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Safe Harbors: The Many Benefits of Marine Monuments and Sanctuaries

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The United States has been at the forefront of marine resource stewardship since the 1970s when Federal officials began to implement a series of national policies aimed at the conservation and management of public trust resources in the ocean. Beginning with the establishment of the National Oceanic and Atmospheric Administration in 1970, soon followed by several pieces of landmark legislation, this era marked the start of a continuing effort to integrate ecosystem science with marine resource management. Among the most important bipartisan legacies of this effort has been the steady expansion of marine managed areas in U.S. coastal and ocean waters. This legacy is being challenged as the Trump Administration considers whether to alter or eliminate the nation's Marine National Monuments and National Marine Sanctuaries.

Keywords: marine ecosystem, conservation, policy analysis, biodiversity, MPAs, reserves

In April of 2017, President Trump issued two separate Executive Orders directing the Departments of Interior and Commerce to review the existing inventory of Marine Monuments and Sanctuaries for potential alteration, reduction or elimination. The first of these Orders (EO # 13792) directed the Secretary of the Interior to review any large (i.e., > 100,000 acres) National Monument established in the previous 20 years. The Interior review, which encompasses all five Marine Monuments and was completed in August 2017, recommends eliminating the current prohibition on commercial fishing in three monuments (Northeast Canyons and Seamounts, Pacific Remote Islands, and Rose Atoll) and shrinking the boundaries of two (PRI and RA). The second Order (EO #13795) directed the Secretary of Commerce to consider whether any Marine Monument or Sanctuary designation or expansion during the past 10 years has had a negative impact on commercial energy or mineral development. This report, while presumably complete, has not been made public.

Marine National Monuments and National Marine Sanctuaries encompass more than one billion acres of federal waters. These areas of national significance are designated in recognition of their rich biological diversity, cultural, economic, or ecological value, and importance to scientific research and exploration. They contain coral reefs, oceanic islands, coastal waters, and deep ocean canyons—some of the world's most pristine and productive ecosystems that conserve and sustain some of our ocean's most valuable resources. Marine Monuments and Sanctuaries encompass ~23% of the U.S. Exclusive Economic Zone, with the majority of that coverage occurring in the recently expanded Papahānaumokuākea monument northwest of Hawaii and the Pacific Remote Islands monument in the central Pacific. These two monuments were first established by President George W. Bush and then expanded by President Barack Obama in 2014 and 2016, respectively. The

most recent growth of the National Marine Sanctuary system occurred in 2015 with the expansion of the Greater Farallones and Cordell Bank sanctuaries. Given the geographic scales involved and the decades of policy precedent at risk, a decision to reduce or alter the nation's inventory of Monuments and Sanctuaries would have significant implications for U.S. marine resource policy, regional economies, and national goals for marine ecosystem management and sustainability. It is vital that in evaluating this decision, both policy makers and the public have access to the best available science on the value of these managed areas, as well as an understanding of the legal and policy frameworks at risk.

The benefits and services marine ecosystems provide to humans are large and diverse, ranging from extractive resource use to subsistence, recreation and ocean tourism. However, these benefits rely on functioning ecosystems, the components of which are owned by no individual but rather held in public trust by federal or state government. The Public Trust Doctrine underlies the view that the United States holds ocean resources in trust for the benefit of all its citizens (USCOP, 2004). The duty of the government to protect marine resources in the same fashion that a traditional trustee must protect and sustainably manage the body of any trust has been underscored in a number of judicial rulings¹. This Public Trust Doctrine principle has been handed down as a bedrock legal principle through English Common Law² from its origins in the Roman Institutes of Justinian. It has been made part of the law of every state in this country². The management of resources provided by Marine Sanctuaries and Monuments ensures that these areas remain ecologically, socially, and economically productive (i.e., they ensure sustainable use), and therefore serves the public trust.

