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RECEIVED 12 August 2025

ACCEPTED 18 September 2025

PUBLISHED 09 October 2025

CITATION

Huang Y (2025) Establishing a national
marine park in the South China Sea:
legal framework necessity, feasibility
assessment, and governance solutions
for marine environmental protection.
Front. Mar. Sci. 12:1684627.
doi: 10.3389/fmars.2025.1684627

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Establishing a national marine park in the South China Sea: legal framework necessity, feasibility assessment, and governance solutions for marine environmental protection

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Establishing a National Marine Park (NMP) in the South China Sea (SCS) plays a pivotal role in protecting marine biodiversity, mitigating ecological threats caused by human activities, and promoting sustainable development. This study evaluates the necessity and feasibility of establishing an NMP in the South China Sea from three dimensions: ecological conservation, economic benefits, and regional governance. Based on a comprehensive review of the current legislative status regarding national marine parks in China, it points out four pressing legal issues that need to be addressed for the construction of an NMP in the South China Sea. These issues include jurisdictional disputes over the waters of the South China Sea, gaps in domestic laws and regulations pertaining to marine parks, fragmented enforcement mechanisms, and the absence of specialized dispute resolution institution. The study proposes resolving these issues by initially establishing marine park pilot projects in waters without jurisdictional disputes, improving domestic specialized legislation and supporting implementation regulations, enhancing enforcement mechanisms, and establishing specialized dispute resolution institution to ensure the smooth construction and maintenance of the NMP in the South China Sea. With the formal establishment of the NMP in the South China Sea and the implementation of subsequent conservation and management measures, the marine ecosystem in the South China Sea will receive better protection, marking an important step for China in leading marine environmental governance in the region and serving as a model for practicing the concept of a “Marine Community with a Shared Future” in the South China Sea.

KEYWORDS

national park, marine protected area, marine park, South China Sea, marine conservation, marine ecological environment

1 Introduction

The South China Sea is of great ecological significance. The South China Sea is a global marine biodiversity hot-spot, renowned for its exceptional ecological richness and strategic location. Its tropical climate, complex currents, and varied topography create an ideal environment for diverse marine life, making it vital for regional and global ecological balance (Huang et al., 2015). However, the South China Sea faces significant marine conservation challenges threatening its ecological integrity and sustainability, primarily due to human activities disrupting ecosystems, degrading habitats, and depleting resources (Vu, 2014).

From the perspective of the geopolitical landscape surrounding the South China Sea, neighboring countries generally focus their attention on the contention for sovereign rights and interests and the pursuit of economic gains. Although some countries mention environmental protection issues on political occasions, their purpose is merely to accuse other neighboring countries of their activities in the region, without expressing genuine concern for the environment or taking concrete environmental protection actions. The purpose of this paper is to call on the countries surrounding the South China Sea to pay attention to environmental protection issues in the region. As a nation that has proposed and advocated the concepts of a “Community with a Shared Future for Mankind” and a “Marine Community with a Shared Future”, China can take the lead in conducting pilot construction of a National Park within its jurisdictional waters in the South China Sea. Thus, this paper will conduct research from the following four aspects: (1) reviewing the current legislative status of national marine parks in China; (2) analyzing the necessity and feasibility of establishing national marine parks; (3) examining the legal challenges associated with establishing a national marine park in the South China Sea; and (4) proposing viable solutions and governance strategies.

2 The current legislative status of national marine parks in China

2.1 Legislative system and core regulations

2.1.1 National-level law and regulations

The *Marine Environment Protection Law of the People's Republic of China*, revised in 2023 and implemented in 2024, was enacted by the Standing Committee of the National People's Congress. As a comprehensive law in the field of marine protection, it explicitly mandates the establishment of a marine ecological protection system and provides a legal basis for the designation of marine parks and ecological restoration efforts. Article 34 of the law stipulates provisions regarding national parks, stating that “the State Council and the people's governments of coastal provinces, autonomous regions, and municipalities directly under the Central Government, along with their relevant departments, shall, in accordance with the need for marine protection, legally incorporate important marine

ecosystems, natural concentrated distribution areas of rare and endangered marine species, areas with concentrated distributions of marine natural heritage and landscapes, and other regions into natural protected areas such as national parks, nature reserves, or natural parks.” The revised law emphasizes “integrated land-sea planning and regional coordination”, requiring that marine park planning be advanced in tandem with the management of rivers flowing into the sea and coastal zone protection.

The *Regulations on Nature Reserves of the People's Republic of China*, revised in 2017, is an administrative regulation promulgated by the State Council. Although it does not directly mention “marine parks”, it outlines principles for the establishment and management of nature reserves, which are applicable to the management of ecological conservation zones within marine parks.

