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U.S. DEPARTMENT OF COMMERCE**

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COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION
UNITED STATES SENATE**

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Good morning, Mr. Chairman and Members of the Subcommittee. I am Timothy Keene, Deputy Assistant Secretary for Oceans and Atmosphere and the National Oceanic and Atmospheric Administration (NOAA). I am co-chair of both the Aquatic Nuisance Species Task Force and U.S. Coral Reef Task Force and am pleased to be here today to discuss both of these important issues. The U.S. Ocean Action Plan outlines the importance of both of these topics with specific goals of promoting coral reef conservation as well as preventing the spread of invasive species. Today, I will discuss the Coral Reef Conservation Act of 2000 (the Act) and the importance of its reauthorization as well as present NOAA's views on S. 363, which would amend the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA) to establish vessel ballast water management requirements.

Reauthorization of the Coral Reef Conservation Act

Coral reefs, often called the "rainforests of the sea," are among the oldest and most diverse ecosystems on the planet. Coral reefs provide resources and services worth over \$375 billion each year to the United States economy and economies worldwide, a surprising amount considering these ecosystems cover less than one percent of the Earth's surface. Coral reef resources provide economic and environmental benefits in the form of food, jobs, natural products, pharmaceuticals, and shoreline protection. Ten and a half million people in the United States live in coastal communities adjacent to coral reefs (U.S. Census 2002). Consequently, coral reefs have become an integral part of the culture, heritage, and economies of these regions. Unfortunately, a combination of stressors has caused a rapid decline in the health of many coral reefs globally.

Congress recognized the need to preserve, sustain, and restore the condition of coral reef ecosystems by passing the Coral Reef Conservation Act of 2000, calling for the creation of a national strategy and program to address the threats to coral reef communities. The Act calls for NOAA to carry out a number of activities to promote the management and sustainable use of coral reef ecosystems, to develop sound scientific information on the condition of coral reef ecosystems, and to assist in the preservation of coral reefs by supporting external conservation programs.

The authority and guidance provided in the Act has allowed NOAA to undertake a number of activities important to understanding and conserving coral reef ecosystems. The Act authorized the establishment of a national program to fund and conduct activities to conserve coral reefs, which led to the creation of NOAA's Coral Reef Conservation Program (CRCP). The CRCP draws experts together from across NOAA and engages external partners to develop integrated strategies to address coral reef decline. In addition, the CRCP works with scientific, private, government and non-government partners to address coral reef conservation on local, national, and international scales. One of the first tasks of the CRCP was to develop the National Coral Reef Action Strategy (National Action Strategy), as called for in the Act. The National Action Strategy established 13 goals, 4 to improve our understanding of reef ecosystems and 9 to reduce impacts of human activities. The National Action Strategy builds on the U.S. National Action Plan to Conserve Coral Reefs adopted by the U.S. Coral Reef Task Force (USCRTF) in 2000, and provides the roadmap for sustaining coral reef ecosystems and the communities and economies that depend on them.

One of the mandates of the Act and goals of the National Action Strategy is to map and characterize U.S. shallow water coral reefs. The goal is to map all shallow reefs by 2009, and to date, NOAA has mapped approximately 66 percent; only Florida reefs remain to be mapped. These habitat maps provide scientists and managers basic information about coral reef ecosystems, assisting them in designing research and management plans, assessing damaged corals, monitoring reef health, and evaluating the results of their work.

The Act and the National Action Strategy also call for NOAA to partner with other federal agencies and state and territorial governments to build an integrated coral reef observing system to monitor, track and report on the condition of the ecosystem over time. This information is used to assess and adapt management actions. In 2002, NOAA worked with federal, state, territorial and commonwealth partners to produce the first *State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States* report. This report assessed the condition of U.S. coral reefs, ranked threats, detailed ongoing conservation actions taken by federal agencies, and contained recommendations from coral reef managers. The second report, scheduled for publication this summer, will reflect more quantitative data obtained through collaborative monitoring programs.