Marine Monuments and Sanctuaries provide a range of benefits to humans, even if their resources, such as fish, oil and gas, or mineral deposits, are not extracted. Conflicts over the designation or expansion of Marine Monuments and Sanctuaries are often associated with the potential loss of economic activity (e.g., reduced recreational and commercial fishing or natural resource development). However, non-consumptive activities such as tourism, SCUBA diving, and whale watching add substantial value to local and regional economies. NOAA economists have documented the economic benefits of Marine Monuments and Sanctuaries via ocean tourism and recreation. In 2014, these economic sectors contributed over \$107 billion to the U.S. economy, and employed 2.2 million people—with more than 11 million saltwater anglers contributing \$60 billion

dollars in gross spending that supports nearly half a million jobs. A considerable portion of this value is generated in and around Marine Monuments and Sanctuaries. For example, recreation on the Olympic Coast of Washington tied directly to sanctuary use generated ~\$102M in annual spending, and added \$78M to the regional economy (Leeworthy et al., 2016). In 2001, the coral reefs of the Florida Keys NMS generated nearly \$13 million in value to snorkelers, scuba divers, and the glass-bottom boat industry (Johns, 2003). In the Great Lakes, Thunder Bay NMS supported \$92 million in sales and added \$51.3 million in value to the regional economy. The visitor center at Thunder Bay attracted 97,000 visitors in 2015, approximately eight times the populations of the nearby City of Alpena (Leeworthy et al., 2017). In Hawaii, the Humpback Whale Sanctuary contributes to a whale watching industry that includes ~50 operators who provided statewide tours to an estimated 330,000 visitors in 2008. The whale watching industry plays a strong role in the state's economy by contributing up to \$11 million in total revenues annually with a total economic impact of up to \$74 million per year (O'Connor et al., 2009).

Marine Monuments and Sanctuaries also have impressive benefits for fish stocks and fisheries (Table 1). They have more and larger fishes and contain apex predators like sharks, usually rare or absent from unmanaged areas. Edgar et al. (2014) found that shark biomass is 14 times greater and the number of large fish species was 36% greater in Marine Protected Areas (MPAs, which includes fully protected marine reserves and other protected areas where fishing is limited but not banned). Marine Monuments and Sanctuaries protect spawning grounds and nursery areas for commercially and recreationally important species. They also contain the big, old, fat, and fecund female fishes (BOFFFFs) that contribute a disproportionately large number of eggs to future generations of fish stocks. All of these factors lead to a “spillover effect” when adult and juvenile fishes migrate outside of the managed area, where they are then captured by recreational or commercial fishers (Gell and Roberts, 2003; Goñi et al., 2010; Di Lorenzo et al., 2016).

Marine Monuments and Sanctuaries are especially well suited for supporting these and other benefits due to the relatively unique cross-jurisdictional authority granted to them by statute. Marine Monuments are established by the President pursuant to the Antiquities Act while marine sanctuaries are established by the Secretary of Commerce under the National Marine Sanctuaries Act. The Antiquities Act gives presidents the authority to protect areas of historic or scientific interest as national Monuments and gives wide latitude to the President for the terms of that protection [54 U.S.C. § 320301(a)]. The Sanctuaries Act was created for the purpose of “conservation and management of [] marine areas, and activities affecting them” [16 U.S.C. §1431(b)(2)] and authorizes research, education, and management for any resources therein. Because they are place-based, these Acts necessarily manage marine resources on an ecosystem-wide basis to achieve their purposes. By contrast, most other marine resource laws primarily manage a single sector or protected resource. As a result,

¹In re Complaint of Steuart Transportation Co., 495 F. Supp. 38, 40 (E.D. Va. 1980) (both Virginia and the United States have the duty to protect the public interest in natural wildlife resources); State Dept. of Env. Protection v. New Jersey Central Power & Light Co., 308 A.2d 671, 674 (N.J. Super. 1973) (reversed on other grounds) (New Jersey has the affirmative fiduciary obligation to protect the public right to a viable marine environment).