2.1.2 Specialized administrative measures

Article 3 of the *Administrative Measures for Marine Special Protection Zones*, promulgated by China's State Oceanic Administration in August 2010, explicitly states that “these Measures shall apply to the establishment, construction, and management of marine special protection zones within the internal waters, territorial sea, contiguous zone, exclusive economic zone, continental shelf, and other sea areas and islands under the jurisdiction of the People's Republic of China”. This further clarifies the legal basis for establishing marine parks in the waters under China's jurisdiction in the South China Sea. These departmental rules also, for the first time, explicitly define “marine parks” as a sub-type of marine special protection zones. Article 10 stipulates that “marine special protection zones can be classified into types such as marine special geographical condition protection zones, marine ecological protection zones, marine parks, and marine resource protection zones, based on their geographical location, resource and environmental conditions, current status of marine development and utilization, and the needs of socio-economic development.....Marine parks shall be established in special marine ecological landscapes, historical and cultural heritage sites, unique geological and geomorphological landscapes, and their surrounding sea areas to protect marine ecological and historical and cultural values and leverage their eco-tourism functions.” The document also specifies the management objectives and approval procedures for marine protected areas.

In October 2023, the *Administrative Measures for National-level Nature Parks (Trial)*, promulgated by China's National Forestry and Grassland Administration, further standardized the construction standards and management requirements for nature parks (including marine parks). It mandates that functional zoning boundaries, protection measures, and utilization methods be clearly defined during the planning process.

2.1.3 Local regulations

Some coastal provinces, and even local people's congresses at the municipal level, have enacted local regulations to refine management requirements for marine parks. At the provincial level, for example, the *Regulations on Marine Environmental*

Protection of Shandong Province prohibits activities such as coral mining and reef destruction within marine parks and specifies penalty standards. The *Regulations on the Protection of Coral Reefs and Tridacna in Hainan Province* establish protection zones and regulatory measures for coral reef ecosystems within Hainan's marine parks. At the municipal level, the *Regulations on the Administration of National-Level Marine Special Protection Zones in Zhoushan City*, revised in 2022, not only outlines rules governing the planning, construction, protection, utilization, and supervision of protected areas but also explicitly defines legal liabilities for violations of relevant provisions.

2.2 Core legislative content

2.2.1 Functional zoning and protection requirements

As a sub-type of marine special protection zones, “marine parks” are subject to the functional zoning provisions outlined in national legislation for marine special protection zones. They are primarily divided into two types. The first is ecological conservation zones, where the strictest protection measures are enforced, prohibiting any development activities and allowing only scientific research, monitoring, and ecological restoration. The second type is rational utilization zones, where moderate eco-tourism is permitted, with restrictions on visitor capacity and a ban on the construction of permanent facilities (e.g., hotels, golf courses). Low-carbon industries, such as ecological aquaculture and recreational fisheries, are encouraged in these areas.

2.2.2 Planning and approval procedures

Domestic legislation stipulates the conditions and approval process for establishing national marine parks in China. The establishment conditions require that the park must possess national representativeness, ecological significance, and management feasibility, with a general minimum area of 15 square kilometers (referencing IUCN standards). The approval process involves an application submitted by the provincial government, reviewed by the National Forestry and Grassland Administration, and ultimately approved by the State Council. As you can see, in September 2025, the Huangyan Island National Nature Reserve in the South China Sea was officially approved for establishment, with the National Forestry and Grassland Administration announcing its area, boundaries, and functional zoning.

2.2.3 Ecological restoration and monitoring

According to domestic law, after the establishment of a marine park, the competent authority is required to formulate an ecological restoration plan, which must be implemented following scientific evaluation and approval. Additionally, a system for monitoring and cleaning up marine debris should be established, with coordinated planning for onshore reception facilities, such as the planned construction of a marine debris transfer station in Tianjin Binhai Park.

2.2.4 Public participation and education

National legislation on marine parks also addresses issues of public participation and education. It encourages a community co-management model, establishing joint management committees to coordinate relationships between the government and stakeholders. Furthermore, marine parks are required to be equipped with science education facilities to promote awareness of marine ecological knowledge, for example, science exhibitions on the conservation of relict gulls.

2.3 Existing legislative challenges

2.3.1 Low legal hierarchy

The current legal framework primarily relies on departmental regulations, such as the aforementioned *Administrative Measures for Marine Special Protection Zones*, lacking dedicated national-level legislation specifically for national marine parks. This results in insufficient protection measures. Although marine special protection zones serve as a broader category encompassing marine parks, the legal provisions for national-level marine special protection zones cannot be fully applied to national marine parks (Jiang, 2019).

2.3.2 Interdepartmental coordination difficulties

National marine parks are approved at the national level but managed by local authorities, involving numerous maritime departments and creating a complex cross-departmental, cross-level governance structure. Marine park management spans multiple sectors, including natural resources, ecological environment, and fisheries, leading to overlapping responsibilities and regulatory gaps. For instance, conflicts arise between offshore protected areas and fisheries planning, requiring coordination between protected area planning, maritime transportation plans, and maritime traffic safety regulations.

2.3.3 Regional variations in implementation

While national marine parks receive dedicated central funding, it is insufficient to cover all operational and developmental needs. Practical experiences reveal that fiscal investment in some coastal regions remains inadequate, resulting in delayed construction of conservation facilities. For example, certain local governments allocate more funds to tourism development within marine parks while allocating relatively little to protective expenditures (Ying, 2019).

