. Several are a result of the enactment of the 2002 Safe Explosives Act (SEA). Two of these rulemakings were issued as “interim final rules,” which allows rules to be enforced without public input as to the effect of the rule on the regulated community. Subsequently, IME raised a number interpretative questions and concerns about these rules which are critical to the continued commerce of commercial explosives. Yet, ATF has delayed again the projected date for finalizing these rules until October 2008 and the projected dates for finalizing every other open rulemaking of significance to IME.

Last year, Congress directed ATF to address these long-standing rulemaking concerns.¹⁴ Despite this fact, ATF has not requested additional staff to address its regulatory backlog or other pending requests for interpretive guidance and accommodations that are the day-to-day work of regulatory agencies. These regulatory tasks may be at odds with ATF's vision as a law enforcement agency, but they are critical to the lawful conduct of the commercial enterprises the Bureau controls.

—*Data.*—ATF is continuing efforts to enhance data capabilities. These efforts should be supported. We are only disappointed in one aspect. We rely on ATF's data collection and analysis capabilities. IME needs data about incidents and theft and losses to perfect our safety and security recommendations and practices. The latest full-year information we have about explosive incidents is from

⁸ ATF Fiscal Year 2009 Budget Submission, Exhibit B.

⁹ These functions include the issuance of licenses to companies engaged in the manufacture, importation, and distribution of commercial explosives, and permits to those that purchase and receive these materials, background checks of certain employees of licensees and permittees, and regulations to ensure that commercial explosives are stored safely and securely. Additionally, when explosives are stolen, lost, or used for illegal purposes, we rely on the ATF to recover products and investigate incidents as necessary.

¹⁰ ATF Fiscal Year 2009 Budget Submission, page 48 and FN5.

¹¹ ATF Fiscal Year 2009 Budget Submission, page 44.

¹² The rulings allow for the use of computer records under certain conditions and storage options for residual amounts of bulk-blasting agents.

¹³ Semiannual Agenda, <http://www.reginfo.gov/public/do/eAgendaMain> (December 10, 2007).

¹⁴ Conference Report—Consolidated Appropriations Act, 2008, H.R. 2764/Public Law 110–161, page 257, citing, “Open Rules.—The Appropriations Committees concur with language in the House Report regarding open rulemakings and the delay in resolving the rules due to staff shortages. The ATF to report within two months after enactment of this Act on the status of all open rules and the ATF's plans to address the backlog.”

2003. We urge the Subcommittee to ensure that ATF has the resources to gather and release this information in a timelier manner.

—*IMESA FR*.—IME prides itself in being the safety and security advocates for the commercial explosives industry. The technical expertise of our members is a resource we gladly share with government agencies. In this regard, IME has spent years and hundreds of thousands of dollars developing and validating a credible alternative to strict interpretation of quantity-distance tables used to determine safe setback distances from explosives in collaboration the Department of Defense Explosives Safety Board and Canadian and U.S. regulatory agencies, including ATF. The result is a windows-based computer model for assessing the risk from a variety of commercial explosives activities called *IMESA FR*.¹⁵ Not only can *IMESA FR* determine the amount of risk presented, but it can also determine what factors drive the overall risk and what actions would lower risk, if necessary. The probability of events for the activities were based on the last 20 years experience in the United States and Canada and can be adjusted to account for different explosive sensitivities, additional security threats, and other factors that increase or decrease the base value. Following this effort, we expected that ATF would be willing to recognize this powerful assessment tool as an alternative for the regulated community to meet quantity-distance limitations, which limitations are themselves standards developed by the IME. However, this has not been the case. ATF has not taken advantage of opportunities to partner with IME and accept this risk-based approach to explosives safety. ATF's reluctance to recognize risk-based modeling is contrary to the norm practiced by all other federal agencies with regulatory responsibilities over the explosives industry. We believe that the consistency of risk analysis offered by *IMESA FR* is preferable to the haphazard "variance" approach ATF uses to address setback issues now.

Areas of Responsibility

ATF has used resources to venture into areas of regulatory authority that are not within its primary sphere of responsibility. In 2003, ATF chose to interpret FEL to give it authority to set clearance standards for workers involved in the transportation of commercial explosives. In 2005, there was a flurry of concern about the breadth of ATF security checklist documents that included standards for facility security such as surveillance, training, public and employee access, vehicle control, fencing and gates—areas of expertise reserved for the Department of Homeland Security (DHS). Since then ATF has advocated for authority or otherwise suggested a role to regulate ammonium nitrate and other easily purchased/unregulated materials used by terrorists in improvised explosive devices.¹⁶

While we respect ATF's expertise and authority to establish standards for explosives storage magazines, ATF's statutory authority does not reach to the security of ammonium nitrate or other explosive precursors.¹⁷ Congress has tasked this responsibility to the DHS under its Chemical Facility Anti-terrorism Standards authority and through the enactment of the Secure Handling of Ammonium Nitrate Act of 2007.¹⁸ Many materials can be manipulated to produce an explosive effect. However, in their unadulterated state they will not explode.¹⁹ DHS is far better positioned to address the range of issues raised by the prevalence of these precursor materials. According to Homeland Security Presidential Directive 7, DHS is charged to identify, prioritize and coordinate protection of the nation's critical infrastructure, of which chemical manufacturing is one sector.²⁰ The Government Accountability Office, in a report on implementation of critical infrastructure programs, identifies no role for the ATF, or the Department of Justice, in developing a national infra-

¹⁵ *IMESA FR* was built on the DDESB's software model, SAFER. The DDESB currently uses SAFER and table-of-distance methods to approve or disapprove Department of Defense explosives activities.

¹⁶ ATF Fiscal Year 2007 Budget Submission, pages 18, 21, 53, 54, 56 and 66. ATF Fiscal Year 2008 Budget Submission, pages 6, 7, 44, 45, and 49. ATF Fiscal Year 2009 Budget Submission, pages 7 and 45.

¹⁷ "Implementation of the Safe Explosives Act", OIG, DOJ, Report Number I-2005-005, page ii.

¹⁸ 72 FR 17688 (April 9, 2007) & 72 FR 65396 (November 20, 2007) and. The Consolidated Appropriations Act, 2008, H.R. 2764/Public Law 110-161, sec. 563.

¹⁹ Containing the Threat from Illegal Bombings, NRC, 1998, page 130.

²⁰ Homeland Security Presidential Directive/HSPD-7, paragraphs 13 & 15, December 17, 2003.

structure protection plan or in guarding that infrastructure and its products.²¹ IME supports chemical facility, hazardous materials transportation and ammonium nitrate security standards. However, we question ATF's involvement and attendant use of resources in these areas, when the Bureau consistently falls behind in its own vital regulatory responsibilities.

Performance Measure Improvements

For a number of years, IME has expressed concern about the lack of appropriate performance measures for the commercial explosives industry. Currently, ATF has three performance and two efficiency measures that apply to the commercial explosives industry.²² Only one performance and one efficiency measure are directed at facilitating regulatory compliance. These measures are the number and percentage of explosives licensee/permittees that are inspected and the percent of perfected explosives applications acted on within 90 days. Yet, ATF is now proposing to delete the only efficiency measure applicable to the explosives industry because the "measure was never developed."²³ Not only should Congress direct the Bureau to restore and implement this measure, it should direct the agency to institute other measures of performance and efficiency for the explosives regulatory program. We have advocated for measures showing the number of background checks that ATF has performed, within what average timeframe, and of those, how many individuals failed to receive clearance, and of those, how many appealed the Bureau's findings; the number of rulemakings outstanding and their priority; turnover rates among agents and inspectors; and the number of individuals from which agencies that are trained through ATF programs. Absent information of this type, it is unclear how Congress can effectively oversee ATF's explosives operations and determine the adequacy of its budget request.

Leadership

The ATF has been without a director since August 2006. Director-designee Michael J. Sullivan has served with distinction for nearly a year. He came at a particularly challenging time and has overseen the agency's move to its new headquarters. We believe the Bureau has been too long without permanent leadership and we urge Congress to promptly act on this nomination.

Conclusion

The manufacture and distribution of explosives is accomplished with a remarkable degree of safety and security. We recognize the important role played by ATF in helping our industry achieve and maintain safe and secure workplaces. Industry and the public trust that ATF has the resources to fulfill its regulatory responsibilities. It is up to Congress and, in particular, this Subcommittee to ensure that ATF has the resources it needs. We strongly recommend full funding for ATF's explosives program.

PREPARED STATEMENT OF THE ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Summary of Recommendations

- APS supports the Coalition for National Science Funding recommendation of \$7.326 billion for the National Science Foundation in fiscal year 2009.
- We ask for the Committee's support of Section 7018b of the America COMPETES Act (Public Law 110-69) which provides equal consideration for NSF's Social, Behavioral and Economic Sciences Directorate. This will ensure that the behavioral and social sciences share proportionately in the increases received by NSF, which is essential to strengthen the vital role of these sciences in achieving innovation and realizing the full potential of basic research to benefit our Nation.
- NSF-funded psychological scientists have won the Nobel Prize and the President's Medal of Science for their groundbreaking work. Greater funding for the SBE Directorate will result in more such breakthroughs and will ensure that the Nation continues as the world's leader in behavioral and social science research and training.

Mr. Chairman, Members of the Committee: Thank you for this opportunity to present the views of the Association for Psychological Science (APS) on the fiscal year 2009 appropriations of the National Science Foundation (NSF). APS is dedi-

²¹ Agency Plans, Implementation, and Challenges Regarding the National Strategy for Homeland Security, January 2005, GAO-05-33, pages 18, 47, 78 and 133.

²² ATF Fiscal Year 2009 Budget Submission, page 49.

²³ ATF Fiscal Year 2009 Budget Submission, page 49.

cated to the promotion, protection, and advancement of the interests of scientifically oriented psychology in research, application, teaching, and the improvement of human welfare. Our 20,000 members are scientists and academics at the Nation's universities and colleges. The NSF supports many members of APS, and a great deal of basic research in our field simply could not exist without NSF funding.

The Nation's Premiere Basic Research Enterprise

In the America COMPETES Act of 2007, Congress and the President agreed that basic science research budgets should be doubled. The fiscal year 2008 omnibus appropriation, however, did not provide the necessary funds to keep pace with this goal. The National Science Foundation received only a 2.5 percent increase for fiscal year 2008, \$364 million less than the President's request. The continued underfunding of NSF constitutes a significant delay in this Nation's science and technology advancement—one we cannot afford in the face of rising global competitiveness.

A renewed commitment to basic research and educational programs at NSF is essential to capitalize on the enormous promise of scientific innovation, to train future scientists, and to ensure the success of multidisciplinary initiatives. The basic science community asks the Committee to make the underlying intent of this Act a reality. The increase we are recommending today, as a member of the Coalition for National Science Funding, is a critical step in offsetting the under-funding that has been a chronic condition for NSF.

The Social, Behavioral and Economic Sciences (SBE) Directorate

It is crucial to recognize the role the behavioral and social sciences play in fostering innovation. The President's Science Advisor and Director of the Office of Science and Technology Policy, John Marburger, has underscored the importance of our discipline in this endeavor, and your colleagues in the House, led by Subcommittee on Research and Science Education Chair Brian Baird, have asked NSF to comply with the statutory requirement in Public Law 110-69, Section 7018b to give equal consideration to the Social, Behavioral, and Economic Sciences (SBE) Directorate.

Under the Administration's budget plan, the SBE Directorate would receive \$233.48 million, 8.5 percent over fiscal year 2008. While this stems the tide of below-average increases in previous years, it is unacceptably disproportionate to other Directorates, which are receiving between 10.3 and 20.2 percent increases. The America COMPETES Act specifically called on NSF not to disinvest in the behavioral and social sciences over the long term. We are concerned about this imbalance, given the enormous potential of behavioral science to address many critical issues facing the Nation, including global competitiveness. To offset previous years' under-funding, we ask the Committee to, at the very least, give the SBE Directorate the 8.5 percent increase the President proposed in this year's NSF budget request. We also ask that the SBE Directorate share proportionately in any such increases ultimately received by NSF.

An Overview of Basic Psychological Research.—NSF programs and initiatives that involve psychological science are our best chance to solve the enigma that has perplexed us for so long: How does the human mind work and develop? APS members include many scientists who conduct basic research in areas such as learning, cognition, and memory, and the linked mechanisms of how we process information through visual and auditory perception. Others study judgment and decision-making (which is the focus of a Nobel prize recently awarded to APS Fellow and NSF grantee Daniel Kahneman); mathematical reasoning (the focus of the recent President's Medal of Science awarded to APS Fellow and NSF Grantee R. Duncan Luce); language development; the developmental origins of behavior; and the impact of individual, environmental, and social factors in behavior.

What's more, basic psychological research supported by NSF and conducted by APS members ultimately has had a wide range of applications, including designing technology that incorporates the perceptual and cognitive functioning of humans; teaching math to children; improving learning through the use of technology; developing more effective hearing aids and speech recognition machines; increasing workforce productivity; and ameliorating social problems such as prejudice or violence. While this is a diverse range of topics, all these areas of research are bound together by a simple notion: that understanding the human mind, brain, and behavior is crucial to maximizing human potential. That places these pursuits squarely at the forefront of several of the most pressing issues facing the Nation, this Congress, and the Administration.

SBE Directorate Highlights

Research supported by the SBE Directorate has the potential to increase employee productivity, improve decision making in critical military or civilian emergency situations, and inform the public policymaking processes across a range of areas. To give just a few examples:

Developmental and Learning Sciences.—This program supports studies that increase our understanding of cognitive, linguistic, social, cultural, and biological processes related to children's and adolescents' development and learning. This kind of research adds to our basic knowledge of how people learn and the underlying developmental processes that support learning. For example, one recently funded study is identifying the cognitive, emotional, and social characteristics that make some children more suggestible than others with respect to legal questioning. The results of these studies will have important implications for developing scientifically sound interviews that produce the most accurate reports from children, and for constructing instruments to detect children who are prone to suggestive factors, which can be adapted for use in schools, mental health, medical, and forensic contexts.

Perception, Action, and Cognition.—The perception, action, and cognition program at NSF supports research on these three functions, and the development of these capacities. Topics include vision, audition, attention, memory, reasoning, written and spoken discourse, motor control, and developmental issues in all topic areas. One recent study funded by this program looks at the important role language plays in emotion perception, and understanding the mechanisms by which language might influence emotion perception. This research shows that the emotions you see in others are influenced by what you know about emotion (especially the language that you speak). It may well be the case that people can be taught to become better emotion perceivers, and hence, better communicators.

Cognitive Neuroscience.—Cognitive neuroscience, within the last decade, has become an active and influential discipline, relying on the interaction of a number of sciences, including psychology, cognitive science, neurology, neuroimaging, physiology, and others. The cross-disciplinary aspects of this field have spurred a rapid growth in significant scientific advances. The blooming field of social neuroscience is yielding research, for example, on the psychological and neural mechanisms involved in the experience of empathy. Brain imaging is being used to measure the effects of stigma, racial bias, similarity, and past shared experiences between oneself and others. This important research will yield a better understanding of the cognitive and neurological mechanisms involved in empathy as well as our ability to share feelings and care for others. Both the findings and the techniques will be of tremendous value to clinicians as well as other researchers.

Cross-Cutting Behavioral Initiatives at NSF

Cyber-enabled Discovery and Innovation.—This new, cutting-edge program supports research on computational thinking, complexity, and interacting systems. NSF expects that this ambitious new undertaking with potentially transformative results will revolutionize the field and shed light onto wide-ranging topics such as emergent phenomena and tipping points in human development. Research into the complexity of social systems will constitute a significant contribution to this endeavor. This investment will help maintain our Nation's expertise in information technology, an essential element for our future competitiveness.

Adaptive Systems Technology.—A new interdisciplinary initiative, this program recognizes the essential human element of exciting new technologies and machines. The human-machine interface is crucial to explore if we are going to make the best use of the latest technology. While biologists describe the trajectory from simple to complex systems and chemists explain the processes underlying complex neural organization, cognitive scientists explore how systems compute and behavioral scientists provide insights into how organisms learn and adapt to their environment. By working together, these scientists can reap the benefits of and develop new ideas through collaboration.

Science of Science and Innovation Policy (SciSIP).—In 2005, the President's Science Advisor, John Marburger, called for a national "science of science policy," asking for research on innovation and scientific discovery processes, as well as on how policymakers use science to shape policy. In response, NSF created the Science of Science and Innovation Policy (SciSIP) research program. By studying science as a social process, SciSIP's goal is the development of an evidence-based platform for science policy. One example of the kind of ideas materializing from this initiative is the measurement of well-being, which deals with such questions as: How can science policy and science outcomes be evaluated by measuring societal well-being? Can scientific priorities be based on well-being? Does well-being as an outcome lead to different science priorities than considering other outcomes? What about national

competitiveness and productivity in relation to science and well-being? Addressing these questions has implications for health and the economy, both of which are linked to well-being.

In closing, I want to note that building and sustaining the capacity for innovation and discovery in the behavioral sciences is a goal of the National Science Foundation. We ask that you encourage NSF's efforts in these areas, not just those activities described here, but the full range of activities supported by the SBE directorate and by NSF at large. Your support will help NSF lay the groundwork for this long-overdue emphasis on these sciences. Thank you.

We would be pleased to answer any questions.

PREPARED STATEMENT OF THE AMERICAN SOCIETY FOR MICROBIOLOGY

The American Society for Microbiology (ASM) is pleased to submit the following testimony on the fiscal year 2009 appropriation for the National Science Foundation (NSF). The ASM is the largest single life science organization with more than 42,000 members. The ASM mission is to enhance the science of microbiology, to gain a better understanding of life processes, and to promote the application of this knowledge for improved health and environmental well-being.

The President requests a 13 percent increase in the NSF's budget for fiscal year 2009 for a total funding level of \$6.85 billion. Included in this request is \$5.6 billion for Research and Related Activities (R&RA), an increase of \$773 million, or 16 percent above fiscal year 2008. With the 16 percent growth, NSF anticipates supporting an additional 1,370 research grants, which will help increase the overall funding rate to 23 percent from the 21 percent rate in fiscal year 2008. However, the success rates in many important biological sciences programs remain below 20 percent. The ASM, therefore, recommends a 16 percent, or \$98 million, increase for BIO, consistent with the requested increase for R&RA. The ASM also recommends that the overall increase for R&RA be \$808 million, or 16.8 percent, and the overall increase for NSF be 13.6 percent above fiscal year 2008, to cover ASM's recommended increase for BIO without affecting the requested increases for other programs.

The NSF plays a critical role in the discovery of new knowledge in the biological sciences. The Society has a number of concerns about BIO funding for the biological sciences, which are discussed below. Our nation's competitiveness in areas such as nanotechnology, climate change, water sustainability, and alternative energy sources depends on innovation in the biological sciences. It is essential that NSF continue strong support for the biological sciences to maintain and expand the contributions of biological sciences research for human, environmental, and economic well being.

The NSF has successfully leveraged its resources for over half a century to promote progress in all fields of science and to enhance its effectiveness and productivity. The NSF builds the nation's research capability through investments in advanced instrumentation and facilities, and by supporting excellence in science and engineering research and education through its competitive, peer-reviewed grants programs. These activities are essential for increasing the nation's economic and scientific competitiveness. Nearly 90 percent of the NSF's budget supports extramural grants, selected through a competitive merit review process, that meet the mission of the Foundation "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense . . ." The NSF has been especially responsive to and benefited from supporting individual investigators and investigator-initiated ideas.

The ASM particularly supports increased funding for R&RA. This funding will promote support for unsolicited grants that potentially advance the frontiers of learning and discovery. The ASM enthusiastically supports the continuation of the NSF's tradition of funding investigator-initiated research.

NSF Biological Sciences

The NSF provides 67 percent, about two-thirds, of federal support for U.S. academic basic research in non-medical biological sciences. This means that NSF's BIO, is arguably the most important source of non-medical funding for biological research, infrastructure, and education in the United States. Through its long history of productivity and innovation, biological research supported by the NSF has been critical for understanding issues of national importance such as the environment, economy, agriculture, and human welfare.

NSF funding is not only important for understanding the functions and behaviors of organisms, it is especially important for understanding how organisms, such as microbes, function and interact with physical and chemical systems. For example,

basic biological research has provided physicists and chemists with model systems used in nanotechnology, chemical production and renewable energy generation, each of which are important for American competitiveness. Thus, it is essential to continue strong investments in the biological sciences, since they translate to advances in physical, mathematical, engineering, and computational sciences.

The Administration has proposed an fiscal year 2009 budget for BIO of \$675 million, an increase of 10.3 percent over fiscal year 2008. This increase continues along the proposed track of the President's American Competitiveness Initiative (ACI). The ASM is concerned that funding for BIO since fiscal year 2003 has flattened and even decreased. The success rate of competitive awards for BIO in fiscal year 2009 is estimated at 19 percent, well below the overall NSF estimated funding rate of 23 percent. Additionally, some programs within BIO have funding rates less than 14 percent, such as the Microbial Observatories/Microbial Interactions and Processes (MO/MIP) programs, Assembling the Tree of Life program, and the Ecology of Infectious Diseases program. Funding rates for BIO research grants have been consistently lower than agency wide average research funding rates, and the gap between BIO and agency wide funding rates has increasingly widened in the last three years.

Scientific opportunities in the biological sciences are increasing significantly, illustrated by the estimated 20 percent increase in BIO research grant proposals from fiscal year 2003 through fiscal year 2007. However, as opportunities have steadily increased, BIO research grant funding rates have decreased significantly from 26 percent in fiscal year 2003 down to an estimated 19 percent in fiscal year 2007.

Growth in BIO is essential for progress in the biological sciences. Growth in the total NSF budget should be reflected by real growth in BIO as well as other NSF directorates. We, therefore, recommend an increase in the BIO budget consistent with the President's request for R&RA in fiscal year 2009, of 16 percent, for a total of \$710 million.

Research in BIO is key to providing fundamental support that is needed for research supported by other NSF directorates. The rapid growth in knowledge by the biological sciences is resulting in the formation of new multi-disciplinary, interdisciplinary, and transdisciplinary efforts that often involve physical and chemical sciences and engineering. Advances in programs in bioenergy and biophysics now depend as much on biology as they do on other scientific disciplines. BIO supports scientific disciplines other than the biological sciences through programs such as Environmental Genomics, MO/MIP, and contributes to interagency priorities, such as climate change and the new NSF-wide program Dynamics of Water Processes in the Environment (WATER).

BIO MO/MIP

In addition to its general concerns about biological sciences funding, the ASM is concerned with a proposal to shift funding in fiscal year 2009 to strengthen core BIO programs and to eliminate support for the demonstrably highly successful Microbial Observatories (MO), Microbial Interactions and Processes (MIP) programs. These programs represent the only sustained national initiatives to describe broadly and understand the diversity of microbial life within the United States. Loss of these programs will mean that other nations with which the United States competes in biotechnology (e.g., China, Japan, Korea, Germany) will continue to support efforts to discover microbial diversity, while the US decreases support.

Differences in funding emphases between existing core programs and microbe-specific programs will likely lead to lower success rates and less funding for microbial researchers. Funding success rates for MO/MIP are already less than 10 percent. The ASM recommends that MO and MIP should be identified as a part of the core programs in BIO, rather than be discontinued. The ASM also recommends increased support for MO/MIP.

Maintaining programs such as MO/MIP is essential to ensure continued discovery of the microbial world, over 99 percent of which remains undescribed. Because they are ubiquitous and functionally more diverse than all plants and animals combined, microbes continue to offer enormous economic potential for industry, agriculture, and medicine. Bioprospecting has already led to many commercial applications, including probiotics, biofuels, and wastewater treatment. The wealth of bacteria, viruses, and other microorganisms that have yet to be cultivated or understood comprise an untapped resource for industry, agriculture, and medicine.

Loss of MO/MIP cannot help but reduce our nation's competitiveness and ability to sustain leadership in microbial biology. Loss of these programs will also adversely affect agricultural research involving a collaboration between USDA and NSF.

NEON

The ASM supports the establishment of the National Environmental Observatories Network (NEON), which will be the first national ecological measurement and observation system designed to answer fundamental regional- to continental-scale scientific questions about the current state of major ecosystems and their response to climate change and other disturbances. Full implementation of the NEON platform will transform our ability to detect and predict changes in ecosystems, and to provide information necessary to respond to change. Integration of microbial biology into the NEON framework also promises to provide a new level of understanding of the interactions between microbes, ecosystems and climate change. The ASM strongly encourages this integration through expanded funding in BIO, and expresses its concern that funding for NEON-related research not reduce the capacities of current BIO programs.

Support for Geosciences, Engineering, and Physical Sciences

Biology and microbial biology are important components of all the research directorates at NSF and should be strongly supported within them. The ASM supports the fiscal year 2009 proposed increases in funding for the research activities at the Geosciences Directorate (GEO), the Engineering Directorate (ENG), and the Mathematical and Physical Sciences Directorate (MPS).

The Geobiology and Low-Temperature Geochemistry program in GEO provides an example of the mutually beneficial relationship between biological sciences and geosciences. Among other areas, this program examines interactions between biological and geological systems at all scales of space and time, interactions between microbes and economically important resources, and interactions among microbes, minerals and groundwater. The Geobiology and Low-Temperature Geochemistry Program also facilitates cross-disciplinary efforts to harness new bioanalytical tools, such as those emerging from molecular biology. The ASM supports the proposed request of \$178 million for Earth Sciences (EAR), an increase of \$22 million, or 14 percent, above fiscal year 2008, with an emphasis towards increased support for the biological geosciences and \$354 million for Ocean Sciences Funding (OCE), an increase of \$43 million, or 14 percent above fiscal year 2008.

Similarly, the Engineering Directorate employs microbial research to examine problems involved in the processing and manufacture of economically important products, and in the efficient utilization of chemical resources and renewable bioresources. Much of this work depends on bioinformatics originating from genomic and proteomic studies. The ASM supports the proposed request of \$173 million for Chemical, Bioengineering, Environmental, and Transport Systems (CBET), an increase of \$42 million or 32 percent, above fiscal year 2008. High emphasis applications for the biological sciences within this program include postgenomic engineering, tissue engineering, biophotonics, nano-biosystems, and biotechnology, leading to improved biosensors, biomaterials, and controlled drug release.

