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NOAA FY 2001 BUDGET REQUEST

OUR SEAS AND OUR SKIES

OF EXCELLENCE AT NOAA

National Oceanic and Atmospheric Administration
U.S. Department of Commerce
Washington, DC
February 7, 2000

NOAA works for America every day.

From providing timely and precise weather and climate forecasts that protect lives and property, to managing fisheries and building healthy coastlines, to making our nation more competitive through safe navigation and examining changes in the oceans, NOAA is on the front lines for America. Each day, NOAA's work touches people all across our nation and around the globe.

As NOAA approaches its 30th anniversary, we are thinking globally, providing the sound science and service essential to measuring, managing, and solving many of this nation's and the world's difficult environmental challenges. The choices made by society and our agency will profoundly shape America's economic and environmental future.

The key challenge is to inspire and create sustainable approaches that effectively meet today's demands without compromising the needs of the future and the undiscovered promises ahead.

NOAA science and technology shape the economic and social choices on which sustainable development is based. NOAA information allows these choices to be made with the least possible uncertainty.

Lives, safety, and businesses, for example, depend on reliable weather and climate forecasts. With a vision of becoming the "no surprise" weather service, NOAA's $4.5 billion weather service modernization will benefit every American – at a cost of just $4 per person per year. Applying revolutionary new technology, NOAA now has more powerful satellites, more sophisticated radars, and new computer systems. Predictions are already faster and more accurate, and they are safeguarding lives and the economy.

Another vital NOAA responsibility, mid-range and long-term climate forecasts, will have enormous impacts on societies and governments.

NOAA is leading the way toward forecasts issued weeks, months, even years in advance. The most recent El Niño brought home the value of longer-term forecasts. Lives and property were saved because NOAA provided the nation with an unprecedented six months' heads-up.

By monitoring environmental changes from the deep ocean to the surface of the sun, NOAA can provide the basis for understanding longer-term climate and environmental patterns. In time, farmers will plant crops knowing next year's weather forecast. Public readiness for severe weather will be greatly improved. Water and energy sources will be better managed. Navigation services will safely support the economic gains of transporting goods. Businesses will have new capability to maximize profits because supply can be adjusted to meet the following year's demand.

NOAA science, technology, and management are addressing the accelerating challenge of sustaining healthy coasts.

America depends on healthy coasts. Coastal communities bring in over 30 percent of the Gross Domestic Product. Coastal tourism generates more than 28 million U.S. jobs and over $54 million annually. The nation's $20-billion-a-year fishing industry depends on healthy marine habitats and diverse ocean life.

Yet we are faced with an environment under threat. Nature is telling us that we must act now. Lives are threatened when the impacts of hurricanes and floods are not mitigated. Local economies can collapse when property values fall along with tourism and fishing revenues.

Already we are changing the chemistry of our waters. All along our coasts, polluted runoff is the major source of water pollution. Coastal states are now vulnerable to fish kills from harmful algal blooms such as red tides and toxic *Pfiesteria*. In the past 20 years, these blooms have contributed to an estimated $1 billion in losses. With collaborations on every level, NOAA is working to more effectively manage the coasts and Great Lakes and to help curtail human and economic costs.

A time-tested NOAA mission – providing accurate charts and positioning – is the backbone of safe navigation. Through improvements in navigation safety and port traffic management, NOAA is advancing the effort to protect America's leadership in international trade.

With resulting economic and environmental benefits, safe navigation ensures efficient passage to the nation's ports and through its waterways. The nation is increasingly dependent upon nautical charts, tide and water level data, and precise positioning information.

NOAA works to sustain America's commercial and recreational fisheries and the economies that depend on them.

By studying the life and ecology of many fisheries species, and the effects of climate and ocean processes on their populations, NOAA ensures that those who are most affected by federal fishery management decisions have a role in the decision-making process *and* good scientific guidelines to factor into management options.

NOAA has ushered in a new era of flexibility for the Endangered Species Act, working to achieve a fair balance between the needs of threatened and endangered species and the needs of communities, industry, and other constituents. NOAA's integrated management approach further underscores the interests of the people and communities that have much to gain from a productive transition to thriving fisheries.