²Arnold v. Mundy, 6 N.J.L. 1, 12-13, 77 (1821) (upon statehood, New Jersey took over from the king trustee duties for lands beneath navigable waters); Martin v. Lessee of Waddell, 41 U.S. (16 Pet.) 367, 410 (1842) (upon the Revolution, the people of each state became sovereign and hold the right to all navigable waters and underlying soil for their common use).

TABLE 1 | Economic impacts of commercial fishing in California's National Marine Sanctuaries.

Sanctuary	Year	Revenue (\$000)	Sales (\$000)	Value-added (\$000)	Income (\$000)	Employment
Channel Islands	2013	27,000	45,000	31,000	28,000	659
Monterey Bay	2013	26,000	42,000	29,000	26,000	843
Cordell Bank	2012	993	1,700	1,000	929	48
Gulf of the Farallones	2013	15,000	15,000	16,000	15,000	291

the Antiquities Act and Sanctuaries Act have the potential to be among our nation's most effective policy tools for linking ecosystem-wide management authority with science-based decision making. These statutes are thus key to meeting the government's public trust responsibility in our ocean waters.

In addition to their potential impact on public trust resources, the two Executive reviews also raise questions related to the legality and process surrounding the alteration or elimination of Monuments and Sanctuaries. The Antiquities Act is silent as to any power to abolish or reduce the size of any monument. In 1938, the Attorney General of the United States, recognizing this silence, concluded that the Act does not authorize the President to abolish monuments after they have been established [39 Op. Att'y Gen. 185-89 (1938)]. Additionally, while enacting the Federal Land Policy and Management Act (FLPMA) in 1976, Congress emphasized that it reserves to itself exclusive authority to modify or revoke any declarations of protected lands created under the Antiquities Act³. In light of FLPMA and the 1938 Attorney General opinion, leading legal scholars agree that Presidents lack authority to revoke, reduce in size, or alter protections afforded monument lands and waters⁴.

For Marine Sanctuaries, the National Marine Sanctuary Act explicitly allows the agency to modify the designation of a Sanctuary [16 U.S.C. § 1434 (a)(4)] but any boundary changes would be subject to the same lengthy procedures required for designation. This includes significant public and environmental review⁵. If the government attempts to modify the management to allow more commercial or extractive uses, these would be improper to the extent that they conflict with the terms of designation or the Act itself which includes prohibitions on destruction, loss, or sale of sanctuary resources [16 U.S.C. § 1436]. Thus, it is likely that any attempt to open up a National Marine Sanctuary to permit extractive, commercial uses would be found to conflict with the purposes of the Act.

Our National Marine Monuments and Sanctuaries provide many benefits to the citizens of the United States. Unsurprisingly, public comments solicited as part of the federal review overwhelmingly support them (99% of an estimated 360,000 individuals who commented⁶) and reject the idea that they

should be restricted or eliminated. Most Marine Monuments and Sanctuaries are managed at the ecosystem level and already support multiple uses including tourism, recreational fishing, and in some sanctuaries, limited commercial activity. They are perhaps the most observed and best managed parts of our marine legacy. Their establishment is in keeping with our government's responsibility to uphold the principles of the Public Trust Doctrine and they continue to be managed through a well-defined, open process. We urge policy makers and the public to actively engage in protecting them for current and future generations.

CONCLUSIONS AND RECOMMENDATIONS

The government should refrain from altering the current, science-based, boundaries and protections of existing Marine Monuments and Sanctuaries. Such changes would have a detrimental impact on their ability to provide ecological and economic services to the communities they serve.

Congress should provide increased funding for research and management of these protected areas to ensure we maximize their benefit as public resources, and allow for expanded stakeholder engagement from all sectors including recreational and commercial use.

Expand routine data collection on the social and economic dimensions of Marine Monuments and Sanctuaries; economic and social analyses should consistently consider the tradeoffs between consumptive and non-consumptive uses.