Collaboration with other scientific disciplines is also very important for continued progress in physics, including biological physics at molecular and cellular levels. MPS supports interdisciplinary research that greatly benefits the physical sciences as well as the biological sciences by creating tools that assist in advancing biological research and other disciplines. The ASM also supports the NSF-wide investment, Dynamics of Water Processes in the Environment (WATER). WATER supports research on living organisms in freshwater ecological systems.

Workforce Development and Training

Support for science and engineering education, from pre-K through graduate school and beyond is an essential part of NSF's mission. Research funded by NSF is thoroughly integrated with education to help ensure that there will always be a skilled workforce to support new and future scientific, engineering, and technological fields, and a robust community of educators to train and inspire coming generations.

In fiscal year 2007 BIO alone, support approximately 13,000 people, including senior researchers, other professionals, postdoctorates, graduate students, undergraduate students, and K-12 teachers. Due to flat funding in fiscal year 2008, this number dropped to approximately 12,700. Increased support for the NSF is essential to fostering a competitive, well-trained scientific workforce. The proposed increase for BIO is estimated to support over 13,500 senior researchers, other professionals, postdoctorates, graduate students, undergraduate students, and K-12 teachers.

Conclusion

Support for the NSF is essential for maintaining and improving the nation's scientific and economic competitiveness. The ASM recommends a 13.6 percent increase

in funding for the NSF, slightly above the President's request, but below the NSF's authorized level for fiscal year 2009. However, the ASM is concerned that BIO has suffered from flat funding over the last six years and we recommend at least a 16 percent increase for BIO, the same as the increase proposed by the President for the entire Research and Related Activities, of which BIO is a part. This increase will recapture ground lost to inflation, expand the currently successful programs, and take advantage of new scientific opportunities in the biological sciences, such as metagenomics. Increased funding for the NSF should ensure adequate funding for all areas of science. One of the primary strengths of the NSF is its ability to catalyze important interactions among research disciplines in the physical and biological sciences. Consequently, all science must be well funded and encouraged.

The ASM appreciates the opportunity to provide written testimony and would be pleased to assist the Subcommittee as it considers the fiscal year 2009 appropriation for the NSF.

PREPARED STATEMENT OF THE SEA GRANT ASSOCIATION

The Sea Grant Association (SGA)¹ respectfully submits for the official record this written testimony for fiscal year 2009 to the Senate Appropriations Subcommittee on Commerce, Justice, and Science. SGA joins with other stakeholders in urging the Subcommittee to recognize and support the vital programs of the National Oceanic and Atmospheric Administration (NOAA) and requests that the Subcommittee fund NOAA at \$4.5 billion for fiscal year 2009. Further, SGA requests that within the overall fiscal year 2009 appropriation for NOAA, the Subcommittee appropriate \$72 million for the National Sea Grant College Program, which is a key component of NOAA's extramural research, education and outreach enterprise playing a direct role in keeping our coastal communities safe, prosperous, and vibrant.

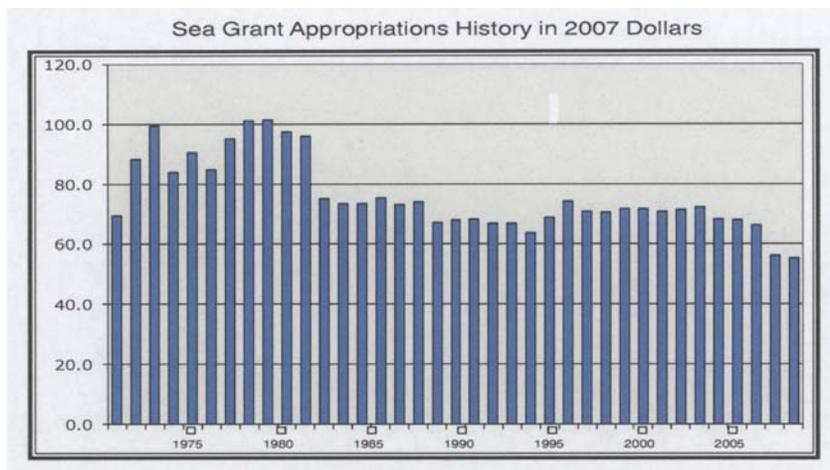
Growth of the National Sea Grant College Program (Sea Grant) has been stunted during that last few years, which over time has begun to directly impact the services delivered on a daily basis to our coastal communities. The constituents of the Sea Grant program—coastal resource managers, state and local governments, tourism sectors, fishing industries, and the general public to name a few—have come to expect and rely on a certain level of service and expertise from the Sea Grant program. However, as the needs of our coastal communities have increased, funding required for the Sea Grant program to support these needs has not kept pace. The SGA recommendation of \$72 million is realistic and even represents an amount below that which is authorized for the program for fiscal year 2004². The programmatic request of \$72 million is also consistent with the amount requested in a Dear Colleague Letter for Sea Grant that was submitted to your Subcommittee earlier this month with 32 signatures. In addition, attached is a list of about 300 stakeholders who attest to the value of the Sea Grant program.

With the costs of research and education rising, the near flat-funding of Sea Grant during the last few years has forced programs to reduce staff and leave numerous high-quality research and outreach projects unsupported. An increased investment in Sea Grant will not only enhance its ability to meet these additional demands, it will also leverage additional state and university matching funds, reflecting its unique value as a federal-state partnership.

The Administration's request of \$55 million for fiscal year 2009 would reverse the small progress made by the program last year by eliminating the modest growth provided by the Congress for fiscal year 2008 (for a total fiscal year 2008 budget of \$57.1 million). At the level proposed by the Administration, the Sea Grant program would be asked to operate at its lowest level in its 40 year history in 2007 dollars (see the below chart).

¹The Sea Grant Association is a non-profit organization dedicated to furthering the Sea Grant program concept. The SGA's regular membership consists of the academic institutions that participate in the National Sea Grant College Program, located within the National Oceanic and Atmospheric Administration (NOAA). SGA provides the mechanism for these institutions to coordinate their activities, to set program priorities at both the regional and national level, and to provide a unified voice for these institutions on issues of importance to the oceans, coasts and Great Lakes. The SGA advocates for greater understanding, use, and conservation of marine, coastal and Great Lakes resources.

²National Sea Grant College Program Act Amendments of 2002, Public Law 107-299.



The implications of what is essentially a freeze in funding for Sea Grant are significant with respect to the economy, sustainability of natural resources, and national safety and security. The Sea Grant network is severely strained and challenged to support its current activities, staff, and operations within this budget scenario, and has difficulty investing in important new research, education and outreach geared toward addressing emerging challenges in such areas as regional climate change and coastal community resiliency.

At present, only about 12 percent of the research proposals submitted for funding to the Sea Grant program are funded due to resource constraints. By contrast, the research funding success rate at the National Science Foundation is just over 20 percent. Sea Grant directors estimate that they receive enough high quality meritorious research proposals—of importance and relevance to NOAA’s mission—to fund about 25 percent, or double what the program is currently able to support. Within the current budget for Sea Grant of \$57.1 million, about \$30 million is used to support research. The balance of the Sea Grant budget is used to support related extension, communication, education and program management. Based on this, the research portion of the Sea Grant program could responsibly manage between \$60 million to \$80 million annually—or double its current research budget. At this level, the Sea Grant program could support important research proposals that currently go unfunded to answer questions and provide new knowledge needed by ocean and coastal resource managers.

It is also important to remember that the success of the Sea Grant program is attributable to its unique ability to intimately tie research results to an extension, communication, and education process that is essential to ensure the use of science to meet the needs of our citizens. The current level of expenditure for extension, communication, and education in the Sea Grant program is approximately \$25 million. A recent report to the NOAA Science Advisory Board³ called on NOAA to substantially expand its extension, outreach, and education activities. Sea Grant has the experience and the “on-the-ground” network to fulfill that policy recommendation immediately if sufficient additional support from NOAA were forthcoming. As the research program expands to meet increasing demands, so too must the tools that put the research results in the hands of decision makers so that they can be utilized. The Sea Grant extension, communication, and education function should be increased commensurate with the level of research funding in the program from its current \$25 million to between \$40 million to \$50 million to ensure the continued balanced approach when it comes to research, extension, communication, and education.

An Investment in the Economic, Environmental and Social Well-being of the Nation

Research and outreach programs supported by Sea Grant are based on competition, undergo rigorous peer-review, and are geared toward addressing the marine,

³Engaging NOAA’s Constituents: A Report from the NOAA Science Advisory Board, March 2008.

coastal and Great Lakes challenges that face our citizens. The federal investment in Sea Grant enables a nationally coordinated network embedded in the best research universities to apply unparalleled intellectual capital to address these problems and opportunities while assisting NOAA in addressing its missions. Cost-effectiveness is enhanced by access to existing university management infrastructure.

Sea Grant serves the nation in many ways. Sea Grant's unmatched access to regional, state and local constituencies through its extension and outreach programs ensures that the federal investment is targeted at relevant issues. The Sea Grant model contributes to the missions of NOAA and other federal agencies, and state and local governments, to the benefit of the general public. In addition, marine education programs supported by Sea Grant funds reach from kindergarten to marine-related business people to elder hostels.

Sea Grant is a national program addressing national, regional, state and local needs. It is a partnership among government, academia, business, industry, scientists, and private citizens to help Americans understand and wisely use our precious coastal waters and Great Lakes for enjoyment and long-term economic growth. This network unites 32 Programs, over 300 universities, and millions of people. Sea Grant is an agent for scientific discovery, technology transfer, economic growth, resource conservation, and public education. It is government as our citizens want it—visible, tangible, relevant, efficient, and effective.

Informing Smart Policy through Sound Science

The interface between science and policy is precisely where the Sea Grant program applies its precious resources. As the program makes decisions on the funding of research projects, issues that are acutely important to local, regional and national decision-makers receive priority attention. Extension and educational resources are also deployed in ways that enhance the relevance and impact of the science and discoveries that result from Sea Grant-funded research.

There is a growing demand from our nation's decision makers and public for scientifically-sound decisions to many of today's complex problems. Sea Grant's integration of science and outreach allows for up-to-date and ongoing needs assessment that helps identify the most important and timely issues that benefit from science-based decision making. Technological and scientific approaches, though desirable, cannot solve all of society's problems, and Sea Grant's ability to embed itself within the communities it serves enables the social dynamics of human ecology to be incorporated thereby improving the utility and impact of investments through the Sea Grant program. Sea Grant's work is always fresh. Although the program has been in place for 40 years, the constant attention to societal needs through stakeholder interactions allows the program to be nimble and responsive, while also maintaining the rigor and reliability of a strategic enterprise.

In recent years, the work of two major national commissions⁴ have brought into focus the importance of our oceans and coasts to our nation's natural heritage, security, and economy. With an offshore ocean jurisdiction larger than the total land mass of the United States, U.S. waters support rich and diverse systems of ocean life, provide a protective buffer, and support important commerce, trade, energy, and mineral resources. And in each example, Sea Grant is there.

- More than \$1 trillion, or one-tenth, of the nation's annual gross domestic product (GDP) is generated within near-shore areas, the relatively narrow strip of land immediately adjacent to the coast. Looking at all coastal watershed counties, the contribution swells to over \$6.1 trillion, more than half of the nation's GDP;
- In 2003, ocean-related economic activity contributed more than \$119 billion to American prosperity and supported over 2.2 million jobs. Roughly three-quarters of the jobs and half the economic value were produced by ocean-related tourism and recreation. More than 13 million jobs are related to trade transported by the network of inland waterways and ports that support U.S. waterborne commerce;
- Annually, the nation's ports handle more than \$700 billion in goods, and the cruise industry and its passengers account for \$11 billion in spending;
- The commercial fishing industry's total value exceeds \$28 billion annually, with the recreational saltwater fishing industry valued at around \$20 billion, and the annual U.S. retail trade in ornamental fish worth another \$3 billion; and
- Nationwide retail expenditures on recreational boating exceeded \$30 billion in 2002.

⁴An Ocean Blueprint for the 21st Century, U.S. Commission on Ocean Policy, April 20, 2004; America's Living Oceans: Charting a Course for Sea Change, Pew Oceans Commission, June 2, 2003.

The SGA recognizes and appreciates the difficult funding tradeoffs the Subcommittee is forced to make each year. We urge you to consider Sea Grant as an investment in the future health and well-being of our coastal communities and support the program at \$72 million for fiscal year 2009. Thank you for the opportunity to present these views.

For more information, please visit www.sga.seagrant.org or contact: Paul Anderson, SGA President, 207.581.1435, panderson@maine.edu; Rick DeVoe, SGA External Relations Committee Chair, 843.727.2078, rick.devoe@scseagrant.org; Joel Widder, Government Relations, 202.289.7475, jwidder@lewis-burke.com.

PREPARED STATEMENT OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

The American Psychological Association (APA), a scientific and professional organization of more than 148,000 psychologists and affiliates, is pleased to submit testimony for the record. Because our behavioral scientists play vital roles within the National Science Foundation (NSF), National Aeronautics and Space Administration (NASA) and the National Institute of Justice (NIJ) within the Department of Justice (DOJ), APA will address the proposed fiscal year 2009 research budgets for each of these agencies:

- APA recommends that the Subcommittee support the President’s fiscal year 2009 request of \$6.85 billion for NSF.
- APA requests that the Subcommittee provide \$18.3 billion for NASA, including \$671 million for NASA Advanced Capabilities (which houses the Human Research Program), and \$594 million for NASA Aeronautics.
- APA urges the Subcommittee to reverse the trend of budgetary neglect for NIJ (within DOJ) by providing \$50 million in fiscal year 2009 for NIJ programs.

National Science Foundation

Core Psychological Research at NSF

NSF is the only federal agency whose primary mission is to support basic research and education in math, engineering and science—including the behavioral and social sciences. NSF’s investment in basic research across these disciplines has allowed for extraordinary scientific and technological progress, ensuring continued economic growth, improvements in the design, implementation and evaluation of public education, strengthened national security, and the generation of cutting edge new knowledge.

APA supports the Administration request of \$6.85 billion for NSF in fiscal year 2009, and urges Congress to implement a doubling of the NSF budget over the next ten years. This is consistent with Administration and Congressional plans to invest substantially in federal science agencies with the capacity to stimulate global competitiveness and innovation. Within the overall NSF budget, APA supports a strong investment in psychological research throughout the research and education directorates foundation-wide, in order to address critical national challenges with an understanding of human behavior at their core. The America COMPETES Act specifically noted the importance of funding the social sciences and this must be reflected in an increase for NSF’s behavioral and social science research portfolio comparable to proposed increases for other sciences at NSF.

Although psychologists receive funding from diverse programs within NSF, most core psychological research is supported by the Social, Behavioral and Economic Sciences Directorate (SBE), with its focus on the variables that determine human behavior across all ages, affect interactions among individuals and groups, and decide how social and economic systems develop and change. In addition to core behavioral research in cognitive neuroscience, human cognition and perception, learning and development, and social psychology, SBE also will continue to support the development of science metrics through its Science of Science and Innovation Policy (SciSIP) research program. Funding SciSIP research is fundamental to identifying processes by which investments in research are transformed into social and economic outcomes, and providing a more effective evaluation of the “return” on scientific investments.

The Biological Sciences Directorate at NSF also provides support for research psychologists who ask questions about the very principles and mechanisms that govern life at the level of the genome and cell, or at the level of a whole individual, family or species. In previous testimony, APA has expressed concern about diminishing support for key behavioral research programs within this Directorate, most notably those focused on learning and cognition. NSF recognizes the importance of learning and cognition to many branches of science already, and supports Foundation-wide initiatives and individual research projects that seek to understand the neural or

genetic mechanisms by which learning occurs, that use learning as an assay for the effects of environmental change on a biological system, that construct and evaluate artificial learning systems, that conceptualize the role of learning in biodiversity and evolution and that apply learning principles to education and workforce challenges.

However, we hope that NSF's focus on transformational science will continue to recognize that behavior links everything from molecular biology to ecology because in a sense behavior is the ultimate genetic phenotype. Animals behave to eat, defend and reproduce, so an understanding of how the molecular processes within and beyond the central nervous system lead to behavior and how behavior serves an adaptive function seems essential to integrating biology across levels. Within the field of animal behavior and cognition there are clear demonstrations that this integration is occurring. For example, individual differences in gene expression can now be linked to individual differences in memory, attention, decision making, individual adaptation and fitness. The opportunity for understanding individual differences is unprecedented.

National Aeronautics and Space Administration

Behavioral Research is Critical for Space Exploration and Air Safety

Over the last 20 years, the NASA research budget has gone down steadily, with space exploration expanding at about the same rate. The result is an increasing gap in life sciences and human factors knowledge—knowledge that is critical for successful missions and for improving both the safety and efficiency of our current and future aerospace systems. Longer space missions place increasing demands on psychological health and performance in space. Psychological scientists are meeting these challenges head on by extending the information management capacity of individuals through computational systems—systems that can sense when the user is overloaded, or determine what needs to be done next and automatically adapt. Such systems improve human decision-making and allow humans to function in extremely challenging environments, such as space flight. The need for science-based practical principles to enhance systems, interfaces, team dynamics, decision-making, training, and psychological health continues to grow, but with a diminishing research budget, NASA behavioral scientists are ill equipped to take on this crucial task.

In 2005, Congress endorsed the Vision for Space Exploration (VSE) to send humans to the moon and then to Mars. An understanding of human performance in space is critical for VSE, and the ability to measure and predict human performance through all mission phases enhances mission safety and mission success. APA urges NASA to prioritize life sciences and human aeronautics research and to restore its support for these programs to a level commensurate with other NASA programs.

In the recently passed America COMPETES Act, NASA is directed to increase funding for basic STEM research to boost competitiveness and innovation. APA urges the Subcommittee to explicitly include social sciences in the STEM definition for NASA, consistent with the definition authorized in the America COMPETES Act in the section on NSF.

In the NASA Authorization Act of 2005, Congress authorized \$18,686,300,000 for fiscal year 2008. The actual allocation for fiscal year 2008 shortchanged the agency by over \$1 billion. At \$17.6 billion, the President's fiscal year 2009 budget request again shortchanges the agency and fails even to keep pace with inflation. APA requests that NASA's budget be at least \$18.3 billion in order for the agency to succeed in moving forward with the Vision for Space Exploration (VSE) while also sustaining its non-Exploration missions. In order to preserve the integrity of the agency's missions, APA further urges Congress to block transfer authority between budget accounts.

Human Research Program

Over the past several years, support for programs in the life sciences has diminished significantly, despite a renewed commitment in 2005 to extend human presence in space, and an unprecedented interest in behavioral research. Now, what remains of the Human Research Program is budgeted at \$152 million, an increase of just 3.4 percent over fiscal year 2008. Human research must be securely and adequately funded and considered an integral component of space mission planning. A successful overall behavioral health program will require a broad perspective, multiple convergent research strategies, and a variety of settings, including space itself. APA therefore requests that NASA's budget for Advanced Capabilities, which houses the Human Research Program, be increased to the fiscal year 2008 level of \$671 million.

Aviation Safety

Aeronautics research (including human factors) has long been a cornerstone of NASA. APA applauds NASA Ames Research Center for its historic attention to human factors research but continued cuts to aeronautics programming and a recent reorganization of the Aeronautics Research Mission Directorate threaten to dismantle this once world-class center for human factors research. The Aeronautics Research Mission has been re-oriented to emphasize disciplines such as aerodynamics over human performance and operational issues. Further, the agency's fiscal year 2008 allocation diminished the spending power of the aeronautics program by 40 percent compared to 2004, forcing NASA centers to cut jobs and university grants in aeronautics research, especially in the area of human performance and aviation safety. NASA's continual underfunding of aeronautics research also poses a significant threat to the Next Generation's (NextGen) schedule and budget. APA therefore recommends that Congress restore NASA's Aeronautics budget to at least the fiscal year 2006 level of \$594 million.

Department of Justice—National Institute of Justice

Behavioral and social science research is also essential to improving the criminal justice system. The National Institute of Justice (NIJ) is the research, development, and evaluation arm of the Department of Justice. It funds research in a range of scientific disciplines, including behavioral and social science research aimed at identifying evidence-based solutions for reducing crime and increasing public safety. The Administration has proposed flat funding for NIJ in fiscal year 2009 for a total of \$34.7 million, equal to its fiscal year 2008 level and a dramatic 32 percent decrease from the fiscal year 2007 level of \$54.3 million. APA strongly urges the Committee to reverse this trend of budgetary neglect for NIJ and recommends providing \$50 million in fiscal year 2009 for NIJ programs.

PREPARED STATEMENT OF THE GREAT LAKES INDIAN FISH AND WILDLIFE
COMMISSION

Agency Involved: Department of Justice

Program Involved: COPS Tribal Resources Grant Program (TRGP)

Summary of GLIFWC'S Fiscal Year 2009 Testimony

GLIFWC requests that Congress: (1) fund the TRGP at \$31,065,000 in fiscal year 2009 (the same level as fiscal year 2007 enacted and \$16,025,000 more than fiscal year 2008 enacted), (2) maintain the Tribal Resources Grant Program (TRGP) as a distinct program within the DOJ COPS Office of Justice Programs, and (3) ensure that special conservation agencies remain eligible, unlike in fiscal year 2006.

Ceded Territory Treaty Rights and GLIFWC's Role

GLIFWC was established in 1984 as a "tribal organization" within the meaning of the Indian Self-Determination Act (Public Law 93-638). It exercises authority delegated by its member tribes to implement federal court orders and various inter-jurisdictional agreements related to their treaty rights. GLIFWC assists its member tribes in: securing and implementing treaty guaranteed rights to hunt, fish, and gather in Chippewa treaty ceded territories; and cooperatively managing and protecting ceded territory natural resources and their habitats.



For the past 24 years, Congress and Administrations have funded GLIFWC through the BIA, Department of Justice and other agencies to meet specific federal obligations under: (a) a number of United States/Chippewa treaties; (b) the federal trust responsibility; (c) the Indian Self-Determination Act, the Clean Water Act, and other legislation; and (d) various court decisions, including a 1999 U.S. Supreme Court case, affirming the treaty rights of GLIFWC's member tribes. GLIFWC serves as a cost efficient agency to conserve natural resources, to effectively regulate harvests of natural resources shared among treaty signatory tribes, to develop cooperative partnerships with other government agencies, educational institutions, and non-governmental organizations, and to work with its member tribes to protect and conserve ceded territory natural resources.

Under the direction of its member tribes, GLIFWC operates a ceded territory hunting, fishing, and gathering rights protection/implementation program through its staff of biologists, scientists, technicians, conservation enforcement officers, and public information specialists.

Community-based Policing

GLIFWC's officers carry out their duties through a community-based policing program. The underlying premise is that effective detection and deterrence of illegal activities, as well as education of the regulated constituents, are best accomplished if the officers work within tribal communities that they primarily serve. The officers are based in reservation communities of the following member tribes: in Wisconsin—Bad River, Lac Courte Oreilles, Lac du Flambeau, Red Cliff, Sokaogon Chippewa (Mole Lake) and St. Croix; in Minnesota—Mille Lacs; and in Michigan—Bay Mills, Keweenaw Bay and Lac Vieux Desert.

Interaction With Law Enforcement Agencies

GLIFWC's officers are integral members of regional emergency services networks in Minnesota, Michigan and Wisconsin. They not only enforce the tribes' conservation codes, but are fully certified officers who work cooperatively with surrounding authorities when they detect violations of state or federal criminal and conservation laws. These partnerships evolved from the inter-governmental cooperation required to combat the violence experienced during the early implementation of treaty rights in Wisconsin. As time passed, GLIFWC's professional officers continued to provide a bridge between local law enforcement and many rural Indian communities.

GLIFWC remains at this forefront, using DOJ funding to develop inter-jurisdictional legal training attended by GLIFWC officers, tribal police and conservation of-

officers, tribal judges, tribal and county prosecutors, and state and federal agency law enforcement staff. DOJ funding has also enabled GLIFWC to certify its officers as medical emergency first responders trained in the use of defibrillators, and to train them in search and rescue, particularly in cold water rescue techniques. When a crime is in progress or emergencies occur, local, state, and federal law enforcement agencies look to GLIFWC's officers as part of the mutual assistance networks of the ceded territories. In fact, the role of GLIFWC's officers in these networks was further legitimized in 2007 by the passage of Wisconsin Act 27. This law affords GLIFWC wardens the same statutory safeguards and protections that are afforded to their DNR counterparts. GLIFWC wardens will now have access to the criminal history database and other information to identify whom they are encountering in the field so that they can determine whether they are about to face a fugitive or some other dangerous individual.

GLIFWC Programs Funded by DOJ

GLIFWC recognizes that adequate communications, training, and equipment are essential both for the safety of its officers and for the role that GLIFWC's officers play in the proper functioning of interjurisdictional emergency mutual assistance networks in the ceded territories. GLIFWC's COPS grants have provided a critical foundation for achieving these goals. Significant accomplishments with Tribal Resources Grant Program funds include:

Increased Versatility and Homeland Security on Superior.—In 2007 GLIFWC used COPS funding to obtain a 22 foot boat to expand patrol capabilities and coverage on Lake Superior. This boat also provides greater versatility than GLIFWC's larger patrol boat to access bays and harbors in the Lake. The boat will be stationed in Marquette for use in both the 1836 and 1842 ceded territories in Lake Superior, as well as to provide increased emergency response, when needed.

Emergency Response Equipment and Training.—Each GLIFWC officer has completed and maintains certification as a First Responder and in the use of life saving portable defibrillators. Since 2003, GLIFWC officers have carried First Responder kits and portable defibrillators during their patrol of around 275,000 miles per year throughout the ceded territories. In remote, rural areas the ability of GLIFWC officers to respond to emergencies provides critical support of mutual aid agreements with federal, state, and local law enforcement agencies.

Ice Rescue Capabilities.—Each GLIFWC officer maintains certification in ice rescue techniques and was provided a Coast Guard approved ice rescue suit. In addition, each of the patrol areas was provided a snowmobile and an ice rescue sled to participate in interagency ice rescue operations with county sheriffs departments and local fire departments.