Many diverse ocean communities came together at the historic National Ocean Conference co-hosted by NOAA. As a highlight of the 1998 Year of the Ocean, over 1,000 conference participants examined the issues vital to protecting and sustaining the use of our ocean and coastal resources. As we move into the new century, partnerships, exploration, and education will be the hallmarks of global success. During the conference, President Clinton and Vice President Gore announced a number of new measures designed to bolster America's economic and environmental interests. The results of this first-of-its-kind conference will help shape U.S. federal ocean policies and actions well into the 21st century.

Understanding ocean and atmospheric links is essential as we work toward sustaining marine biodiversity, reducing the vulnerability of communities to natural disasters, and increasing longer-term weather forecasts. Since 1989, the cost of national hazards in the U.S. has averaged as much as $1 billion per week. That cost is expected to rise.

When it comes to our environment, everyone is a stakeholder. With the stakes so high, it is imperative that our decisions reflect the best available scientific information. More than ever before we have the capacity to profoundly affect our environment.

By providing the highest quality and objective scientific information on the state of the Earth's climate on greenhouse gases to U.S. policymakers, NOAA has contributed significantly to the scope of the FY 2001 major climate assessment of the Intergovernmental Panel on Climate Change.

How we choose to manage our ocean and coastal environment, and whether we choose to safeguard and manage its finite treasures in an enduring way, relate directly to the standards we set for life itself. The health of our environment is a harbinger of our own. It is also intrinsic to America's economic prosperity. If we are to reap the benefits of the environment yet protect its fragile assets for future generations, the economy and the environment must simultaneously flourish. Selecting one over the other represents a false choice.

As we reach the new century, the quality of our environment will be the legacy we bequeath to our children and grandchildren. This is a challenge too essential to ignore.

With its broad mandate of critical issues, NOAA is a unique and exciting agency. I am pleased that so many of the ways in which NOAA works for America every day are the focus of this first business report.

Dr. D. James Baker
Under Secretary of Commerce for Oceans and Atmosphere and
Administrator, National Oceanic and Atmospheric Administration

EXECUTIVE SUMMARY

NOAA, a key component of the Department of Commerce, plays a vital role in the everyday lives of our citizens through our numerous contributions to the Nation's economic and environmental health. In a period of strongly competing government priorities, the President's FY 2001 Budget Request of $2.9 billion in total budget authority provides essential new resources for NOAA, underscoring the agency's important contributions to the Nation (see Section 4 for a detailed breakout of the Budget Request). The proposed budget provides the resources necessary to maintain indispensable services, ensures continuing progress in critical investment areas, and addresses statutory obligations.

This year marks the 30th anniversary of our Agency, and our slogan for this event, "Our Seas and Our Skies–30 Years of Excellence at NOAA," captures the essence of who we are and what we do. By tackling challenges from the deep ocean to the surface of the sun, NOAA is helping to make America and the world a healthier place to live. Although NOAA is young, the responsibilities and mission that NOAA retains date back much earlier, beginning with maritime charting in 1807 when President Thomas Jefferson established the Survey of the Coast, which later evolved into our National Ocean Service. As depicted in the graph below, NOAA has grown from a $277 million agency in 1971, to a $2.9 billion request with 12,600 people today.