3 Necessity and feasibility of establishing a national marine park

3.1 Ecological necessity: the imperative for protection

The South China Sea stands as a biological treasure trove, hosting an extraordinary array of marine biodiversity that spans from the tiniest plankton to formidable apex predators. Its

ecological significance is unparalleled, characterized by unique evolutionary adaptations and a wealth of endemic species. These elements collectively sustain vital ecological processes that are indispensable for the survival of marine life and the well-being of human communities reliant on these waters. However, this delicate ecosystem faces severe threats from anthropogenic activities (Yan et al., 2009). Overfishing has disrupted intricate food chains, while coastal development and pollution have led to the degradation of critical habitats. Climate change further compounds these pressures through ocean acidification and warming, posing a long-term threat to the viability of the entire ecosystem.

Destructive fishing practices, such as bottom trawling, have wreaked havoc on habitats and depleted fish stocks, while overfishing continues to unravel the fabric of marine food webs (Jia et al., 2005). Industrial-scale operations often exceed sustainable limits, with bycatch exacerbating the loss of biodiversity. Marine tourism, though potentially beneficial, has also contributed to these threats through unregulated coastal development that destroys mangroves and coral reefs. Recreational activities damage sensitive environments, and pollution from sunscreen chemicals, plastics, and sewage further degrades water quality. Hydrocarbon extraction introduces risks of oil spills and chronic pollution, while seismic surveys disrupt marine mammals. Infrastructure development fragments habitats, and shipping generates noise pollution and introduces invasive species through ballast water (Dutton, 2011), creating persistent state of environmental stress.

In light of these challenges, the establishment of a National Marine Park emerges as a critical solution. Through spatial zoning, core protection zones would ban extractive activities, buffer zones would allow regulated use, and general areas would permit controlled economic activities. This approach strikes a balance between conservation and human needs, offering a spatial management solutions that safeguards biodiversity, maintains ecological processes, and enhances fisheries through spillover effects (Wells et al., 2016). Restoration initiatives would rehabilitate degraded areas, with monitoring guiding adaptive management (Gewirtz, 2016). By implementing science-based management across sectors, a National Marine Park could significantly reduce anthropogenic pressures while supporting responsible economic activities, providing a comprehensive framework for human-marine coexistence in this vital region.

3.2 Economic and social feasibility: bridging conservation and prosperity

The ecological necessity of establishing a National Marine Park in the South China Sea is inextricably linked to its economic and social feasibility. The rich ocean landscape and unique ecological resources of the region not only provide a strong foundation for conservation but also present significant potential for promoting sustainable tourism (Ying, 2019), which could serve as a model for balancing economic development with environmental stewardship.

Marine parks offer a diverse array of attractions, including coral reefs, mangrove forests, and marine wildlife, which support

nature-based activities like diving and snorkeling. When regulated properly, these activities have a low environmental impact while generating substantial economic returns. However, careful planning is essential to ensure that visitor numbers remain within the ecosystem's carrying capacity, preventing overexploitation and degradation of natural resources.

The economic benefits of a National Marine Park extend far beyond direct revenue from tourism. They create multiplier effects in related sectors such as hospitality, transportation, and retail, stimulating local economies and creating job opportunities. Local communities, in particular, stand to benefit from employment in park management and conservation, reducing their dependence on extractive industries like fishing and promoting a more sustainable livelihood.

Sustainable tourism also fosters cultural exchange and raises awareness about conservation issues. Environmental education programs transform visitors into conservation advocates, enhancing their experiences while building public support for marine protection. Infrastructure development within the park must be designed to minimize environmental impact, with thoughtful planning of facilities and waste management systems ensuring that tourism activities do not compromise the ecological integrity of the area.

Moreover, tourism can support scientific research through citizen science programs, where visitors contribute to data collection and monitoring efforts. Research, in turn, informs management decisions, creating a feedback loop that enhances the effectiveness of conservation measures. Technological advancements like virtual reality offer low-impact visitor experiences, while digital platforms can manage visitor distribution, reducing pressure on sensitive areas. Sustainable tourism also allows for the development of innovative products like educational snorkeling tours, which combine recreation with learning. Indigenous knowledge can be incorporated to enhance authentic experiences while preserving cultural heritage, giving marine parks a competitive advantage as consumer preferences shift toward responsible travel. Visitors, in turn, become conservation ambassadors, amplifying the educational impact of the park.

To ensure the long-term sustainability of these economic and social benefits, robust monitoring systems should be established to track economic, environmental, and social indicators. This data-driven approach allows for adaptive management, enabling park authorities to respond to changing conditions and emerging challenges. Ultimately, the economic and social feasibility of a National Marine Park in the South China Sea hinges on a commitment from all stakeholders (Wang et al., 2024) to prioritize conservation while pursuing sustainable economic development.