Wilderness Search and Rescue Capabilities.—Each GLIFWC officer completed Wilderness Search and Rescue training. The COPS Tribal Resources Grant Program also enabled GLIFWC to replace a number of vehicles that were purchased over a decade ago, including 10 ATVs and 16 patrol boats and the GPS navigation system on its 31 foot Lake Superior Patrol Boat. These vehicles are used for field patrol, cooperative law enforcement activities, and emergency response in the 1836, 1837 and 1842 ceded territories. GLIFWC officers also utilize these vehicles for boater, ATV, and snowmobile safety classes taught on reservations as part of the Commission's Community Policing Strategy, providing critical outreach to tribal youth.

Hire, Train and Equip Three Additional Officers.—Funding was contracted to provide three additional officers to ensure tribes are able to meet obligations to both enforce off-reservation conservation codes and effectively participate in the myriad of mutual assistance networks located throughout a vast region covering 60,000 square miles. As required by the program, GLIFWC has absorbed the salary costs related to sustaining those positions, however COPS funding is needed now more than ever to sustain the other components of program related to training and equipment.

Consistent with numerous other federal court rulings on the Chippewa treaties, the United States Supreme Court re-affirmed the existence of the Chippewa's treaty-guaranteed usufructuary rights in *Minnesota v. Mille Lacs Band*, 526 U.S. 172 (1999). As tribes have re-affirmed rights to harvest resources in the 1837 ceded territory of Minnesota, workloads have increased. In addition, a consent decree signed in 2007 will govern the exercise of treaty rights in inland portions of the 1836 ceded territory in Michigan, where one of GLIFWC's member tribes exercises treaty rights.

But for GLIFWC's COPS grants, this expanded workload, combined with staff shortages would have limited GLIFWC's effective participation in regional emergency services networks in Minnesota, Michigan and Wisconsin. The effectiveness of these mutual assistance networks is more critical than ever given: (1) national homeland security concerns, (2) state and local governmental fiscal shortfalls, (3)

staffing shortages experienced by local police, fire, and ambulance departments due to the call up of National Guard and military reserve units, and (4) the need to cooperatively combat the spread of methamphetamine production in rural areas patrolled by GLIFWC conservation officers. Examples of the types of assistance provided by GLIFWC officers follow:

- As trained first responders, GLIFWC officers routinely respond to, and often are the first to arrive at, snowmobile accidents, heart attacks, hunting accidents, and automobile accidents (throughout the ceded territories) and provide sheriffs departments valuable assistance with natural disasters (e.g. floods in Ashland County and a tornado in Siren, Wisconsin).
- Search and rescue for lost hunters, fishermen, hikers, children, and the elderly (Sawyer, Ashland, Bayfield, Burnett, and Forest Counties in Wisconsin and Baraga, Chippewa, and Gogebic Counties in Michigan).
- Being among the first to arrive on the scene where officers from other agencies have been shot (Bayfield, Burnett, and Polk Counties in Wisconsin) and responding to weapons incidents (Ashland, Bayfield, Burnett, Sawyer, and Vilas Counties in Wisconsin).
- Use of a thermal imaging camera (purchased through the COPS program) to track an individual fleeing the scene of an accident (Sawyer County, Wisconsin).
- Assistance in evacuating residents after a chemical plant explosion (Burnett County, Wisconsin).
- Organizing and participating in search and rescues of ice fishermen on Lake Superior (Ashland and Bayfield Counties in Wisconsin), Lake Superior boats (Baraga County in Michigan and with the U.S. Coast Guard in other parts of western Lake Superior), and kayakers (Bayfield County in Wisconsin).

In 2008, GLIFWC proposes to utilize DOJ TRGP funding for training and equipment to: (1) recognize, secure and respond appropriately to homeland security threats, (2) improve response to incidents that trigger joint law enforcement activities such as “incident command center” protocols and training, and (3) improve community awareness through state certified safety classes (hunter safety, boater safety, ATV safety and snowmobile safety). Simply put, supporting GLIFWC’s officers will not only assist GLIFWC in meeting its obligations to enforce tribal off-reservation codes, but it will enhance intergovernmental efforts to protect public safety and welfare throughout the region in the states of Wisconsin, Minnesota, and Michigan. The COPS Tribal Resources Grant Program provides essential funding for equipment and training to support GLIFWC’s cooperative conservation, law enforcement, and emergency response activities. We ask Congress to support increased funding for this program.

PREPARED STATEMENT OF KILLDEER MOUNTAIN MANUFACTURING

On behalf of Killdeer Mountain Manufacturing, manufacturer of aerospace assemblies, located in Killdeer, Halliday, Hettinger, and Dickinson, North Dakota, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America’s manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer’s global competitiveness is supported by those companies who receive benefit. In North Dakota, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. Our company is currently working on a nationally recognized Lean Enterprise Certification Program with the assistance of Dakota MEP.

As a Dakota MEP Director, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who’ve partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Da-

kotas exporting over \$2 billion. Manufacturing brings new wealth to our country, our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry better compete. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP continues to be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF THE NATIONAL ASSOCIATION OF MARINE LABORATORIES

On behalf of the National Association of Marine Laboratories I am pleased to submit this statement for the official record in strong support of the research and education programs under the subcommittee's jurisdiction that play a vital role in the ocean, coastal, and Great Lakes research and education enterprise. I will focus my remarks on four key areas: federal support for extramural ocean, coastal and Great Lakes research; the next generation of ocean infrastructure; U.S. innovation and competitiveness through investment in the marine sciences; and ocean education, literacy, diversity and workforce development.

The National Association of Marine Laboratories (NAML) is a nonprofit organization of about 100 institutions employing more than 10,000 scientists, engineers, and professionals and representing ocean, coastal and Great Lakes laboratories stretching from Maine to the Gulf of Mexico, Guam to Bermuda, and from Alaska to Puerto Rico. NAML labs support the conduct of high quality ocean, coastal and Great Lakes research and education in the natural and social sciences and the effective use of that science for decision-making on the important issues that face our country.

FEDERAL SUPPORT FOR EXTRAMURAL OCEAN, COASTAL AND GREAT LAKES RESEARCH

NAML strongly urges the Subcommittee to maintain and strengthen its support for cutting-edge ocean, coastal, and Great Lakes research and education across the federal funding agencies within its jurisdiction.

The marine sciences are inherently interdisciplinary, push the envelope in terms of technology development, test the boundaries of our data collection and analysis systems, and offer an effective training ground for future scientists and engineers. NAML believes that competitive, merit-based research support by all relevant federal agencies is essential to the overall progress of coastal, ocean and Great Lakes science and education. Specifically, NAML calls on the Subcommittee in the fiscal year 2009 appropriations bill to support the research and education programs of the National Science Foundation, the National Oceanic and Atmospheric Administration, and the National Aeronautics and Space Administration one of its highest priorities.

National Science Foundation (NSF)

NSF provides vital support for basic research and education which enhances public understanding of the Nation's oceans, coastal areas, and the Great Lakes and strengthens the long-term economic competitiveness and national security of our country. NSF support for cutting edge research, cyberinfrastructure, as well as more traditional instrumentation and infrastructure is essential for the health of the Nation's research enterprise. NSF also plays a large role in supporting education and training for the next generation of scientists and engineers and enhancing diversity by attracting and retaining women and minorities. Marine labs contribute significantly to this objective through the research and education programming conducted with NSF support. NAML is supportive of proposals from the Administration (\$6.9 billion request for fiscal year 2009) and the Congress (via the America COMPETES Act) to substantially increase NSF support for fiscal year 2009 and urges that in the provision of such resources, they be distributed in a balanced way to include all of the NSF directorates consistent with similar guidance provided in the fiscal year 2008 appropriations conference report.

National Oceanic and Atmospheric Administration (NOAA)

NOAA is a critical player in ocean, coastal and Great Lakes research and education and many NAML labs are co-located with, or linked to, NOAA laboratories. Through its partnerships with marine labs and universities, NOAA has access to world-class expertise and unique research facilities. In addition, by partnering with the external research and education community, NOAA can leverage funds and fa-

ilitate multi-institution cooperation, all for the purpose of promoting the very best science. NAML urges the Subcommittee to recognize the value of NOAA by funding the agency at a budget of \$4.5 billion for fiscal year 2009, as supported by the Friends of NOAA Coalition. In addition, we call on the Subcommittee to emphasize NOAA's key extramural research and education programs which assist NOAA in addressing its mission. These programs include: the National Sea Grant College Program, the National Undersea Research Program, Ocean Exploration and Research, the National Estuarine Research Reserve System, the Competitive Research Program within NOAA's Climate Program Office, the Integrated Ocean Observing System, Oceans and Human Health, Coastal Zone Management, Office of Education and the various joint and cooperative institutes. In addition, NOAA supports important research in aquaculture and invasive species.

In 2007, NOAA released a comprehensive five year research plan¹ that highlights the linkage between NOAA research and the Nation's economic competitiveness. A healthy NOAA budget coupled with solid partnerships with the extramural research and education communities will only strengthen NOAA's research and education capabilities and ultimately make our nation safer.

National Aeronautics and Space Administration (NASA)

Budgets for NASA earth and space science have declined in recent years despite fervent calls from the community to protect science funding at the agency. The National Academy of Sciences released a report in 2007² calling on NASA to "renew its investment in Earth observing systems and restore its leadership in Earth science and applications." NAML is not alone in its contention that this nation is in need of a balanced investment in NASA that will maintain a strong and vibrant earth and space science enterprise. NASA's support for earth observations and research is vital in helping us better understand our own planet. We are encouraged that the Administration has called for Earth and Space science increases in its fiscal year 2009 budget request. NAML urges the Subcommittee to renew its investment in the NASA Earth Science budget for fiscal year 2009.

NEXT GENERATION OF OCEAN INFRASTRUCTURE

In addition to program support for research at the various federal funding agencies, support for infrastructure and instrumentation—including long term planning for the next generation of infrastructure—is critical to the operation of marine labs. NSF in particular provides important support for basic laboratory facilities, instrumentation, support systems, computing and related cyberinfrastructure, and ship access through the important Major Research Instrumentation (MRI) and the Field Stations and Marine Laboratories (FSML) programs. The U.S. Commission on Ocean Policy's report³ made several recommendations about the need for development and enhancement of ocean, coastal and Great Lakes research infrastructure. NAML recognizes the need for infrastructure investment at all scales, from traditional infrastructure—such as marine laboratories, ships, observation systems, satellites—to next generation infrastructure and technology like genomics, proteomics, robotics, nanotechnology, and other advanced computational approaches. As federal research budgets grow, so too must support for critical infrastructure required to effectively implement research and education. We are hindering our brightest scientific minds by denying them the proper infrastructure needed to support their research. NAML urges the Subcommittee to recognize the importance of sustained support for infrastructure across the federal research agencies and provide commensurate funding for fiscal year 2009.

FEDERAL SUPPORT FOR U.S. INNOVATION AND COMPETITIVENESS THROUGH INVESTMENT IN THE MARINE SCIENCES

NAML notes that the Federal government has targeted the "physical sciences" for funding increases in recent years, despite the outcome of the fiscal year 2008 appropriations process. The Congress, through enactment of the America COMPETES Act (Public Law 110-069), recognized that the physical sciences did not only refer to science coming out of the National Science Foundation, the Department of Energy's Office of Science, and the National Institute of Standards and Technology, as defined by the Administration. In addition to these agencies the COMPETES Act ac-

¹Research in NOAA: Toward Understanding and Predicting Earth's Environment, National Oceanic and Atmospheric Administration, June 2007.

²Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond, Committee on Earth Science and Applications from Space: A Community Assessment and Strategy for the Future, National Research Council, January 2007.

³An Ocean Blueprint for the 21st Century, U.S. Commission on Ocean Policy, April 20, 2004.

knowledged the role that many Federal agencies—such as NOAA and NASA—play in U.S. innovation and competitiveness. For fiscal year 2009, NAML urges the Subcommittee to fund all of the “physical science” agencies, including NSF, NOAA, and NASA, at levels that will help the nation keep pace on the global stage.

OCEAN EDUCATION, LITERACY, DIVERSITY AND WORKFORCE DEVELOPMENT

NAML believes that an informed, engaged and ocean literate populace is critical for the economic, environmental health of our planet and to the quality of life of all Americans. NAML encourages the federal government to strengthen its commitment to enhancing ocean, coastal and Great Lakes education, literacy, diversity and workforce development.

In early 2008 NAML developed a whitepaper⁴ addressing the ocean education mission at NOAA and calling on NOAA to be a strong contributor to the implementation of the recommendations made within the 2006 Conference on Ocean Literacy (CoOL) report⁵. The Conference on Ocean Literacy was a watershed event that brought together for the first time all of the Federal entities overseeing ocean education and literacy. Its subsequent report issued key recommendations for fostering an ocean-literate society and increasing ocean workforce diversity. NAML looks forward to working with NOAA, as well as other federal agencies with ocean education missions, in implementing the report’s recommendations.

A strong national ocean policy can only be sustained with the most up to date and reliable scientific information. To ensure that the Nation will continue to generate the very best knowledge investment is needed today in coastal, ocean, and Great Lakes education programs that support learning at all age levels, by all disciplines, and for all Americans. NAML labs work closely with many programs throughout the Federal government to produce a more ocean-literate populace. These include the Centers for Ocean Science Education Excellence program (COSEE) and the Louis Stokes Alliance for Minority Participation program at NSF, and the Office of Education and National Sea Grant College Program within NOAA. Not only do marine labs serve as excellent training grounds for experiential ocean education, they are also committed to enhancing diversity within the field of ocean, coastal and Great Lakes research and education by fostering relationships with community colleges and minority-serving institutions (MSIs) to provide distinctive learning opportunities for underrepresented groups. At marine laboratories, students achieve a greater understanding of the oceans and coastal ecosystems and take with them a sense of stewardship for these important environments. Given the interdisciplinary nature of the ocean sciences, a continued interagency approach will be needed by the Federal government to foster a truly ocean-literate populace. NAML urges the Subcommittee to provide priority funding for the science education programs noted above for fiscal year 2009.

Thank you for the opportunity to express these views on behalf of the National Association of Marine Laboratories. We hope the Subcommittee will take these points into consideration as you move forward in the fiscal year 2009 appropriations process.

PREPARED STATEMENT OF THE FEDERATION OF AMERICAN SOCIETIES FOR
EXPERIMENTAL BIOLOGY (FASEB)

Mission

Our nation’s ability to remain competitive in the global economy depends on its capacity to develop new knowledge, train scientists, and provide resources that fuel discovery and innovation. Funding for the National Science Foundation’s (NSF) scientific research and education programs is essential to the fulfillment of these goals.

NSF’s mission is “to promote the progress of science; to advance the national health, prosperity, and welfare; [and] to secure the national defense.”¹ Although NSF receives less than 5 percent of the federal research and development (R&D) budget, it has a leading role in advancing U.S. science, technology, engineering and mathematics (STEM). In addition to providing necessary support for large scale research facilities, NSF funds approximately 20 percent of all federally-sponsored

⁴ Ocean Literate America: A Whitepaper in Support of the National Oceanic and Atmospheric Administration’s Ocean Education Plan, National Association of Marine Laboratories, February 2008.

⁵ Conference on Ocean Literacy Report, Washington, D.C., June 7–8, 2006.

¹ National Science Foundation. <http://www.nsf.gov/about/>. Accessed September 17, 2007.

basic research² and at least two-thirds of all federally-sponsored non-medical basic research at America's colleges and universities.³ Each year, this funding results in grants to more than 200,000 scientists, teachers and student researchers for cutting-edge projects at thousands of institutions across the country. NSF is also a major force in science education and training. The agency supports education research and funds initiatives to prepare teachers, develop curricula, and engage students in scientific activities that are critical for strengthening our scientific workforce. NSF's support of science and education and its emphasis on integrating research and education make it unique among federal research sponsors; its broad approach stimulates the flow of ideas across scientific boundaries and brings new insight to bear on perplexing research questions. NSF's pioneering research investments have advanced the frontier of science and have led to the development of marketable technologies, processes and methods.

A recent National Academies report warns that as other countries make R&D spending a top priority, the scientific and technological building blocks that are critical to U.S. economic leadership are eroding.⁴ Expressing a similar sentiment, the U.S. Office of Science and Technology Policy stated that "keeping our competitive edge in the world economy requires policies that lay the ground work for continued leadership in innovation, exploration, and ingenuity."⁵ Although Congress recognized NSF's contribution to the science and technology enterprise when it authorized a doubling of the agency's budget by 2007, NSF's budget remains far below the amount the NSF Authorization Act of 2002 specified.⁶

Enactment of the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Science, and Education (COMPETES) Act⁷ in 2007 renews U.S. commitment to science and technology and puts NSF on a path to double its budget by 2015, permitting the agency to expand its support for scientific research and education and training programs. These critical investments in NSF will ensure that the United States remains at the forefront of scientific discovery and technological innovation.

Select Accomplishments in Research and Education

Research that NSF funds traverses the sciences, captures the imagination, and improves our quality of life. A few highlights of innovative research and education projects NSF supports follow.

Nanotechnology

Nanotechnology is a multidisciplinary field in which scientists design and build objects and even machines with the dimensions of individual atoms and molecules. This new research area is revolutionizing everything from computers to health care, and NSF is leading the charge.

—*Developing Medical Nanosensors.*—Scientists have developed nanosize chemical sensors that can detect glucose in human tissue. This research is paving the way for the development of a class of biosensors that could improve the way diabetics monitor blood sugar and facilitate tracking a variety of other molecules, such as hormones, cholesterol and drugs.

—*Disrupting Cancer Development.*—Scientists have found they can use antisense DNA to disrupt cells' production of cancer-causing proteins; attaching gold nanoparticles to antisense strands enhances their ability to disrupt the production of these proteins.

High-End Computing and Advanced Networking

Computational research that NSF funds is driving discovery in critical scientific fields. High-end computing and advanced networking is enabling scientists to better understand biological systems and apply new knowledge to pressing health, environmental and social concerns.

—*Developing HIV Drugs.*—Scientists are harnessing the power of super-computers to model molecular structure and movement. Structural models of enzymes that

² Ibid.

³ AAAS Report XXXII: Research and Development Fiscal Year 2008. (2007) American Association for the Advancement of Science. Washington, DC.

⁴ National Academies of Science. (2007) *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Future*. Washington, DC.

⁵ Domestic Policy Council. (2006) *American Competitiveness Initiative: Leading the World in Innovation*. Office of Science and Technology Policy. Washington, DC.

⁶ Public Law 107-368. (December 2002) National Science Foundation Authorization Act of 2002.

⁷ H.R. 2272. (August 2007) America Creating Opportunities to Meaningfully Promote Excellence in Technology, Science, and Education (COMPETES).

permit HIV to survive and proliferate have guided the development of new drugs to target these essential proteins.

—*Networking Biodiversity Data.*—The Global Biodiversity Information Facility has created a worldwide network of biodiversity data, including genetic and ecological data, on the earth's myriad species. This information is useful in predicting the spread of disease, identifying the sources of disease-resistant crop genes, and tracking the spread of invasive species.

Materials Science and Engineering

Nature produces an array of materials with structural properties that the materials scientists create in labs cannot rival. Basic research on the structures of these materials is helping engineers develop new products with medical and industrial applications.

—*Developing Artificial Joints and Limbs.*—Basic research on the biology of the unique cartilaginous skeletons of sharks may help researchers design biological materials that are suitable for the development of artificial joints and limbs.

—*Medical Uses of Collagen.*—Researchers have discovered ways to modify collagens that may help block the formation of scar tissue, control the growth of blood vessels in tissues for implantation, and develop better infection-fighting bandages.

Basic Physiological Processes

Though it may not be evident at first glance, humans have a fair amount in common with species as diverse as fungi, frogs and bears. Due to similarities at the genetic, cellular and physiological levels, studying these and other organisms yields insight into human health and disease. NSF support for this basic scientific research paves the way for human medical advances.

—*Advancing Organ Transplant Technology.*—Researchers discovered that certain frogs produce an “antifreeze” that prevents cell damage in frigid temperatures. As a result, these frogs can survive for months in freezing weather even though their major organs have come to a practical halt. Research in this area may lead to technologies that permit longer preservation of human organs and, therefore, improve transplantation success rates.

—*Using Baker's Yeast to Study HIV.*—Yeast cells are structurally similar to human cells and contain harmless retrovirus-like elements that scientists use to model HIV. A mechanism scientists discovered in these retrovirus-like elements may be the missing link to retrovirus replication and may provide a new target for the development of HIV drugs.

Science Education and Training

The National Science Foundation supports the nation's STEM infrastructure by contributing to science education. NSF programs are cultivating the next generation of scientists and engineers by developing research curricula, engaging K–12 and undergraduate students in science, providing support for graduate and postdoctoral researchers, and improving teacher training.

—*Math and Science Partnership (MSP) Program.*—This program supports educational partnerships between universities, local school systems, businesses, and informal science organizations. Early analyses of this initiative demonstrate that participating students show improvements in math and science proficiency.

—*Science, Technology, Engineering, and Mathematics Talent Expansion (STEP) Program.*—The STEP program aims to increase the number of students who obtain undergraduate degrees in STEM disciplines through grant support to academic institutions. With STEP funding, colleges and universities have developed programs to engage women and minorities in science, provide students with research opportunities, and introduce them to scientific careers.

—*Integrated Graduate Education Research and Training (IGERT) Program.*—This initiative supports 125 doctoral degree programs that foster interdisciplinary training in emerging scientific domains. IGERT trainees have produced important scientific and technological breakthroughs, which include a handheld imaging device that can detect breast tumors and “bio-transformable” materials doctors can implant in the body to deliver drugs or open blood vessels.

Investing in the Future

NSF's strategic plan for the future⁸ outlines the agency's approach to building our nation's research capacity. By combining support for basic research, education, and training with investments in emerging areas of scientific interest and need, NSF will ensure that the United States has the infrastructure and talent to maintain its role as a leader in science and technology.

Fundamental and Transformational Research

NSF will continue to support both transformational R&D and the basic science on which it depends. The agency is emphasizing interdisciplinary investigation in areas such as the neural bases of behavior, energy and climate research, and nanomaterial safety. Through investments in computer science and mathematics, NSF will advance research in all STEM disciplines and enhance our ability to make future discoveries.

Systems Biology

Support for NSF is critical to advancing new areas of biological discovery such as systems biology. NSF has led this emerging field, which unites biologists, chemists, engineers, mathematicians and physicists. Systems biologists are developing a better understanding of living systems and their interactions with the non-living world, which is essential to understanding the global impact of phenomena such as climate change.

Education and Training

By funding initiatives such as MSP, STEP and IGERT, NSF will continue to foster innovative approaches to science education. NSF's focus on integrating research and education; bridging gaps between K-12, undergraduate science and technical education; and expanding partnerships between academia and industry will broaden interest and participation in science careers.

Recommendation

If we are to continue to lead the world in innovation and prepare for future prosperity, funding for NSF is essential. As NSF Director Arden Bement, Jr. has said, "America's sustained economic prosperity is based on technological innovation made possible, in large part, by fundamental science and engineering research. Innovation and technology are the engines of the American economy, and advances in science and engineering provide the fuel."⁹ Without a greater commitment to NSF, our country faces the grave possibility of losing its global dominance in science and technology.

In keeping with the America COMPETES Act of 2007, FASEB recommends an appropriation of \$7.33 billion for the National Science Foundation in fiscal year 2009.

 PREPARED STATEMENT OF THE NATIONAL CONGRESS OF AMERICAN INDIANS

On behalf of the tribal nations of the National Congress of American Indians (NCAI), the Nation's oldest and largest organization of tribal governments, we are pleased to present our recommendations on the Administration's fiscal year 2009 budget for Indian programs.

Recommendations

Priority 1.—Reject consolidation of DOJ programs and restore funding to fiscal year 2002 levels. Top three priorities at DOJ: COPS \$35 million, Tribal Courts \$15 million, Tribal Prison Construction \$35 million.

⁸National Science Foundation (2006). *Investing in America's Future: FY 2006-2011*. <http://www.nsf.gov/pubs/2006/nsf0648/NSF-06-48.pdf>. Accessed October 31, 2007.

⁹Dr. Arden L. Bement, Jr., Director National Science Foundation. (March 29, 2006) Testimony before the Senate Commerce, Science, and Transportation Subcommittee on Technology, Innovation, and Competitiveness. <http://commerce.senate.gov/pdf/bement-032906.pdf>. Accessed on September 17, 2007.

DEPARTMENT OF JUSTICE

[In thousands of dollars]

	Fiscal year—			
	2006 enacted	2007 enacted	2008 Omnibus	2009 (Re-stored to fiscal year 2002 Levels)
Indian Assistance:				
Tribal Prison Construction	9,000	9,000	8,630	35,000
Indian Tribal Courts Program	8,000	8,000	8,630	15,000
Alcohol and Substance Abuse	5,000	5,000	5,180	5,000
Community Oriented Policing Services: Tribal Law Enforcement	14,808	15,000	15,040	35,000
Title V—Incentive Grants: Tribal Youth	10,000	10,000	14,100	14,100

Priority 2.—Fully fund Violence Against Women Act programs; Research on violence against Native women; and the National Tribal Sex Offender and Order of Protection Registry.

VAWA

[In thousands of dollars]

	Fiscal year—			
	2006 enacted	2007 enacted	2008 Omnibus	2009 (Re-stored to fiscal year 2002 Levels)
Research on violence against Native women	940	1,000
National Tribal Registry	940	1,000

Priority 3.—Department of Commerce, Office of Native American Business Development, \$3 million.

Background

The administration of justice in Indian Country is clearly in crisis.¹ Because of the unique legal and political status of Indian tribes within the United States, the federal government has a responsibility to assist tribes in safeguarding Native people from crime. Despite this responsibility, law enforcement and criminal justice services in Indian Country are chronically underfunded. In October 1997, the Executive Committee for Indian Country Law Enforcement Improvements issued its final report to the Attorney General and the Secretary of the Interior. The report concluded that “there is a public safety crisis in Indian Country,” and “the single most glaring problem is a lack of adequate resources in Indian Country.”² In the wake of this report, funding for tribal justice systems was increased for several years. Ten years later, however, funding levels have been cut and law enforcement and justice systems in Indian Country are once again operating without the resources they need. As a result, tribal communities continue to suffer crisis levels of crime.