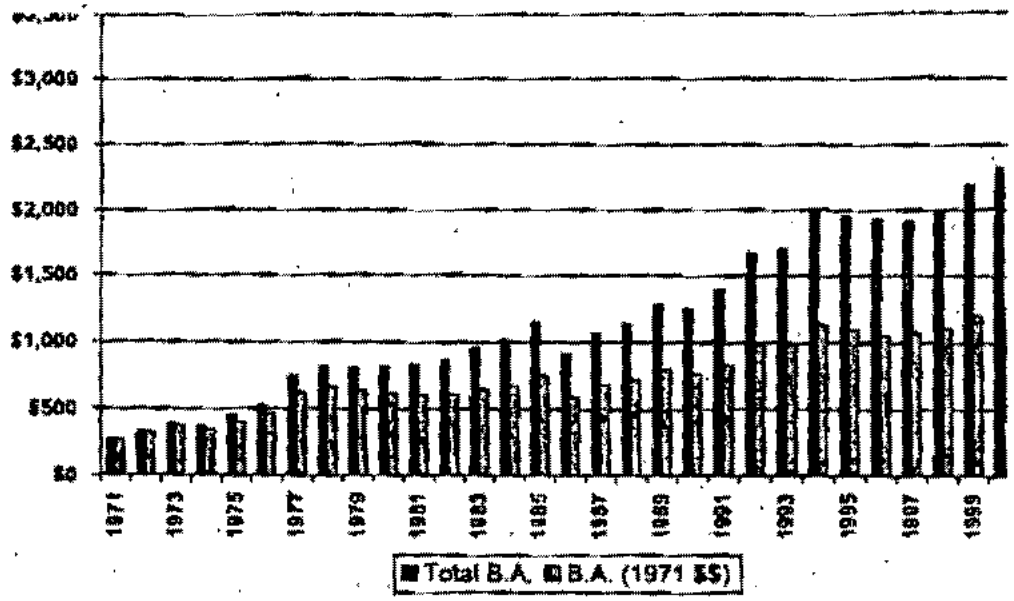
OUR SEAS AND OUR SKIES

OF EXCELLENCE AT NOAA

Since then, NOAA has had much to be proud of–but there is still much to be done. NOAA has the challenge of mapping the future of our oceans and coasts, and of deepening our understanding of the atmosphere, which are no less than the economic and environmental lifelines of America and the world. This Budget Request, then, is one in a series of steps toward these goals.

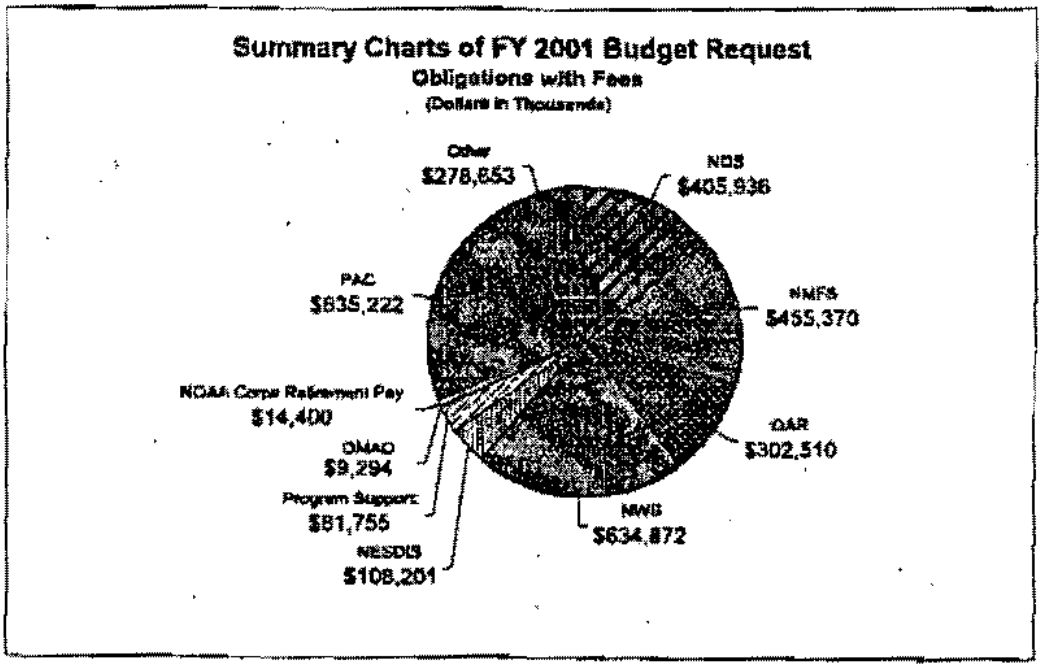
NOAA's responsibilities, from issuing weather and climate forecasts, to managing our Nation's ocean and marine resources, are much in the public view. In 1999, we experienced a range of powerful weather and climate events, including a La Niña, for which NOAA provided a long range forecast, searing heat that scorched southern states, floods that swallowed parts of America's heartland, and a devastating hurricane season. The 1997-'98 El Niño provided scientists around the world their first opportunity to observe a major climate event from beginning to end, and issue valuable forecasts to help mitigate the potential impacts.

NOAA BUDGET GROWTH: FY 1971 - FY 2001



In 1999, NOAA built on its ability to provide long range forecasts and develop new climate products, including hurricane and drought outlooks that allowed emergency managers, businesses, communities and individuals to make advance preparations for the inclement weather. Also in 1999, NOAA completed the deployment of the Advanced Weather Interactive Processing System (AWIPS). This system, along with the NOAA Weather Radio and the Warning Decision Support System, was credited for the outstanding service and long lead time for warnings issued during a violent outbreak of tornadoes in May in Oklahoma and Kansas.