3.3 Political and diplomatic feasibility: navigating complex geopolitics

While the ecological and economic arguments for establishing a National Marine Park in the South China Sea are compelling, its political and diplomatic feasibility cannot be overlooked. The region is characterized by complex sovereignty disputes and geopolitical tensions, which pose significant challenges to any collaborative initiative. However, this marine park could offer unique opportunities

for regional cooperation, enabling conservation and sustainable management efforts to be carried out by leveraging shared ecosystems. Although our current research is confined to the establishment of a National Marine Park in non-disputed waters, there is a possibility of expanding the marine park to disputed waters in the future, evolving from the principle of “shelving disputes and pursuing joint development” to that of “shelving disputes and pursuing joint conservation”.

Collaborative efforts in the context of a National Marine Park could span scientific research, ecological protection, and law enforcement, yielding more effective outcomes than unilateral actions. The park could serve as a neutral platform, allowing nations to focus on environmental goals while setting aside political disputes, at least temporarily. This approach aligns with the growing recognition that environmental protection and political cooperation can coexist, even in contested spaces (McCook et al., 2019). Scientific collaboration is particularly promising, given the region’s complex marine environment. A regional research network could facilitate the sharing of data, conduct joint expeditions, and develop unified strategies for conservation and management. Shared databases and monitoring stations would enhance ecological tracking and threat detection, enabling a more coordinated response to emerging challenges. Such cooperation could build trust among nations and serve as a model for addressing other transboundary issues. Law enforcement cooperation is also critical for combating illegal fishing, pollution, and unauthorized resource extraction. Joint patrols, shared training programs, and common protocols would improve compliance with conservation rules and enhance the effectiveness of enforcement efforts. This framework could standardize procedures and improve interoperability among maritime forces, creating a more robust and coordinated approach to protecting the marine park.

However, navigating sovereignty disputes requires a pragmatic and flexible approach. A National Marine Park should prioritize ecological protection while maintaining neutrality on territorial claims. Cooperative management zones could be established to separate conservation from jurisdictional debates, allowing progress to be made without resolving sovereignty issues. Provisional arrangements under international law provide a legal basis for such cooperation, ensuring that the park operates within a clear and transparent framework. Diplomatic engagement is crucial to addressing sovereignty concerns and building trust among nations. Regular consultations and confidence-building measures, such as joint research projects, can foster mutual understanding and create a positive atmosphere for cooperation. An incremental approach, starting with less contentious areas and gradually expanding cooperation, allows trust to develop over time (Zou, 2017).

4 Legal challenges in establishing the national marine park

4.1 Jurisdictional disputes in the South China Sea waters

From the practices of marine park construction around the world, since marine national parks generally cover relatively large

sea areas, they often extend beyond a country’s territorial sea jurisdiction and into adjacent zones such as the contiguous zone and exclusive economic zone. The South China Sea waters involve multiple countries and regions. Due to the interweaving of various complex factors, including historical and geopolitical ones, there are widespread jurisdictional disputes. Some neighboring countries, based on their unilateral claims, assert territorial sovereignty and maritime rights and interests over some islands, reefs, and their adjacent waters in the South China Sea. They frequently conduct resource exploration and development, military activities, etc., in the disputed waters, keeping the situation in the South China Sea in a complex and sensitive state for a long time. This situation where multiple countries assert different rights and interests over the same sea area has severely disrupted the normal marine management order in the region and posed significant obstacles to the establishment of national marine parks.

4.2 The inadequacy of the domestic legal system

4.2.1 Legislative gaps

The most prominent legislative gap is the absence of statutes that clearly define the legal status, boundaries, and management structure of marine parks. Current laws primarily focus on sectoral issues such as fisheries management and pollution control, rather than adopting an integrated approach to ecosystem protection. This sectoral focus leads to regulatory overlaps and conflicts, making it difficult to implement cohesive management strategies for marine parks.

What’s more, the current legal framework lacks clear provisions for marine protected area zoning, which are essential for balancing conservation and sustainable use objectives. Without well-defined zones, it is challenging to regulate human activities within marine parks effectively, leading to potential over-exploitation of resources and degradation of ecological habitats.

Coordination between national and local laws presents significant challenges. Provincial regulations often conflict with national conservation objectives, creating legal ambiguities that undermine the authority of marine park management authorities. These conflicts can result in inconsistent enforcement of regulations and hinder the effective implementation of conservation measures.

Last but not at least, procedural gaps in the legal framework complicate the establishment of marine parks. For instance, public consultation procedures are inadequate, increasing the risk of conflicts with local communities. Additionally, the absence of periodic review mechanisms for management plans, based on monitoring data, limits the ability of park authorities to adapt to changing environmental conditions and management needs (Morton and Blackmore, 2001).

4.2.2 Institutional framework deficiencies

The institutional framework for marine park management is characterized by fragmented responsibilities, with no single lead agency having comprehensive authority over marine protected

areas. Responsibilities are dispersed across multiple agencies, leading to coordination challenges and inefficiencies in management.