Clearly communicate the importance of Marine Monuments and Sanctuaries to policymakers during the government decision making process.

Federal resource managers can best meet their public trust responsibilities when marine resource management plans fully integrate sustainable use with robust conservation strategies. The National Marine Sanctuaries Act and Antiquities Act are among the best tools for implementing and integrating those conservation strategies.

Congress should refrain from weakening either the National Marine Sanctuaries or Antiquities Acts as these two statutes provide unique tools for implementing ecosystem approaches to management, tools that will be increasingly critical for sustaining our marine resources in the face of climate change and the increasingly competitive use of our ocean space.

All members of the public should remain engaged with the Administration and Congress to clearly communicate

³H.R. Rep. No. 94-1163 (May 15, 1976) at 9.

⁴Mark Squillace, *Presidents Lack Authority to Abolish or Diminish National Monuments*. See *Virginia Law Review Online*, Volume 103, 55-71 (June 2017).

⁵16 U.S.C. §§ 1433 & 1434 and 16 U.S.C. § 1434 (a)(4).

⁶<https://blog.marine-conservation.org/2017/08/overwhelming-support-for-marine-monuments-and-sanctuaries.html>

the importance and value of Marine Monuments and Sanctuaries to policymakers during the ongoing decision making process.

AUTHOR CONTRIBUTIONS

JB, WS, and LC conceived of and outlined the paper. Each author wrote the initial draft of the paragraph/section related to their area of expertise. All authors edited the manuscript and worked

collaboratively on revising the content, wording, and framing. Final editing was led by WS and JB.

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REFERENCES

- Di Lorenzo, M., Claudet, J., and Guidetti, P. (2016). Spillover from marine protected areas to adjacent fisheries has an ecological and a fishery component. *J. Nat. Conserv.* 32, 62–66. doi: 10.1016/j.jnc.2016.04.004
- Edgar, G. J., Stuart-Smith, R. D., Willis, T. J., Kininmonth, S., Baker, S. C., Banks, S., et al. (2014). Global conservation outcomes depend on marine protected areas with five key features. *Nature* 506, 216–220. doi: 10.1038/nature13022
- Gell, F. R., and Roberts, C. M. (2003). Benefits beyond boundaries: the fishery effects of marine reserves. *Trends Ecol. Evol.* 18, 448–455. doi: 10.1016/S0169-5347(03)00189-7
- Goñi, R., Hilborn, R., Díaz, D., and Adlerstein, S. (2010). Net contribution of spillover from a marine reserve to fishery catches. *Mar. Ecol. Progr. Ser.* 400, 233–243. doi: 10.3354/meps08419
- Johns, G. M., Leeworthy, V. R., Bell, F. W., and Bonn, M. A. (2003). *Socioeconomic Study of Reefs in Southeast Florida, Final Report*. Hazen and Sawyer; Florida State University; NOAA.
- Leeworthy, V. R., Schwarzmann, D., and Reyes Saade, D. (2017). *Non-market Economic Value of Recreation Use on the Outer Coast of Washington and the Olympic Coast National Marine Sanctuary, An Attributes Approach: Volume 6, 2017. Marine Sanctuaries Conservation Series ONMS-17-xx*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD.
- Leeworthy, V., Schwarzmann, D., Reyes Saade, D., Goedeke, T. L., Gonyo, S., and Bauer, L. (2016). *Market Economic Impacts and Contributions of Recreating Visitors to the Outer Coast of Washington and the Olympic Coast National Marine Sanctuary: Volume 2, 2014. Marine Sanctuaries Conservation Series ONMS-16-03*. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD.
- O'Connor, S., Campbell, R., Cortez, H., and Knowles, T. (2009). *Whale Watching Worldwide: Tourism Numbers, Expenditures and Expanding Economic Benefits, a Special Report*. International Fund for Animal Welfare, Yarmouth, MA.
- USCOP (2004). *United States Commission on Ocean Policy: An Ocean Blueprint for the 21st Century: Final Report*.

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