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DEVELOPING STRATEGIES FOR MARINE ENVIRONMENTAL PROTECTION IN THE WEST PHILIPPINE SEA AND ADJACENT SEAS

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INTRODUCTION

Spanning approximately 3.5 million square kilometers (Albano 2018), South China Sea (SCS) is one of the world's most ecologically significant but also geopolitically sensitive maritime region. It is the largest marginal sea in the West Pacific bordered by China, Taiwan, the Philippines, Malaysia, Brunei, Indonesia, Singapore, and Vietnam (The Asian Center and Institute for Maritime Affairs and Law of the Sea 2013). The SCS plays a vital role in the region's economy by supporting fisheries, energy resources, and is a major route for trade.

The SCS has been a locus of geopolitical tension for decades, with various countries asserting claims over islands, reefs, various features, and waters in the region. These overlapping claims have created a complex and volatile situation, particularly in the West Philippine Sea (WPS). As defined by Administrative Order No. 29, issued in 2012 by then President Benigno Aquino III, the WPS refers to the region of the South China Sea that falls within the Philippines' exclusive economic zone, encompassing important features such as the Kalayaan Group of Islands (Spratlys Group of Islands), and Panatag Shoal (Scarborough Shoal or Bajo de Masinloc). Despite efforts, a binding code of conduct for the region remains elusive (Naval 2024), complicating collaboration on critical issues such as marine environmental protection and conservation, and sustainable fisheries management. Without a binding and clear regulatory and policing mechanisms, this aggravates and results in the rapid degradation of environments in the WPS and adjacent seas, compounded by coastal and ocean-based pollution, illegal wildlife trade, poaching, climate change, overexploitation, and unsustainable fishing practices. This underlines the pressing need for effective and sustainable conservation strategies based on multilateral cooperation to safeguard this vital marine area and its ecosystems.

ECOLOGICAL SIGNIFICANCE OF THE SOUTH CHINA SEA

The high diversity in seascapes and landscapes along with its interactions with various oceanographic processes make the SCS heterogenous, resulting in the creation of niches and high functional diversity within habitats (Mallory 2022). It is recognized as one of the biodiversity hotspots in the world, home to approximately 571 species of corals and 3,790 fish species (Huang et al. 2014; Froese and Pauly 2018). This vast biodiversity plays a critical role in sustaining ecological services and supporting the livelihoods of millions of people through fisheries, tourism, aquaculture, and even cultural services. Additionally, it provides other significant ecological services such as carbon sequestration through extensive mangroves, corals, and seagrass beds, which help mitigate climate change, and provide coastal protection from storm surges and erosion, safeguarding vulnerable coastal populations (Albano 2018; Ke et al. 2022).

The strong ecological connectivity within the SCS basin further emphasizes the need for coordinated and collaborative protection of marine ecosystems in the different coasts around the region (Vo et al. 2013). The dependence of invertebrates and other organisms on currents for dispersal, where transboundary routes have strong source-sink dynamics, calls for a more integrated and holistic approach in conservation (Juinio-Meñez 2015). The region for example serves as a critical hub for migratory species, such as tuna and marine turtles, linking ecosystems across the Asia-Pacific. Coral reefs, seagrasses, and mangroves in the SCS are interconnected, providing habitats and nurseries for marine life and ensuring the continuous replenishment of fish stocks. These underscore SCS's indispensable role in the health of the planet's oceans and the well-being of millions of people who rely on its resources.

SOCIO-ECONOMIC IMPORTANCE OF THE SOUTH CHINA SEA

Fisheries remain a significant industry dependent on the resources in the SCS, with around 25 percent associated with artisanal fishing by small fishers while around 75 percent contributed by commercial fishers (Pauly and Liang 2020). It ranks as the fourth-largest fishing zone in the world, producing approximately 10-12 percent of the global commercial catch (Stock 2014; Turker 2023), underscoring its critical role in feeding both local populations and global markets. Its strategic location also makes it a highway for trade, with approximately one-third of the world's maritime trade passing through the region, carrying goods valued at over USD 3 trillion annually (Turker 2023), making the region's role indispensable to international shipping. Moreover, it is estimated to have a substantial untapped reserve of oil and natural gas at 11 billion barrels and 190 trillion cubic meters, respectively (Center for Preventive Action 2015). This makes the region not only an economic lifeline for countries in Southeast Asia but also a strategic area for global energy security.

