On behalf of the Consortium for Ocean Leadership (COL), which represents our nation’s leading ocean science, research, and technology organizations from academia, industry, and the larger nonprofit sector (to include philanthropy, associations, and aquariums), I appreciate the opportunity to submit for the record our fiscal year (FY) 2021 funding priorities for the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA).

Last year brought an Atlantic hurricane season that was the fourth most active on record, including the devastating Dorian. Harmful algal blooms continued to ravage coastal communities around both our ocean and our lakes, impacting the health and livelihood of millions of Americans. Economic opportunities grew — as of September, there were 26,000 MW of offshore wind capacity, which will only grow as planned auctions continue — but also fell — in December, an announcement was made that, for the first time ever, the federal cod fishery in the Gulf of Alaska will close for the 2020 season. And the number of people in our coastal populations — 94.7 million in 2017 — only continues to grow.

It’s clear that our national, homeland, energy, food, water, and economic securities, as well as our public health and safety, depend on a healthy ocean — which in turn depends on ocean science and technology – a concept I refer to as “ocean security.” This understanding lets us properly forecast, prepare, mitigate, and resiliently recover from the events listed above—and the many others that come from the ocean. I hope that as the subcommittee makes funding decisions for FY 2021, you will provide the needed support for programs, many of which are outlined below, that advance our nation’s ocean security, ensuring we remain an economically competitive, scientifically literate nation secure in our access to food, water, and energy.

Ocean issues don’t fall to just one agency but to more than a dozen. Even specific topics are covered by multiple agencies. NOAA and NSF both have substantial ocean observing infrastructure through the U.S. Integrated Ocean Observing System (IOOS) and the Ocean Observatories Initiative (OOI), respectively, but other agencies collect their own data through their missions, fleets, and other techniques. IOOS itself has 17 federal partners. Advancing science, technology, engineering, and math (STEM) education falls to, among others, NOAA’s Office of Education, NASA’s Office of STEM Engagement, and NSF’s Directorate for Education and Human Resources. But it’s not just the federal ocean science community investing in these and other similar enterprises; there are more than 600 businesses engaged in ocean observation and forecasting; over 400 postsecondary institutions that provide ocean-related certificates or degrees; and in excess of 45,000 nonprofits focused on ocean and coastal activities. Partnerships and collaborations are critical to successfully addressing ocean issues, ensuring wise use of resources, and making data accessible.

Fortunately, a program already exists that can spur the rapid and flexible creation of multisector partnerships to solve complex ocean problems and advance the economic, environmental, and national security interests of the United States. The National Oceanographic Partnership Program (NOPP), a congressionally mandated program established in 1997, is an ideal vehicle to advance collaborative efforts and already has been involved with funding projects such as IOOS, the Argo...
Project, and the JASON project. If we are serious about better understanding our ocean, its threats and its opportunities, it would be in our best interest to do so in a manner that promotes collaboration and leveraging of funds amongst all stakeholders — public and private. **To fully utilize NOPP and facilitate the success of projects promoting national goals (national security, economic prosperity, quality of life) related to ocean knowledge, I respectfully request the subcommittee provide $20 million in NOPP funding — $10 million to NOAA and $10 million to NASA.** I thank the subcommittee for their support of the program in FY 2020 appropriations. Additionally, COL supports interest that has been expressed by the agencies in transferring the Ocean Research Advisory Panel (ORAP), NOPP’s statutory Federal Advisory Committee Act body, from Navy to NOAA, and would request that $1 million of the $10 million appropriated to NOAA for NOPP be specified for ORAP as conditional funding.

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**National Oceanic and Atmospheric Administration**

*For NOAA to fully execute its mission of service and science, I respectfully request $6.5 billion for the agency, in addition to support to other programs highlighted below.*

To ensure that our ocean is both healthy and sustainably used, we must first know what exists beneath its waters. Unfortunately, more than 80 percent of our ocean is unexplored, unmapped, or unobserved. I appreciate the renewed effort from the administration to increase ocean mapping through the Presidential Memorandum on Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska. However, I want to ensure equal efforts are paid to exploration and that funds aren’t taken from NOAA’s Office of Ocean Exploration and Research (OER), the only federal organization dedicated to ocean exploration, and reallocated to mapping efforts. Additionally, due to the cooperative nature of ocean exploration — which includes other federal and state agencies, nonprofits, private industry, and academic institutions — **I respectfully request the subcommittee fund OER at $60 million and that report language address the importance of collaboration and coordination among federal and state agencies, academic institutions, industry, and other oceanographic partners to maximize return on investment and advance shared data, science and public engagement, and innovative technology.**