The CRCP has developed the first NOAA-wide coral ecosystem research plan to set priorities and guide NOAA-funded coral reef ecosystem research for the next five years (FY 2005-2010), including the research conducted through grants and contracts. The Research Plan covers all coral reef ecosystems under the jurisdiction of the United States and the Pacific Freely Associated States and incorporates direct input and review from partner agencies, state and territorial governments, coral reef managers, scientists, and other key stakeholders. The plan is intended to provide scientific information and tools for management of coral ecosystems and is scheduled for completion in 2005.

CRCP efforts authorized by the Act have also addressed the threat to reefs from marine debris and abandoned vessels. Debris and vessels can cause physical harm to coral reefs

through entanglement and collision, and thus are serious concerns in some regions of the United States. NOAA leads a partnership with the State of Hawaii, Department of the Interior (DOI), U.S. Coast Guard (USCG), nongovernmental, and many local organizations to remove and dispose of derelict fishing gear from the Northwestern Hawaiian Islands (NWHI). Since 2000, this effort has removed over 400 metric tons of marine debris from the NWHI. The removal of all major, existing accumulations of derelict fishing gear and other marine debris from the NWHI will be completed this year. Because derelict fishing gear continues to accumulate in this area, NOAA and our partners have been coordinating an international discussion on how to detect and remove derelict fishing gear from the open ocean. NOAA has also created an Abandoned Vessels Program to identify candidate wrecks for further attention and to initiate removal of the highest priority cases.

As required in the Act, outreach and education activities to build public awareness and local capacity are another way the CRCP promotes sustainable management of coral reef ecosystems. The CRCP has reached out to stakeholders by creating and distributing educational materials and by conducting workshops and training sessions. For example, NOAA has supported a series of coral reef fisheries management workshops. NOAA has also assisted state and territorial governments in enhancing their human resource capacity for marine resource management by providing technical training for managers, by creating internship/fellowship programs, and by providing direct funding to support management staff.

The U.S. states, territories, and commonwealths, through the USCRTF, developed three-year Local Action Strategies (LAS) to promote collaborative on-the-ground management of threats to coral reefs. These LAS are locally-driven roadmaps for collaboration and cooperation among federal, state, territory and non-governmental partners that identify and implement priority actions needed to reduce key threats to valuable coral reef resources. Florida, Hawaii, Guam, the U.S. Virgin Islands, American Samoa, Puerto Rico, and the Commonwealth of the Northern Mariana Islands each created specific LAS for select, locally relevant, threats using six priority focus areas: overfishing, land-based sources of pollution, recreational overuse and misuse, lack of public awareness, climate change and coral bleaching, and disease. Additional focus areas were identified in some jurisdictions including: invasive species in Hawaii, population pressure in American Samoa, and maritime industry and coastal construction impacts in Florida. With assistance from NOAA and other federal agencies, these jurisdictions completed LAS for selected priorities in 2004 and will be implementing the various projects through 2007. The Administration strongly supports the local jurisdictions' efforts. As part of the U.S. Ocean Action Plan, the Administration has requested funding in the FY 2006 NOAA and DOI budgets to support implementation of the LAS.

The CRCP supports local reef management and conservation efforts through grant programs authorized by the Act. The comprehensive grants program supports a wide range of coral reef conservation projects both nationally and internationally. NOAA's CRCP grants are awarded in six categories: State and Territory Coral Reef Management; State and Territory Coral Reef Ecosystem Monitoring; General Coral Reef Conservation;

Projects to Improve or Amend Coral Reef Fishery Management Plans; International Coral Reef Conservation; and Coral Reef Ecosystem Research. These projects have advanced important conservation activities, such as the LAS, local capacity building, publication of educational materials, implementation of school marine science programs, identification and mapping of essential fish habitats, and the promotion of sociological assessments of marine protected areas. Between 2002 and 2004, NOAA awarded 133 grants to external partners in the public, private, and non-profit sectors providing \$15,650,145, and leveraged an additional \$5,821,553 through matching funds. The awarded funds represent over thirty percent of the CRCP budget for FY 2004. NOAA plans to award an additional \$4,550,000 in FY 2005 through the CRCP grant program.

As authorized by the Act, NOAA has partnered with the National Fish and Wildlife Foundation (NFWF) to administer the Coral Reef Conservation Fund. Over the past four years, this partnership has leveraged \$2 million in CRCP funds into more than \$9 million awarded in federal and non-federal matching funds for 116 coral conservation projects in 20 countries, five U.S. trusts or territories, and four U.S. states. The Coral Reef Conservation Fund is designed to foster public-private partnerships and to promote site-based conservation efforts. These grants foster integrated resource management and have advanced the development of tools to address threats to coral reefs throughout U.S. and international waters.

