Jonathan Putnam
Office of International Affairs
National Park Service
1201 Eye Street NW. (0050)
Washington, DC 20005
jonathan_putnam@nps.gov

Letter in Support of Nomination of the Marianas Trench Marine National Monument for Listing as a UNESCO World Heritage Site from International Deep-sea Research Community

At over 1500 kilometers long, 60 kilometers wide, and over 11 kilometers deep, the Mariana Trench is one of the largest geologic features on the planet. It is more than a mile deeper than Mt. Everest is high and hosts Challenger Deep, the deepest point on Earth. It is also home to numerous sites of exceptional scientific value, including submerged volcanoes that host deep-sea hydrothermal vents, the largest documented mud volcanoes, coral atolls and fringing reef ecosystems that support apex predators like sharks and whales, as well as habitat-forming stony corals. Currently, the United States' portion of the Mariana Trench falls within the Marianas Trench Marine National Monument, an almost 250,000 square kilometer area of protected submerged lands and waters partitioned into three units, the Trench Unit, the Islands Unit, and the Volcanic Unit. Designating the Marianas Trench Marine National Monument as a UNESCO World Heritage Site would recognize this unique geologic, scientific, and cultural resource.

The Islands Unit of the Marianas Trench Marine National Monument, the only region that currently enjoys comprehensive protection of both the seafloor and water column are home to sharks, whales, and dolphins, as well as several species of endangered and threatened sea turtles. More than two dozen species of seabirds inhabit the area and enrich the nutrient load of coral communities, fertilizing the shores with energy from the sea. The Monument complements the protections of adjacent wildlife conservation reserves on the terrestrial portions of Farallon de Parajos, Maug, and Asuncion Islands, which are protected in perpetuity by the Commonwealth of the Northern Mariana Islands government.

The Volcanic Unit of the Marianas Trench Marine National Monument comprises 21 submerged volcanoes of exceptional scientific values. The Volcanic Unit encompasses submarine mud volcanoes, "black smoker" hydrothermal vents, as well as one of the few locations where chemical processes create a natural laboratory for in-situ investigations into the ecological consequences of ocean acidification. Since the creation of the Monument, several research expeditions have embarked to characterize the biodiversity, biogeographic connectivity, microbial ecology, geology, and chemistry within the Volcanic Unit. The close proximity to infrastructure provided by Saipan and Guam, as well as the protections afforded by the creation of the Monument and its location within the United States EEZ make the Volcanic Unit an essential region for the establishment of long-term longitudinal studies that can serve the international scientific community for generations.

The Trench Unit encompasses the majority of the Mariana Trench, which stretches from north of the northernmost Mariana Islands to south of Guam. At over 11 kilometers deep at its deepest point, the Trench Unit is a vast and almost completely unexplored submarine canyon. It is home to the deepest living fish species, arthropods that exhibit deep-sea gigantism, a tremendous diversity of fishes and invertebrates such as cusk eels, anglerfish, pelagic sea cucumbers, squat lobsters, shrimp, deep-sea sharks, and uncounted, undiscovered, and undescribed species from every phylum. Only four vehicles have ever been capable of diving to the bottom of the Mariana Trench, all of which are currently decommissioned or destroyed. Thus, over a third of the volume of the Trench Unit is currently out of reach for direct observation or targeted sampling.

The Marianas Trench Marine National Monument would be the first World Heritage site to include unexplored ecosystems, including geologically active sites that promise new species, scientific discoveries, and insight into biological processes in the deepest ecosystem on earth. Numerous expeditions using remotely operated vehicles are in development to explored and study these regions.

The Marianas Trench holds a unique place in the history of science. It played a major role in the Challenger Expedition, which is often acknowledged as the birth of modern marine science. Three humans have reached the bottom of the Marianas Trench during two historic dives, the *Trieste* in 1960 and the *Deepsea Challenger* in 2012.

The Monument would be the second World Heritage site of both natural and cultural value and contribute under-represented marine habitats to the UNESCO World Heritage program.

We, the undersigned members of the ocean science and deep-sea research communities, support the nomination of the Marianas Trench Marine National Monument as a UNESCO World Heritage Site.

Diane K.	Adams	Rutgers, the State University of New Jersey	USA
Diva	Amon	University of Hawaii at Manoa	USA
Juan Francisco	Araya	Universidad de Concepción and Universidad de Atacama	Chile
Sophie	Arnaud-Haond	Ifremer	France
Maria	Baker	University of Southampton	UK
Meri	Bilan	Centre of the University of the Azores	Portugal
Angelika	Brandt	University of Hamburg	Germany
Sandra	Brooke	Florida State University	USA
Alastair	Brown	University of Southampton	UK
Julian Mariano	Burgos	Marine and Freshwater Research Institute	Iceland
Marina R.	Cunha	Universidade de Aveiro	Portugal
Bronwen	Currie	Ministry of Fisheries an Marine Resources	Namibia
Anindita	Das	MACS-Agharkar Research Institute	India

Elizabeth M.	De Santo	Franklin & Marshall College	USA
Ron J.	Etter	University of Massachusetts	USA
Emanuela	Fanelli	Marine Environmental Research Center	Italy
Donato	Giovannelli	Earth-Life Science Institute	Japan
Michael S.	Heard Snow	University of Edinburgh	UK
Gerhard J.	Herndl	University of Vienna	Austria
Santiago	Herrera	Lehigh University	USA
Ana	Hilario	University of Aveiro	Portugal
Richard	Holmes	British Geological Survey	UK
Tammy	Horton	National Oceanography Centre	UK
Jacob	James	Waitt Foundation	USA
Shannon	Johnson	Independant	USA
S. Kim	Juniper	Ocean Networks Canada	Canada
Marcelo V	Kitahara	Universidade Federal de São Paulo	Brasil
Nikolaos	Lampadariou	Hellenic Centre for Marine Research	Greece
Lisa A.	Levin	Scripps Institution of Oceanography	USA
Kathryn	Mengerink	Waitt Institute	USA
Susan	Mills	Woods Hole Oceanographic Institution	USA
Bhavani	Narayanaswamy	Scottish Association for Marine Science	UK
Brennan	Phillips	Harvard University	USA
Ana	Ramos	Instituto Español de Oceanografía	Spain
Ascensão	Ravara	Universidade de Aveiro	Portugal
Michael A.	Rex	University of Massachusetts	USA
Steve W.	Ross	UNCW, Center for Marine Science	USA
Hanieh	Saeedi	Federal University of Espirito Santo	Brasil
William	Saleu	BETA Scientific	Papua New Guinea
Kirk	Sato	Scripps Institution of Oceanography	USA
Christine	Shulse	DOE Joint Genome Institute	USA
Frederic	Sinniger	University of the Ryukyus	Japan
Paul	Snelgrove	Memorial University of Newfoundland	Canada
Martin	Solan	University of Southampton	UK
Eulogio H.	Soto	Universidad de Valparaiso	Chile
Oliver	Steeds	Nekton	UK
Paris	Stefanoudis	University of Southampton	UK
Tracey	Sutton	Nova Southeastern University	USA
Michelle L	Taylor	University of Oxford	UK
Andrew D.	Thaler*	Blackbeard Biologic: Science and Environmental Advisors	USA
Paul	Tyler	University of Southampton	UK
Rui Pedro	Vieira	National Oceanography Centre	UK
Helena	Wiklund	Natural History Museum, London	UK

Joana	Xavier	University of Bergen	Norway
Moriaki	Yasuhara	The University of Hong Kong	China

*please direct correspondence to andrew@blackbeardbiologic.com.