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**Testimony on Environmental Education and Climate Change
Education at NOAA, NSF and NASA
and the Need to Enact Comprehensive Climate Change Legislation**

**For the Subcommittee on Commerce, Justice, Science & Related Agencies
Committee on Appropriations
U.S. House of Representatives**

Mr. Chairman, members of the Subcommittee, on behalf of the National Wildlife Federation (NWF), our nation's largest conservation advocacy and education organization, and our more than four million members and supporters, I thank you for the opportunity to submit this testimony which includes funding recommendations for the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). While NWF supports numerous programs under the jurisdiction of this Subcommittee, the purpose of this testimony is to recommend levels of funding for specific environmental education and climate change education programs that we believe are vital to NWF's mission to inspire Americans to protect wildlife for our children's future.

This Subcommittee has taken a leadership role in funding environmental education and especially climate change education at the federal level. In addition to growing NOAA's Office of Education, the Subcommittee initiated new Climate Change Education programs at NASA in FY 2008 and at NSF in FY 2009. While we appreciate the Subcommittee's leadership, we believe that the overall federal investment in environmental education and climate change education programs nationwide – pennies per capita – is woefully inadequate. The National Wildlife Federation also supports climate change education and environmental education programs across the federal agencies at the U.S. Forest Service, Environmental Protection Agency, U.S. Department of Education and U.S. Department of the Interior.

Summary of Recommendations:

Agency	Program	FY 2011 Recommendation	FY 2010 Level
NOAA	Bay Watershed Education and Training (B-WET)	\$16.0 million	\$9.7 million
NOAA	Environmental Education Initiatives, including Environmental Literacy Grants	\$20.0 million	\$14.0 million
NOAA	Climate Change Education	\$10.0 million	n/a
NSF	Climate Change Education	\$30.0 million	\$10 million
NASA	Climate Change Education	\$15.0 million	\$10 million

Funding for these programs is supported broadly through the Campaign for Environmental Literacy's *Green Education Budget* and the conservation community's *Green Budget* documents.

The Need for Environmental Education and Climate Change Education

As our nation moves towards a clean energy economy and creates new "green jobs," we must ensure that our education infrastructure keeps pace. Senate leadership and President Obama have stated their desire to comprehensive climate change legislation this year, a priority that the National Wildlife Federation strongly supports. To be successful as a nation under a new clean energy economy, we must have an environmentally literate citizenry that has the knowledge to find new, innovative solutions to protect our planet. While public awareness and concern about global warming continues to rise, the vast majority of the public does not understand how climate change works, how it impacts their lives and careers, and how their decisions and actions contribute to it. Consider the following examples:

- Survey research shows that most Americans do not know what the carbon cycle is or understand what actually causes global warming. They do not know how most electricity is generated or the importance of healthy forests and oceans in generating oxygen and absorbing carbon dioxide.
- Less than half of the population recognizes that the cars and appliances they use contribute to global warming, and eight out of 10 parents admit that they know "little" to "nothing" about the specific causes of climate change.
- The average high school student fails a quiz on the causes and consequences of climate change (nearly 82 percent of participants affirmed, incorrectly, that "scientists believe radiation from nuclear power plants cause global temperatures to rise.").
- In addition, most students don't see themselves at risk: Only 28 percent believe it's very likely that climate change will affect them personally in their lifetimes.

Educating Americans about climate change is a significant opportunity for our nation to prepare today's leaders, and the leaders of tomorrow, to implement the solutions created by a comprehensive climate change bill. Unfortunately, some still mistakenly see environmental protection programs as a costly burden on prosperity. In fact, the challenge posed is an entrepreneur's dream. Addressing global warming will generate millions of good new jobs and put the U.S. at the exciting forefront of a new clean energy economy. The successful transition to this new green economy hinges on education.