There are no clear criteria for determining appropriate levels of human activity within different zones of marine parks. Additionally, adjustment mechanisms based on monitoring data are lacking, making it difficult to respond to observed impacts and ensure the long-term sustainability of marine park ecosystems. Provisions promoting compatible economic activities, such as ecotourism, are insufficient. This limits the potential for marine parks to generate sustainable revenue streams and support local communities, while also contributing to conservation efforts.

4.2.3 Climate change adaptation gaps

Despite the region's vulnerability to climate change, there are no provisions in the legal framework aimed at enhancing ecosystem resilience to warming waters and acidification. This omission increases the risk of irreversible damage to marine ecosystems and undermines the long-term viability of marine parks. Climate scenarios are not required in the design and management of marine parks, limiting the ability of park authorities to anticipate and respond to future climate change impacts. Additionally, adjustment mechanisms for observed impacts are lacking, further hindering adaptive management efforts. Conflicts between climate mitigation and conservation objectives are not addressed in the legal framework. This can lead to trade-offs that undermine the effectiveness of conservation measures and the achievement of climate change mitigation goals.

4.2.4 Inadequate treatment of traditional knowledge systems

There are no mechanisms for incorporating indigenous ecological knowledge into marine park management. This omission overlooks valuable traditional knowledge that can contribute to more effective conservation strategies and enhance community engagement in marine park management. Participatory governance structures that enable the meaningful involvement of traditional users in marine park management are absent. This lack of participation undermines the legitimacy of management decisions and limits the potential for community-based conservation initiatives (Hong, 2016).

The inadequacy of the domestic legal system makes it difficult to support the comprehensive planning, scientific establishment, and effective supervision of national marine parks.

4.3 The fragmentation of enforcement mechanisms

The enforcement mechanism of domestic marine conservation laws serves as a linchpin for the establishment of a National Marine Park in the South China Sea. Effective law enforcement necessitates explicit legal provisions and a robust institutional framework; however, structural and operational challenges have impeded the realization of conservation objectives.

A pivotal issue lies in the ambiguous responsibilities of enforcement entities. Overlapping jurisdictions result in inefficiencies, with fisheries management, pollution control, and

habitat protection often falling under the purview of disparate departments. This lack of unified coordination leads to fragmented enforcement efforts, undermining the comprehensive management of the marine park. Resource constraints further hamper enforcement endeavors. Insufficient funding restricts patrols, monitoring activities, and legal prosecutions, while the vast expanse of the South China Sea demands advanced technologies such as satellite tracking. The uneven adoption of these technologies, stemming from fiscal and technical disparities, weakens deterrence capabilities. Interdepartmental coordination also poses challenges. Institutional silos prioritize short-term economic gains over conservation, leading to conflicting policies. While joint task forces or shared databases could enhance cooperation, their implementation remains inconsistent. Penalties for violations are often too lenient to deter illegal activities such as overfishing or pollution. Strengthening punitive measures and oversight requires legislative reforms and judicial rigor.

Public participation remains low due to a lack of trust or channels for engagement. Community-based monitoring could leverage local expertise to complement enforcement efforts. Technological limitations persist. Although tools like artificial intelligence and remote sensing offer solutions, cost and expertise gaps limit their utilization. Investments in modern technologies and training could enhance enforcement capacities. Adapting to evolving threats such as climate change is crucial. Adaptive management strategies could improve responsiveness, but institutional inertia slows their adoption.

4.4 The lack of a specialized dispute resolution institution

The absence of a specialized environmental dispute resolution institution is detrimental to the proper handling of disputes related to the marine park. After the establishment of a National Marine Park in the South China Sea, given the presence of numerous neighboring countries, if nationals from these countries, such as fishermen, trespass into the park established by China in the South China Sea, foreign-related legal disputes may arise. Environmental disputes are inherently comprehensive, complex, and diverse, potentially involving civil, criminal, and administrative liabilities. When compounded by foreign elements, the resolution of such disputes becomes even more challenging. We believe it is necessary to establish a specialized dispute resolution institution for the National Marine Park to specifically handle both domestic and foreign-related disputes occurring within its boundaries.

5 Proposed legal solutions and governance strategies

5.1 Pilot construction should commence first in non-disputed jurisdictional waters

Firstly, initiate pilot projects for the establishment of marine protected areas in waters free from jurisdictional disputes, such as

starting with China's territorial sea and contiguous zones. In the future, further exploration can be made into joint management frameworks with neighboring countries (Chen et al., 2017).

Secondly, continuously strengthen cooperation with neighboring countries in the field of marine environmental protection, advocating the principle of "shelving disputes and pursuing joint conservation". For instance, we believe that when determining the siting criteria for marine parks, priority should be given to aligning with international standards, while actively engaging in communication and cooperation with countries bordering the South China Sea. Specifically, bilateral and multilateral agreements should be utilized to establish a foundational framework for cooperation, ensuring that ecological protection transcends political boundaries and recognizing marine conservation as a shared responsibility.