Hand-in-hand with exploration are ocean observations, which let us know who needs to evacuate from a hurricane’s path, if the shipping channel is deep enough for a vessel to pass through safely, if changing pH will wipe out a shellfish farm; or if an area should be a marine sanctuary or a potential site for offshore wind development. The U.S Integrated Ocean Observing System (IOOS) is a coordinated network of technologies (such as gliders, satellites, buoys, underwater vehicles, and tide gauges) that generate continuous data on our coasts, ocean, and Great Lakes. Building and leveraging local and regional partnerships ensures IOOS’ efficiency and provides the infrastructure needed to support jobs, the economy, maritime safety, and environmental health. **To ensure we continue to collect data and increase our ocean observations, I respectfully request $45.25 million for the regional system and $7.3 million for the IOOS Program Office.** This regional system request includes $34.7 million for the network of 11 regional coastal observing systems; $2.52 million to install high-frequency radar systems to close gaps in surface current mapping; $2.46 million for underwater gliders to detect harmful algal blooms, ensure safe navigation, and improve hurricane warnings; $1.27 million for streamlining observations; and $4.3 million for research and development.
I thank the subcommittee for continuing to recognize the importance of STEM education and extension programs, despite repeated attempts by the administration to eliminate many of them. I respectfully request $20 million for NOAA’s Bay-Watershed Education and Training and Environmental Literacy Program (ELP). The two goals of NOAA’s agency-wide education strategic plan required by the America COMPETES Act are workforce development and environmental literacy, where formal and informal education and outreach create an environmentally literate society. Sustained and adequate funding for these programs not only advances NOAA’s mission but grows the STEM workforce, strengthens our economy, and ensures our national security. As the longest-standing and most comprehensive national grants program with a focus on environmental literacy, ELP grants have and will continue to keep our coastal communities – and our nation as a whole – safe, secure, and prosperous. Adequately funding ELP will allow programs such as the National Ocean Sciences Bowl (NOSB), a quiz-bowl style ocean science competition for high schoolers that has received ELP funding during its 23-year history, to flourish. The NOSB alone has graduated tens of thousands of students from high school with a solid ocean science foundation who go on to careers that advance our nation and keep it secure.

For more than 50 years, the National Sea Grant College Program (Sea Grant) has supported coastal and Great Lakes communities, improving community and economic resiliency, ensuring the health of coastal ecosystems, and advancing environmental literacy and workforce education. In 2018, $76.5 million in federal funds resulted in $624 million in economic benefit, helping more than 200 communities improve their resilience and over 2,000 seafood HACCP safety certifications. I respectfully request $82.9 million for the National Sea Grant College Program and $15 million for Sea Grant Aquaculture in FY 2021.

The importance of programs that address emerging issues cannot be understated. One of these, NOAA’s Marine Debris Program, has grown in importance and visibility as scientists and the public better understand the widespread impact of the ocean plastic problem. I respectfully request $10 million for this program to evaluate, track, and clean up debris that threatens ocean health.

**National Science Foundation**

As the only federal agency tasked with supporting all fields of fundamental science and engineering (except medical sciences), NSF is vital to our nation’s scientific enterprise, today and tomorrow. I respectfully request at least $9 billion for NSF "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense" in FY 2021.

I want to thank the subcommittee for providing $127 million in FY 2019 to finish out the final year of a three-year funding profile to complete construction of all three Regional Class Research Vessels (RCRVs). With more modern technology and abilities than previous generations, these long-awaited RCRVs will provide even more access to the marine realm, and I respectfully request the subcommittee maintain full support for these critical research vessels.

As with NOAA, STEM education at NSF plays a vital role in securing our national, homeland, economic, energy, food, and water securities. Broadening the backgrounds of scientists to represent all people across our nation, better reflecting our diversity of gender, race, class, and perspective, is critical for all STEM fields — not just ocean science. A diverse, STEM-literate workforce strengthens our nation’s economy and is vital to maintaining the nation’s leadership in science and technology innovation. It’s imperative to reinforce the importance of funding federal programs that
empower underrepresented groups to become the next generation of ocean-STEM leaders at every educational and technical level. The NSF INCLUDES (Inclusion across the Nation of Communities and Learners of Underrepresented Discoverers in Engineering and Science) program aims to increase access to and participation in STEM learning by demographic groups with historically low participation in these fields. Programs such as this – that support a more diversified academic core in the science and technology workforce – are key to growing our blue economy.

**National Aeronautics and Space Administration**
While trips to the moon and Mars spur excitement and wonder, it’s critically important that space exploration not come at the expense of understanding our only home. I respectfully request $7.25 billion for the Science Mission Directorate and $2.5 billion for NASA Earth Science. This should include support for the agency’s Earth-facing missions, including those proposed for elimination in the president’s budget request, specifically the Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission and the Climate Absolute Radiance and Refractivity Observatory (CLARREO) Pathfinder instrument. Both were recommendations from the 2007 Earth Science decadal survey. As support is thrown behind the space-based efforts at NASA, let’s not forget how space-based ocean science can inform research related to ocean work on other moons and planets.

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In 2004, the U.S. Commission on Ocean Policy released *An Ocean Blueprint for the 21st Century*. It describes a vision where

> “The oceans, coasts, and Great Lakes are clean, safe, prospering, and sustainably managed. They contribute significantly to the economy, supporting multiple, beneficial uses such as food production, development of energy and mineral resources, recreation and tourism, transportation of goods and people, and the discovery of novel medicines, while preserving a high level of biodiversity and a wide range of critical natural habitats.”

In the ensuing 16 years, we’ve made progress in achieving that vision, but we still have a long way to go before it becomes reality. It’s increasingly becoming more and more clear that strengthening our ocean security — through transformational partnerships like NOPP and adequate and consistent funding for our federal ocean science agencies and programs — is necessary to the success and stability of our maritime nation.

Our nation doesn’t exist in a vacuum. As our federal investments in ocean science and technology falter, our competitors’ investments do not. Other nations, such as our great peer-competitor China, are investing more in research infrastructure and education and are threatening our global leadership in the maritime domain.

As you work to provide funding for these critical programs, COL and our member institutions ([https://oceanleadership.org/membership/](https://oceanleadership.org/membership/)) are doing all we can to give you the subcommittee allocations necessary to fully fund these programs. I know you face difficult decisions that involve offsets and divestments to achieve a balanced budget. COL and our members stand ready to engage in discussion to help establish priorities around the ocean security framework to support these difficult decisions. Thank you for your exemplary leadership and dedicated work and for the opportunity to provide input into FY 2021.