

### ***Agenda Note: Charting a Way Forward***

The task of exploring the global ocean is virtually infinite. Leadership and resources are finite. A successful NOAA ocean exploration strategy must use leadership to expand resources. A government agency depends on public support for its core resources, and a network of partnerships, built with a spirit of collaboration, can expand positive outcomes many times.

Since it was established, the OEAB has pointed the way forward on numerous issues, such as supporting new technology, completing the mapping of the EEZ, forming partnerships with non-governmental explorers, expanding public outreach, and promoting the blue economy. With the appointment of a new senior leadership team at NOAA and the renewal of OEAB membership, it is time to look forward again. What are the ocean exploration challenges on which NOAA should focus its leadership and resources? How can the OEAB best help to chart that way forward?

*Evolving Issues:* The knowledge we have gained over the past decade--much of from ocean exploration--only reinforces the urgency of understanding the ocean as threats to ocean systems and health increase. At the same time, a better understanding of the ocean can help address urgent issues of climate change response, food security, renewable energy production, and others. How should ocean exploration priorities change in response?

*Technology:* Advances in technology change lives and societies. Breakthroughs come when leaders apply new technology to existing challenges. Henry Ford revolutionized the world of work by replacing steam powered machines with electric machines, and putting together the first assembly lines. Advanced sensors now enable Saildrone to do mapping that five years ago could only be done by large, crewed vessels at ten times the cost. Trawling nets to survey fisheries can be replaced by eDNA sampling. Uncrewed vehicles dramatically reduce the cost and risk of exploring the deep ocean. Can such technological advances revolutionize the world of exploration? Should NOAA provide leadership for that revolution, perhaps by forming ARPA-O or another vehicle to de-risk the application of new technologies?

*Explore from Shore:* The new technologies often enable an “explore from the shore” strategy. Ships and crews will remain essential for many tasks, but just as the telepresence strategy empowered collaboration with shore based experts during deployment at sea, robots reduce the need for human presence. New technologies expand what can be known about the oceans; just as important these technologies can multiply the number of explorers. Public support provides the lifeblood of government programs. Can NOAA apply new technologies (including new communication and visualization technologies that the pandemic has driven) to build on its admirable record of supporting STEM education and engaging the public?

*An Alliance Structure:* NOAA has an enviable position as the designated civilian public agency for ocean science. However, it will never have the resources to conduct most of the exploration undertaken by Americans. In the past few years, it has launched several different partnerships, which have in turn expanded the scope of collaborative exploration. Consolidated leadership in

ocean exploration now demands: durable relations among public agencies at both federal and state level; ongoing contracts with corporations; partnerships with private explorers; and, working relations with agencies from other nations. NOAA has used a campaign strategy to lead other partners, such as in the upcoming Pacific Campaign. Long term leadership would benefit from an alliance structure that re-enforces habits of collaboration. The UN Decade for Oceans could be an opportunity to exercise such leadership.

*Pick a Place:* The upcoming Pacific campaign is a good example of NOAA leading a broader effort, but what next? A geographic campaign is an opportunity to build new partnerships. Several years ago, the OEAB considered the lack of access to US flagged icebreakers and the status of the aging Okeanos Explorer, and it advised against deployment to the Arctic. Now, global warming has expanded access through the Arctic Ocean, creating scientific and commercial opportunities as well as geopolitical fears. Is it time for NOAA to take a lead in building an alliance for Arctic exploration? If not, others will set their own agenda.