NOAA, as directed by the Act and the National Action Strategy, also supports and participates in international coral reef conservation. NOAA promotes improved human and institutional capacity to manage and conserve coral reefs internationally through technical assistance and its international coral small grants program. NOAA participates in multiple international efforts such as the International Coral Reef Initiative (ICRI), which supports international coral reef research and management efforts, including the Global Coral Reef Monitoring Network that produces biennial Status of Coral Reefs of the World reports. Last year, NOAA worked in partnership with the scientific community and its partner agencies to put forward the U.S.'s successful bid to host the 2008 International Coral Reef Symposium, the largest international gathering of coral reef scientists and managers.

NOAA continues to play an active role in the U.S. Coral Reef Task Force (USCRTF). The USCRTF was established by Executive Order 13089 and is composed of twelve federal agencies, seven states and territories, and the three Freely Associated States. Biannual meetings bring members together to discuss key issues, propose new actions, present progress reports, and update the coral community on past accomplishments and future plans. These USCRTF meetings provide a valuable venue for the exchange of information in which members can voice concerns about their coral reef conservation efforts and collaborate to find more effective alternatives. Many of NOAA's coral reef conservation efforts, such as the coral ecosystem research plan, are developed in partnership with the various federal agencies and state and territory governments on the USCRTF.

As I have outlined, the authority provided to NOAA under the Act has yielded many benefits to coral reef management and protection. The Administration recognized the

importance of conserving corals in the U.S. Ocean Action Plan released on December 17, 2004. The President's FY 2006 budget request includes \$27.2 million for the Coral Reef Conservation Program, including the \$1.5 million in new funding to further implement LAS mentioned earlier. NOAA's continuing coral reef conservation efforts will include forming new international partnerships and fostering coral protection by recreational interests. NOAA is coordinating with partner agencies on the recently re-established marine debris committee to address this critical issue. In addition, NOAA is continuing the process to designate the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve as the fourteenth National Marine Sanctuary.

Recent accomplishments represent only intermediate steps toward achieving the goals of the National Coral Reef Action Strategy. Much remains to be done to halt the degradation of coral reefs and to sustain these valuable marine ecosystems and the economies that depend on them. Reauthorization of the Coral Reef Conservation Act is an important step in continuing this work to protect and restore coral reefs in the United States and abroad. Reauthorization would allow continuation of important NOAA-sponsored mapping, monitoring, research, and management efforts through the CRCP national and grants programs, and the Coral Reef Conservation Fund partnership with NFWF.

While the Act has allowed NOAA to develop an effective coral program, there are some limitations to the current Act that if addressed could significantly advance efforts to reduce threats and conserve our valuable coral reef resources. Some limitations and hurdles posed by the current Act language are described below.

Every year many boats run aground on coral reefs causing significant damage to these fragile ecosystems. These vessel groundings are not well documented in all regions, but where recorded the numbers are astounding. For example, over seventy boat groundings occur annually in the Florida Keys National Marine Sanctuary alone, of which approximately four cause significant damage to the reefs and consequently require major damage assessments and restoration activities. Although the federal government has authority to address coral reef damage from groundings in designated protected areas, such as national parks and national marine sanctuaries, no similar authority exists to respond to any grounding that occurs outside of designated protected areas. Appropriate authority in the Act would enable NOAA, or other appropriate agencies, to respond to events and recover from the responsible party the costs for both this response and, where warranted, comprehensive damage assessment and restoration activities.

The Administration and Congress have recognized the value of the CRCP. It would be appropriate to recognize this support by authorizing the Act at the President's FY 2006 request level of \$27.2 million, and ensure that an adequate portion of this funding is available for effective program administration. Further, the current language allocating the appropriations between the grant and the national programs is confusing and contradictory. This language requires clarification, which could be accomplished by either outlining how funding should be allocated across all sections of the Act or by providing NOAA the discretion to make allocation decisions.