The Bureau of Justice Statistics estimates that Native Americans “experience an estimated 1 violent crime for every 10 residents age 12 or older.”³ Native Americans are the victims of violent crime twice as often as African Americans, two and half times as often as whites, and four and a half times as often as Asian Americans.⁴ Two specific areas of crime in Indian Country deserve particular mention: domestic violence and drug-related crime.

Violence against Women.—Nearly every study on the rate of sexual assault in the last ten years that has included race or ethnicity as a factor has concluded that American Native American women suffer a rate of sexual violence at least 2 to 3

¹Michael Riley, Lawless Lands, Denver Post (Nov. 11–14, 2007).

²Report of the Executive Committee for Indian Country Law Enforcement Improvements (1997), available at <http://www.usdoj.gov/otj/icredact.htm>.

³Steven W. Perry, Bureau of Justice Statistics, U.S. Dep’t of Justice, “American Indians and Crime: A BJS Statistical Profile,” 1992–2002, at iv (2004) [hereinafter American Indians and Crime 1992–2002], available at <http://www.ojp.usdoj.gov/bjs/pub/pdf/aic02.pdf>.

⁴Id. at 5.

times higher than any other group of women in the United States.⁵ In 2000, the National Violence Against Women Survey concluded that more than 1 in 3 Native women will be raped in their lifetime.⁶ These statistics demonstrate that violence against Indian women has reached crisis proportions. Full funding for the programs authorized by the Violence Against Women Act will bring much needed resources to tribal governments.

Methamphetamines.—Nationally Native Americans have the highest rates of methamphetamine abuse.⁷ On some reservations the reported rate of meth abuse has been as high as 30 percent.⁸ The Bureau of Indian Affairs Office of Law Enforcement Services surveyed tribes with whom they work closely on law enforcement, 74 percent of tribes indicated that meth is the drug that poses the greatest threat to their community.⁹ Meth causes dramatic increases in violent crime, suicide, and child neglect. An informal survey of the seven FBI offices located primarily in Indian country estimated that approximately 40 percent to 50 percent of violent crime cases investigated in Indian country involve meth.¹⁰ In addition, the National Indian Child Welfare Association estimates that 80–85 percent of the Indian families in child welfare systems have drug or alcohol abuse issues.¹¹

In order to address the profound needs in many tribal communities, additional law enforcement and criminal justice resources are badly needed. The most telling indicators of the under-resourcing of public safety services in Indian Country are the chronic law enforcement staffing deficit, the over-burdened tribal courts, and the deplorable conditions of tribal detention facilities.

Law Enforcement Staffing.—More than 200 tribal police departments, ranging from small departments with only two officers to those with more than 200 officers, help to maintain public safety in Indian Country. Current funding for tribal law enforcement and first responders lags well behind that for non-tribal law enforcement. The Bureau of Indian Affairs conducted an analysis of law enforcement staffing in Indian Country in 2006, and found that Indian Country has 2,555 law enforcement officers, yet needs a total of 4,409, resulting in a gap of 1,854 officers, or a 42 percent unmet staffing need. According to the Bureau of Justice Statistics, cities like Baltimore, Detroit, and Washington have police-to-citizen ratios of 3.9 to 6.6 officers per 1,000 residents. On the other hand, virtually no tribal police department has more than 2 officers per 1,000 residents. Increased funding for tribes under the COPS program will help to close this gap.

Tribal Courts.—Tribal judicial systems, the primary and most appropriate institutions for maintaining order in tribal communities, frequently are overburdened due to lack of federal funding. Tribal courts are overwhelmed with hundreds of serious cases declined by U.S. attorneys as well as increasing meth and drug crimes. Tribal courts have been level funded for at least the last five years. Increased funding for tribal courts will ensure that tribal justice systems are equipped to handle their increasing case load.

Detention Facilities.—Well functioning detention centers for tribal members both accused and convicted of crimes are of great importance to criminal justice in Indian Country. Detention centers in Indian Country often do not meet minimum acceptable standards for prisons: frequently basic maintenance does not occur, major sani-

⁵ Amnesty International, *Maze of Injustice: The Failure to Protect Indigenous Women From Sexual Violence in the United States* (2007); Lawrence A. Greenfeld & Steven K. Smith, Bureau of Justice Statistics, U.S. Dep't of Justice, "American Indians and Crime," p. 3, table 3 (Feb. 1999), available at <http://www.ojp.usdoj.gov/bjs/abstract/aic.htm>.

⁶ Patricia Tjaden & Nancy Thoennes, National Inst. of Justice, U.S. Dep't of Justice, "Full Report of the Prevalence, Incidence, and Consequences of Violence Against Women," p. 23 (2000), available at <http://www.ncjrs.gov/pdffiles1/nij/183781.pdf>.

⁷ Office of Applied Studies, Substance Abuse and Mental Health Services Administration, "Methamphetamine Use, Abuse, and Dependence: 2002, 2003, and 2004. The National Survey on Drug Use and Health Report," (Sept. 16, 2005).

⁸ Donna Vigil, Director, Division of Health Programs, White Mountain Apache Tribe, Oral testimony offered to the U.S. Senate Committee on Indian Affairs Hearing on Indian Youth Suicide (May 17, 2006).

⁹ The New Mexico Investigative Support Center, "Bureau of Indian Affairs Office of Law Enforcement Services, National Methamphetamine Initiative Survey," p. 4 (2006) [hereinafter National Methamphetamine Initiative Survey], available at http://www.ncai.org/ncai/Meth/BIA_MethSurvey.pdf.

¹⁰ FBI Indian Country Unit Presentation, The Federal/Tribal Meth Summit sponsored by the Department of Justice, Attorney General's Advisory Committee, Native American Issues Subcommittee of United States Attorneys (Oct. 13, 2005).

¹¹ Connie Bear King, Testimony of the National Indian Child Welfare Association before the Senate Finance Committee regarding Keeping America's Promise: Health Care And Child Welfare For Native Americans (March 22, 2007), available at <http://www.senate.gov/~finance/hearings/testimony/2007test/032207testcbk.pdf>.

tation concerns exist, safety and security are inadequate, resources for juveniles do not exist, funding for rehabilitation and re-entry programs is almost non-existent, health care services for inmates are lacking, and there is very little accountability for fixing the problems that plague tribal detention centers.¹² As such, the safety of tribal members who are incarcerated is often jeopardized and the safety of tribal members in the community is put at risk because prisoners are offered few basic services and quickly released due to over-crowding. Increased funding for the construction of tribal detention facilities is imperative.

Juvenile Justice.—A critical piece of law enforcement is juvenile detention facilities and juvenile rehabilitation and treatment programs. Many tribes have no place to house juvenile offenders and are required to shoulder the cost of transportation and bed rental in order to send their youth to another jurisdiction—often far from their communities. In addition, tribes have no ongoing source of funds for non-detention programs for youth. Research on juvenile justice has shown that detention is the most expensive and often the least effective way to deal with young offenders; it should be the last resort. However, without the resources to support alternatives to detention, tribes have few options for addressing juvenile crime. Increased funding for the Tribal Youth Program will allow tribes to begin to address this need.

PREPARED STATEMENT OF THE MARINE CONSERVATION BIOLOGY INSTITUTE

On behalf of Marine Conservation Biology Institute (MCBI), I wish to thank the members of the Commerce, Justice, Science, and Related Agencies Appropriations Subcommittee for the opportunity to submit written testimony on fiscal year 2009 National Oceanic and Atmospheric Administration (NOAA) appropriations. MCBI supports funding increases to the President's fiscal year 2009 budget for several significant NOAA conservation programs and activities as follows: \$2 million for Hawaiian monk seal recovery; \$5.5 million for the Deep Sea Coral Research and Technology Program; \$30 million for the National Marine Sanctuaries Program; and \$2.9 million for the Marine Protected Areas Program.

MCBI is a national, nonprofit environmental organization whose mission is to advance the science of marine conservation biology and secure protection for ocean ecosystems. Our headquarters are in Bellevue, Washington; we also have offices in Hawaii, California and Washington, DC. MCBI is a member of the Friends of NOAA Coalition and supports the Coalition's recommendation for funding NOAA at \$4.5 billion in fiscal year 2009. Our justifications of increases for critical conservation programs and activities are as follows:

The Hawaiian monk seal is one of the most critically endangered marine mammals in the world, and is the only U.S. marine mammal species whose entire range lies within U.S. jurisdiction. Most Hawaiian monk seals reside in the Papahānaumokuākea Marine National Monument, but there is a small important sub-population in the Main Hawaiian Islands. Over the last 20 years, the Hawaiian monk seal population has declined to approximately 1,200 individuals.

The Hawaiian monk seal is headed toward extinction unless the National Marine Fisheries Service (NMFS) and its partner agencies aggressively budget for, and implement the recommendations of the 2007 recovery plan, which strives to protect and enhance the overall number of breeding female seals. This is not an unattainable goal, but it will require a variety of concurrent actions and interventions at a projected annual cost of approximately \$7 million annually over the next 5 years. Although this cost may seem high, in comparison, the Steller seal lion whose current Western population is approximately 45,000 has received \$55 million in conservation support since 1998, while the more critically endangered Hawaiian monk seal has received approximately \$21 million over the same time period.

For fiscal year 2009, the President's budget includes an \$855,000 request from NOAA in the monk seal line item. Additionally, discretionary funding usually is allocated from other Protected Resources line items for seal management. In fiscal year 2008, for example, total funding for the seal base program is approximately \$2.1 million. Even at this funding level, research and protection interventions in the Northwestern Hawaiian Islands have been cut back by two-thirds for the summer field season. Furthermore, there are no funds requested in fiscal year 2009 for managing seals in the Main Hawaiian Islands where human interactions are a significant threat to recovery.

¹²U.S. Department of the Interior, Office of the Inspector General, "Neither Safe Nor Secure: An Assessment of Indian Country Detention Facilities," P. 1-6 (2004), available at <http://www.doi.gov/upload/IndianCountryDetentionFinal%20Report.pdf>.

To recover the monk seal, the recovery team is unanimous that the recovery plan must be implemented aggressively on a sustained basis. I urge the subcommittee to increase seal funding as follows:

- For fiscal year 2009, MCBI recommends an additional \$2 million above the President's budget request be added to the monk seal line item specifically for recovery plan implementation. \$1 million of this amount is needed for the Pacific Island Fisheries Science Center's ongoing field efforts to enhance pup and juvenile survival principally in Papahānaumokuākea.
- Another \$1 million is needed for coordinating the seal recovery program and crisis intervention actions in the Main Hawaiian Islands. Of this \$1 million, MCBI recommends \$150,000 for a Regional Office Coordinator, and \$600,000 for six field response team leaders who handle day to day interventions to protect the 100 or so seals scattered around the Main Islands. The remaining \$250,000 would go for programs to educate the public on appropriate behavior toward seals, prevent seal disease, and capture and rehabilitate entangled, abandoned, sick or wounded seals for eventual release back into the ocean.

The Deep Sea Coral Research and Technology Program is an exciting addition to the budget this year. With the recent discovery of extensive deep sea coral ecosystems within U.S. waters—ecosystems every bit as diverse as many tropical coral reef systems—scientists are now challenged to understand these ecosystems to the fullest. Unfortunately, many deep sea coral areas are highly susceptible to destructive fishing practices, particularly bottom trawling. Under the newly reauthorized Magnuson-Stevens Conservation and Management Act of 2006, NOAA was directed to create a new Deep Sea Coral Research and Technology Program under the direction of the National Marine Fisheries Service.

MCBI is pleased to see start-up funding of \$1.5 million for the program in the fiscal year 2009 NOAA request. However, we would like to mention that due to the expensive technology and research vessel time required to study and map deep sea corals, an additional \$5.5 million could be used to fund known research needs:

- An area of the southeastern U.S. shelf edge and slope spanning approximately 23,000 square miles is of top priority for mapping and scientific studies for the conservation of deep sea corals. With adequate funding, extensive mapping of this southeastern shelf can be accomplished with three 30-day scientific cruises at approximately \$2 million per cruise.
- In addition, another priority for the Deep Sea Coral Research and Technology Program is the development of observer by-catch workshops. These workshops will train fisheries observers to identify corals brought up by commercial fishers and assess the continued impacts that fishing is having on seafloor corals. \$1 million would fund at least three workshops in the regions where they are most needed.

The National Marine Sanctuaries Act authorizes the Secretary of Commerce to designate and manage areas of the marine environment for resource protection and multiple use. Currently, the National Marine Sanctuary Office is responsible for managing the nation's 13 marine sanctuaries and the Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands. Collectively, these units cover more area than the entire National Park System.

The President has requested \$49.8 million in fiscal year 2009 for the Sanctuary Program base. This includes \$44.4 million for Operations, Research and Facilities (ORF) and \$5.4 million for Procurement, Acquisition, and Construction. This is a decrease of \$6.5 million from the \$56.3 million enacted in fiscal year 2008.

Given the pressing needs to better protect sanctuary resources, MCBI recommends a considerable increase in funding of \$23 million in fiscal year 2009, to bring the overall program budget to \$80 million. This would include \$60 million for the ORF base and \$20 million for acquisition and construction. With the proper funding, the Office of National Marine Sanctuaries can better execute its responsibilities as a leader in ocean management and conservation. Funding will support monitoring and enforcement of sanctuaries, ensure public access through visitor facilities and programs, and promote scientific research.

The Marine Protected Areas Program is responsible for the implementation of Executive Order 13158, "Marine Protected Areas" (MPAs). MPAs are defined as discrete areas of the ocean that have some degree of formal protection under federal, state, tribal and local laws. MPAs are essential to maintain biological diversity, protect ocean habitats, and effectively manage fish populations. NOAA is tasked with undertaking a gap analysis to identify which additional types of marine areas should be protected.

Given the ongoing degradation of our ocean resources, research to implement the executive order has moved excessively slowly, in part due to insufficient funding. After receiving a start-up budget of \$3 million in fiscal year 2001, the MPA Program

budget reached almost \$5 million in fiscal year 2004, and then dropped rather abruptly to \$1.5 million in fiscal year 2007 and 2008. During this period of decline, the center lost 70 percent of its staff (i.e., a loss of 18 full and part-time employees).

MCBI recommends \$2.9 million be added to the fiscal year 2009 budget for the MPA Science Center in fiscal year 2009. Without adequate funding, the MPA Center cannot properly carry out the goals of creating and expanding a national system of MPAs, rendering technical assistance to state-level MPA programs, and maintaining its MPA inventory.

In conclusion, MCBI respectfully requests that the subcommittee augment funding for the marine ecosystem and species protection programs mentioned above. Thank you for the opportunity to share our views.

PREPARED STATEMENT OF THE NATIONAL CORN GROWERS ASSOCIATION

The National Corn Growers Association (NCGA) appreciates the opportunity to share with the subcommittee our appropriations priorities for fiscal year 2009, and we respectfully request this statement be made part of the official hearing record.

The National Corn Growers Association (NCGA) is a national organization founded in 1957 and represents more than 32,000 members in 48 states, 47 affiliated state organizations and more than 300,000 corn farmers who contribute to state check-off programs for the purpose of creating new opportunities and markets for corn growers.

NCGA's top priority in the fiscal year 2009 Science, State, Justice and Commerce appropriations bill is maintaining funding and focus of the \$101.22 million for the National Science Foundation (NSF) Plant Genome Research Initiative (initiative). The initiative is supported by the Interagency Working Group on Plant Genomes under the auspices of the National Science and Technology Council within the Office of Science and Technology Policy. In 1997, NCGA spearheaded the effort on legislation that authorized major plant genome research, which resulted in the Plant Genome Research Initiative. Obtaining genome sequence information frequently leads to breakthroughs in the study of a particular organism. The goal of the initiative is to understand the structure and function of plant genes at all levels in species of economic importance and indeed, the initiative has led to an unprecedented increase in our understanding of the genomics and genetics of plants. The initiative also changed the way research is conducted in plant biology and helped to attract a new generation of scientists to the plant sciences field at U.S. colleges and universities.

Bringing agriculturally important plant species into the genomic age is an important goal. Initial major accomplishments included the completion of the model laboratory plant *Arabidopsis* and rice genome sequences. Completion on those genomes demonstrated that genomic sequence was the most comprehensive way toward gene discovery—a first step toward identifying the role of each gene. Building upon lessons learned sequencing smaller plant genomes, sequencing the corn genome became feasible. *Arabidopsis*, a member of the brassicaceae, or mustard, family, has a genome of 125 million base pairs. Rice's genome has 430 million base pairs. Sequencing the corn genome had been considered difficult because of its large size and complex genetic arrangement. The genome has 50,000 genes scattered among the haploid genome size of 2.3 billion nucleotides—molecules that form DNA—that make up its 10 chromosomes.

In 2004, valuable corn research was made available through NCGA to research scientists working to understand the maize genome through the availability of sequencing data from Ceres, DuPont and Monsanto. This information, combined with the corn sequence data already in the public domain, significantly accelerated the identification of genes within the entire corn genome and was a precursor to the effect that the full corn sequence will have on the research community.

In 2005, NSF, the United States Department of Agriculture (USDA) and the Department of Energy (DOE) awarded \$29.5 million to sequence the corn genome. NSF selected a consortium of four research institutions to sequence the maize genome: The University of Arizona, Washington University in St. Louis, Iowa State University in Ames and Cold Spring Harbor Laboratory in Cold Spring Harbor, New York. The goal of the Maize Genome Sequencing Project is to unravel the DNA sequence of the maize plant and to identify the genes and begin to determine their position on the chromosomes—the tiny bundles of DNA that form the storage units of genetic information. The sequencing of corn pushed the state of the art of genetic research to new levels as its genome has complexities beyond any plant sequenced to date. The highly repetitive regions of DNA, formerly considered “junk” DNA, are extremely prevalent in corn, and have been shown to have a significant impact on how

the genetic engine of life truly works. These issues have posed significant challenges to researchers interested in crop improvement, plant molecular biology, or genome evolution. Using a physical map that covers about 95 percent of the maize genome map, scientists generate a draft sequence to reveal the locations of regulatory elements within stretches of so-called non-coding “junk” DNA. Focus of the project does center on gene-containing regions and are sequenced in detail. This sequencing strategy enables the consortium to sequence the corn genome at a fraction of the cost that was necessary to decipher the human genome, which is only slightly larger than the corn genome.

Today, genomic research technology and techniques are ready to complete a high quality corn genome sequence. The result will be the complete sequence and structural understanding of the entire corn genome, annotated functional sequences, and their locations on corn’s genetic and physical map. This genome will be the most complex eukaryotic genome to be sequenced to date, including the human genome. The corn genome sequence will, in turn, help in the eventual completion of other major crop genome sequences, as itself benefited from knowledge gained through the prior completion of other genome sequences. Corn will also serve as a model system to aid in elucidating clues to improve the growth and development of other related grass crops, such as wheat, sorghum, millet and barley. Importantly, access to all of this information is shared through GenBank, Gramine, MazeGDB and other public repositories for genome-sequence data.

With focused funding, we will be much closer to achieving the goal of this initiative—understanding the structure and function of all economically significant plant genes. The corn industry, including the academic research community, grain handlers, growers, and seed companies, supported the corn genome sequencing project and will continue to support a program that maintains its focus on discovering the functionality of genes in economically important plant species. A complete corn genome sequence and the application of its information will provide a wide range of benefits. Both the public and private sectors will be able to expedite their breeding programs and increase their knowledge of corn’s important agronomic traits. Corn growers will be able to plant varieties of corn that are better suited to market and environmental needs, such as pest resistant traits, lower nitrogen needs, and higher yields—all increasing sustainability. Quality researchers will continue to be attracted to the field of plant genomics and genetics.

Consumers will also benefit from more abundant and sustainable food, feed and fuel supplies. Corn is not only grown for food and feed, it is converted to a myriad of processed food products—literally thousands of products in the typical supermarket contain corn. Improvements aim at increasing yield and nutritional value and optimizing the properties crucial for grain products such as flour and pasta. The production of corn-based products with enhanced nutritional value that are safer and less allergenic will directly benefit consumers.

Corn is also an important material for many industrial purposes and products including rubber, plastics, fuel and clothing. Corn is a model system for studying complex genomic structure, organization and function and its high quality genetic map will serve as the foundation for studies that may lead to improved biomass and bio-energy resources from corn and related plant species.

The request for the Directorate for Biological Sciences (BIO) is \$675.06 million, and increase of \$63.04 million, or 10 percent, over the fiscal year 2008 request of \$612.02 million. The Directorate for Biological Sciences supports research, infrastructure, and education in the biological sciences at U.S. colleges, universities, non-profit research institutions, and other research and education organizations.

BIO includes a sub-activity request for Plant Genome Research (PGR) of \$101.22 million, an amount that does not contemplate an increase from the fiscal year 2008 request. PGR sub-activity was initiated in fiscal year 1998 as a stand alone budget managed by Biological Infrastructure (DBI). In general, 36 percent of the PGR portfolio is available for new research grants. The remaining 64 percent is used primarily to fund continuing grants made in previous years. PGR supports research in agronomic significant species. However, the fiscal year 2009 budget proposes to roll PGR into the Integrated Organismal Systems (IOS) sub-activity, potentially causing the program to lose focus. Rolling the PGR budget into IOS will result in a significant reduction in funds available for new genetic projects in economically important species as the needs of non-agricultural plants would be served from the same budget. The fiscal year 2009 budget also proposes to roll Arabidopsis 2010 into the IOS sub-activity. It is important to note that model systems research such as this project, has been traditionally supported through NSF’s core budget and not PGR or IOS. This change may result in a reduction of resources available for economically significant plants, such as continued work on new projects involving the rice genome and future new project stemming from corn genome work, during flat

budget cycles. The Arabidopsis 2010 project and the NSF's independent Plant Genome Research Program (PGRP) complement each other and provide a broad base of support for the plant biology research community. Arabidopsis 2010 has traditionally received up to \$25 million per year. It is critical that both activities remain separate and receive enough support to achieve their goals.

Maintaining and improving upon the resources available for crop systems is now more important than ever, as agriculture tries to meet the demands of consumers worldwide by providing a safe and secure supply of resources for human and animal nutrition, fiber, bioenergy, and industrial feeds. Continued strong governmental support of basic agricultural research is essential to ensure that the innovation pipeline remains robust. NCGA requests that this subcommittee include in the fiscal year 2009 Science, State, Justice and Commerce appropriations bill language that secures the \$101.22 million PGR budget to be applied exclusively to species of economic importance, keeping in line with the original intent of the program.

Thank you for the support and assistance you have provided to corn growers over the years. Please feel free to contact Jon Doggett at 202-628-7001 if you need any additional information.

PREPARED STATEMENT OF THE NATIONAL FISH AND WILDLIFE FOUNDATION

Madam Chairman and Members of the Subcommittee: Thank you for the opportunity to submit testimony regarding fiscal year 2009 funding for the National Fish and Wildlife Foundation (Foundation). We appreciate the Subcommittee's past support and respectfully request your approval of \$4 million through the National Oceanic and Atmospheric Administration's (NOAA) fiscal year 2009 appropriation.

This funding request is well within the authorized levels and would allow the Foundation to uphold our mission and expand our successful partnership with NOAA. Madam Chairman, I want to make one very important point: we are asking for your support of well-established conservation programs with national significance. The Foundation is an honest broker for the federal agencies and we have a remarkable track record of bringing private partners together to leverage federal funds and maximize conservation impacts.

In 1999, Congress expanded the Foundation's mandate to specifically include NOAA's mission to restore and protect marine and coastal resources. During fiscal year 2001-2006, the Foundation received an average appropriation of \$2 million annually to further the mission of NOAA's National Marine Fisheries Service and National Ocean Service through cooperative agreements and leveraging of private sector funds. In fiscal year 2007, the Foundation sustained cooperative agreements with NOAA to continue our partnership programs. We respectfully request that the Subcommittee restore NOAA appropriations for the Foundation in fiscal year 2009 to accelerate our work with NOAA to protect coastal habitats and marine species.

This fiscal year 2009 request would allow the Foundation to expand key partnerships and highly successful grant programs in the areas of marine debris removal, coral reef conservation, marine species protection and coastal ecosystems such as Delaware Bay, Long Island Sound, Tampa Bay, San Francisco Bay, Puget Sound and Chesapeake Bay. The Foundation continues to excel in grant-making while providing thought leadership, accountability and sustainable conservation outcomes. Our unique ability to organize federal agencies and private partners to work together to achieve mutual conservation goals through on-the-ground and in-the-water grant programs is notable and there is significant potential to advance these efforts in fiscal year 2009 and beyond.

In addition to NOAA, the Foundation works closely with the U.S. Fish and Wildlife Service (FWS) and other Department of the Interior agencies, the Environmental Protection Agency (EPA), and USDA's Natural Resources Conservation Service (NRCS), among others. On average, every federal dollar is leveraged with three or more matching dollars from the non-federal sector. Therefore, a NOAA appropriation of \$4 million in fiscal year 2009 would turn into a minimum of \$8 million, according to the Foundation's Congressional Charter which requires a minimum of a 1:1 match, and have the potential to turn into \$16 million or more for on-the-ground conservation. Funds appropriated by this Subcommittee are fully dedicated to project grants and do not cover any overhead expenses of the Foundation.

This Subcommittee's funding will also attract additional funding for conservation through corporate sponsorship, legal settlements, and direct gifts. Through our targeted grants, the Foundation strategically invests federal funds entrusted to us to achieve measurable success in "moving the needle" on collaborative conservation objectives over the next five to ten-year period. To date, the Foundation has leveraged more than \$53 million in NOAA funds to invest more than \$157 million for on-the-

ground and in-the-water conservation. Over 1,200 project grants have been awarded, focusing on the conservation needs of at-risk species, habitat enhancement, coastal restoration, marine debris clean-up, environmental education, and community-based stewardship.

Conserving Fish, Wildlife, Plants and Habitats

fiscal year 2009 appropriations through NOAA will be focused on mutually agreed upon projects according to our Keystone Initiatives and the objectives of the Foundation's Special Grant Programs, which are specific to a geographic area, group of species, or conservation concern. The Keystone Initiatives represent the new core portfolio of the Foundation's grant making with clearly defined long-term goals, well-articulated strategies, and defined budgets to reach desired outcomes. In 2007 the Foundation continued implementing a new strategic plan and developing targeted Keystone Initiatives, with the goal of achieving sustainable and measurable conservation impacts.