To fulfill its environmental stewardship mission, NOAA has initiated and continued strong cooperative efforts to protect our living marine resources. These efforts include innovative partnerships with the states of Washington, Oregon, and California to protect and recover at-risk Pacific salmon and steelhead species. These partnerships were based upon the significant flexibility of the Endangered Species Act (ESA) and provided a mechanism to reduce human-caused threats to the at-risk species before they are listed under the ESA. Thus, the partnerships promote the economic strength of the Nation and enhance recovery of at-risk species.



Take reduction strategies also have decreased incidental mortality in commercial fisheries. Strong fishery management programs have helped ensure the long term sustainable harvest of valuable stocks of marine fish. Management actions to rebuild haddock stocks in New England have resulted in recent assessments indicating that the stock is recovering, and harvest limits have been safely increased.

NOAA also has led an effort to bring increased visibility to the challenges threatening our living marine resources. NOAA co-hosted the National Ocean Conference in 1998 with the Department of Navy—the first national conference to draw attention to key ocean resources and issues, including coastal and ocean navigation and transportation, coastal habitats, fishing resources, and the interaction of ocean processes on weather and climate. Over 800 national leaders, members of Congress, researchers, and other interested stakeholders attended. Over 1,000 additional stakeholders participated in the Conference via satellite downlinks to facilities around the country. Several initiatives were introduced during the Conference which were included in the FY 2000 budget submission and are included in the FY 2001 Budget Request. A further discussion of these crosscutting initiatives is provided later in this section.

NOAA's mission is to describe and predict changes in the Earth's environment, and to conserve and manage the Nation's coastal and

marine resources to ensure sustainable economic opportunities. NOAA implements its mission through the activities of its five line offices: the National Ocean Service (NOS); the National Marine Fisheries Service (NMFS); the Office of Oceanic and Atmospheric Research (OAR); the National Weather Service (NWS); and the National Environmental, Satellite, Data and Information Service (NESDIS). The chart below illustrates the distribution of NOAA's Budget Request among the line offices.

Today, the Nation and the world look to NOAA's five line offices to provide timely and precise weather forecasts that protect lives and property; to manage fisheries and protected species; to build healthy coastlines; to make America more competitive through safe navigation; to examine changes in the oceans; and to inspire and create approaches that will protect and keep our precious natural resources alive for the generations to come.

NOAA conducts research to develop new technologies, improve operations, and supply the scientific basis for managing natural resources and solving environmental problems. NOAA's comprehensive system for acquiring observations–from satellites and radars to ships and submersibles–provides critical data and quality information needed for the safe conduct of daily life and the basic functioning of a modern society. NOAA's products and services include short term weather forecasts, seasonal climate predictions, long term global change prognoses, environmental technologies, nautical charts, marine fisheries statistics and regulations, assessments of environmental changes, hazardous materials response information, and stewardship of the Nation's ocean, coastal, and living marine resources.

These products and services provide vital support to the domestic security and global competitiveness of the United States, and positively impact the lives of our citizens, directly or indirectly, every single day.

The President's Budget Request also allows NOAA to perform an essential role in a number of Departmental, interagency and Presidential initiatives, including: the Natural Disaster Reduction Initiative; the Lands Legacy Initiative; the Climate Services and Observations Initiative; building the capacity of the Nation's Minority Serving Institutions (MSIs); the South Florida Ecosystem Restoration Initiative; the Clean Water Initiative, and the America's Ocean Future Initiative. Critical budget initiatives and programs are described below:

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NOAA ACCOMPLISHMENTS 1993-2000

Significantly Improving Weather and Climate Forecasts

NOAA has completed successfully a decade-long, modernization and restructuring of the National Weather Service (NWS), a $4.5 billion investment in new observing systems, information infrastructure, and human resources. Over 120 next generation radars and 152 advanced weather interactive processing systems were installed and a new generation of geostationary environmental satellites were developed and launched; these observing systems provide more uniform monitoring and blanket coverage of the United States. As part of the restructuring, the former weather office structure was reduced from over 250 weather offices to 121 Weather Forecast Offices and 13 River Forecast Centers. NWS modernization provides dramatically improved short-term warnings and forecast products and services that enhance public safety, protect lives, and contribute to the economic productivity of the Nation. For example, NOAA has increased its lead-time for flash flood warnings from 22 minutes in 1993 to 55 minutes in 2000, with an improvement in accuracy from 71% to 86%. Lead-time for tornado warnings has improved from 6 minutes in 1993 to 12 minutes in 2000, with an improvement in accuracy from 43% to 70%. With each minute increase in lead-time and accuracy, many lives are saved and property damage avoided.