NOAA would like to work with the Committee to find an appropriate way to provide Congress updates and information on the coral programs, without diverting too many resources from accomplishing the core missions of these programs. Also, although the Act provides the authority for NOAA to give emergency grants for addressing unforeseen or disaster-related circumstances, we have never implemented this provision and are potentially restricted from doing so. Due to the amount of time that it takes to process a grant, this is not an appropriate vehicle for responding to an emergency situation.

S. 363, Ballast Water Management Act of 2005

Nonindigenous species are affecting habitats and species on all of our coasts and introductions of new species can alter both physical habitat and impact native species and ecosystem productivity. For example, last year, the State of Ohio shut down its Great Lakes smallmouth bass fishery for the months of May and June — two of the largest months for their recreational fishery. The closure surprised the public because the cause was a fish much smaller than the smallmouth bass — the round goby, a ballast water introduction. The male smallmouth bass protect the smallmouth bass nests from predators. When the males are removed, large numbers of round gobies move in and prey on the eggs — jeopardizing the smallmouth bass fishery.

Another example of direct predation is the introduction of the green crab. When the green crab moved into the Gulf of Maine in the 1940s and 1950s, it contributed to the collapse of the soft-shell clam fishery. It was recently introduced to the west coast, where it might affect Dungeness crab populations and shellfish aquaculture. Initial studies have already shown declines in abundance of native crab and bivalve populations in areas where the green crab has been established.

Introduction of an invasive species can cause disruption of a food chain and have cascading impacts. In the northern portion of San Francisco Bay, a very small clam species — *Potamocorbula amurensis* — has become so abundant and is such an efficient filter feeder that phytoplankton are no longer abundant. The next step up the food chain is the zooplankton that feed on the phytoplankton. Significant declines in the abundance of zooplankton and mysid shrimp have now been documented. In turn, these organisms are prey for juvenile fish species.

NOAA's Great Lakes Environmental Research Laboratory has documented a similar food chain disruption in the Great Lakes. In some areas, up to 75 percent of the benthic biomass is made up of *Diporeia* species, small amphipod crustaceans that are a primary prey source for fish species such as the whitefish. In areas where zebra mussels are present, *Diporeia* have virtually disappeared and whitefish are showing signs of nutritional distress.

I would like to update the Subcommittee on our progress in addressing the ballast water issue. During the 1996 reauthorization, NOAA and the U.S. Fish and Wildlife Service (FWS) were charged with sponsoring research to develop new technologies for ballast water management. Although primary responsibility for this program lies with FWS and

NOAA, a number of different Federal agencies have been cooperating on ballast water issues. The U.S. Department of Transportation Maritime Administration (MARAD) deserves particular recognition. Despite not being mentioned in the existing statute, MARAD has volunteered testing platforms for research projects. Each year NOAA, FWS, and MARAD put out a joint request for proposals for ballast water technology development projects with a joint peer review process for selection. In addition to this process, other Federal agencies involved in evaluating technologies and setting priorities include the USCG, the Environmental Protection Agency (EPA), the U.S. Geological Survey, and the Department of Defense.

Since 1998, 54 research projects have been sponsored under the Ballast Water Demonstration Program. Sixteen additional ballast water-related projects have been sponsored through the National Sea Grant College Program aquatic nuisance species competition. Among the technologies that have been tested are filtration, ultraviolet radiation, ozone injection, sonic bombardment, heat treatment, and oxidizing and non-oxidizing biocides. We are well beyond proof of concept with many of these technologies, and there are some promising results.

Even as we have begun to address the development of new technologies, new issues have arisen concerning ballast water. In the Great Lakes region, there is considerable concern over vessels with no ballast on board (NOBOB). While fully loaded vessels may declare no ballast on board, organisms may still be present in residual water and sediments at the bottom of the tank. These organisms may be resuspended as cargo is unloaded and ballast water is added to compensate. In 2001, NOAA's Great Lakes Environmental Research Laboratory identified NOBOB ships as a high priority research need. They organized a large multi-institutional research project with multiple sponsors to directly characterize and assess the invasion risk from ballast water discharges associated with NOBOB vessels operating in the Great Lakes. In addition to looking at the NOBOB issue, the program also looked at the efficacy of ballast water exchange.

