



DEEP-OCEAN STEWARDSHIP INITIATIVE

Executive Committee

As the organizers of a global coalition of deep-sea experts, the Executive Committee of the Deep Ocean Stewardship Initiative (DOSI) is thankful for this opportunity to comment on topics that should be addressed in NOAA's draft EIS of designating marine portions of Papahānaumokuākea Marine National Monument as a National Marine Sanctuary. We would like to offer input from a deep-sea perspective regarding several of the themes on which NOAA has requested comments.

**The location, nature, and value of ecosystems, species, and resources that would be protected by a sanctuary:**

While shallow environments tend to be the most visible beneficiaries of protection, diverse ecosystems in the deep sea (commonly defined as the part of the ocean below a depth of 200 meters that is too dark to support photosynthesis) are widespread in the current monument. The most recent proof of this is the [exploration cruise conducted in the area](#) by Ocean Exploration Trust, NOAA, and other partners in 2021. That cruise discovered astoundingly rich and diverse deep-sea communities of sponges and corals, along with the creatures those communities support, on the Voyager Seamounts south of Kapou. Significant deep-sea biodiversity was also found during NOAA Ocean Exploration's CAPSTONE campaign [expeditions in 2016](#) and previous Ocean Exploration Trust [exploration expedition in 2018](#). Along with "pure" deep-sea environments, shallow reefs often continue into deeper water, with a high level of connectivity and interdependence between their shallow and deep parts.

While impressive, deep-sea environments like these are exceptionally fragile. Organisms in the deep tend to grow very slowly because of limited food and cold temperatures, which makes the deep sea slow to recover from any human-caused damage or disturbance. Deep-sea species are also especially vulnerable to climate change; because their environment usually changes very little compared to shallow water, warming, acidification or deoxygenation of the deep can be devastating.

Protected area regulations and monitoring plans worldwide often fail to account for deep-sea environments and their particular needs in a world affected by climate change, which can leave these environments vulnerable to harm. NOAA should therefore consider the particular impact of sanctuary designation, and any change in regulation that comes with it, on the rich, deep-sea ecosystems in the area.

## **The potential socioeconomic, cultural, and biological impacts of sanctuary designation:**

In providing more streamlined and politically durable protection of marine portions of Papahānaumokuākea than the current Marine National Monument, sanctuary designation may have a positive impact on the deep-sea life in the area. Deep-sea environments globally are at increasing risk of damage from deep-seabed mining, bottom trawling, and other uses. Creating a National Marine Sanctuary in the area with regulations that disallow such activities would ensure local deep-sea life remains protected. Sanctuary designation would not protect the deep-sea environment from climate change, but in many cases reduction of other risks is believed to help ocean species survive its effects.

This continued protection may have socioeconomic and cultural benefits. Deep-sea research, which is currently allowed by permit in the Monument, provides valuable contributions to many branches of science. These include the [development of new materials](#), [medical research](#), and the [study of climate change](#). The deep sea also holds cultural and aesthetic value for many, with this archipelago in particular being the sacred wahi kupuna of the Native Hawaiian people. NOAA should consider the value that the deep-sea portions of Papahānaumokuākea provide in these areas and the corresponding benefits of improved protection. At the same time, NOAA should consider the risks that any future changes to sanctuary regulations could pose to deep-sea environments and their uses.

## **Spatial extent of the sanctuary and boundary alternatives NOAA should consider:**

As Dr. Beth Orcutt stated in her comment, [a 2021 research cruise](#) conducted by Ocean Exploration Trust and partners found diverse deep-sea communities on seamounts outside of the current Monument boundaries. NOAA's EIS should consider the benefits of expanding the area of a future Sanctuary to include these deep-sea communities, and others in the Pacific Remote Islands Marine National Monument, while also considering the impacts of this action on local people and current human activities in the area.

## **Important management measures for the sanctuary:**

Future management of a National Marine Sanctuary in marine portions of Papahānaumokuākea should take the following recommendations into account:

1. Design management measures for deep-sea and mesophotic environments within the Sanctuary so that the particular needs of these communities are accounted for, avoiding regulatory gaps.
2. Ensure that monitoring plans for the Sanctuary include plans for monitoring of deep-sea environments. Effective use of ROVs and AUVs can help inform management measures.

3. Due to a limited ability to monitor changes and apply adaptive management in the deep sea, especially across such a wide area, apply the precautionary principle to any activities under consideration in deep portions of the future Sanctuary.

Thank you once again for the opportunity to comment in advance of this important decision for Papahānaumokuākea.

Sincerely,

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