Tourism is another key driver of the region's economy, with millions flocking to the SCS's coral reefs, crystal-clear waters, and biodiversity hotspots. Southeast Asia's coral reefs alone attract approximately 35 million tourists annually, contributing significantly to local economies (International Coral Reef Initiative 2018). Culturally, the SCS is also significant to the communities and nations bordering it. It has been a vital route for trade and cultural exchange for centuries. Long before European colonial influence, people relied on the sea for their livelihoods and as a space for interaction and communication with other cultures, making it a cornerstone of regional identity and heritage (Tønnesson 2002; Ward 2012; Anh 2015). The sea has shaped cultural practices, traditions, and the socio-economic fabric of these coastal communities, underscoring its irreplaceable role in the region's cultural landscape.

THREATS AND CHALLENGES

These ecosystem services are, however, under threat due to manmade-related changes and natural events that contribute to their deterioration. For example, since the 1950s, fish stocks in the region have declined by 70-95 percent, and catch rates have fallen by 66-75 percent in the last two decades (Moles 2022). These unsustainable fishing practices not only threaten food security for millions of people but also destroy vital marine habitats, including coral reefs and seagrass beds, which are crucial for maintaining marine biodiversity and in mitigating emerging issues such as climate change.

Additionally, the construction of artificial islands, reclamation projects, and dredging have led to irreversible habitat loss and disrupted marine migration routes (McNamara 2020; Sacks 2022). Coastal and ocean-based pollution are also a continuing issue including plastic pollution due to inadequate waste management

practices (Matsushita et al. 2022). It is further exacerbated by the largely unregulated fishing fleets in the area, many of which lack proper waste disposal systems, leading to the accumulation of plastic waste and abandoned fishing gear that threatens marine life and biodiversity (Onda 2022). Recent studies have also highlighted rapid warming in the region due to the changing global climate. Changes in sea surface temperatures and altered ocean currents worsen the impacts of extreme weather events, such as typhoons, while also threatening the stability of coastal and marine ecosystems and the region's coastal communities and infrastructure (Das 2024).

OPPORTUNITIES AND WAYS MOVING FORWARD

The increased appreciation of the role of the oceans in providing a sustainable future has led to the emergence of new development models based on the understanding of its dynamics and vulnerabilities. Specifically, the concept of 'blue economy' emphasizes sustainable economic growth from ocean resources while conserving marine ecosystems as reflected in various regional initiatives including the Changwon Declaration of 2012, and just recently in September 2023, the ASEAN Blue Economy Framework. This adds another layer of value to the WPS and the SCS in general as nations look to balance economic growth with environmental stewardship as it holds vast potential in supporting a sustainable blue economy that benefits both its natural environment and the livelihoods of its people. Through integrated management strategies, the blue economy can enhance regional cooperation while ensuring the long-term health and productivity of the SCS's marine resources. This approach however also emphasizes the need for science-based and data-driven management, conservation, and utilization frameworks to attain sustainability, emphasizing the need for research and innovation.

Given the geopolitical context and the current environmental status of the South China Sea, the long-term health of its marine resources is at significant risk. This further complicates efforts to address geopolitical tensions and promote sustainable development. However, by also emphasizing shared environmental threats and interconnected ecosystems, scientific cooperation geared towards environmental protection may also provide a mechanism for potential cooperation without prejudice to territorial dispute. Marine scientific research (MSR) is essential in addressing these challenges by providing the scientific evidence needed to develop sustainable conservation strategies, guide policy decisions, and foster regional cooperation. For this to materialize, however, several alignments will need to happen from the local to the regional level. In the Philippines alone, the lack of a national MSR agenda limits the promotion of the conduct of MSR and provides a plan of action on ensuring its translation into policies. As the region moves toward policy solutions, the challenge lies in leveraging MSR for effective and cooperative management within the WPS and in the larger South China Sea, ensuring long-term ecological health and socioeconomic stability.

STRATEGIC RECOMMENDATIONS

While the West Philippine Sea is often the central focus of discussions about sovereignty and resource management, it is a requisite to acknowledge the broader context of the South China Sea. Unfortunately, information remains scarce in this area and existing resources are often fragmented and difficult to access. The challenge is not merely the lack of data; rather, it lies in the lack of a centralized repository that could provide comprehensive and integrated information to usher data-driven decisions. The difficulties in finding standardized data further complicate efforts to develop science-based and data-driven solutions necessary for informing and influencing policy decisions related to marine conservation strategies. Adding another layer of complexity is the significant overlap in the functions of various government agencies responsible for managing marine research and resources. Numerous agencies have similar mandates, yet their overlapping responsibilities often lead to confusion and inefficiency in implementing effective policies. This fragmentation not only hinders efficient coordination but also results in a persistent lack of coherence in the governance of marine resources. The absence of a clear and centralized authority exacerbates the difficulties inherent in sustainable marine governance. In distinction to these, the involvement of various external parties in the region, coupled with the ongoing instability, makes it also substantial to develop effective strategies for marine conservation.