5.2 Strengthening domestic legislation

5.2.1 Drafting specialized marine park laws

Formulating specialized legislation for the National Marine Park in the South China Sea is crucial for establishing a legal foundation for marine conservation in this ecologically significant region.

Firstly, we advocate that this specialized legislation should be promulgated by the National People's Congress and its Standing Committee to ensure a high legal hierarchy, as such high-level legislation can address the issue of insufficient coordination among existing regulations.

Secondly, with regard to legislative guiding principles, it must be clarified that this process requires integrating international best practices with localized adjustments to address the complex geopolitical and environmental challenges in the South China Sea. Relevant legislation must ensure compliance with the United Nations Convention on the Law of the Sea (UNCLOS) and other pertinent international treaties, while appropriately considering the legitimate rights of other coastal states bordering the South China Sea to ensure legal legitimacy. For instance, as the South China Sea serves as a vital shipping route, the marine park cannot unreasonably restrict freedom of navigation, which is a critical compliance issue. UNCLOS permits the formulation of environmental regulations within exclusive economic zones but prohibits discrimination against foreign vessels. Therefore, legislation for the marine park must balance conservation with navigation rights (Lyons et al., 2019). The establishment of the marine park should fulfill obligations under UNCLOS while promoting sustainable resource utilization, without infringing upon the rights of other countries in disputed areas. This entails achieving a balance between ecological conservation and sustainable use principles while properly addressing jurisdictional complexities (Kusuma et al., 2021). Furthermore, when determining key parameters related to the marine park, priority should be given to international standards and best practices. This not only aligns with international rules but also ensures conformity with the perceptions of most international actors, thereby avoiding excessive opposition.

Lastly, in terms of legislative content, the law should supplement and refine existing legislation. On one hand, it should

establish clear parameters for the park's establishment and management, defining precise geographical boundaries based on scientific assessments. On the other hand, a flexible zoning mechanism should allow for differentiated protection levels across different areas based on ecological surveys.

This framework must mandate the development of a management plan that includes conservation objectives, monitoring protocols, and adaptive strategies. A multi-tiered governance structure should combine centralized oversight with local implementation, clearly defining the responsibilities of each agency. Participation from stakeholders and scientific advisory input are essential for legitimate decision-making. Conservation measures should regulate extractive activities such as fishing and mineral exploration while managing non-extractive pressures, including tourism and pollution. The law must address cumulative impacts and protect critical habitats such as coral reefs and mangroves, including provisions on transboundary environmental impacts. Adaptive management provisions should allow for periodic review of conservation measures based on evolving scientific understanding. A comprehensive monitoring program must track ecological and socioeconomic impacts to guide decision-making. Regular evaluation mechanisms should mandate comprehensive reviews of the park's effectiveness, with procedures for public participation. This adaptive approach ensures responsiveness to changing conditions and priorities.

5.2.2 Improving supporting regulations

In addition to the aforementioned specialized legislation for marine parks, it is also necessary to formulate a set of enforcement measures that align with the higher-level laws. For instance, the "National Marine Park Regulations" could be enacted to clarify detailed rules for functional zoning, establish an ecological compensation mechanism, and define standards for penalties for violations, while refining the provisions to ensure their practical operability.

The supporting regulations should also address inter-departmental coordination issues. Given the complex management structure of national marine parks, which are approved at the national level but managed locally, and involve multiple maritime-related departments, a coordinated governance mechanism must be established. This mechanism should clarify the roles and responsibilities of each department, eliminate overlapping functions, and fill regulatory gaps. Meanwhile, standardized cross-departmental procedures should be specified in these regulations, including standardized protocols for information sharing, joint decision-making, and collaborative enforcement. For instance, in cases where marine protected areas conflict with fisheries or maritime transportation plans, a joint assessment and negotiation process should be initiated to reconcile differences and find mutually acceptable solutions.

Moreover, the supporting regulations could also include rules regarding the use of technology for management. For example, utilizing digital platforms and GIS (Geographic Information System) technologies to create a unified database and mapping system for marine parks. This would facilitate real-time information

exchange, spatial analysis, and conflict detection among different departments, enabling more efficient and coordinated management.

To address the issue of uneven local implementation due to varying financial capacities and priorities, a multifaceted approach is needed to ensure adequate funding and consistent enforcement across regions. It is crucial to design supporting regulations dealing with funding allocation: While special funds from the central government provide a foundation, consider increasing the proportion of funding directed towards conservation and infrastructure projects critical for marine park management (Chen et al., 2017). And establishing a Matching Fund System to encourage local governments to contribute matching funds for specific projects, with the central government providing a certain percentage of the total cost. This would incentivize local investment in conservation while ensuring that projects align with national priorities. In addition, the supporting regulations could also explore alternative financing models, liking introducing public-private partnerships (PPPs), eco-tourism revenue sharing, and green bonds as additional funding sources for marine park development and maintenance.