Four Keystone Initiatives were launched by the Foundation in 2007: (1) Birds, (2) Wildlife and Habitats, (3) Fish, and (4) Marine and Coastal Conservation. Each grant approved under a Keystone Initiative will be designed to provide a measurable outcome that brings us one step closer to the final long-term conservation goal of the Initiative. Achieving success through our Keystone Initiatives will also help to fulfill the objectives of the National Fish Habitat Action Plan and the National Oceanographic Partnership Program, among others.

With increased support through NOAA appropriations, the Foundation can accelerate our collaborative efforts to achieve long-term conservation impacts for fish and wildlife through our Keystone Initiatives. Increased funding in fiscal year 2009 will also help to strengthen the Foundation's Special Grant Programs, a few of which are highlighted below:

- The Coral Reef Conservation Fund was initiated in 2000 with NOAA to build public-private partnerships and leverage resources for effective stewardship of marine and coastal resources, and the communities that depend on them. FWS and NRCS have contributed to the Fund which supports grants to reduce and prevent degradation of coral reefs and associated habitats. Recently, the Harold K.L. Castle Foundation provided additional support for our efforts in Hawai'i and Tesoro Corporation is providing additional support in 2008 for an education and outreach campaign. The Foundation has provided funding for nearly 200 projects with \$7.3 million in federal and non-federal funds, leveraged with \$11.6 million in non-federal matching funds, for a total of \$18.9 million for coral reef conservation in 38 countries, including 4 U.S. states and 8 U.S. territories.
- The International Sea Turtle Conservation Fund supports projects for the six species of sea turtles found in the Western Hemisphere, all of which are considered endangered or threatened. Since 1998, grants have been awarded for more than 100 projects in over 25 countries, representing a total of \$6.2 million in funding from both federal and non-federal sources. Projects focus on key nesting and foraging areas for species survival as well as local capacity-building and outreach with fisherman to increase awareness and minimize damage caused by certain fishing techniques to marine turtle populations. This collaborative effort with NOAA and FWS is the leading source of funding for sea turtles in the Western Hemisphere.
- The Marine Debris Prevention and Removal Program was established in 2006 through a partnership with NOAA's Marine Debris Program. The program focuses on improving best management practices of ports and marinas, reducing derelict fishing gear, and research to better understand the impacts of marine debris on marine mammals, sensitive habitats, and tourist and fishing industries. Since 2006, the Foundation has supported 28 projects with over \$1.2 million in federal funds, leveraged with over \$1.5 million in non-federal matching funds for projects in 13 States and 4 U.S. Territories. In 2007, the Foundation formed partnerships with industry to prevent debris introduction to the marine environment, including the new Reel in and Recycle Program in partnership with Pure Fishing and Berkeley Recycling, and the Nets to Energy in partnership with Covanta, aimed at recycling retiring or derelict fishing gear and convert it into energy.
- The Pinellas County Environmental Fund (PCEF) is a unique partnership formed in 2000 between the Pinellas County Board of County Commissioners, NOAA, and the Foundation to actively pursue the protection, restoration, and enhancement of fish and wildlife habitat around Tampa Bay. PCEF helps to implement the on-the-ground habitat and species conservation recommendations developed through the Tampa Bay Estuary Program and incorporated into the Tampa Bay Comprehensive Conservation and Management Plan. Since incep-

tion, the PCEF has leveraged \$9.6 million with an additional \$14.3 million in matching funds to support 123 projects for a total conservation investment of nearly \$24 million in the Tampa Bay area.

Other Special Grant Programs supported by NOAA, including the Delaware Estuary Watershed Grants Program, Long Island Sound Futures Fund and Chesapeake Bay Stewardship Fund, continued positive results in 2007 with grantee requests far exceeding available funds. As mentioned, the Foundation is successfully building bridges between the government and private sector to benefit NOAA's mission. Fiscal year 2009 appropriations through NOAA allow the Foundation to continue our investment in common-sense, innovative, cooperative approaches that directly benefit coral reefs and other marine habitats as well as targeted species, such as Loggerhead turtles, Hawksbill turtles, and Pacific coho salmon.

A Tradition of Successful and Accountable Performance

Since 1984, the Foundation has awarded nearly 9,500 grants to over 3,000 organizations in the United States and abroad and leveraged—with our partners—more than \$400 million in federal funds into over \$1.3 billion for conservation. NFWF is recognized by Charity Navigator with a 4-star rating for efficiency and effectiveness. The Foundation has taken important strides to improve our grant review and contracting process to ensure we maximize efficiency while maintaining strict financial and evaluation-based requirements. Interactive tools through our website have improved communication with our stakeholders and helped to streamline our grant-making process. We expect that as of spring 2008, the Foundation will be operating under a paperless application system.

Grant-making through our Keystone Initiatives and Special Grant Programs involves a thorough internal and external review process. Peer reviews involve federal and state agencies, affected industry, non-profit organizations, and academics. Grants are also reviewed by the Foundation's Keystone Initiative staff, as well as evaluation staff, before being recommended to the Board of Directors for approval. In addition, according to our Congressional Charter, the Foundation provides a 30-day notification to the Members of Congress for the congressional district and state in which a grant will be funded, prior to making a funding decision.

Once again, Madam Chairman, we greatly appreciate your continued support and hope the Subcommittee will approve funding for the Foundation in fiscal year 2009.

PREPARED STATEMENT OF THE OPTOELECTRONICS INDUSTRY DEVELOPMENT
ASSOCIATION

On behalf of the 75 member organizations of the Optoelectronics Industry Development Association (OIDA) and our approximately 200 affiliates, I urge you to fund the National Institute of Standards and Technology (NIST) in fiscal year 2009 at the levels authorized in the America COMPETES Act signed into law in 2007: \$541.9 million for Scientific and Technical Research and Services, \$86.4 million for Construction of Research Facilities, \$131.5 million for the new Technology Innovation Program, and \$122 million for the Manufacturing Extension Partnerships, or a total of \$881.8 million.

The high technology community depends on sound metrology to support its products. The NIST Optoelectronics Division helped develop the metrology standards that enabled American companies to establish a very strong market share in optical fiber, which provides the backbone of the Internet. But the need for metrology assistance continues and our members therefore strongly support NIST's proposed fiscal year 2009 initiative called "Going at Light Speed: Optical Communications and Computing." In a different area, the NIST Optical Technology Division provides the standards for the emerging solid state lighting industry, in which our members are developing new technology that will save energy, help our environment, and enable new lighting functions. These are just a few examples from our industry.

We strongly object to the absence of an Administration request for funding for the new NIST Technology Innovation Program (TIP). Like its predecessor, the Advanced Technology Program (ATP), TIP will help our members, many of which are small and medium-sized companies, advance their technologies through the most difficult and risky stages of development. We believe that the legislation creating TIP has resolved all significant concerns with ATP, and TIP will prove to be an extraordinarily successful program.

We appreciate your consideration of the needs of our industry. The Optoelectronics Industry Development Association is a Washington, DC-based organization that is the focal point for vision, transformation, and growth of the

optoelectronics industry. OIDA advances the competitiveness of its members by focusing on the business of technology, not just technology itself.

PREPARED STATEMENT OF THE INTERNATIONAL FUND FOR ANIMAL WELFARE

The International Fund for Animal Welfare and our more than 2 million members worldwide appreciate this opportunity to submit testimony in support of recovery efforts for the endangered North Atlantic right whale. On behalf of the many scientists, academics, aquariums, and conservationists who are deeply worried about the plight of the North Atlantic right whale, we are writing to request the Subcommittee's support for restoring funding for North Atlantic right whale conservation and research programs administered by the National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS). Adequate funding is essential to ensure that this endangered marine mammal is not lost forever. Specifically, we ask Congress to restore funding in NOAA's fiscal year 2009 budget to the fiscal year 2005 level of \$12.5 million. This funding is vital for the long-term recovery of this species. At least half of the requested amount should be directed to funding disentanglement efforts and a competitive grants program that focuses on (1) innovative entanglement mitigation and monitoring, (2) reproduction and health research (health assessment, reproduction studies and monitoring, and non-invasive medical assessments), and (3) monitoring of anthropogenic impacts (necropsy, carcass recovery, field monitoring, scar analysis).

The North Atlantic right whale is one of the world's most endangered marine mammals, with only about 300–400 whales remaining today. While the North Atlantic right whale is protected under both the Endangered Species Act and the Marine Mammal Protection Act, a lack of adequate resources over the years has severely hampered NMFS' ability to effectively protect and recover this endangered species.

The survival of each individual is vitally important to ensure the survival of this species. Since 1986, the majority of confirmed North Atlantic right whale deaths, have resulted from human-induced causes including ship strikes and entanglements in fishing gear. Since January 2004, twenty right whale deaths have been confirmed. These data are a minimum estimate of the actual number of deaths as they do not account for animals that may have died at sea and gone undetected. At least nine of these mortalities were linked to ship strikes. Seven of them were reproductively mature females and three were pregnant with near-term fetuses at the time of death, suggesting that females are particularly vulnerable to ship strikes. These data alone represent a loss of more than five percent of the total breeding population adding yet more pressure to the successful recovery of this species.

Little is known about the year-round distribution of right whales. Existing federally-funded surveys operate seasonally, and only in specific areas where human impacts are thought to be greatest. This results in many areas with little or no survey effort, which has led to a lack of understanding of other areas that may be important to right whale survival, which puts them at an avoidable and unnecessary risk.

Restoring funding to the fiscal year 2005 level of \$12.5 million would provide much-needed funding for: surveys (both visual and acoustic); mandatory ship reporting systems; ship strike strategy implementation (including enforcement of speed restrictions and routing measures); mortality investigations; disentanglement efforts; gear research; state and federal cooperative research grants; health assessments; population monitoring; implementation and refinement of take reduction plans; and other high-priority projects identified in the recovery plan. This will allow NMFS to improve protections for right whales by reducing the threat of entanglements in fishing gear and preventing fatal ship strikes.

The urgency of this situation is highlighted by the announcement in December, 2006, of the extinction of the Yangtze, or baiji, river dolphin in China. In the 1980's, scientists estimated there were 400 baiji alive, only a remnant of the estimated 5,000 that once existed, but a number sufficient to allow recovery for the species, if adequately protected. Sadly, over-fishing, vessel traffic, noise pollution, habitat degradation and marine debris continued to exert ever-increasing pressure on the remaining population. The result? In less than 30 years, they are now officially extinct and join the growing list of species that humans have helped drive to extinction.

The similarities between the history and fate of the baiji and the North Atlantic right whale are alarming. Human generated threats such as vessel strikes, entanglements in fishing gear, pollution, and habitat degradation have replaced whaling as a threat. We are seeing the increasing industrialization of our oceans, and whales will be the first to pay the price of our neglect.

North Atlantic right whales remain at risk of extinction from human-induced vessel strikes and entanglements in fishing gear, and from low reproductive rates. NMFS has made laudable efforts to reduce mortalities from shipping and fishing, but these efforts have been hamstrung by inadequate funding and information. We remain hopeful that the Administration will soon issue long-overdue protections from ship strikes and provide the funding needed for implementation and monitoring to ensure full compliance with these protective measures.

In collaboration with scientists, academics, aquariums, conservationists, and as identified in NMFS' own recovery plan, we have identified the following funding priorities for fiscal year 2009 to further recovery efforts of North Atlantic right whales. The requested funding will ensure the survival of right whales by providing better information to managers, developing solutions for conflicts with industry, supporting management measures that integrate industry and right whale needs, and monitoring progress toward these goals.

Innovative entanglement mitigation and monitoring

Gear research is urgently needed to develop fishing methods and gear types that will not harm right whales while also allowing fishermen to make a living. A new rule mandating sinking groundline will be in effect in October 2008 and is likely to reduce right whale entanglements. No clear options or agreement on vertical lines exist, and work on this problem is urgently needed. Vertical lines may account for up to 70 percent of entanglements.

Reproduction and health research (health assessment, reproduction studies and monitoring, and non-invasive medical assessments)

Right whale reproduction is still suffering from unknown effects. The potential causes of impaired reproduction include habitat problems (including noise and pollution), incidental effects of entanglements (over 70 percent of right whales have been entangled), disease (possible human sources), and red tides. Identifying those causes could lead to prevention or solutions that would enhance population recovery. Health assessments are a critical tool for evaluating the aftermath of ship strikes and entanglements, and allow predictions of survival. In addition, health assessments are essential for evaluating trends in the population related to reproduction and survival.

Monitoring of anthropogenic impacts (necropsy, carcass recovery, field monitoring, scar analysis)

Support for necropsy work on stranded right whales is needed to determine the cause of death. This is a fundamental tool for evaluating whether management actions have been effective. Monitoring of anthropogenic impacts on right whales through photo-documentation and scarring analysis is critical to understanding whether management actions regarding fishing and shipping have been effective. Appropriate photographic data collection, scarring analysis, and entanglement documentation are all required to understand the status of the right whale population.

Surveys (both visual and acoustic, habitat studies)

Effective management of human activities to reduce impacts to right whales requires a detailed understanding of migratory paths and behavioral patterns. Shipboard and aerial surveys are the single most important source of information to determine seasonal distribution of right whales. Shipboard surveys also collect vital population data, including biopsy samples for genetic studies and fecal samples for reproduction and health research. Passive acoustic surveys provide a simple tool for evaluating the presence of whales when poor weather or nighttime conditions prevent visual surveys. These combined datasets are essential for managers attempting to manage anthropogenic risk to right whales.

While surveys directly address our need to understand right whale distribution, habitat studies address questions of why right whales visit particular habitats. Right whales may experience different risks depending upon the habitat use of an area (i.e., surface feeding in the great South Channel puts whales at risk from ships, and bottom feeding may put whales at risk from certain fishing gear). Short-term tagging studies, combined with prey and oceanographic sampling, can provide valuable information to managers, and long term non-invasive tagging techniques (under development), can do this across several habitats.

Disentanglement efforts

Until appropriate "whale-safe" gear and or methods have been developed and implemented, disentanglement efforts are our last line of defense against right whale deaths from fishing gear. Right whales are commonly hard and always dangerous

to disentangle. Pharmacological restraint may enhance success, and these and other available tools should be deployed as appropriate.

Catalog and population monitoring, genetic studies

The foundation of all right whale research and conservation efforts is the individual identification of right whales, which allows tracking of births, deaths, movements, and anthropogenic effects by age, sex, and genetic characteristics. Catalog data identifies segments of the population that are at risk from human activities, and is the only way to monitor recovery.

The catalog is critical for tracking population size and trends, developing population models for management, and targeting particular management actions. Genetic analyses provide information that cannot be obtained by any other means including factors affecting the reproductive rate, and genetic identification of live and dead right whales.

Implementation, refinement, and enforcement of take reduction plans

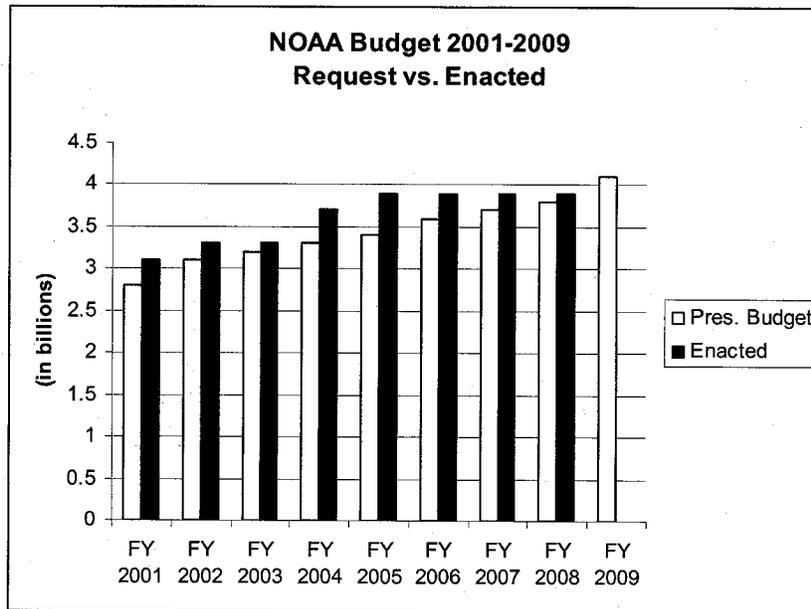
NMFS has the ultimate responsibility for reducing take of North Atlantic right whales, and needs adequate support and the best available data to ensure this process is effective and informed by good science.

In conclusion, we respectfully request that the Subcommittee on Commerce, Justice, Science, and Related Agencies appropriate no less than \$12.5 million in the fiscal year 2009 for recovery of the endangered North Atlantic right whale. Funding of the previously mentioned programs is essential to not only protect the North Atlantic right whale from further decline, but to help recover their population to a level that will ensure these charismatic creatures, which play an integral role in the oceans' ecosystems, will survive for the benefit and enjoyment of future generations.

PREPARED STATEMENT OF OCEANA

On behalf of the more than 250,000 supporters of Oceana, an international, non-profit conservation organization devoted to protecting ocean waters and wildlife, I submit the following testimony on the fiscal year 2009 budget for the National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce. I request that this testimony be submitted for the official record.

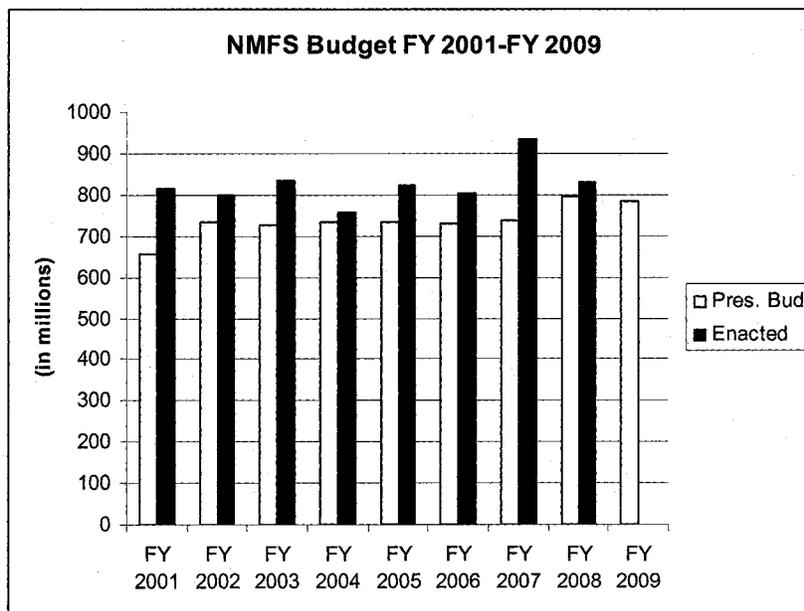
The National Oceanic and Atmospheric Administration's (NOAA) mission is "to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs." More specifically, NOAA manages our fisheries, researches climate change, and predicts our weather, among other critical duties. Funding for this agency has been well below the needed level to fully address all of its responsibilities.



In the fiscal year 2009 budget, the Administration requests \$4.11 billion for NOAA. Oceana is pleased that the Administration request is above the fiscal year 2008 enacted amount of \$3.91 billion. The majority of the increase is directed to the Procurement, Acquisition and Construction (PAC) account for needed improvements to the NOAA satellite program. While this increase is necessary to keep our satellites operating, more resources must also flow into the Operations, Research and Facilities (ORF) account, which funds the programmatic work of the agency. The ORF account has remained stagnant since fiscal year 2005, which when taking inflation into account, has resulted in less money for ocean conservation and management.

Oceana urges the Subcommittee to provide \$4.5 billion for NOAA in the fiscal year 2009 Commerce, Justice, Science appropriations bill. NOAA has a critical role in promoting sustainable coastal communities and a healthy economy. We recommend that any increase above the President's request be directed into the ORF account to provide resources for fishery management, coral reef protection, undersea research, ocean wildlife conservation, coastal management, and ocean education.

More specifically, we urge the subcommittee to fund the following critical ocean research and conservation programs at these recommended levels: \$56 million for fishery observer programs; \$40.5 million for stock assessments; \$57.1 for enforcement activities; \$15 million for deep water coral conservation; \$26.4 million for sea turtle research and management; \$82 for marine mammal research and management; and \$10 million for ocean acidification research.



National Marine Fisheries Service (NMFS)

The Administration's fiscal year 2009 request for the National Marine Fisheries Service is less than the previous year's enacted level and is below the fiscal year 2008 Administration's request. This decrease is disappointing; especially considering the President's signing into law the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) in January 2007. This comprehensive law includes critical changes to our fishery management system and requires additional funding to implement these changes. The Administration's request includes approximately \$32 million for new programs to implement the requirements under the MSRA, but more money is needed to provide data for responsible fishery management. Stock assessments and fishery observers are just a few examples of such programs. In addition, sufficient enforcement of fishery management laws is needed.

Fishery Observer Programs—\$56 million

Fishery observers are independent scientists who gather information about fishing practices by accompanying fisherman at sea. Observers collect data on the composition of what is caught and brought on board during fishing operations. This is in contrast to landings data which only records what is brought to port—failing to account for bycatch—often dead or injured fish, marine mammals, sea turtles, sea birds and other ocean wildlife that is discarded. According to the NMFS, observers are currently deployed in only 42 of the nation's 300 fisheries. Of the fisheries that have observers, coverage levels in many of these fisheries are well below the amount needed for precise and accurate estimates of bycatch and total catch of fish and other marine species.

Stock Assessments—\$40.5 million

Oceana supports the President's request for \$40.5 million for the fisheries stock assessment program. Almost two-thirds of the nation's fish populations lack basic information to determine whether or not those fish populations are depleted or "overfished." In fact, there are 65 "major" stocks or stock complexes classified as "unknown" with respect to their population status. The Magnuson-Stevens Fishery Conservation and Management Act requires that the fisheries of the United States end overfishing, therefore accurate data is needed to provide regional fishery managers with the information needed to make management decisions.

Enforcement—\$57.1 million

Successful fishery management relies upon fair enforcement of laws, regulations, and other requirements of fishery management plans. Without resources for enforcement personnel at sea and at ports, compliance with fisheries laws will be inconsistent. The enforcement program also provides resources for cooperative agreements with state enforcement authorities.

Deep Sea Coral Conservation—\$15 million

The Magnuson-Stevens Fishery Conservation and Management Act provides the regional Fishery Management Councils with the authority to protect deep sea coral habitat. These long-lived, slow growing corals can be destroyed in a matter of minutes by certain types of destructive fishing gear. These coral areas often serve as nurseries for commercially important species. Recognizing the importance of corals, the President's budget includes \$1.5 million for a deep sea coral research program to identify and map sensitive habitat areas. Oceana supports this recommended increase for research and also would like additional resources be used for additional fishery observers, enforcement of protected areas, and the minimization of gear impacts on deep sea coral habitat.

Sea Turtle Research and Conservation—\$26.4 million

Oceana requests that the Subcommittee reject the Administration's funding cut to the marine turtle program and instead expand upon existing funding. For over 25 years, all sea turtles that swim in U.S. waters are listed as endangered or threatened under the Endangered Species Act, yet populations of sea turtles continue to decline. Commercial fisheries alone are authorized to kill 10,000 and injure an additional 334,000 turtles each year. Beyond commercial fishing, the federal government has not analyzed the cumulative impact of all permitted activities on sea turtle populations. There is not enough research on the health of sea turtle populations to ensure that these authorized takes are not jeopardizing the existence of the species. Additional funding will enhance research, recovery and conservation activities for imperiled sea turtles species.

Marine Mammal Research and Conservation—\$82 million

Oceana requests that funding for the marine mammal program be restored to the fiscal year 2005 level of \$82 million. These funds will help ensure that National Marine Fisheries Service adopts measures to recover depleted and strategic marine mammal species, such as Northern right whales, bottlenose dolphins, and pilot whales. Activities that may be supported by these funds include marine mammal research, bycatch reduction strategies recovery plan implementation, and marine mammal mortality event response. The President's request of \$41.23 million is only half of the enacted fiscal year 2005 level.

Ocean Acidification—\$10 million

In addition to climate change, humanity's emissions of carbon dioxide are altering the acidity of the world's oceans. As emissions increase, more carbon dioxide is absorbed by the oceans, thus altering the water chemistry. Researchers agree that ocean acidification will pose a significant threat to marine ecosystems over the next century, with significant potential impacts to fisheries and coral reefs. More research is needed to better understand the ecological implications of these predicted impacts to the entire marine ecosystem and the degree to which marine organisms and ecosystems will be able to adapt to increased acidity. Oceana recommends \$10 million for an ocean acidification research program.

Climate Change

NOAA's role in climate change includes monitoring, researching, and predicting the impacts of climate change on humans and the environment. In the oceans alone, ocean acidification, sea level rise, and increased intensity of storms are just a few of the areas under NOAA's purview, not to mention, coastal infrastructure impacts, changes to inland weather patterns, and increased satellite needs to monitor global fluctuations. NOAA's research capabilities are becoming increasingly important in our changing world. New money is needed now to address climate change. This increased research should not come out of the existing NOAA budget and at the cost of current programs.

Overall, substantial increases are needed for the National Oceanic and Atmospheric Administration. Increases to the PAC account cannot come at a cost to the ORF funding. Both accounts need substantial increases in the fiscal year 2009 budget and in years to come if NOAA intends to manage our fisheries, conserve endangered species, protect ocean and coastal habitat, monitor global warming and its impacts, predict our weather, and perform other critical services to our nation.

Thank you for your consideration of these recommendations.

Oceana received no funding from a federal grant (or subgrant thereof) or contract (or subcontract thereof) in the current fiscal year or either of the two previous fiscal years.

PREPARED STATEMENT OF THE AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

The American Institute of Biological Sciences (AIBS) encourages the Committee to provide the National Science Foundation (NSF) with \$7.326 billion for fiscal year 2009, the funding level authorized by the America COMPETES Act.