The final report of the NOBOB Assessment program found that ballast water exchange can be highly effective for reducing concentrations of organisms entrained with coastal ballast water, and although it remains imperfect, it is generally a beneficial management practice in the absence of more effective management tools. The assumption that "salinity shock" is an additional advantage for protecting the Great Lakes ecosystem from invasive species must be viewed with some caution and requires further examination. The effectiveness of "salinity shock" in eliminating freshwater-tolerant organisms varied widely depending on the types and forms of organisms that are present in ballast tanks, including whether the organism is in a resting, larval or adult stage. While "salinity shock" may be a useful tool, like ballast water exchange, it is imperfect.

As you can see, the introduction of non-indigenous species is an issue of great importance. The 1990 NANPCA initially focused on ballast water and the Great Lakes. The 1996 National Invasive Species Act provided voluntary guidelines for the rest of the country with provision for regulatory action if the voluntary guidelines were not effective. As you know, the USCG made a formal finding that the voluntary guidelines

were not effective and issued regulations requiring ballast water management for vessels entering U.S. ports from beyond the Exclusive Economic Zone (EEZ). Currently, the only practical method of management is ballast water exchange, but all stakeholders recognize that this is an interim solution until methods for treating ballast water are developed.

NOAA supports the goal of S. 363, which is to reduce the risk of introducing new invasive species by ballast water. While S. 363 addresses the issues associated with ballast water, NOAA is concerned that it only amends section 1101 of NANPCA. While NOAA notes that the entire NANPCA is due for reauthorization, we acknowledge that ballast water is a highly time-sensitive issue and therefore understand the need for narrowing the focus of legislation such as S. 363.

I would like to focus on a few of the sections of S. 363 that we feel warrant special attention. S. 363 includes two separate administrative procedures for determining acceptable exchange zones. The bill provides for ballast water exchange in water that is at least 50 nautical miles from land and 200 meters in depth. The USCG – in consultation with NOAA and EPA – is responsible for issuing limitations on ballast water exchange in these areas. However, the designation of alternate exchange zones within 50 nautical miles from land and 200 meters in depth is the responsibility of NOAA, in consultation with USCG and EPA. Because the USCG is the primary regulatory authority for ballast water exchange and will be responsible for enforcement, NOAA recommends the USCG be the lead for both procedures after consultation with NOAA and EPA.

NOAA also would like to express concern over one of the definitions in Section 3(b)(5). This section proposes a new paragraph 13 for Section 1003 of the NANPCA defining “harmful aquatic organisms and pathogens.” Under the proposed definition, these are organisms determined by the Secretary to cause an adverse impact if introduced. Such determinations and creation of a list of organisms would not be useful in the context of ballast water management and could require significant resources. In the case of ballast water, literally thousands of species could be introduced, and the biological information for many is insufficient to assess whether they will become invasive or cause adverse impacts. To put this in context, James Carlton, one of the leading theorists on invasion biology, once said that zebra mussels would not have been an obvious choice for a list of potential invaders. He pointed out that prior to the late 1980s they probably had been carried in ballast water. However, only when a combination of ecological conditions and concentration of organisms was present did they become established. Because of the difficulties of distinguishing harmful organisms from benign ones, virtually all treatment and management options are designed to remove or inactivate all aquatic organisms and we therefore recommend revision of the definition to reflect this reality.

Considerable progress has been made in addressing the ballast water problem since the 1996 reauthorization, but much work remains. The FY 2006 President’s budget requests \$7.9M to continue NOAA’s valuable work to prevent invasive species through programs such as the Aquatic Invasive Species Program, Sea Grant, the

Great Lakes Environmental Research Lab, and National Center for Coastal Ocean Science. This includes augmenting research to significantly advance the techniques available to stop invasive species transfer through ship ballast water. I urge you to support this request. As we learn more, new issues will arise. The emerging issue of coastwise traffic, which involves ships that never move out of the 200-mile EEZ and are not required to exchange ballast water, magnifies the importance of new treatment technologies. However, with a strong commitment, I think that we will be able to significantly reduce the risks associated with ballast water as a vector for the introduction of new species.

Conclusion

That concludes my testimony, Mr. Chairman. I would be happy to respond to any questions that the Subcommittee may have.