National Oceanic and Atmospheric Administration (NOAA):

Environmental Education Initiatives and Environmental Literacy Grants

The National Wildlife Federation supports funding NOAA's Environmental Education Initiatives at \$20.0 million in FY 2011, including \$18.0 million for Environmental Literacy Grants. NOAA's Office of Education oversees several Environmental Education Initiatives, the largest initiative being the Environmental Literacy Grants (ELG) program which helps to establish new partnerships that deliver educational materials to thousands of teachers and students. The ELG program enables NOAA to partner with the top science centers, aquaria, and educators in the country to educate the public about vital issues around our changing planet. It also allows NOAA to leverage the vast array of climate science being undertaken to increase

public understanding and the quality of education. These funds are awarded on a competitive basis and are increasingly used to build capacity at the national and regional levels.

Funding NOAA Environmental Education Initiatives at \$20.0 million, including \$18.0 million for Environmental Literacy Grants, will enable NOAA's Office of Education to implement the education recommendations in the President's U.S. Ocean Action Plan, particularly the goal to strengthen collaboration among public and private sectors, states and regions, scientists and educators, and the federal agencies. Funding would also further leverage the existing capabilities of formal and informal education partners through competitive grants and coordinate regional education efforts. These funds are important to NOAA because they represent virtually all of the discretionary funds available to the Office of Education for addressing annual NOAA education goals as called for in the America COMPETES Act. In FY 2010, Congress funded NOAA's environmental education initiatives at \$14.0 million.

Bay Watershed Education and Training Programs

The National Wildlife Federation supports funding NOAA's Bay Watershed Education and Training (B-WET) program at \$16.0 million in FY 2011. Administered by NOAA since 2003, the B-WET program offers competitive grants to leverage existing environmental education programs, foster the growth of new programs, and encourage development of partnerships among environmental education programs within watershed systems. B-WET's rigorously evaluated programs are implemented by region, which allows the unique environmental and social characteristics of the region to drive the design of targeted activities to improve community understanding, promote teacher competency, and enhance student interest and achievement in science. A fundamental goal of the program is to demonstrate how the quality of the watershed affects the lives of the people who live in it. B-WET supports programs for students as well as professional development for teachers, while sustaining regional education and environmental priorities. B-WET awards have provided environmental education opportunities to more than 100,000 students and 10,000 teachers. With an increase in funding in FY 08, B-WET expanded from the Chesapeake Bay, California, and Hawaii to also include the Pacific Northwest, the northern Gulf of Mexico, and New England. An increase of \$4.3 million in FY 2011 will enable this successful program to expand to additional watersheds in the Great Lakes and Alaska. An increase in funding of \$6.3 million in FY 2011 will enable this successful program to grow in existing sites and expand to additional watersheds.

Climate Change Education Grant Program

The National Wildlife Federation supports the creation of a new Climate Change Education Grant Program at NOAA, funded at \$10.0 million in FY 2011. Implementation of comprehensive global climate change policies being considered by Congress will require coordinated and effective federal efforts to help improve broad public understanding of the core ecological, social, and economic concepts and principles involved in climate change mitigation and adaptation. NOAA's Office of Education has legislative authority for such education initiatives through the America COMPETES Act (PL 110-69, Sec. 1502). Funding in FY 2011 for a new Climate Change Education Grant Program will enable NOAA to leverage the vast array of climate science being undertaken at the agency as part of developing strategies for addressing the gaps between the state of climate change education and the state of public climate change literacy. Grants would contribute to improving the climate literacy of the nation's

citizens, students, workforce, policy makers, and decision makers by systemically and strategically strengthening climate change education in formal and informal education at all age levels.

National Aeronautics and Space Administration (NASA):

Climate Change Education Grant Program

The National Wildlife Federation supports funding NASA's Climate Change Education Grant Program at \$15.0 million in FY 2011. In FY 2008, Congress appropriated funds for the first time to address climate change education by providing funding for climate change education grants through NASA. In August 2008, NASA announced a Request for Proposals for a first-ever competitive grant program seeking applications from educational and nonprofit organizations to use NASA's unique contributions to climate and earth system science. The goals of the program include: improving the teaching and learning about global climate change in elementary and secondary schools and on college campuses, increasing the number of students using NASA earth observation data/NASA earth system models to investigate and analyze global climate change issues, increasing the number of undergraduate students prepared for employment and/or to enter graduate school in technical fields relevant to global climate change, and increasing access to high quality global climate change education among students from groups historically underrepresented in science. The National Wildlife Federation recommends that the NASA climate change education program be primarily used for grant-making purposes, and focus not only on education about climate science, but also advance education that focuses on the connections and relationships between climate change, the economy, energy, health, and social wellbeing.