Finally, the supporting regulations should address the issue of local capacity building by developing local enforcement guidelines. This could guide the local government to tailor enforcement measures to local contexts, taking into account regional ecological characteristics, socio-economic conditions, and cultural practices. To ensure the implementation effect, a performance-based monitoring and evaluation system should be implemented. Thus, the supporting regulations should set clear performance indicators, such as defining quantifiable targets for conservation outcomes, visitor management, community engagement, and financial sustainability in order to assure the effectiveness of local implementation.

5.2.3 Strengthening technology and public participation

Legislation should require marine parks to establish digital management platforms for real-time disclosure of ecological data; meanwhile, encourage volunteers to participate in activities such as monitoring and patrolling.

To further enhance the effectiveness of these platforms, the legislation could mandate the integration of advanced technologies such as satellite remote sensing, underwater acoustic monitoring, and artificial intelligence algorithms. These tools can provide comprehensive, high-resolution data on marine ecosystems, enabling more precise management decisions. For instance, satellite imagery can be used to monitor changes in coral reef coverage or detect illegal fishing activities over large areas, while underwater sensors can continuously track water quality parameters like temperature, salinity, and dissolved oxygen levels.

In terms of public participation, beyond merely encouraging volunteers, the legislation should establish formal mechanisms for their involvement. This could include setting up volunteer training programs to equip them with the necessary skills for effective monitoring and patrolling. Training modules could cover topics such as species identification, data collection techniques, and emergency response procedures. Additionally, creating a

certification system for volunteers can enhance their credibility and motivation, as well as provide a benchmark for evaluating their contributions.

Moreover, the legislation should facilitate the establishment of community advisory committees comprising local residents, NGOs, scientists, and park managers. These committees can serve as a platform for dialogue and collaboration, ensuring that the concerns and perspectives of diverse stakeholders are incorporated into marine park management plans. Regular public consultations and hearings should also be mandated, allowing for transparent decision-making processes and fostering a sense of ownership and responsibility among the public towards marine conservation.

To incentivize public participation, the legislation could introduce rewards and recognition programs for outstanding volunteers and community groups. These could include certificates of appreciation, public acknowledgments, or even small grants to support local conservation initiatives. Such measures not only recognize the valuable contributions of volunteers but also encourage more people to get involved in marine park protection efforts.

5.3 Enhancing enforcement capabilities

Firstly, enhancing the professional competence of law enforcement personnel is of paramount importance. Marine law enforcement work is characterized by its uniqueness, requiring a grasp of specialized knowledge in marine biology, environmental law, and maritime operations. Training programs should focus on cultivating both technical and legal expertise, while continuous professional development ensures that law enforcement officers can adapt to the dynamic changes in ecosystems and regulations. Additionally, investment in equipment such as patrol boats and monitoring devices plays a pivotal role in improving law enforcement efficiency.

Secondly, cross-departmental collaboration is crucial for overcoming bureaucratic fragmentation. Marine conservation involves multiple agencies, including environmental, fisheries, and coast guard departments. Establishing a unified coordinating body (e.g., setting up an inter-departmental task force) is essential to ensure smooth communication among departments and enhance the efficiency of decision-making processes. Clearly defined accountability mechanisms are also vital. Independent review bodies can ensure compliance with legal standards, while public reporting promotes transparency.

Thirdly, integrating modern technology can revolutionize law enforcement practices. Satellite surveillance, drones, and Automatic Identification Systems (AIS) enable real-time tracking of illegal activities, while data analysis and artificial intelligence technologies can identify patterns of compliance. Digital platforms enhance transparency and accountability mechanisms. Institutional support for data management and cybersecurity is necessary, and training programs should incorporate technological modules to ensure the professional competence of officers.

Strengthening law enforcement requires investment in human resources, inter-agency coordination, and technology. A well-trained team, coupled with collaboration and advanced tools, is

essential for effective marine conservation. Addressing these issues will reinforce the legal framework for marine parks in the South China Sea and ensure the achievement of conservation objectives.

5.4 Establishing a specialized dispute resolution body

Firstly, this dispute resolution body specifically established for the South China Sea National Marine Parks should possess exclusive jurisdiction or special jurisdiction over foreign-related marine environmental protection disputes. The South China Sea region has a unique geographical location, boasts rich and diverse marine ecosystems with extremely high ecological value, and is also an area where international shipping, fishing, marine scientific research, and other activities are frequently carried out. Numerous countries have different interests and demands in the South China Sea waters, which can easily lead to differences and disputes in the development and utilization of marine resources as well as environmental protection. Endowing this dispute resolution body with exclusive jurisdiction or special jurisdiction can ensure that foreign-related marine environmental protection disputes concerning the South China Sea National Marine Parks receive centralized and professional handling. This means that within the jurisdiction of this body, other ordinary judicial or arbitration institutions shall no longer exercise jurisdiction over similar disputes, thereby avoiding issues such as jurisdictional conflicts and inconsistent rulings from multiple institutions, and ensuring the authority and consistency of dispute resolution. For example, when a dispute arises between neighboring countries and China regarding fishery resource protection measures in a certain sea area within the marine park, this specialized body can promptly intervene based on its exclusive jurisdiction and make a fair ruling in accordance with relevant international and domestic laws, preventing the dispute from escalating and becoming more complex.