NOAA has become a leader of the international operational environmental satellite community, providing the US with state-of-the-art remote sensing systems for improving weather and climate forecasts. Over the last 8 years, NOAA has flown a number of advanced instruments on new polar orbiting environmental satellites, allowing for the first time to routinely monitor the insides of major storms, and significantly improving forecasts of severe weather. To prepare for the future generation of satellites, the Clinton Administration initiated a major new effort, the National Polar-orbiting Operational Environmental Satellite System, which will become operational later this decade. This system will combine the nation's military and civilian environmental polar-orbiting satellite programs into a single, national system that will satisfy both civil and national security requirements for satellite environmental data. The program marks the most significant change in U.S. operational remote sensing since the launch of the first weather satellite in 1960, and heralds a new unified path for the United States in the development, acquisition, management and operation of environmental satellites. Combining civil and military satellite efforts will save over $1 billion over the lifetime of this new satellite system.

Using new ocean observing systems, research advances, and investments in supercomputing technology, NOAA, for the first time provided temperature and precipitation predictions an unprecedented six months in advance for the 1997-98 El Nino. These seasonal climate forecasts give businesses and government agencies in energy, agriculture, water resources, economic and other sectors a chance to use the predictions in their long-term planning process, saving the

nation millions of dollars in agriculture losses, energy planning, and weather-related losses. Using these observing systems and improved understanding of weather patterns, NOAA began issuing hurricane outlooks that accurately predicted more active Atlantic hurricane seasons in 1999 and 2000. In addition, NOAA has developed a new climate report, issued monthly. This report is essential to give the nation an assessment of the climate in the US on an ongoing basis.

Improving our Understanding of Global Change

NOAA scientists perform research that increases our understanding of environmental systems and provide expert assessment of the current state of environmental science. These assessments provide decision-makers with the scientific basis for making environmental policy. NOAA research has revealed long-term trends in temperature and greenhouse gas levels, established the importance of the ocean and terrestrial ecosystems as reservoirs of CO_2, and increased the understanding of the role of aerosols and non-CO_2 greenhouse gases in the global radiation budget. NOAA scientists are leaders in the development and application of global climate models. NOAA climate research includes work on the development of the historical temperature record and the archiving and interpretation of historical climate data.

This research is used extensively in the scientific and impacts portions of the Intergovernmental Panel on Climate Change (IPCC) assessments. The IPCC was established by the World Meteorological Organization and the United Nations Environment Program in 1998 and is charged with assessing the scientific information and the environmental impacts of climate change and with the formulation of response strategies. There have been three of these assessments; 1990, 1995, and an upcoming 2001 report. NOAA climate research provides much of the scientific basis of these assessments. NOAA scientists have also assumed leadership roles in the preparation and the US government review of these important policy documents.

NOAA has made fundamental contributions to the science of tropospheric ozone. NOAA scientists have increased our understanding of the mechanisms of long range pollution transport, urban and rural ozone formation, and provided a leading role in incorporating NOAA and other research into the report, "Assessment of Tropospheric Ozone Pollution-A North American Perspective". This report, published in 2000, was prepared by the international organization comprised of Mexico, US, and Canada and known as the North American Research Strategy for Tropospheric Ozone (NARSTO). Many of the scientific papers and review articles which form the basis for the report were prepared by NOAA scientists and NOAA scientists sit on the NARSTO Executive Steering committee and the NARSTO Synthesis team which prepared the report.

Ensuring Safer Marine Navigation

NOAA has made great strides to improve the safety of marine transportation, since 98% of all cargo by weight passes through U.S. ports and harbors. Working with concerned constituents, NOAA identified 43,000 square nautical miles of sea floor in 1993 that were in critical need of resurvey. By the end of 2001, this backlog will be reduced by approximately 28%, to about 31,000 miles. NOAA also significantly reduced the time it takes to produce critical nautical charts with newly collected data from two years to four weeks and now produces the charts in electronic as well as traditional paper formats. Over the last 6 years, NOAA equipped some of our Nation' s busiest harbors with a Physical Oceanographic Real-Time System (PORTS) that measures currents, water levels, winds and other important oceanographic and meteorological data and provides the information in real-time through a variety of user-friendly formats. These data are much more accurate than those provided by traditional tide and current prediction tables and are critical for safe and cost-effective navigation, search and rescue, and oil spill response and prevention.

