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The High Seas: Greed, Power, and the Battle for the Unclaimed Ocean

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Olive Heffernan, The High Seas: Greed, Power, and the Battle for the Unclaimed Ocean, Greystone Books, 2024, ISBN 9781771645881 hb

As the title suggests, this book examines the political, economic and legal contests shaping governance on the high seas, which cover two-thirds of the world's oceans and lie beyond the jurisdiction of any single state (p. 1). As an award-winning science journalist, Olive Heffernan brings a strong science-reporting perspective to the subject. She investigates how unregulated exploitation, geopolitical rivalry and environmental degradation are reshaping the global commons.

The book examines the power structures that shape access to ocean resources and the distribution of ecological costs. It also asks how the international community can govern a space once imagined as a blue frontier (p. 22). Structured across twelve chapters, it traces the high seas' transformation from an open frontier to a contested political and moral landscape. Its themes range from industrial fishing and deep-sea mining to marine protected areas and climate intervention.

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The main achievement of the book lies in transforming high seas governance into a structured and readable global narrative. It combines factual reporting with clear explanation and links key areas of high seas governance, from deep-sea mining, marine genetic resources (MGRs) to the newly adopted Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement). The book also draws on field investigation, interviews and documentary research, giving the narrative both immediacy and institutional context.

The book opens by framing the high seas as both a legal construct and a material frontier. It contrasts the historical image of the ocean as boundless with its growing vulnerability to human exploitation, tracing the evolution of the "freedom of the seas" doctrine — from Hugo Grotius's seventeenth-century ideals to its codification in the 1982 United Nations Convention on the Law of the Sea (UNCLOS). Chapter 1 argues that the principle, originally designed to ensure open access, has in practice enabled unregulated extraction and geopolitical competition. Through examples from industrial fishing, transoceanic shipping and deep-sea exploration, it shows how technological progress has turned once-inaccessible waters into zones of economic rivalry. The chapter concludes by outlining the book's broader analytical framework. It combines historical narrative, policy analysis, and investigative reporting to examine how the high seas reflect contemporary challenges of global inequality and fragmented governance (p. 27).

Chapter 2 shifts focus to the mesopelagic, or "twilight zone" (200–1,000 metres), presenting it as both a critical engine of the carbon cycle and a potential industrial frontier. The chapter focuses on Norway, where the SINTEF SeaLab and the Institute of Marine Research lead state-funded experiments to develop a mesopelagic fishery. The author then cautions that commercial exploitation of the twilight zone risks repeating past ecological mistakes if it proceeds without adequate baseline scientific data and precautionary safeguards (p. 41). It supports this argument by referring to earlier unsuccessful lanternfish fisheries in South Africa and Iceland, as well as quota disputes in the North Atlantic. More broadly, the author raises questions about whether activities in areas beyond national jurisdiction should proceed before sufficient scientific knowledge is available. Similar tensions between technological capacity and ecological uncertainty recur throughout the book.

Chapter 3 introduces the concept of "dark targets" — vessels that hide their identity through signal manipulation, at-sea transhipment, and flag-of-convenience registration. These practices, the author argues, connect illegal, unreported and unregulated (IUU) fishing with wider transnational crimes, revealing major gaps in maritime governance. It documents how satellite monitoring and data-sharing initiatives have improved surveillance but stresses that transparency technologies alone cannot overcome fragmented governance. This discussion highlights that real accountability requires cross-border data integration and stronger port-state measures (p. 81).

Chapter 4 addresses the global push for deep-sea mining, driven by demand for critical minerals such as nickel, cobalt and copper. It situates the debate within the framework of UNCLOS and the International Seabed Authority (ISA). It describes the ISA as "hopelessly conflicted from its inception" (p. 105), because it is tasked with protecting the international seabed while also generating and distributing mining revenues. Despite growing political pressure to adopt exploitation regulations, the author observes that the core questions of environmental risk, benefit-sharing and institutional accountability remain unresolved. It concludes that technological readiness cannot substitute for ecological knowledge or legal safeguards. The author therefore supports calls for a precautionary pause in mining activities until scientific baselines and monitoring systems are in place. This institutional tension also invites attention to how states implement their responsibilities within the ISA framework. States have adopted diverse regulatory forms for participation in ISA-sponsored exploration. China's role as a sponsoring state for ISA exploration contracts illustrates a responsible approach by a state party [1–3].