Secondly, this dispute resolution body should be staffed with high-caliber legal professionals capable of handling foreign-related marine environmental protection disputes. Foreign-related marine environmental protection disputes often involve complex legal issues, encompassing laws and regulations in multiple fields such as international law of the sea and environmental protection law, and may also relate to the legal systems, policy orientations, and international practices of different countries. Therefore, legal professionals within the body must possess solid legal expertise, not only being proficient in domestic laws related to marine environmental protection but also having in-depth research and understanding of international legal documents such as the United Nations Convention on the Law of the Sea and regional marine environmental protection agreements. At the same time, they should have rich practical experience and be able to skillfully apply legal knowledge to resolve actual disputes. In addition, considering the particularity of foreign-related disputes, legal professionals should also have good foreign language skills and cross-cultural communication abilities, enabling them to effectively communicate with parties, lawyers, and experts from different countries, accurately understand the demands and viewpoints of

all parties, and ensure the fairness, impartiality, and openness of the dispute resolution process.

To attract and retain these high-caliber legal talents, the dispute resolution body should establish a comprehensive talent selection, training, and incentive mechanism. In the selection process, strict standards and procedures should be formulated to recruit legal professionals with rich experience and professional qualities from well-known domestic and foreign law schools, law firms, and research institutions. In terms of training, legal professionals should be regularly organized to participate in relevant training courses, academic seminars, and case analysis meetings at home and abroad to continuously update their knowledge structures and enhance their ability to resolve complex disputes. At the same time, legal professionals should be encouraged to participate in international maritime law practice and research projects to accumulate international experience and increase their influence in the field of international maritime law. Regarding the incentive mechanism, competitive remuneration packages and good career development opportunities should be provided, and legal professionals who perform outstandingly in dispute resolution work should be commended and rewarded to stimulate their work enthusiasm and creativity.

In addition to the above two aspects, this dispute resolution body should also establish scientific and reasonable dispute resolution procedures and rules. Procedures and rules are the key to ensuring the fair and efficient conduct of dispute resolution. In terms of procedural design, the characteristics of foreign-related disputes should be fully considered to ensure that all parties can fully express their opinions and demands and enjoy equal rights of statement and defense. For example, reasonable time limits and methods for each step of the dispute submission, acceptance, reply, evidence presentation, cross-examination, and ruling should be stipulated to avoid procedural delays leading to prolonged disputes. In terms of rule formulation, it is necessary to base on internationally accepted rules and practices while also taking into account the actual situation and special needs of the South China Sea National Marine Parks to formulate a targeted and operable rule system. For example, clarify the applicable laws for dispute resolution, rules of evidence, and methods of ruling enforcement to provide clear guidance and basis for dispute resolution.

In conclusion, establishing a specialized dispute resolution body for the South China Sea National Marine Parks is a systematic and complex undertaking that requires comprehensive planning and meticulous construction from multiple aspects, including jurisdiction setting, staffing, and the formulation of procedural rules. Only in this way can we ensure that this body plays its due role in handling foreign-related marine environmental protection disputes and provides solid legal guarantees for the sustainable development of the South China Sea National Marine Parks.

6 Conclusion

At a time when global marine ecological and environmental governance is drawing significant attention, marine environmental protection has become a focal point of the international community, while the establishment of a National Marine Park (NMP) in the South

China Sea (SCS) faces complex and diverse legal and governance challenges. Despite the numerous unresolved issues at the legal level currently, through in - depth research, we are fully confident and capable of addressing these challenges.

In September 2025, the State Council of China approved the establishment of a new national - level nature reserve at Huangyan Island. This decision not only highlights the forward - looking nature and practical significance of this study but also indicates that the problem - solving measures proposed in this study hold significant reference value for the construction of the Huangyan Island national - level nature reserve.

Looking ahead, with the official establishment of the NMP in the South China Sea and the gradual implementation of subsequent protection and management measures, the marine ecosystem in the South China Sea will undoubtedly receive more comprehensive and effective protection. This represents a crucial step taken by China in the field of marine environmental governance in the South China Sea, demonstrating its responsibilities as a major country. It also provides a vivid practice and model for putting the concept of a “Marine Community with a Shared Future in the South China Sea” into action. Meanwhile, we will continue to explore cooperation models for establishing marine protected areas or marine parks in disputed waters and make every effort to promote the South China Sea towards a sea of peace, environmental friendliness, and win-win cooperation.

Author contributions

YH: Formal analysis, Funding acquisition, Methodology, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare financial support was received for the research and/or publication of this article. This research was funded

by Philosophy and Social Sciences Research Project of Department of Education of Hubei Province (Project Number: 24Q128), the Industry-Academia Collaboration and Cooperative Education Project of the Ministry of Education of China (Project Number: 2407113648) and the Doctoral Research Startup Fund Project of Hubei University of Automotive Technology (Project Number: BK202367).

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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