Expanding Protection for Marine Sanctuaries and Estuaries

Since 1993, NOAA and its state partners have increased the number of National Estuarine Research Reserves from 22 reserves in 19 states to 25 reserves in 20 states with two pending to be established in 2001. This expansion has more than doubled the fragile estuarine habitat protected to over one million acres. Estuaries are the "kidneys" of our environment, serving as filters where fresh water meets the ocean to help maintain the health of our coasts.

In 1993, 11 National Marine Sanctuaries protected 14,733 square nautical miles of valuable cultural and natural resources along our Nation' s coasts. Today, as a result of this Administration's investments to preserve these unique and important sites, there are now 13 Marine Sanctuaries covering 18,000 square nautical miles of sensitive underwater habitat and submerged cultural resources including the newest sanctuary in the Great lakes. Other Sanctuaries boast whales off the coast of Hawaii and splendid coral reefs around the Florida Keys and American Samoa.

Partnering with States on Coastal Conservation

The number of states participating in the Coastal Zone Management program has expanded from 29 in 1993 to 33 of 35 possible participants. The states, working in partnership with NOAA, have developed voluntary, comprehensive coastal management programs to keep U.S. coastlines healthy and productive. While no states had approved Coastal Zone Management Nonpoint Pollution Control programs in 1993, of the 29 states with CZM programs in 1993, 4 have fully approved Nonpoint Pollution Control Programs and the rest have conditionally approved

programs to reduce pollution from runoff, one of the greatest remaining threats to our nation' s water quality. The 4 states which recently entered into the CZM partnership are in the process of developing their CZM Nonpoint Pollution Control programs for approval.

Increasing Coastal Habitat Restoration

Significant strides have been taken to restore living marine resource habitat areas that have been degraded through catastrophic events, such as oil spills or ship groundings, or as a result of cumulative human activities, such as water diversions or land use changes. NOAA has provided financial and technical assistance to states and communities, working with them to develop local strategies to restore over thousands of acres of coastal habitat. NOAA is now helping to restore over 5,000 acres per year compared to less than a couple of hundred acres per year in 1993. . NOAA-funded projects, many in partnership with state and local communities, have resulted in 46,000 acres of restored coastal habitat since 1995. As more than 50 percent of Americans now live and work along our Nation's coast, recovery and careful use planning is more important than ever to ensure that we can live in harmony within this fragile yet economically important environment.

Recovering Fishery Stocks

Based on the National Marine Fisheries Service's publication, "*Our Living Ocean*," the status of 17 fishery stocks have improved and are no longer overutilized under the *Our Living Ocean* (OLO) review period covering 1992-1999. We expect greater improvement in light of the current Fishery Management Plans now containing provisions to address overfishing as mandated under the reauthorization of the Manguson-Stevens Act in 1996. Overall, there has been some net progress in controlling excessive fishing mortality rates, but work remains to be done. Cooperative efforts continue between fishing communities, state and local governments, the Fishery Management Councils, the Congress and academia to reduce unwanted bycatch, improve the sustainability of stocks, and ensure that the abundance of fish continue to improve for the benefit of generations to come.

For example, as part of a major conservation effort to rebuild New England Groundfish stocks, NOAA put into effect new rules in July 1996 for a significant reduction in the existing fishing effort for cod, haddock and flounder. Because of these new conservation measures, these stocks have begun to rebuild. For example, the 1998 class for haddock was the largest in 20 years and the Georges Bank cod stock biomass has increased 43% above the record low-level of 1995. To mitigate the effects of the fishing reductions, NOAA undertook several programs to assist the fishing industry through programs that remove fishing vessels from the fleet and other disaster assistance efforts in fishing communities in the Pacific Northwest and the Gulf of Mexico. NOAA has also taken significant steps to recover protected species. The California gray whale,

previously hunted to near extinction, has recovered and been taken off the endangered species list. In another example of innovative partnerships, NOAA developed habitat conservation plans for Pacific salmon to guide harvest practices in northern California on 210,000 acres of company lands for the next 50 years, protecting salmon-bearing streams. NOAA has also developed comprehensive recovery plans for many species of Pacific salmon. Demonstrating the importance of new technologies, NOAA, working with the university community, developed new technologies to allow endangered sea turtles to escape safely from shrimping nets in the Southeast.