Alex Rose, *Executive Director, Blue Ring*

The Blue Frontier Deserves Our Attention

Space is quite consistently referred to as the "final frontier," but we have somehow managed to miss a nearly unknown world right here on our home planet: the ocean.

I like to call it deep blue space.

It's common knowledge that the ocean makes up the majority of our planet, yet we know surprisingly little about it. We have more accurately mapped the surface of Mars than the bottom of our own seas, so it's not the technology that's holding us back. It's misinformation and a general sense of disconnect from our natural world that has plagued us since the Industrial Revolution.

We still have 7 mi. deep of alien ocean to explore on Earth, so it is high time to reinvigorate our spirit of discovery through bold, varied and widely accessible exploratory methods that will get us engaged with understanding the precious marine ecosystems that desperately need our care and protection.

Science shows that being near, on or under the water makes us happier, healthier and more fulfilled.

Engaging your "blue mind" and getting to know our marine habitats can be as simple as snorkeling or as involved as a submarine ride.

Scuba diving allows us to explore the first few hundred feet of our ocean world in a way that wasn't possible until about 75 years ago. Scuba, which stands for "self-contained underwater breathing apparatus," was incrementally developed over thousands of years starting in Aristotle's time through an experimentation process with a fairly high mortality rate. Many iterations of diving bells, helmets and regulators came about with varied success, but it remained a major hazard for quite some time due to our lack of understanding of human physiology under pressure. Jacques Cousteau and Émile Gagnan drew upon centuries of trial and error to eventually create the Aqua-Lung in 1943, the first apparatus to deliver purified and filtered compressed air to a diver on demand.

Underwater photography made huge, fast strides after the advent of modern scuba. While the first underwater photograph was taken in 1856, it wasn't until 1957 that 35-mm-format cameras specifically designed for underwater use were available. This innovative camera, originally called the Calypso, was soon purchased by Nikon and re-released in 1963 as the Nikonos, a series of underwater cameras that became quite famous. Today, nearly every Canon, Nikon and Sony camera out there can be secured in a watertight housing, fitted with strobe lights and used to create images under the waves.

To go beyond the realm of scuba requires more sophisticated equipment. Like drones in the air, ROVs are widely used for underwater research, and small, relatively inexpensive ones such as those from OpenROV and iBubble have even become available to the public for both recreation and citizen science.

Submarines are also incredible resources that can allow us to reliably descend to 3,000 ft. or more to observe and study the unique ecosystems that exist in extremely cold water devoid of sunlight and most nutrients. The vast majority of subs in existence are unfortunately not accessible to the general public, but that could change soon.

The technology to explore the blue frontier is ever evolving, and so should our awareness of the oceans. On World Oceans Day, June 8, 2017, I launched Blue Ring (www.bluering.blue), a membership-driven benefit corporation designed to fund global ocean conservation projects.

For $25 annually, anyone can "mery" the ocean, receive a blue ring or pendant to show off their commitment, and help fund the construction of two 1,000-m, dual-classed citizen submersibles built by Deep Ocean Exploration and Research (DOER), which was founded by the legendary oceanographer Dr. Sylvia Earle. Together, we can power a movement to explore and protect the unknown depths of our planet's final frontier. **ST**

Reprinted from **Sea Technology** *magazine.*
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