Chapter 5 examines how scientists and entrepreneurs are turning the ocean into a testing ground for large-scale climate engineering and carbon removal. It discusses proposed ocean-based climate interventions, including iron fertilization, ocean alkalinity enhancement, artificial upwelling, and marine cloud brightening. These interventions have limited scientific justification and lack regulatory oversight, and they pose significant uncertainty and regulatory gaps, particularly regarding potential transboundary ecological effects [4]. It illustrates these concerns through cases such as the 2012 iron fertilization experiment near Haida Gwaii and the LOHAFEX project in the Southern Ocean. The author argues that technical feasibility does not guarantee ecological security. She also points to the absence of clear legal rules governing the transboundary effects of ocean-based climate interventions. Existing regimes, including the Convention on Biological Diversity, provide mainly non-binding guidance and leave key questions of authorization and liability unresolved.

Chapter 6 explores how rapid Arctic warming has turned the polar region from a remote wilderness into a new axis of geopolitical, economic, and legal competition. As sea ice retreats and new maritime routes open, the chapter links emerging national claims and commercial interests to shifts in identity and strategy. It argues that governance and environmental protection have not kept pace with expanding economic activity in the Arctic. Black carbon emissions from shipping, growing oil-spill risks and limited monitoring and enforcement capacity illustrate these challenges [5]. Together, these pressures show how climate change is transforming the Arctic into a zone of both economic opportunity and environmental risk.

Chapter 7 portrays the Southern Ocean as a microcosm of humanity's confrontation with ecological boundaries. It analyzes how warming is pushing Antarctic krill southward and increasing the overlap between industrial fishing and the feeding grounds of penguins and whales. It argues

that climate change is intensifying competition within the Southern Ocean ecosystem. Although the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) has adopted catch limits, consensus-based decision-making and limited spatial protections continue to leave key ecosystems vulnerable (p. 182). The author uses the contrast between regulatory intent and ecological outcomes to illustrate the difficulties of translating conservation commitments into meaningful protection in the Southern Ocean.

Chapter 8 traces the evolution of MGRs from biological samples collected for pharmaceutical research to digital sequence information (DSI) that can be stored, shared and patented independently of the original material. It shows how corporations like the German conglomerate BASF have accumulated control over vast marine genetic databases, converting shared biodiversity into private property. While the Nagoya Protocol advances access and benefit-sharing (ABS) for terrestrial resources, comparable mechanisms for marine and digital resources have lagged behind. The newly adopted BBNJ Agreement seeks to address this gap with monetary and non-monetary benefit-sharing mechanisms. However, implementation challenges remain, particularly regarding the traceability of DSI, downstream benefit-sharing, capacity disparities between developed and developing states, and the practical implementation of benefit-sharing arrangements (pp. 204-206). The discussion frames the contest over MGRs as a question of global justice, in which the promise of shared benefits from the ocean genome is constrained not only by law, but by the political economy of innovation itself.

Chapter 9 exposes the ocean's role as humanity's "final dumping ground" for the by-products of modern civilization, including oil discharges, plastic debris, and deorbited spacecraft [6–8]. It points out that marine pollution continues to accumulate despite longstanding international rules such as the International Convention for the Prevention of Pollution from Ships and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. One reason is that industries often regard their own contributions as limited. The author then argues that this problem reflects a broader tendency to treat the ocean as a repository for externalized environmental costs. It uses controversies such as Japan's Fukushima wastewater release to illustrate this dynamic (p. 229). Similar approaches also appear in domestic legal systems, where designated dumping or discharge areas are used to manage waste disposal [9]. Overall, the author underscores the growing recognition that the ocean's capacity to absorb human waste is finite, and that unintentional pollution remains one of the most pervasive threats to the marine environment.