AIBS is a nonprofit scientific association dedicated to advancing biological research and education for the welfare of society. Founded in 1947 as a part of the National Academy of Sciences, AIBS became an independent, member-governed organization in the 1950s. AIBS is sustained by a robust membership of some 5,000 biologists and nearly 200 professional societies and scientific organizations; the combined individual membership of the latter exceeds 250,000. AIBS advances its mission through participating in coalition activities in research, education, and public policy; publishing the peer-reviewed journal *BioScience* and the education Web site ActionBioscience.org; providing scientific peer review and advisory services to government agencies and other clients; convening meetings; and managing scientific programs.

The fiscal year 2008 omnibus appropriations provided only a 2.5 percent increase over fiscal year 2007 funding for the NSF. This appropriation disappointed many in the science community who had hoped for the 10 or 11 percent increase pledged by Congress through House and Senate Appropriations Committee marks, respectively.

Although the President's fiscal year 2009 budget request recognizes the need to increase funding for the NSF, the request would only provide a modest two-year adjustment for NSF programs such as the Biological Sciences directorate (BIO). Thus, we encourage the Committee to work to provide NSF funding at the level authorized in the America COMPETES Act (Public Law 110-69), enabling a modest increase for BIO and the Social, Behavioral and Economics directorate (SBE).

Innovating our innovation enterprise, improving science education, strengthening research infrastructure, and addressing energy, security, and environmental problems are bipartisan national priorities. NSF is the primary federal agency that funds fundamental research through competitively awarded, peer-reviewed, extramural grant programs. These research grants drive discovery and have enabled the United States to remain a global economic and scientific leader. Moreover, NSF-sponsored biological sciences research is transformative and leads to the development of sustainable and cost-effective solutions for society's greatest challenges, including energy independence, climate change, and security.

NSF's BIO directorate is vital to our nation's continued leadership in the biological sciences, the fields of science dedicated to understanding how organisms and ecological systems function. Research disciplines heavily dependent upon the directorate include botany, ecology, microbiology, zoology, basic molecular and cellular biology, and systematics and taxonomy. Equally important, NSF provides essential support for our nation's biological research infrastructure, such as field stations and natural science collections (e.g. university-based natural history museums), and education and training programs for undergraduate, graduate and post-doctoral students.

According to government data, BIO provides 67 percent of federal grant support for fundamental biological research conducted at our nation's universities and other nonprofit research centers. Transformative research in the biological sciences has advanced our understanding of complex living systems and is leading the way forward in addressing major challenges—protecting the environment, conserving biodiversity, and developing new bio-inspired technology. In fact, during a hearing before the House CJS Subcommittee on February 27, 2008, NSF Director Arden Bement referred to this century as “the bio century” and went on to explain that bioscience is “where the fundamental work is being done.” Indeed, biological research from molecules and cells to ecosystems is the backbone supporting major cross-foundation initiatives, including Adaptive Systems Technology and Dynamics of Water Processes in the Environment (WATER). To continue to support activities across the Foundation, it is critical that BIO receives appropriate funding to advance its core research programs.

The President's fiscal year 2009 budget request would provide \$5.594 billion to support disciplinary research programs within the Research and Related Activities (R&RA) account. This funding level would provide an average 16.0 percent increase

over fiscal year 2008 estimated appropriations for the R&RA account; however, within R&RA, proposed budget increases are spread unevenly among the directorates. For example, the Mathematical and Physical Sciences directorate would increase \$235.36 million (20.2 percent) and the Engineering directorate would increase \$122.46 million (19.2 percent) over their respective fiscal year 2008 estimated appropriations while BIO is slated for just a \$63.04 million increase (10.3 percent). This pattern would be understandable and acceptable if it were a one-year anomaly. However, this pattern of funding has become the norm—leaving some directorates, such as BIO, SBE and Geosciences behind.

In contrast, COMPETES authorizes \$5.742 million for R&RA in fiscal year 2009, and would provide an average 19.1 percent increase over fiscal year 2008 appropriations. Moreover, COMPETES-authorized funding levels would provide NSF with the necessary funding to provide BIO with a 19 percent increase, placing it more on par with the trajectory of other directorates.

Administration officials point to the importance of aligning the budget with priorities articulated in both the American Competitiveness Initiative and the America COMPETES Act. Yet, language in COMPETES (Public Law 110-69, Sec. 7018(b)) calls for parity in funding among scientific disciplines by specifying, “The Director shall give priority in the selection of awards and the allocation of Foundation resources to proposed research activities, and grants funded under the Foundation’s Research and Related Activities Account, that can be expected to make contributions in physical or natural science, technology, engineering, social sciences, or mathematics, or that enhance competitiveness, innovation, or safety and security in the United States.”

Indeed, research in the biological sciences has directly contributed to the development of new technologies and has advanced our understanding of life in critical areas, including genomics, emerging diseases, ecosystem services, global change, nanotechnology, and complex systems. Such research has led to important discoveries with implications for American competitiveness and public health and safety. For example, scientists at Arizona State University funded through BIO used a special laser to analyze the split-second process within photosynthesis where plants harness light energy; their research may have important implications for the development of solar energy technologies. It is imperative that we understand how biological systems—whether a microbe or an ecosystem—function so that we can address current issues like global change and can innovate solutions to additional challenges that will likely emerge in the future.

Members of the biological sciences community are concerned that inadequate funding is being provided to fundamental biological and environmental sciences. For twelve years, the research grant funding rate for BIO has been consistently lower than the NSF-wide funding rate. In 2008, the research grant funding rate was only 15 percent compared with an agency-wide rate of 21 percent. Unfortunately, this trend occurs at a time when BIO is contributing the largest percentage of federal dollars to basic biological sciences research and the number and scope of problems requiring biological information continues to increase.

Key Areas

Increased funding for NSF at the level authorized by the America COMPETES Act would enable more robust investment in the five core programs supported by BIO: Molecular and Cellular Biosciences; Integrative Organismal Systems; Environmental Biology; Biological Infrastructure; and Emerging Frontiers.

The fiscal year 2009 budget request includes important funding for the National Ecological Observatory Network (NEON), the first national ecological measurement and observation system designed to answer regional- to continental-scale scientific questions. NEON is an innovative facility that is designed to transform the way science and education are conducted by enabling integration of data from natural- to human-dominated systems and from genomes to the biosphere. A total of \$26 million has been requested for NEON in the fiscal year 2009 BIO budget. Roughly \$16 million would be funded from Emerging Frontiers and \$10 million from Biological Infrastructure.

BIO provides essential support for the development and maintenance of other important research infrastructure (e.g., natural science collections and field stations) that is necessary to advance our understanding of biological systems.

Indeed, there is a growing national awareness of the need to reinvest in the physical and personnel resources associated with our nation’s scientific collections. Evidence for this may be found in the annual Office of Science and Technology Policy (OSTP) and Office of Management and Budget (OMB) memorandum to federal agencies on research and development priorities, which has charged federal agencies to evaluate the needs of the collections they host or support. A federal interagency

working group on scientific collections has also been established. As part of this effort, NSF is surveying non-federal research collections to gain a better understanding of the nature of our nation's holdings.

Unfortunately, the fiscal year 2009 budget request for the Division of Biological Infrastructure (DBI) is \$86.99 million, only 0.1 percent more than DBI's fiscal year 2008 appropriation (\$86.94 million). The biological sciences community is increasingly concerned that decreasing investment in the tools of science, namely the facilities, collections, and instruments that enable discovery, will have profound and negative impacts on the science.

Research support is only one of NSF's important missions. NSF is a vital component of our nation's formal and informal science education system. Whether through programs such as Research Experiences for Undergraduates, Integrated Graduate Education and Research Traineeships, or other fellowships for graduate and postdoctoral researchers, NSF provides the resources required to recruit, educate and train our next generation of scientists. We encourage Congress to continue to support these vital science education programs.

Thank you for your thoughtful consideration of this request and for your prior support of the National Science Foundation. If you have any questions or require additional information, please contact either of us at 202-628-1500.

PREPARED STATEMENT OF PADGETT BUSINESS SERVICES

On behalf of Padgett Business Services, located in Fargo, North Dakota, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America's manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer's global competitiveness is supported by those companies who receive benefit. In North Dakota, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. In several companies, I have had the opportunity to partner with Dakota MEP to further develop our manufacturing capacity.

As a Dakota MEP Director, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who've partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Dakotas exporting over \$2 billion. Manufacturing brings new wealth to our country, our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry better compete. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP continues to be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF PHOENIX INTERNATIONAL

On behalf of Phoenix International, a leader in the design and manufacture of custom, integrated electronic solutions, located in Fargo, North Dakota, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted

America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America's manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer's global competitiveness is supported by those companies who receive benefit. In North Dakota, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. With the assistance of Dakota MEP, our company has worked on a number of improvement projects to improve productivity.

As a Dakota MEP Director, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who've partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Dakotas exporting over \$2 billion. Manufacturing brings new wealth to our country, our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry better compete. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP continues to be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF THE RED CLIFF BAND OF LAKE SUPERIOR CHIPPEWAS

The following is a brief, qualitative analysis of the local impact of the Presidents fiscal year 2009 budget proposal as we understand it from data available in the Department of the Interior Indian Affairs Budget Justifications Fiscal Year 2009 and related budget documents. A more detailed, large-scale analysis of the appropriation is available from the National Congress of American Indians (www.ncai.org), but here we focus on concerns and priorities of the Red Cliff Band, a small, federally-recognized Indian Tribe in far northern Wisconsin.

Key information about the Red Cliff community is available in the attached Red Cliff "Community Snapshot" <http://www.redcliff-nsn.gov/planning/08snapshot-2.pdf>

Natural Resources Management

The President's fiscal year 2009 budget continues to stifle the Tribe's effort to maintain an active role in the management and stewardship of the Lake Superior fishery resource, which has tangible recreational and economic benefits for the region and which was severely impacted by heavy cuts to the Tribal Management Development Program (TMDP) in the mid 80's and 90's. Funding since that time has stagnated such that, in 2009, TMDP funding will still have not recovered to levels of over twenty years prior, yet cost for such things as utilities, staff benefits, and supplies have significantly increased over that time, and this has prevented the Tribe from adequately addressing its aging hatchery facilities and water systems.

Lake Superior has the only fully-restored, self-sustaining trout populations in Lake Superior, due in substantial part to Red Cliff's efforts. Now the fisheries management department of the Tribe, which co-manages an area of almost 2.8 million hectares, is further threatened by a dramatic increase in disease-management costs associated with the deadly fish disease VHS.

Without offsets to these cumulative cost increases, the viability of Red Cliff's fisheries programs is severely threatened.

More details about the accomplishments and challenges of the Red Cliff Natural Resources program are attached (Attachment 2).

Request: At minimum, restore Red Cliff's TMDP funding to mid-80's funding levels of \$300,000 (up from \$222,000 proposed for fiscal year 2009) and reject Bush's 30 percent cut to the BIA's Fish Hatchery Maintenance program.

Public Safety and Justice

Tribally-designated COPs grants have served as the Tribe's only reliable source of law enforcement vehicles and field equipment in the past decade. Red Cliff re-

sponds to emergencies not only on reservation lands but, at times, on the beautiful but dangerous shores of Lake Superior and the adjacent National Park lands, and Red Cliff likewise responds to the mutual aid requests of the City of Bayfield and Bayfield County. President Bush's budget will eliminate Tribal COPs set-asides, reducing the likelihood of our responders' availability and preparedness, thereby threatening the safety and well-being of residents and tourists.

Likewise, set-asides are proposed to be eliminated for Tribal Courts, for which Red Cliff's base funding is also being reduced by 4.2 percent in the President's budget. Red Cliff Tribal Court has no alternative funding and has already curtailed expenditures on judges and otherwise limited its services in the enforcement of vital local laws. With further erosion of funds, Red Cliff will continue to struggle to bring justice to the victims of child abuse, protect its treaty rights, or generally enforce the Red Cliff Code on which it depends for its sovereignty and civil order.

Finally, the fiscal year 2009 budget Justification shows that nearly \$15,000 for Red Cliff community fire protection has been eliminated. Red Cliff's local Fire Department which, again, serves Red Cliff and adjacent communities, is very much dependent on CFP dollars for equipment purchases, the most recent being wildland fire fighting vehicle attachments.

Request: Reject the President's proposal to consolidate DOJ programs and eliminate Tribal set-asides. Maintain previous years' average funding levels of +/- \$15,000 for Community Fire Protection.

Education and Job Training

With combined elimination of the Johnson O'Malley (JOM) and Job Placement and Training programs from the BIA's Consolidated Tribal Government budget, Red Cliff stands to lose over \$73,500 in much-needed assistance to already-disadvantaged local people.

The Red Cliff Tribe does not feel JOM's GPRA/PART ratings reflect the strong value that our community places on the JOM program, which serves as an important way to promote educational parity for children whose families experience unemployment and poverty rates several times that of surrounding Bayfield County. JOM provides such things as sports gear, instrument rentals, and other important academic supports which can make the difference between attainment and alienation. While JOM cannot solve all of the challenges of the Bayfield School district with its large proportion of native students, the tutors paid for by Red Cliff's JOM program have helped many young learners build the academic confidence to resist otherwise high truancy rates of the District.

Job training and placement for Tribal members is especially important in light of Red Cliff's geographic isolation and distance to the service industries in which local jobs are relatively scarce. In light of great commitment to their ancestral lands and culture and their obligations to local extended families, Tribal members seeking jobs rely on placement and training assistance to increase their likelihood of local employment.

Request: Reject the President's proposed elimination of the Johnson O'Malley program and Job Placement and Training programs.

Housing and Community Facilities

The President's fiscal year 2009 budget proposes elimination of the Department of the Interior's Housing Improvement Program (HIP). While the program is competitive and does not result in a large number of projects in a community as small as Red Cliff, the Tribal members it does assist are among our most needy: the elderly and disabled. With housing having been in extremely short supply on the Red Cliff Reservation, deterioration of an elder's home often guarantees stressful relocation. HIP is often the only option for remodeling or replacement of existing homes where the elder cannot afford or qualify for other housing programs.

A \$4.6 million reduction has also been proposed for the Indian Community Development Block Grant program in fiscal year 2009. In Red Cliff, ICDBGs have been an absolutely essential solution to the abovementioned housing shortage. With ICDBGs and DOD Sec. 154 funds, the Tribe has been able to make the most significant housing infrastructure improvements in a generation—making over 175 sewer home sites available in the coming years. Likewise, ICDBGs offer the Tribe one of its primary options to address aging and inadequate public facility space.

Every dollar eliminated from ICDBGs translates to homes not served with essential utilities or to community services that cannot be sited in Red Cliff.

Request: Restore \$13.6 million eliminated from the DOI's Housing Improvement Program and \$4.6 million from HUD's Indian Community Development Block Grant programs in fiscal year 2009.

Health

The President's fiscal year 2009 budget does not slash budgets for the Indian Health Service, yet neither does it address the disturbing health trends in the community that are likely to pose a massive burden to the health care budgets of the Red Cliff Health Center, the City of Ashland's health service providers, Bayfield County, and the State of Wisconsin.

We are referring in part to the fact that local data shows 74 percent of native patients at the Red Cliff Health Center—including many children—are obese or at risk of obesity, and the resulting incidence of Type 2 diabetes and related complications are projected to triple disease-related health care expenditures for those afflicted, an increase that is above and beyond the double-digit medical services inflation that has been disproportionately impacting our impoverished community.

The ten-year old Red Cliff Health Center is one of the Tribes greatest social and economic successes and has already met or exceeded some patient service levels that were not projected to be realized until 2015. The Red Cliff Health Center's ability to address the vital health needs of the Red Cliff community—ranging from prenatal care to mental health treatment to dental services—are presently most limited by space available.

To address the obesity challenge and other service demands mentioned above, the Health Center seeks a facility expansion of at least 5,000 to 8,000 square feet at a base cost of \$1 million to \$1.4 million which would be dedicated to preventative health and specialty health services. IHS and other federal funds for facility expansion are presently very limited.

The Red Cliff Health Center has earned a reputation for offering quality services to Tribal and non-Tribal members throughout the County. A special appropriation for Health Center expansion will help the Red Cliff Tribe to help avert the looming cost crisis and to offer marketable services and health industry jobs.

For additional details see Attachment 3.

Request: Special appropriation of up to \$1.4 million for expansion of Red Cliff's Health Center for preventative health services.

Welfare

President Bush's fiscal year 2009 national budget proposes a \$14 million reduction in welfare assistance, which includes BIA's General Assistance Program (GA). Estimates of Tribe-specific cuts are not clear, but the fiscal year 2009 BIA budget justification shows that, both with regard to clients served and welfare costs for GA, Red Cliff could expect a cut of as much as 40 percent from fiscal year 2007 levels of \$82,000, which allows the Tribe to assist with over 300 cases per year.

Compared with adjacent Bayfield County, the rates of unemployment and children in poverty in Red Cliff are as much as three times and five times higher, respectively. Loss of 40 percent of Tribal GA funds could pose extreme hardships to a number of our residents who have few if any other income options.

Request: Reject Bush's proposed \$14 million cut to BIA's welfare assistance programs.

Transportation

The President's proposal to cut in half the BIA road maintenance program comes at a time when costs for fuel, pavement, and other materials have substantially increased the per-mile cost of maintaining Red Cliff's 35 miles of reservation roads—costs which are already high due to severe winter conditions commonly experienced in our location at the northern tip of Wisconsin.

The road maintenance funding cuts will have significant impacts beyond Red Cliff. The Tribe realizes great operating efficiencies by using BIA road maintenance dollars to contract with the nearby Town of Russell, whose facilities, staff, and equipment are utilized for road grading, snow removal, vegetation clearing, and other services necessary to maintain safe roads for residents and visitors. In addition to Russell, other communities' roads that are not on the Reservation but are nevertheless used heavily by Tribal members are also eligible for Tribal assistance. Thus, reductions to BIA roads maintenance funds may pose hardships not just to Red Cliff but to adjacent governments.

Request: Reject Bush's proposed fiscal year 2009 50 percent reduction of BIA roads maintenance funding.

Land Consolidation

The Indian Land Consolidation Program (ILCP) was proposed for elimination in fiscal year 2009.

Red Cliff's Reservation is a mere 14,000 acres, only 8,000 of which are held in Trust for the Tribe. Land recovery is therefore a top priority, but the Tribe itself

has no discretionary funds for acquisitions. Fractionation of ownership interests in land probated to heirs of Tribal land allottees poses major obstacles to land recovery, and it also places heavy probate administration costs on the BIA, which consequently diminishes other BIA and/or federal services available to the Tribe.

The President's claims of ILCP inefficacy are misleading. The program's efforts have been strategically targeted, and in those areas have been very effective. ILCP reports 68 percent of fractionated interests in Red Cliff have been acquired by ILCP, which translates to just over 1,000 acres—a very significant portion of our Reservation! Continued ILCP effort toward land consolidation is very important to Red Cliff and to other Tribes around the nation.

Request: Reject Bush's proposed fiscal year 2009 elimination of the ILCP.

General comments

Contrary to what is sometimes heard from Indian Nations, the Red Cliff Band of Lake Superior Chippewa strongly supports the mission and budget of the Bureau of Indian Affairs. That is not to say we are entirely satisfied with BIA's performance or decisions, yet we recognize that we as individual Tribes are also responsible to aid the agency in attaining GPRA and PART goals.

Of the Tribal casinos in the State of Wisconsin, the Red Cliff Tribe's Isle Vista Casino is distinguished as one of the lowest grossing, and thus it serves to offer only basic local employment and exceedingly little aid to local government. Stagnation in federal funding levels in the face of increasing costs of living therefore equates to lost programs, services, and organizational capacity. We ask you to protect and enhance Indian programs offered through BIA, IHS, HUD, USDA and others.

The Red Cliff Tribe's greatest strides in recent years have been in the areas of housing and related infrastructure, and we are grateful for your support. Health care, education, economic development, and environmental protection remain as urgent needs in our community, and we look forward to working with you and your staff to discuss issues and implement solutions. Thank you.

PREPARED STATEMENT OF THE DAKOTA MANUFACTURING EXTENSION PARTNERSHIP

On behalf the Board of Directors of Dakota Manufacturing Extension Partnership, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America's manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer's global competitiveness is supported by those companies who receive benefit. In the Dakotas, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. Several years ago our company, Turtle Mountain Corporation in Dunseith, North Dakota, was able to significantly improve its overall competitiveness as a supplier and its workforce with the assistance of Dakota MEP.

As a Dakota MEP Board Chairman, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who've partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Dakotas exporting over \$2 billion. Manufacturing brings new wealth to our country, our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry compete with offshore companies. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP

continues to be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF SEARCH, THE NATIONAL CONSORTIUM FOR JUSTICE
INFORMATION AND STATISTICS

Introduction

Mr. Chairman and members of the subcommittee, I am Ron Hawley, Executive Director of SEARCH. Thank you, Mr. Chairman and members of the Subcommittee for your support. The efforts of your outstanding subcommittee staff are also greatly appreciated. SEARCH has requested a \$2 million earmark from the Department of Justice, Byrne Discretionary Grant Program to be included in the Commerce, Justice, Science, and Related Agencies Appropriation bill. This amount of funding will ensure that the SEARCH National Technical Assistance and Training Program can reach local and state criminal justice agencies that are truly in need of SEARCH's services.

SEARCH is a state criminal justice support organization comprised of governors' appointees from each state. SEARCH's mission is to promote the effective use of information and identification technology by criminal justice agencies nationwide. For more than 20 years, the SEARCH National Technical Assistance and Training Program has been the only no-cost service for small- and medium-sized criminal justice agencies to assist them in: (1) enhancing and upgrading their information systems; (2) building integrated information systems that all criminal justice agencies need; (3) ensuring compatibility between local systems and state, regional and national systems; (4) developing and delivering high-tech crime training; and (5) providing computer forensic technical assistance support. SEARCH has provided training and technical assistance in every state. The criminal justice agencies that SEARCH has assisted have found our services invaluable.

Because the National Technical Assistance and Training Program is national in scope, SEARCH is able to replicate successful implementation strategies in one state or locality and disseminate and transfer those strategies to other states and localities. This unique program not only helps state and local agencies work more efficiently and effectively through the use of advanced information technologies, but it also creates a foundation for a national information infrastructure for interoperable justice systems.

SEARCH conducts research to examine emerging trends and issues that have the potential to impact the collection, maintenance and exchange of justice information, while advocating policies that ensure effective privacy protection for the subjects of those records. The technical assistance provided by SEARCH has always been sensitive to the privacy implications of the effective use of information systems.

In short, the automated sharing of information is a critical component of effective justice. Better information means better decisions, and better decisions mean improved public safety. Creating information sharing capabilities among state and local public safety agencies that consistently conform to national and international standards efforts and that provide tangible benefits and outcomes will strengthen the foundation for successful nationwide information sharing to help prevent major national incidents and terrorist attacks.

SEARCH's National Technical Assistance and Training Program has received rave reviews, not only from those local, regional and state law enforcement and criminal justice agencies that have received its services, but also from the Bureau of Justice Assistance (BJA), which administers the grants to SEARCH.

In the Department of Justice Reauthorization Act (Public Law 109-162), the Congress expressly and specifically authorized SEARCH's National Technical Assistance and Training Program. Chapter 5, Subsection C, 1184 of that provision reads:

(a) IN GENERAL.—Pursuant to subpart 1 of part E of title I of the Omnibus Crime Control and Safe Streets Act of 1968, the Attorney General may make grants to SEARCH, the National Consortium for Justice Information and Statistics, to carry out the operations of the National Technical Assistance and Training Program.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Attorney General to carry out this section \$4,000,000 for each of fiscal years 2006 through 2009.

Byrne Competitive Grant Program

Before talking specifically about the SEARCH National Technical Assistance and Training Program, let me take a moment to ask for enhanced funding for the Byrne Competitive Grant Program. Through the Chairman's leadership, the fiscal year 2008 omnibus appropriations bill established the competitive grant process for pro-

grams of national significance to prevent crime, improve the administration of justice, and assist victims of crime. The process is administered by the Office of Justice Programs (OJP) to those national programs that previously have received earmark funding under the Byrne discretionary program. However, the total amount of grant funding provided to all of the competing national programs was set at only \$16 million in fiscal year 2008. We believe that funding in the range of at least \$65 million is the minimum necessary to permit a workable and effective competitive grant program.

SEARCH supports the laudable goal of distributing funds on a competitive basis to those national programs that can demonstrate the most compelling uses for those funds. However, the outstanding leadership of the Subcommittee in creating this program is undermined by the harsh reality that \$16 million is a woefully inadequate amount to provide funding for national programs to assist criminal justice and law enforcement efforts across the country.

SEARCH's National Technical Assistance and Training, alone, received a \$2 million grant from the Byrne Discretionary funds in 2006—this would comprise one-eighth of the funds now available under the Byrne competitive grants. Dividing \$16 million among dozens of national programs will result in drastic reductions in the level of funding provided to these programs or no funding at all for many deserving organizations.

Indeed, for that reason we not only urge the Congress to fund the fiscal year 2009 competitive program at the \$65 million level, but also to support emergency legislation that would increase the amount provided for the Byrne Competitive Grant program in fiscal year 2008 by approximately \$50 million so that those national programs seeking to compete for these funds will have a chance at receiving a meaningful grant amount and, thereby, continuing to provide their vital criminal justice services. We have attached to our written testimony a letter from SEARCH and four other national programs supporting enhanced competitive grant funding.

Use of Past Funding

Returning now to SEARCH, in fiscal year 2007, SEARCH's National Technical Assistance and Training Program received a \$2 million earmark out of the Byrne Discretionary Grant Program in the Office of Justice Programs. Through funding provided in fiscal year 2007, the SEARCH National Technical Assistance and Training Program reached out to nearly every state, as well as the District of Columbia.

SEARCH's on-site technical assistance customarily includes helping a state or local law enforcement agency establish an automated justice information system; evaluate and plan for integration of existing information systems; or enhance, expand or implement a computerized criminal justice record system. A typical technical assistance activity takes approximately six weeks and is staffed by two individuals with the required expertise making three site visits—one for an initial consultation and data gathering, one to provide recommendations, and one for follow-up. Each of these technical assistance activities cost approximately \$50,000.