To address these challenges effectively, we make the following recommendations:

1. It is necessary to prioritize the establishment of open-access data repositories and data-sharing initiatives among government institutions, academic entities, and other stakeholders.

Having accessible and reliable data is crucial for developing informed policies and strategies for marine conservation. This could also facilitate interdisciplinary collaboration as the complexity of marine conservation issues requires diverse perspectives and expertise. Upholding interdisciplinary research initiatives will champion collaboration between various institutions, driving innovation in marine science.

2. Resolve overlapping mandates of responsible agencies to bring clarity regarding leadership roles. This streamlining would help initiatives to focus on the importance of data centralization, fundamentally strengthening awareness and informing policy decisions effectively. Regular consultations between the related agencies should be encouraged to nurture a culture of collaboration. In conjunction with this central body, developing a comprehensive and accessible data repository is indispensable. Such a repository would allow stakeholders across government and academia to contribute to and utilize all-important scientific data for informed decision-making. This includes building capacity (expertise and human resource) and assets (vessels, such as the National Academic Research Fleet or NARFleet, a group of research vessels aimed at providing crucial data and logistical support for MSR activities and supporting infrastructure) locally to strengthen conduct of MSR.

3. Increase and invest in public awareness campaigns based on science and the environment, making the issues more tangible and relatable to the public. This will play a significant role in educating communities about the importance of marine conservation and the role they can play in sustainable practices. Understanding local communities' stake in marine health is fundamental in cultivating a more informed and engaged citizen science.

4. On a policy level, the Philippines should work on strengthening enforcement against detrimental activities (i.e., reclamation, waste mismanagement, Illegal, Unreported, and Unregulated Fishing, and illegal trade). This means not only creating concrete regulations but also ensuring that there are resources and support for monitoring and enforcement. These measures can help the country develop a more effective approach to marine conservation that preserves its unimagined natural resources.

5. The Philippines should also consider maximizing the concept of science diplomacy as a strategic tool for strengthening international collaboration and addressing transboundary environmental challenges. Science diplomacy involved capitalizing scientific collaborations between countries to tackle shared global challenges and support diplomatic goals by combining scientific expertise with foreign policy efforts. It includes three main aspects: diplomacy for science, which uses diplomatic channels to enable international research cooperation; science for diplomacy, where scientific partnerships help build trust and strengthen international relationships; and science in diplomacy, which integrates scientific knowledge directly into policy decisions (Royal Society and AAAS, 2010; European External Action Service [EEAS], 2023; Fedoroff, 2009). The opportunity presented by science diplomacy enables countries to engage in constructive dialogue, build mutual understanding, and promote collaborative efforts especially in the realm of marine conservation. As global dynamics continue to shift, utilizing science as a connector between nations can facilitate communication and encourage collective action in addressing pressing environmental issues. The commitment of the Philippines to promoting scientific collaboration can also serve as a form of soft power, strengthening diplomatic ties with neighboring countries. Likewise, cultivating partnerships with other nations can stimulate knowledge exchange and support collaborative research efforts that address common challenges effectively.

6. The Philippines should first establish a central coordination body delegated to overseeing all marine conservation efforts, beyond what the agencies are currently doing to capably develop marine conservation strategies in the South China Sea Region. Having a designated entity responsible for coordinating these efforts affirms that objectives align with national priorities, regional commitments, and that resources are utilized efficiently.

Building upon these initiatives, strengthening regional partnerships will enable knowledge sharing and resource collaboration with neighboring countries. Recognizing the interconnected nature of marine ecosystems and the collective challenges faced by these nations is paramount. Working together through regional partnerships can lead to better outcomes in marine governance, ascertaining that strategies are informed by shared experiences and knowledge. Elevating goodwill and cooperation on critical marine and environmental initiatives, the Philippines can position itself as one of the leading countries in regional marine governance. Implementing stricter environmental policies backed by adequate funding and resources is significant to counter harmful environmental activities. With these approaches, the Philippines can support its marine conservation strategies and work towards a sustainable future for its rich marine biodiversity. Centering on these interconnected pointers, the Philippines can work towards a more coherent and effective approach to marine conservation in the South China Sea region, eventually affirming the sustainability of its instrumental marine resources for the current generation as well as the generations yet unborn.

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