Chapter 10 examines the emerging interest in harvesting polar icebergs as freshwater sources amid global water scarcity. It discusses large-scale proposals in the United Arab Emirates and South Africa and raises concerns that iceberg towing could disrupt ocean ecosystems and create legal grey zones concerning ownership and liability. By contrast, small-scale ventures in Newfoundland suggest that nearshore use can be more manageable under

local regulation. The author underscores the gap between technical feasibility and the moral, legal and institutional questions that must be addressed before any large-scale commercialization of iceberg harvesting.

Chapter 11 focuses on the Pelagos Sanctuary for Mediterranean Marine Mammals. It is jointly managed by France, Italy and Monaco. Once celebrated as a model of regional cooperation, it now represents what the author calls a "paper park" (p. 251) — a protected area in name rather than in reality. The Pelagos Sanctuary suffers from overlapping shipping, oil exploration, fishing, and tourism activities that undermine conservation goals. The author argues that effective protection depends on enforceable rules, cross-jurisdictional coordination and sustained scientific monitoring. It supports this point by comparing the Pelagos Sanctuary with Mexico's Cabo Pulmo Marine Reserve, where strict fishing bans led to ecosystem recovery.

Chapter 12 concludes the book by presenting the BBNJ Agreement as a major milestone in global ocean governance. It traces the Agreement's trajectory from the inaugural expert meetings in 2001 to the concluding negotiations, which yielded new legal frameworks and procedures for marine protected areas, environmental impact assessments, capacity-building, and benefit-sharing. However, its effectiveness will depend largely on its implementation. Key challenges include coordination among existing regimes, such as regional fisheries management organizations (RFMOs), ISA and the International Maritime Organization (IMO). With less than one percent of the high seas currently protected, the Agreement is presented as having the potential to give legal effect to conservation targets such as the 30×30 goal. The chapter ends on a conditional note, emphasizing that legal instruments alone cannot substitute for political will.

The book provides an accessible and well-documented account of contemporary ocean governance debates. It makes complex governance debates accessible without sacrificing analytical rigor. At the same time, some of the book's assessments would have benefited from greater attention to implementation constraints, institutional design, and the diversity of state practice. However, there are three issues that are worthy of in-depth discussion.

First, the author places disproportionate weight on Northern and North Atlantic perspectives. By contrast, perspectives from the Global South, including those of small island developing states (SIDS), receive comparatively limited attention. Including comparative examples, such as SIDS' socio-ecological perspectives on deep-sea mining [10] and African states' capacity gaps in BBNJ implementation [11], would make the analysis more balanced and better reflect the diversity of ocean governance dynamics [12,13].

Second, the book gives limited attention to methodological assumptions and implementation challenges. While it draws on NGO reports and research models, it offers little discussion of their limitations [14]. Its discussion of treaty implementation also remains at the level of principle and gives comparatively limited attention to practical constraints such as financing, capacity-building and technology transfer for developing states. The

interaction between the BBNJ Agreement and existing regimes such as RFMOs, ISA and IMO is also only briefly addressed [15–17].

Third, the analysis of state practices remains underdeveloped. Across the book, state engagement in ocean governance is often interpreted primarily through the lens of economic interest. While this perspective captures important economic motivations, it can understate the influence of institutional rules and compliance practices on state behaviour. China provides one example of this tendency. In the discussion of Arctic and Southern Ocean governance, the analysis emphasizes economic motivations. This framing, however, overlooks China's substantive participation within frameworks such as the Arctic Council and CCAMLR, where state positions are also shaped by scientific assessments, procedural rules, and consensus-based decision-making [18–21]. Furthermore, the existing maritime order, grounded in territorial zoning and resource-oriented governance, has proved increasingly inadequate for regulating emerging activities such as geoengineering and other novel uses of the ocean [22].

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