SEARCH has been recognized for its longstanding commitment to improving criminal history records at both the state and national levels. SEARCH software and related materials assist police and other law enforcement agencies in areas such as computer-aided dispatch, records management systems and mobile computers. In the post-9/11 world, information sharing and communications interoperability is more important than ever to protect our families and the first-responders responsible for their safety in an emergency.

For example, SEARCH is helping state policymakers and technical and operational stakeholders in numerous jurisdictions develop standards-based, high technology data sharing solutions so that critical law enforcement, court, corrections, prosecutor, and other justice agency information is rapidly shared to provide the foundation for accurate and appropriate decision-making. Simultaneously, SEARCH is actively focused on helping states develop privacy policies governing the collection of information in various state criminal justice systems to protect individual privacy and civil liberties in the growing information sharing environment.

Meanwhile, SEARCH provides direct operational support to law enforcement in its cybercrime investigation program. SEARCH, for example, was integral in helping law enforcement identify and stop a suspect who was planning a shooting rampage at a local high school. A State Patrol officer contact SEARCH for immediate help after receiving reports about an individual making statements via the Internet that a local high school was to be the target of a shooting rampage. The State Police did not have the local resources or expertise to properly conduct an Internet investigation to identify the user. Using its knowledge of Internet Service Provider protocols and social networking Web sites, SEARCH located the individual's online profile on a networking site that displayed photos and videos of firearms and automatic weap-

ons. The State Patrol was then able to gather the leads necessary to further their investigation. SEARCH performed a forensic capture of the individual's profile and videos, which were offered to the State Patrol.

In other cybercrime assistance efforts, SEARCH has helped a number of police departments across the nation set up MySpace predator deterrent programs. The departments set up MySpace pages that encourage local youth to add the police department as a "number one friend" on the youths' MySpace Pages. This gives the police a prominent presence on the youth's page, and also enables the youth to quickly contact the police online if they receive inappropriate messages. This is just another example of how SEARCH helps law enforcement proactively work to protect their young citizens from Internet risks.

Through SEARCH cybercrime training classes and technical workshops, investigators are taught methods to prevent, detect and investigate the rising tide of cybercrime, such as fraud, email threats, online stalking and child exploitation. In one-on-one work with law enforcement investigators and prosecutors, SEARCH provides immediate operational assistance and critical operational guidance to practitioners on emerging technological issues in high-tech crime, such as assisting a local law enforcement agency obtain evidence from cell phones seized at the scene of a gang-related drive-by shooting.

Intended Use of Funding From Fiscal Year 2009

For fiscal year 2009, SEARCH is requesting \$2 million for the National Technical Assistance and Training Program. If SEARCH is provided with the requested funding, SEARCH intends to utilize the funds to address goals in both the information sharing and high-tech crime investigation aspects of the program. In the information sharing space, SEARCH intends to: (1) support through training and technical assistance the adoption of national law enforcement and public safety information technology standards; (2) contribute to the development of new and emerging law enforcement and public safety standards; (3) develop specific information sharing requirements for the re-entry of prisoners into society following incarceration; and (4) improve agencies' ability to measure and manage their information sharing initiatives. SEARCH also intends to use the funds to train law enforcement investigators in high tech crime investigation, including training and education on cybercrime.

Conclusion

Congressional support for the SEARCH National Technical Assistance and Training Program is vital. The federal investment of \$2 million can be leveraged many times over by contributing to the ability of state and local criminal justice agencies to provide timely, accurate and compatible information throughout the nation.

On behalf of SEARCH, its governors' appointees, and the thousands of criminal justice officials who participate in the SEARCH network and who benefit from SEARCH's efforts, I thank you for your time. It has been a pleasure appearing here today.

PREPARED STATEMENT OF THE FLORIDA STATE UNIVERSITY

Summary of Request: Florida State University is requesting \$3,000,000 from the National Oceanic and Atmospheric Administration (NOAA) Air Research Laboratory (ARL) Account to fund the Center for Vapor Mercury in the Atmosphere.

Mr. Chairman, I would like to thank you and the Members of the Subcommittee for this opportunity to present testimony before this Committee. I would like to take a moment to briefly acquaint you with Florida State University.

Located in Tallahassee, Florida's capitol, FSU is a comprehensive Research I university with a rapidly growing research base. The University serves as a center for advanced graduate and professional studies, exemplary research, and top-quality undergraduate programs. Faculty members at FSU maintain a strong commitment to quality in teaching, to performance of research and creative activities, and have a strong commitment to public service. Among the current or former faculty are numerous recipients of national and international honors including Nobel laureates, Pulitzer Prize winners, and several members of the National Academy of Sciences. Our scientists and engineers do excellent research, have strong interdisciplinary interests, and often work closely with industrial partners in the commercialization of the results of their research. Florida State University had over \$190 million this past year in research awards.

Florida State University attracts students from every state in the nation and more than 100 foreign countries. The University is committed to high admission standards that ensure quality in its student body, which currently includes National Merit and National Achievement Scholars, as well as students with superior cre-

ative talent. Since 2005, FSU students have won more than 30 nationally competitive scholarships and fellowships including 2 Rhodes Scholarships, 2 Truman Scholarships, Goldwater, Jack Kent Cooke and 18 Fulbright Fellowships.

At Florida State University, we are proud of our successes as well as our emerging reputation as one of the nation's top public research universities.

Mr. Chairman, let me summarize our primary interest today.

Mercury is one of two very toxic trace elements known to be best transported through the atmosphere. Local, regional, and global distributions of gaseous elemental mercury are unknown even though vapor mercury is the most important source of anthropogenic mercury to the atmosphere. Most U.S. mercury emissions occur in the northeast yet most mercury deposits fall on Florida and the southeastern coastal zone. Patterns of mercury in local rainfall can be interpreted as either "local source" or "long-distance source" and are thus non-diagnostic. These enormous gaps in scientific understanding undermine public policy initiatives to develop strategies to protect natural environments and human health and to find appropriate energy solutions to our national power and transportation needs.

To this end, FSU is prepared to lead a Southeastern Mercury Consortium to study the large-scale sources and fates of atmospheric mercury. This consortium will be a partnership between NOAA's Air Resources Lab (ARL), Florida State University (FSU) and Georgia Institute of Technology. ARL's mercury research group has pioneered ground and airborne measurements and models of atmospheric mercury. FSU's Oceanography Department and Isotope Geochemistry Programs in the National High Magnetic Field Lab excel in ultra-trace element chemistry and isotopes—including mercury—in global atmospheric and aquatic environments. Georgia Tech's Schools of Earth & Atmospheric Sciences and Civil & Environmental Engineering have extensive regional and global programs in urban photochemistry, "tailpipe" and "smoke stack" gases, and global atmospheric mapping of reactive trace gases and aerosols from research airplanes and satellites. We will concentrate on the two most critical pieces of the puzzle—gaseous elemental mercury and reactive gaseous mercury. This effort will fill the gap we now have in the understanding of mercury vapors, so that we can ensure safe power and transportation to our citizens.

Mr. Chairman, this project is extremely important and I appreciate your consideration.

PREPARED STATEMENT OF THE EDUCATIONAL ASSOCIATION OF UNIVERSITY CENTERS

Mr. Chairman, as President of the Educational Association of University Centers, which is the advocacy organization for universities in the EDA University Center Program, I am pleased to offer this testimony regarding fiscal year 2009 funding for this important program administered by the Economic Development Administration at the Department of Commerce. On behalf of our the network of universities across the United States that are participating in the program, our appropriation request for the EDA University Center Program for fiscal year 2009 is \$12.5 million. The EDA Technical Assistance line item is currently funded at about \$9 million annually for the national EDA University Center Program.

As you know, the EDA University Center Program is a network of centers located at universities and colleges in most states. The program has operated for over 30 years as the only federally funded program specifically designed to link the higher education system in the United States with local and regional economic development organizations, local units of government, private sector companies, non-profits and regional organizations. There are about 55 centers in the program currently.

Through this program, the resources, research, expertise, experience and capabilities of the higher education system are made accessible to help capitalize on opportunities, address problems and overcome economic challenges for areas suffering economic dislocation and distress. Each University Center reflects the character and capacities of the sponsoring institution and tailors its portfolio of programs, projects and services based on the individual institution and the needs of the service region that center serves.

Each EDA University Center currently receives approximately \$100,000 to \$150,000 per year. The program has been funded at the same level for over a decade. The additional funding that is requested would enable current University Centers to be funded at a level of \$250,000 per year, which combined with the required local match of an amount equal to the federal share, would create program budgets of \$500,000 per University Center. The nation's universities are a vital component of the economic development capacity of the United States and this increased funding will yield a strong return on the investment.

The University Center Program and the University Centers that form it operate in conformance with the EDA's investment principles. That means that programs and projects undertaken by the university centers include: being market-based and results-driven; having strong organizational leadership; advancing productivity, innovation and entrepreneurship; addressing medium to long-term needs; anticipating economic changes; fostering economic diversification; and including a high degree of local commitment. To those ends, the University Center program nationwide participates in economic development activities that help leverage hundreds of millions of dollars in private sector investment.

A fundamental objective of the University Center Program is to focus program activities on areas of economic distress and to conduct projects and programs that lead to the creation and retention of high-wage, high-skill, and high-demand jobs. The types of activities undertaken by university centers include direct technical assistance. That assistance can take the form of direct assistance to private sector companies. A typical example of a technical assistance project would be working with a manufacturer to develop a prototype of a new product, analyze the potential market for the product, and help commercialize and launch the new product. The end result will hopefully lead to increases in production capacity within the firm, resulting in new job creation.

University centers also often have the capacity and the mission to conduct applied research to inform economic development initiatives. Before a significant financial investment is made in an economic development project, due diligence must be performed to determine if there is a high probability for a significant return on investment in terms of jobs created and retained, as well as indirect jobs created and retained in the supply chain and in local and regional commercial and retail businesses. Typical projects that would require applied research to determine potential for success are industrial parks, technology parks, business incubators and accelerators, and public works projects to improve infrastructure, such as potable water treatment plants, wastewater treatment, access roads and other projects. Research such as market and feasibility analyses, business plans, operating plans and other types of analyses serves to strengthen projects and to help ensure that investments are directed toward projects with the highest potential to deliver in economic terms.

University centers also conduct economic analyses to identify industry clusters that exist or that have the potential to be created. Industry clusters are private sector companies that exist in a defined geographic region and that have similar characteristics that can enable individual firms to create competitive advantages through relationships that often include pooled procurement activities or supply chain linkages, where firms provide raw materials, components or other products or services to companies that are using raw materials to produce value-added products or that create products by combining components to produce a finished item for delivery to customers. By conducting the research to identify companies with potential affinity and the potential for benefit from economies of scale, jobs may be created or retained and individual companies made more competitive and profitable. These efforts also can strengthen local and regional economies by developing a local supply chain and producing products that are exported from the region, thereby bringing revenue into the region from external sources.

An example of university center activity is the initiative that has been undertaken by the University Center program at the University of Michigan, which I oversee, along with our partners at Cleveland State University, Ohio University and Purdue University. Our work addresses the adverse impacts on communities in Michigan, Ohio and Indiana that are experiencing major manufacturing plant closures. The university center programs at these universities are collaborating to deliver services to the impacted communities and to help the communities to access resources from a range of federal agencies, state agencies and non-profit organizations. The EDA University Centers in each institution are active collaborating to provide student, staff and faculty support for the affected communities in their respective states.

The tools that have been created to help these communities develop economic recovery plans include a resource guide to Federal, State and Non-profit agencies and organizations that can help communities in economic distress and experiencing sudden and severe economic dislocation. Communities also receive a Regional and Community Profile that contains critical information, such as key infrastructure, transportation corridor information, workforce characteristics, demographic information, and that helps identify core competencies and competitive advantages of communities and regions. A "Strategic Planning for Economic Recovery Workbook" helps to facilitate an accelerated strategic planning process that takes place over a period of 4-6 weeks and leads to a set of implementation projects to address economic, community and social needs in the communities and regions that are adversely impacted.

After the community stakeholders have become organized and identify critical needs, the program convenes a Community Stakeholder Workshop that brings Program Representatives from Federal and State agencies to present information about their programs for distressed communities and to meet one-on-one with stakeholders representing a wide range of economic and community development organizations, social service agencies, local elected officials and units of governments that are qualified to receive funding.

Another example of the wide range of University Center Program assistance activities is a project conducted by the University of Pennsylvania EDA University Center. The South Central Workforce Investment Area of Pennsylvania created a Department of Defense (DOD) Industry Partnership to strengthen the region's defense industry through targeted skills training. Penn State University's Pennsylvania Technical Assistance Program (PennTAP) managed the development of this Partnership. This Partnership grew out of a state-funded economic development initiative, Job Ready PA, which builds partnerships to more effectively respond to the workforce needs of targeted industries.

The Industry Partnership is comprised of representatives from regional DOD commands and activities, the private contractors supporting those activities, and regional education institutions and training providers. The Partnership acts as a workforce intermediary, connecting the workers and contractors with the educational infrastructure by creating industry-driven training programs in response to identified skill gaps targeting three categories of workers: DOD personnel; civilian contractors providing both infrastructure as well as technical and mission support services; and DOD systems manufacturers and parts and component suppliers.

Every University Center Program across the United States has many examples of terrific project and program activities that have greatly contributed to the health of regional and local economies and that have addressed economic distress.

The economic security, national security and global competitiveness of our nation are increasingly bound with the higher education system of colleges and universities in America. The economy of our nation is in a period of transformation from a primarily industrial-based economy to a post-industrial economy. This transformation is creating enormous challenges as jobs are lost in some sectors and regions, and jobs are created in other sectors and regions. It is essential that the higher education system play an engaged and proactive role in the nation's economy.

The EDA University Center Program is the primary federal program to ensure that that role is continual and successful. It is for that reason that the funding for this critical program be continued with the increase that is requested. Because it is a national program, no single state, region or economic sector gains at the expense of any other region or sector. I thank you for your attention to this issue and hope that this request will be approved.

PREPARED STATEMENT OF THE NATIONAL FEDERATION OF COMMUNITY BROADCASTERS

Thank you for the opportunity to submit testimony to this Subcommittee requesting a \$30 million appropriation for the Commerce Department's Public Telecommunications Facilities Program (PTFP) in fiscal year 2008. As the President and CEO of the National Federation of Community Broadcasters, I speak on behalf of 250 community radio stations and related individuals and organizations across the country including many new Low Power FM stations. NFCB is the sole national organization representing this group of stations, which provide independent local service in the smallest communities and the largest metropolitan areas of this country. Nearly half of NFCB's members are rural stations, and half are controlled by people of color.

In summary, the points we wish to make to this Subcommittee are that NFCB:

- Supports funding for PTFP that will cover the ongoing needs of public radio and television stations.
- Supports funding for conversion of public radio and television to digital broadcasting.
- Supports funding to help public and community radio stations prepare to provide emergency information during natural or manmade disasters.

Community Radio supports \$30 million in funding for the Public Telecommunications Facilities Program in fiscal year 2009. Federal funding distributed through the PTFP is essential to continuing and expanding the public broadcasting service throughout the United States. It is particularly critical for rural stations and those serving low income communities. PTFP funds new stations, expanding the reach of public broadcasting to rural areas and to audiences that are not served by existing stations. In addition, it replaces obsolete and worn out equipment so that existing

public stations can continue to broadcast high quality programming. PTFP funding is critical to ensuring public radio's readiness to provide life-saving information to communities in the event of local disasters, as we have seen during weather emergencies in the past few years. Finally, with the advent of digital broadcasting, PTFP funding is helping with the conversion to this new technology.

We support \$30 million in funding to ensure that both the ongoing program will be continued, and that there will be additional financial resources available to help cover the cost of improving the emergency infrastructure of public broadcasting stations. This additional funding is considered an urgent need if community stations are to withstand and continue broadcasting through extreme weather or other emergency situations. In addition, increased funding is necessary to assist the conversion of public radio and television to a digital format, which is particularly important when the FCC has endorsed a standard for digital radio broadcasting, the television conversion deadline is imminent, and commercial radio stations are converting to digital transmission, and public radio should not be left behind.

PTFP funding is unique. It is the only funding source available to help get new stations on the air and ensure that public broadcasting is available everywhere in the United States. At a time when local service is being abandoned by commercial radio, PTFP aids communities developing their own stations which provide local information and emergency notifications.

Funding from PTFP has been essential to keep public radio stations on the air by funding the replacement of equipment, often items that have been in use for 20 or more years. The program is administered carefully to be certain that stations are acquiring the most appropriate type of equipment. They also determine that equipment is being properly maintained and will not fund the replacement of equipment before an appropriate period of time in use. PTFP has also helped bring public radio service to rural areas where it is not otherwise available. Often they fund translators to expand the coverage of an existing station and they help with the planning and equipment needs of a new station. Recently, many of these new projects have been for Native American controlled stations on Indian Reservations or new Low Power FM installations that broadcast very locally.

Federal funding is particularly critical to stations broadcasting to rural and underserved audiences which have limited potential for fundraising due to sparse populations, limited number of local businesses, and low income levels. Even so, PTFP funding is a matching program, so federal money is leveraged with a local commitment of funds. This program is a strong motivating factor in raising the significant money necessary to replace, upgrade and purchase expensive broadcast equipment.

Community Radio stations must be prepared to provide continuing service during emergency situations. As we saw during the severe storms and devastating hurricanes of the last few years, radio is the most effective medium for informing a community of weather forecasts, traffic issues, services available, evacuations, etc. Since everyone has access to a radio and they are portable and battery operated, a radio is the first source for this critical information. Radio stations therefore must have emergency power at both their studios and their transmitter in order to provide this service.

The National Federation of Community Broadcasters supports funding for the conversion to digital broadcasting in public radio and television. While public television's digital conversion is mandated by the Federal Communications Commission, public radio is converting to digital to provide more public service and keep up with the market. The digital standard for radio has been approved and over 365 public radio transmitters have been converted. Most exciting to public radio is that stations can broadcast two or more high quality signals, even while they continue to provide the analog signal. Currently 117 stations are providing 153 streams of programming. The development of additional digital audio channels will potentially more than double the service that public radio can provide, particularly to unserved and underserved communities.

Thank you for your consideration of our testimony. If the Subcommittee has any questions or needs to follow up on any of the points expressed above, please contact the National Federation of Community Broadcasters at www.nfcb.org.

PREPARED STATEMENT OF THE AMERICAN ASTRONOMICAL SOCIETY

I appreciate the opportunity to comment on NASA's 2009 budget from my perspective as President of the American Astronomical Society (AAS).

The AAS believes that the President's fiscal year 2009 request of \$17.6 billion is the bare minimum necessary to meet the agency's many challenges—from the re-

invention of manned spaceflight, to the agency's many scientific missions in Earth Science, Heliophysics, Astrophysics, and Planetary science.

The AAS is the major organization of professional astronomers in the United States. The basic objective of the AAS is to promote the advancement of astronomy and closely related branches of science. The membership, numbering approximately 7,000, includes physicists, mathematicians, geologists, and engineers whose interests lie within the broad spectrum of modern astronomy. AAS members advise NASA on scientific priorities, participate in NASA missions, and use the data from NASA's outstanding scientific discoveries to build a coherent picture for the origin and evolution of the Earth, the solar system, our Galaxy, and the Universe as a whole.

In recent years, the astronomical community, working together with NASA, has produced a remarkable string of successes that have changed our basic picture of the Universe. Observations with the Hubble Space Telescope (HST) of exploding stars whose light has been traveling for half the age of the Universe, combined with the exquisite map of the glow from the Big Bang itself from the Wilkinson Microwave Anisotropy Probe and information from other observatories, shows that the Universe we live in is not the Universe we see. Mysterious Dark Matter makes the ordinary particles clump together to form stars and galaxies. Even more mysterious Dark Energy makes the expansion of the Universe speed up. Both of these concepts challenge our understanding of the nature of matter and energy in the Universe and open up broad new vistas for future work.

Similarly, exploration of the solar system has been a resounding success for NASA, with exciting missions to Mars and to Saturn revealing a beautiful and intricate history that is interwoven with the history of our planet Earth. A new mission is now on its way to Pluto. The discovery of planets around other stars has been a great triumph of the past decade, raising hopes for seeing planets like our own Earth, and placing our own solar system, and life itself, in a new context.

In addition to contributing greatly to our knowledge and understanding of the universe, NASA continues its long history of contributing to the country's high technology economy via spin-offs from its science programs. Hubble Space Telescope (HST) images form one of the key databases behind GoogleSky bringing state-of-the-art imagery of the Universe into a tool now available to anyone, anywhere in the world with a computer (<http://www.google.com/educators/spacetools.html>). NASA's leadership brings high visibility to U.S. science and technology achievements and attracts young people to these fields.

NASA's key role in these discoveries makes its science program of deep interest to AAS members. In the past, NASA has worked with the astronomical community to find the most promising paths forward. The James Webb Space Telescope (JWST) is a large program that was endorsed by the National Academy of Sciences (NAS) Decadal Survey in astronomy. When completed in the next decade, it will help expand the frontier of knowledge to the deepest reaches of space and time and into the hidden places where stars and planets are formed. The astronomical community also recommended, and NASA plans to execute, a wide range of other programs—some of moderate scope and others that nourish the infrastructure for a healthy and vibrant community. This balanced approach has proved best—with a range of opportunities carefully crafted to get the best science from NASA's Science budget.

While we enjoy a generous flow of data from past and current space telescopes, we are looking forward to new telescopes and new scientific challenges in the next decade. The astronomical community, under the leadership of the National Academy of Sciences (NAS), is preparing for the commencement of the Astronomy and Astrophysics Decadal Survey that is carried out once every ten years. This is an opportunity to look forward toward the future of space astrophysics in the context of a broad, national astronomy and astrophysics program. The next Decadal Survey will provide guidance for federal investment in the next generation of ground and space-based telescopes.

This priority-setting exercise has been the key ingredient in the success of U.S. astronomy and astrophysics for the past five decades. It is very important for the health of NASA's astrophysics program that we conduct an orderly evaluation of concepts across the full spectrum of astrophysics missions and wavelengths. To emphasize this point, the American Astronomical Society issued this statement in January 2008:

"The American Astronomical Society and each of its five divisions strongly endorse community-based priority setting as a fundamental component in the effective federal funding of research. Broad community input is required in making difficult decisions that will be respected by policy makers and stake-holders. The decadal surveys are the premier examples of how to set priorities with community input.

Other National Academy studies, standing advisory committees, senior reviews, and town hall meetings are important components. Mid-decade adjustments should also be open to appropriate community input. Pleadings outside this process for specific Congressional language to benefit projects or alter priorities are counterproductive and harm science as a whole. The American Astronomical Society opposes all attempts to circumvent the established and successful community-based priority-setting processes currently in place.”

Recognizing the current challenging budget climate, in which federal non-security, discretionary spending is severely constrained, the current NASA budget for science is nonetheless cause for concern. Specifically, I am concerned about the overall drop in funding for Astrophysics from \$1.363 billion in fiscal year 2008 to a proposed \$1.162 billion in fiscal year 2009 (a decline of 14.7 percent). The budget is projected to remain flat thereafter.

Using NASA’s new-start inflation index, this forecast is a reduction of \$423 million (31 percent) for fiscal year 2013 in real buying power over that for fiscal year 2008. This decrease is proposed to occur during an era of significant new astrophysics discoveries with observatories such as the JWST and with the expected exciting recommendations from the Decadal Survey.

The fundamental issue is that NASA is under-funded for its overall mission and received no extra funds to help with the recovery of the *Columbia* disaster. This, in turn, creates budgetary stress for all of the Directorates including Science. In my view, this is the key problem that must be addressed by the Congress and the next Administration.

The AAS therefore recommends that Congress fund NASA Science by 2.9 percent over the fiscal year 2009 level. This modest increase over the President’s fiscal year 2009 request will help maintain balance within the science portfolio, which is critical to our community. This increase is also the same increase as proposed for the top-line NASA budget. Small missions and research grants to individual investigators must also be supported. Otherwise, many exciting programs to explore the solar system, to detect planets around other stars, to measure gravitational waves from astronomical events, to explore black holes in all their manifestations, and to seek the nature of the dark energy may be threatened. The AAS also recommends a one-time supplement of \$1 billion to help allay expenses associated with the *Columbia* disaster and the Shuttle return to flight.

Finally, the AAS strongly encourages the Administration and Congress to uphold the priorities of the NAS Decadal Survey in astronomy. We are pleased that the development of JWST and HST servicing mission are priorities in the new budget, but we stress that balance is critical in the Science portfolio.

NASA Science has been and continues to be a beacon of innovation and discovery by inspiring generations of young people, capturing the imagination of the public, developing new technologies, and discovering profound insights into the nature of our Universe.

The AAS and its members are prepared to work with Congress and with NASA to help find the best way forward. We will give you our best advice and we will work diligently to make the most of NASA’s investment in science.

PREPARED STATEMENT OF THE NATURE CONSERVANCY

Thank you for the opportunity to offer the recommendations of The Nature Conservancy (Conservancy) on the fiscal year 2009 budget for the National Oceanic and Atmospheric Administration (NOAA). The Conservancy urges the Committee to provide appropriations for NOAA at or approaching \$4.5 billion, as recommended by the Friends of NOAA Coalition. This funding level for NOAA would allow expanded ocean conservation, restoration, and management programs; increased research and education activities; and provide critical improvements in infrastructure (satellites, ships, high performance computers, facilities) and data management. More specifically, The Nature Conservancy supports the following funding levels for the following programs:

[In millions of dollars]

Line Office, Account, Program	Fiscal Year 2009 President’s Budget	Fiscal Year 2009 TNC Recommendation
National Ocean Service: Operations, Research, and Facilities: Regional Collaboration	5	10

[In millions of dollars]

Line Office, Account, Program	Fiscal Year 2009 President's Budget	Fiscal Year 2009 TNC Recommendation
Coral Reef Program	25.9	30.5
Response and Restoration Base, Damage Assessment, Remediation, and Restoration Program (DARRP)	9.3	9.3
Estuary Restoration Program	1.2	4
Procurement, Acquisition, and Construction: Coastal and Estuarine Land Con- servation Program	15	60
National Marine Fisheries Service:		
Operations, Research, and Facilities:		
Community-based Restoration Program	13	23
Open Rivers Initiative	7	12
Protected Species Research & Management, Cooperation with States990	5
National Environmental Satellite Data & Information Service: Operations, Research, and Facilities: Coral Reef Monitoring737	.737
Pacific Coastal Salmon Recovery Fund	35	90

The Conservancy works to identify priorities for coastal and marine conservation through ecoregional plans. We identify present and likely future threats to biological diversity and then identify appropriate strategies for conservation. At more than one hundred marine sites around the world, the Conservancy has used a variety of strategies for conservation including habitat restoration, removal of invasive species, coastal land acquisition, private conservation of submerged lands, establishment of protected areas, management of extractive marine resources activities, and reduction of nutrient and toxic inputs to coastal systems. No single strategy works everywhere; at every site multiple conservation approaches that take into account the biological, socioeconomic, and political circumstances are needed.