National Science Foundation (NSF):

Climate Change Education Grant Program

The National Wildlife Federation supports funding NSF's Climate Change Education (CCE) Grant Program at \$30.0 million in FY 2011. Climate change education (and research) has been identified as a Presidential priority area for NSF. While public awareness and concern for climate change continues to rise, the vast majority of the public remains demonstrably illiterate about how climate change works, how it impacts their lives, and how their decisions and actions contribute to it. Yet climate change education (CCE) is newly emerging as a field, with few materials, curricula, models, standards, or professional development opportunities to fill the void. Furthermore, CCE is inherently interdisciplinary, and as a result, it often falls through the cracks in traditional science education.

NSF initiated the Climate Change Education grant program with an FY 2009 appropriation of \$10.0 million from Congress (with the same appropriated in FY 2010). This program is aimed at improving K-12 to graduate education in climate change science and increasing the public's understanding of climate change and its consequences. It is catalyzing activity at the national level and helping to develop the next generation of environmentally-engaged scientists and engineers by supporting awards in the following areas: increasing public understanding and engagement; development of resources for learning; informing local and national science, technology, engineering, and mathematics (STEM) education policy; preparing a climate science

professional workforce; and enhancing informed decision-making associated with adaptation to and mitigation of climate change impacts. These emerging priorities lie at the intersection of social/behavioral/economic and Earth system sciences.

NSF has wisely chosen to use these funds to tackle some of the most pressing issues in the critical but still unformed field of CCE: strategies for scaling up and widely disseminating effective curricula and instructional resources, assessment of student learning of complex climate issues as it translates into action, addressing local and national STEM educational standards and policy for teaching CCE, and professional development in climate change literacy for policy decision makers at all levels (local to national). The FY 2009 funding was only able to fund 10 projects. Congress should significantly expand this grant program in FY 2011.

Enacting Comprehensive Climate Change Legislation

Global warming represents the world's gravest danger to people and wildlife and threatens to undermine decades of on-the-ground conservation and sustainable development progress around the globe. As the broad agreement among scientists continues tell us, to avoid the worst effects of global warming we must limit additional warming to no more than 2 degrees Celsius over pre-industrial levels. According to the Nobel Prize-winning Intergovernmental Panel on Climate Change (IPCC), we have a reasonable chance of meeting this objective if developed countries, such as the United States, as a whole cut their emissions by 25-40 percent below 1990 levels by 2020 and by 80-95 percent below 1990 levels by 2050.

More recent findings, since the publication of the IPCC scientific assessment in 2007, suggest that the need for action is ever more urgent. Earlier this month, scientists from around the world gathered in Copenhagen to discuss their most recent findings and concluded that the worst-case scenarios found in the 2007 assessment were being realized and even exceeded. The melting of Arctic sea ice has been found to be vastly outpacing previous predictions, new studies have revised projections of sea level rise dramatically upward, and there is rapid new release of methane from thawing permafrost and deep sea ice. Simply put, science mandates that there is no excuse for inaction and we must act as swiftly as possible to reduce greenhouse gas emission as deeply as possible.

Therefore, that the National Wildlife Federation's (NWF) top priority is enactment of comprehensive climate change that invests in transforming America to a new clean energy economy. This legislation must reduce domestic global warming pollution as swiftly as possible by 2020 and by over 80 percent by mid-century in order to protect wildlife and future generations from the most destructive impacts of climate change. Designed and implemented correctly, such legislation can also provide the financial resources needed to invest in new clean energy solutions, protect the public from rising energy prices, and safeguard America's natural resources from the impacts of global warming.

Conclusion

Providing federal support for environmental and climate change education is a critical strategy in securing our new clean energy future and preparing the next generation for the challenges and opportunities ahead. Thank you again for providing the National Wildlife Federation with the opportunity to provide testimony.