NOAA is an important partner to the Conservancy in many aspects of our conservation work:

- We work with NOAA's programs that support site-based conservation and restoration activities of coastal and marine systems. Programs such as Coastal and Estuarine Land Conservation, Community-based Restoration, Open Rivers Initiative, and the Pacific Coastal Salmon Recovery Fund are excellent examples of practical, community-oriented approaches to conservation of coastal and marine resources. These programs should be expanded.
- Our chapters routinely partner with NOAA programs that support management of marine and coastal ecosystems. The National Marine Sanctuary Program, the National Estuarine Research Reserve System, the Coastal Zone Management Program, the Coral Reef Program, the Marine Protected Areas Center, and fisheries and protected species management programs, are all valuable partners on Conservancy projects and should be funded robustly.
- We rely upon NOAA's data, research, and monitoring of coastal and marine systems, and have several shared priorities on which we collaborate. For example, NOAA's Coastal Services Center maintains a strong partnership-oriented approach to providing information and technical assistance to states, local governments, other federal agencies, and the private sector to inform decision-making.
- NOAA's contributions to state and local implementation and education programs help ensure that the human capacity exists to address environmental management issues at the necessary scale. The Committee should provide funding for staff capacity to provide technical assistance, efficiently manage grants and programs, and help to measure effectiveness.

The Conservancy highly values the contributions these NOAA programs make to sustaining healthy ocean and coastal ecosystems and we encourage the Committee provide significant funding for them. In particular, we would like to offer our recommendations regarding a specific set of programs that support conservation and restoration. NOAA has demonstrated significant capability to achieve results by advancing constructive, on-the-ground and in-the-water habitat conservation. Habitat losses have a substantial impact on the health and productivity of marine ecosystems, yet NOAA's ability to work closely with communities around the country to stem or reverse these losses is constrained by the relatively small amount of funding they receive. We would urge you to consider increasing funding for the following programs:

Habitat Restoration

Community-based Restoration Program (\$23 million).—Currently this program, with its exceptional track record since 1996, is able to fund only about 15 percent of the proposals it receives. Additional funds would be well-spent.

Open Rivers Initiative (\$12 million).—There are hundreds of thousands of small obsolete barriers on rivers and streams across the United States that block fish passage and restrict access to important habitat. This Initiative is part of a multi-agency commitment to address this problem.

Damage Assessment, Remediation, and Restoration Program (DARRP) (\$9.3 million).—Thousands of oil spills and hazardous waste sites contaminate coastal and estuarine areas. DARRP uses a collaborative process to respond to pollution events, assess injuries, and work with responsible parties to restore natural trust resources. Through this program NOAA has secured nearly \$450 million in settlements for restoration projects over the last 15 years. Additional funding is necessary for NOAA to continue to properly respond to spills, conduct initial environmental assessments, and work to resolve each settlement.

Estuary Restoration Program (\$4 million).—The Estuary Restoration Act (ERA), as reauthorized by the Water Resources Development Act of 2007, sets a goal to restore one million acres of estuary habitat by 2010. The Act encourages coordination among all levels of government, and engages the unique strengths of the public, nonprofit, and private sectors. The ERA authorizes \$4 million for NOAA, including \$2.5 million for on-the-ground restoration projects and \$1.5 million for maintenance of restoration project monitoring data.

Protected Species Conservation

Cooperation with the States (\$5 million).—Through this program, authorized under Section 6 of the Endangered Species Act, NMFS provides grants to States to support conservation actions that contribute to recovery or benefit listed species, recently de-listed species, and candidate species that reside within that State. A comparable program in U.S. Fish and Wildlife Service (FWS) has been successful in funding activities that contribute to the recovery of listed species under FWS jurisdiction. With the exception of jointly managed species (e.g. Atlantic salmon), activities related to NMFS jurisdiction species are not eligible for funding under the FWS program. While substantial funding has been directed to Pacific salmon, there are few resources available to support proactive conservation efforts for the other 30 species for which NMFS has sole or joint management responsibility.

Pacific Coastal Salmon Recovery Fund (\$90 million).—The Conservancy strongly supports \$90 million for the Pacific Coast Salmon Recovery Fund (PCSRF). PCSRF has funded hundreds of successful on the ground salmon conservation efforts and is a critical state, tribal, and local complement to federal salmon recovery and management efforts. We are pleased that NOAA is moving towards a more merit-based allocation of funds focused on activities to recover and protect listed and at-risk salmon populations. However, we are greatly concerned about the dramatic decline in funding for the program, from \$89 million in fiscal year 2004 and fiscal year 2005 to \$35 million in the President's fiscal year 2009 request.

Coastal and Estuarine Land Conservation

Coastal and Estuarine Land Conservation Program (CELCP) (\$60 million).—The Nature Conservancy supports funding CELCP at \$60 million for fiscal year 2009. We recognize that this is a substantial increase of prior year funding levels, but feel that it is warranted given the extraordinary circumstances surrounding the fiscal year 2007 and fiscal year 2008 budgets and the pent-up demand left over from low funding levels in those years. We support a competitive process to award CELCP funding. However, for a competitive process to be successful, funding for the program needs to accommodate a greater percentage of the overall demand for coastal acquisition projects.

Coral Reef Conservation

Coral Reef Conservation Program (\$30.5 million).—The Conservancy continues to work through a strong partnership with NOAA's Coral Reef program, and we are delighted with their enthusiastic desire to work together on improving resilience of coral reefs, developing approaches for sustainable financing for coral conservation activities at the local level, and other creative approaches to reducing threats to corals. The \$30.5 million requested would include \$1.5 million to support "Local Action Strategies," a unique partnership between NOAA and states and territories to address threats to coral reefs at the local level.

Coral Reef Monitoring (\$737,000).—This line item is an important part of the Coral Reef Program, but is requested by the Administration through the National

Environmental Satellite Data and Information Service (NESDIS). The President's budget requests \$737,000 for this modest but effective program known as "Coral Reef Watch." Whether funded in NESDIS or consolidated with the Coral Reef Program funding in NOS, we recommend that \$737,000 be included in addition to the \$30.5 million referenced above.

Regional Approaches to Ocean and Coastal Issues

Regional Collaboration (\$10 million).—For the second year, the Administration's budget requests \$5 million to help implement the Gulf of Mexico Governors' Action Plan. The Conservancy thanks the Committee for their support and appropriation of this funding in fiscal year 2008 and urges the Committee to provide an additional \$5 million of funding in 2009 to support implementation of regional collaborations in the Northeast and the West Coast, as well as the Governor's Alliance in the Gulf of Mexico. As states come together to form these collaborations, funding should be made available to address issues at the regional scale. As such, we also recommend including this funding in the budget under the title or "Regional Collaborations" rather than "Gulf of Mexico Regional Collaboration."

Thank you for this opportunity to share with the Committee the Conservancy's priorities in NOAA's fiscal year 2009 budget. We would be pleased to provide the Committee with additional information on any of the Conservancy's activities described here or elsewhere. You may contact Emily Woglom at 703-841-5374 or via email at ewoglom@tnc.org, if you have questions on which we might be of assistance.

The Nature Conservancy is an international, nonprofit organization dedicated to the conservation of biological diversity. Our mission is to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Our on-the-ground and in-the-water conservation work is carried out in all 50 states and in more than 30 countries and is supported by approximately one million individual members. We have helped conserve nearly 15 million acres of land in the United States and Canada and more than 102 million acres with local partner organizations globally.

The Conservancy owns and manages approximately 1,400 preserves throughout the United States—the largest private system of nature sanctuaries in the world. We recognize, however, that our mission cannot be achieved by core protected areas alone. Therefore, our projects increasingly seek to accommodate compatible human uses to address sustained human well-being.

PREPARED STATEMENT OF TRAIL KING INDUSTRIES

On behalf of Trail King Industries, major trailer manufacturer and employer of 900 people, with plants located in West Fargo, North Dakota, Mitchell, South Dakota and in Brookville, Pennsylvania, I would like to thank the Committee for allowing our organization to submit this testimony for the record. I am writing to respectfully request that the Hollings Manufacturing Extension Partnership program be provided the authorized \$122 million within the fiscal year 2009 Commerce, Justice, Science and Related Agencies Appropriations Bill. This requested level of funding for 2009 was provided for in the recently enacted America COMPETES Act. As you know, the Hollings Manufacturing Extension Partnership (MEP) is a program within the Department of Commerce, National Institute of Standards and Technology, a program authorized to improve competitiveness of America's manufacturing community.

The MEP is one of the most successful partnerships in the country. In addition to public support, a value proposition to improve manufacturer's global competitiveness is supported by those companies who receive benefit. In South Dakota, the Dakota MEP provides assistance to companies in continuous improvement, innovation, strategic growth, technology and workforce development—all major needs of our companies. Last year, we were able to pilot a unique Manufacturing "Boot Camp" for unemployed, with the Dakota MEP.

As a Dakota MEP Director, I would also like to report that the average company benefits and impacts realized in the Dakota MEP improvement work with manufacturers mirrors the national MEP average at \$1.4 million per engagement. These benefits have been realized by manufacturers who've partnered with Dakota MEP over the past six years.

Manufacturing continues to diversify and grow the economies of the Dakotas. It currently is 10 percent of the gross state product in North Dakota and 11 percent in South Dakota. The industry has nearly 1,900 firms employing 69,000 in the Dakotas exporting over \$2 billion. Manufacturing brings new wealth to our country,

our states and communities which, in turn, generate other economic activity and opportunities.

Manufacturing must remain one of our country's economic strengths and the MEP is an invaluable program to help the industry better compete. Without unwavering strong federal support, the MEP will be unable to maintain its mission of serving America's small manufacturers' increasing needs. At a time when our economic strength and global competitiveness are national priorities, the MEP continues to be a wise investment. We respectfully request that you appropriate \$122 million for the MEP in fiscal year 2009.

PREPARED STATEMENT OF THE UNIVERSITY CORPORATION FOR ATMOSPHERIC RESEARCH

I submit this written testimony for the record of the U.S. Senate Committee on Appropriations, Subcommittee on Commerce, Justice, Science, and Related Agencies, on behalf of the University Corporation for Atmospheric Research (UCAR). UCAR is a 71-university member consortium that manages and operates the National Center for Atmospheric Research (NCAR) and additional programs that support and extend the country's scientific research and education capabilities.

We are reminded on almost a daily basis that the world faces significant and profound environmental challenges. Yet at a time when the need has never been greater, we are faced with decreasing investments in real terms for the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), and the National Oceanic and Atmospheric Administration (NOAA). These are key agencies needed to provide the necessary observations, science, prediction models, and information that policy- and decision-makers need to respond effectively to short-term threats from weather hazards and to plan and prepare for the long-term future of the United States as we move into an uncharted climate. To meet both short- and long-term challenges the nation must support Earth sciences and applications in NSF, NASA and NOAA. I urge the Members to support the fiscal year 2009 request of \$6.84 billion for NSF at a minimum, \$4.583 billion for NASA's Science Mission Directorate, and \$4.5 billion for NOAA overall.

The atmospheric and Earth sciences community appreciates the difficult choices Appropriators were forced to make in the fiscal year 2008 Consolidated Appropriations Act, but remains concerned about the negative consequences of not investing now in science. We appreciate Congress' support for the enactment last year of the America COMPETES Act and urge the Appropriations Committee to follow through with fiscal year 2009 funding for NSF, NASA, and NOAA that reflects the concern demonstrated in that legislation for the health of this country's scientific programs.

National Science Foundation (NSF)

While we lost a year with nearly flat NSF funding for fiscal year 2008, this critical science agency can get back on track to planned accelerated research levels by receiving appropriated funds at the level of the authorized amount of \$7.32 billion in the America COMPETES ACT. This would provide a return on investment that would benefit citizens in additional research funded for the short and long term health of the country. I urge the Members to support the President's overall fiscal year 2009 request of at least \$6.84 billion for the NSF, and within NSF, the request of \$5.59 billion at least for Research and Related Activities (R&RA), the heart of NSF's scientific enterprise.

Geosciences Directorate (GEO).—In this most critical moment for the health of our planet and the future of life as we know it, the geosciences contribute knowledge that is absolutely necessary to understanding climate, weather, the dynamics of water resources, solar effects on Earth, space weather, the interactions of Earth's systems, energy resources, geologic hazards, and all aspects of the global oceans. The economic effects are substantial, with estimates of the component of the U.S. economy exposed to risks associated with weather and climate variability alone reaching \$3 trillion annually. While we support the increase for NSF's GEO Directorate in the fiscal year 2009 budget request, we urge the Committee to once again reiterate, as it did last year, that all disciplines of science, including the geosciences, should be considered integral to the American Competitiveness Initiative and urge even stronger increases to include GEO on the "doubling track." I urge the Members to support the President's fiscal year 2009 request of \$848.67 million, at a minimum, for the Geosciences Directorate, and within GEO, to provide the President's request of \$240.8 million at least for the Atmospheric Sciences Division which provides resources for the atmospheric sciences community that are critical to the physical safety of our citizens, our economic health, and global issues of national security

such as severe weather hazards, climate change, the security of our communications infrastructure, and the environmental health of the planet.

Office of Cyberinfrastructure (OCI).—As stated in the fiscal year 2009 request, OCI “supports research, development, acquisition and operation of advanced shared and connecting infrastructure that enables otherwise unrealizable advances in 21st century science and engineering research and education.” The modeling of the Earth’s atmosphere is one of these “otherwise unrealizable advances.” I urge the Members to support the fiscal year 2009 request of \$220.08 million, an 18.8 percent increase over fiscal year 2008 that recognizes cyberinfrastructure’s key role.

National Aeronautics and Space Administration (NASA)

NASA’s Science Mission Directorate (SMD) has a central role in understanding our planet. Yet despite increasing policy-driven demand for information and analysis the funding in this area is not keeping up with needed support for observing systems and research. I appreciate the Administration’s focus on the especially critical Earth Science account in the fiscal year 2009 request. But NASA’s overall role in this country’s scientific endeavor is so strategic and central to our well being that SMD should be one of this nation’s highest priorities. I urge the Members to increase the Science Mission Directorate funding levels to at least \$4.583 billion, \$142 million above the fiscal year 2009 request and sufficient to keep pace with 3 percent inflation.

With accelerating climate change, there are few NASA responsibilities more important than monitoring the Earth’s environment. Within NASA’s SMD account, Earth Science does relatively well at \$1.367 billion, a 6.8 percent increase, but much less well than in recommendations of the National Research Council’s Earth and Science Applications From Space (Decadal Survey). Planned out-year funding absolutely falls short. It is encouraging to see the Decadal Survey being used as a benchmark for the order and timing of missions. However, falling behind schedule increases the risk of losing continuity in important observational data, which presents serious calibration issues. I urge the Members to plan for future investments of over \$2 billion annually as called for by the Decadal Survey, whereas the fiscal year 2009 request includes out-year funding of approximately \$1.3 billion annually.

NASA’s SMD programs that are in progress and others that are yet to be implemented will enable us to mitigate some of the property damage and prevent some of the deaths caused by severe weather and help us to mitigate, understand, and cope with the inevitable effects of natural and human-induced climate change. SMD “space weather” programs, part of the Living with a Star Program, will also protect space vehicles, astronauts, and satellites from the devastating radiation of solar storms. These programs are critical to the health of our economy, to the health of the Earth, and to our national security. Once again, I urge the Members to protect the vibrant NASA science accounts and missions, current and planned, that make possible the study of our own planet and the environment that sustains life on Earth.

National Oceanic and Atmospheric Administration (NOAA)

As stated in the Friends of NOAA Coalition letter of March 12, 2008, “Assuming an annual inflationary rate of 3 percent, and using fiscal year 2005 as a baseline, the agency’s budget would need to be \$4.4 billion in fiscal year 2009 just to remain level in constant dollars.” It is obviously impossible for NOAA to keep up with expanding responsibilities while its budget effectively shrinks. The atmospheric sciences community appreciates the Administration’s request of \$4.1 billion for fiscal year 2009, but this increase of 5.5 percent over fiscal year 2008 will primarily augment the satellite programs while others are diminished. The America COMPETES Act, signed into law last August, states that NOAA “shall be a full participant in any interagency effort to promote innovation and economic competitiveness through near-term and long-term basic scientific research and development and the promotion of science, technology, engineering, and mathematics education consistent with the agency mission, including authorized activities.” NOAA has the potential to make much greater contributions, but the agency is struggling. There simply must be a better balance between NOAA’s infrastructure, operations, and research funding, as well as effective management and organizational structure at all levels, for this agency to accomplish its mission.

I urge the Members to support an appropriation of at least \$4.5 billion for NOAA in fiscal year 2009—a level recommended by the Senate for the past three fiscal years and endorsed by the multi-sector Friends of NOAA Coalition and Weather Coalition—and to do so while maintaining vital support for other portions of the Subcommittee’s research and development portfolio. While not sufficient to meet all of NOAA’s current obligations, it would begin to alleviate pressures that have built up

over many years and set a more realistic (although still inadequate) base for this agency to meet current and future obligations of national importance.

Office of Oceanic and Atmospheric Research (OAR).—Within OAR's Competitive Research Program request of \$134.7 million, a small increase will support several climate and weather data related activities of great importance to the country and enable OAR to work more effectively with, and leverage from, the enormous base of expertise in the academic community. Within OAR Weather and Air Quality Research, the potentially substantial role of Unmanned Aircraft Systems in filling very serious observational gaps will be examined, and hurricane forecast improvement will be pursued. The fiscal year 2009 request moves the U.S. Weather Research Program from the National Weather Service back to OAR. This chronically underfunded program will fund THORpex, a multi-year international field experiment to improve two to ten-day forecasts, as well as experimental hurricane forecasting work. I urge the Members to support the fiscal year 2009 request of \$372.2 million (Operations, Research and Facilities—ORF) for the Office of Oceanic and Atmospheric Research.

National Weather Service (NWS).—Within NWS, UCAR supports the fiscal year 2009 program changes including support for weather data buoys to enhance hurricane and severe storm observations, developing enhanced fire weather modeling capability, and additional water vapor sensors that contribute to improved weather aviation services within the Integrated Upper Air Observing System. I urge the Members to support the fiscal year 2009 request of \$930.7 million for the NWS.

National Environmental Satellite, Data and Information Service (NESDIS).—NESDIS receives an absolutely necessary increase for the geostationary satellite series, GOES-R. Any further delay or decrease in funding will cause additional program costs as well as interruption to the overall continuity of GOES comprehensive data coverage including atmospheric, oceanic, climatic, and solar observations. This would cause severe problems for the nation's weather forecasts and warnings, climatologic analysis and prediction, ecosystems management, and safe and efficient public and private transportation. The fiscal year 2009 request cuts funding for the tri-agency National Polar-orbiting Operational Environmental Satellite (NPOESS) program, which we understand is a result of restructuring. We are extremely concerned about out-year funding for this critical program, but are pleased with the reinstatement of the development of two NPOESS climate sensors that were previously de-manifested, the Clouds and the Earth's Radiant Energy System (CERES) sensor and the Total Solar Irradiance Sensor (TSIS).

Of additional concern is the nearly flat funding for NESDIS Data Centers. If the country is truly committed to renewing and capitalizing on its investment in Earth-observing systems, it must also invest in accessing, archiving and assessing the data gathered from these systems. The weather and climate community is concerned also that the President's request fails to begin initial planning for the CLARREO and GPSRO missions, as recommended in the NRC Decadal Survey. CLARREO and GPSRO provide critical measurements of Earth's and the sun's radiation, which are critical for climate, and temperature, water vapor, and electron density profiles for weather, climate, and space weather.

I urge the Members to consider the NESDIS Procurement, Acquisition and Construction (PAC) account fiscal year 2009 request level of \$1.24 billion to be the base level for this line office; to examine the erosion of funding for the NESDIS Data Centers and appropriate for them an inflationary increase; to press the agency to begin planning for the CLARREO and GPSRO missions; and to continue to pursue solutions to this nation's critical Earth observing program, the infrastructural satellite component of which is going to cause NOAA's core programs to be undercut severely if additional resources or restructuring are not provided.

National Ocean Service (NOS).—Ocean data are of great importance to the work of the atmospheric sciences community. Of particular interest are the efforts within NOS to manage hydrographic datasets more effectively and efficiently (Ping to Chart Infrastructure Streamlining), as well as the implementation as it was originally conceived, of the Integrated Ocean Observing System (IOOS). There is great concern that years of report recommendations have not been heeded and that the original concept of a "system of systems" providing information on the current and future state of the oceans, informed by competitive research grants to provide the technologies and understanding required to build and improve a scientifically sound system, has been abandoned. I urge the Members to support data gathering efforts within the National Ocean Service, but to ensure that a competitive grants program be fully funded for the Integrated Ocean Observing System so that this valuable program may be appropriately structured to meet its societal goals.

I sincerely thank the members of the Committee for your stewardship of the nation's scientific enterprise and your understanding that the future strength of the nation depends on the investments we make in science and technology today.

PREPARED STATEMENT OF MITCHELL V. VOYDAT

My name is Mitchell V. Voydat and I'm a private citizen highlighting the extreme urgency of appropriations that need to be earmarked for the continuation of two very successful, critical and important programs. The two programs are the Whale disentanglement program of the Provincetown Center for Coastal Studies (PCCS), located in Provincetown, Massachusetts for the highly endangered species, the North Atlantic Right Whale and the Dolphin SMART program, for the wild bottlenose dolphin located in the Florida Keys National Marine Sanctuary. The North Atlantic Right Whale is a highly endangered species listed under the Federal Endangered Species Act and both right whales and the bottlenose dolphin must be protected under the Marine Mammal Protection Act. The National Marine Fisheries Service (NMFS) under the National Oceanic and Atmospheric Administration (NOAA) is the responsible agency for the protection of the North Atlantic Right Whale and the bottlenose dolphin.

Let me explain the whale disentanglement program of PCCS.

The main responsibility of the whale disentanglement program is freeing Right Whales from life-threatening entanglements in fishing gear. Without the necessary appropriations, there is a very, very high and very, very real possibility of North Atlantic Right Whales becoming entangled in life-threatening fishing gear, serious injury or death caused by the entanglement and extinction of the highly endangered species, because there are only approximately 350 North Atlantic Right Whales living today.

The whale disentanglement program is world-renowned and the only one of its kind on the East Coast.

The whale disentanglement program of PCCS have freed 89 Right Wales and five of these rescues were right whales who went on to have calves.

Please help the PCCS secure the very necessary and urgent appropriations to continue its life savings services of freeing right whales from life-threatening entanglements in fishing gear.

Let me explain the Dolphin SMART Program.

A special area of the Florida Keys National Marine Sanctuary is home to a resident group of bottlenose dolphins. It is also where many businesses conduct dolphin tours in a small geographic area. This heightened amount of human activity in a small area may cause unnecessary stress to the local population by disrupting their natural behaviors. This prompted conservation agencies, including NOAA's National Marine Sanctuary Program and National Marine Fisheries Service, the Dolphin Ecology Project and the Whale and Dolphin Conservation Society, as well as local businesses and members of the public, to team up and develop a unique, multi-faceted program encouraging responsible viewing of wild dolphins and recognizing businesses that participated.

When we approach wild dolphins too closely, move too quickly, or make too much noise, we increase the risk of disturbing their natural behaviors, such as migration, breathing, nursing, breeding, feeding and sheltering.

The Dolphin SMART mission is to promote responsible stewardship of wild dolphins inhabiting the Florida Keys Nation Marine Sanctuary.

Program participation is for commercial businesses conducting and booking wild dolphin tours in the Florida Keys. The Dolphin SMART program offers participation incentives for businesses that follow the program criteria and educate their customers about the importance of minimizing wild dolphin harassment.

What does Dolphin SMART mean?

S—Stay at least 50 yards from dolphins.

M—Move away cautiously if dolphins show signs of disturbance.

A—Always put your engine in neutral when dolphins are near.

R—Refrain from swimming with, touching or feeding wild dolphins.

T—Teach others to be Dolphin SMART.

Purpose of the Dolphin SMART Program:

—Minimize the potential of wild dolphin harassment caused by commercial viewing vehicles.

—Reduce expectations of wanting to closely interact with wild dolphins in a manner that may cause harassment.

—Eliminate advertising that creates expectations of engaging in activities that may cause harassment.

—Promote stewardship of the Florida Keys National Marine Sanctuary.

Upon successful completion of the program criteria, the training and evaluation, Dolphin SMART businesses receive materials recognizing them as active Dolphin SMART participants. Participants must complete an annual refresher training and evaluation to ensure active participation. Dolphin SMART participants can easily be

identified by a flag or decal displayed on their vessel featuring the Dolphin SMART logo and current calendar year.

Madam Chairman and Honorable U.S. Senators: As you can see, here are two very, very successful programs, but without earmarking the necessary funds to keep these programs running, without the Dolphin SMART program, human intervention will threaten, disrupt and destroy the natural behaviors of wild dolphins in the Florida Keys, and without the whale disentanglement program of PCCS, extinction of the North Atlantic Right Whale is very, very real and very certain.

I want to thank Madam Chairman, the Honorable U.S. Senator from Maryland, Senator Mikulski, and the ranking member, the Honorable U.S. Senator from Alabama, Senator Shelby and all the Honorable Committee Members on the U.S. Senate Subcommittee on Commerce, Justice, Science and related agencies for giving me the opportunity to submit my written testimony for these two very successful, critical and very important programs.