

Heffernan, Olive. *The High Seas: Greed, Power and the Battle for the Unclaimed Ocean***Greystone Books, 2024**

360 pp., notes, references, index

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This is not a book for pessimists. *The High Seas* is a volume of recent history and focuses on the often-unnoticed activities on, in, and beneath waters that are not only out of sight, but often out of mind. In the first part of the book Heffernan moves quickly over the development of international rights and claims over the seas, from the establishment of the three-mile limit, through the extension to 12 miles and the subsequent 200-mile zones of economic control, and ultimately to the extended continental shelf claims. The introduction to the attempts to nationalize the seas is a short but valuable preamble to the core of the author's concern.

Foremost in her analysis of recent and current activities is the lack of balance between the perceived rights to high-sea resources and the frequent abdication of any responsibilities in these same seas. This is a depressing recounting of the tragedy of the commons wherein the resource either belongs to everyone or no one resulting in a failure to manage it for the good of all. Heffernan is not an academic but is an established and respected science journalist. The book is well researched and written and benefits from the journalist's ability and skill in allowing those working on the unclaimed oceans to tell their numerous stories.

Some of the topics in this omnibus of marine abuse will be familiar for anyone following the current direction of environmental history: the great gyres of plastic garbage, the sea-bed nodule mining, the predatory fishing fleets, and the creation of marine dead zones. While Heffernan covers these expected areas, the value in the publication lies in the less-familiar areas of destruction and overuse. She covers, for example, the discovery and potential exploitation of a fishery of the "twilight zone," an area between the maximum depth for photosynthesis at about 100 meters and the beginning of almost absolute darkness at 1,000 meters, an area which may contain billions of tons of fish. The author explores the value of this resource but stresses the danger of exploitation without an understanding of the ecological role of these creatures. In addition, this is a completely unregulated area and a potential source of conflict between states seeking to exploit the space.

Another seldom-cited value of the high seas is as the location of genes and drugs found, and yet to be found, in marine flora and fauna. While some attention has been paid to the potential of areas such as the Amazon rain forest, the potential of the unowned oceans as the source of additional genetic

resources is great. Here too, owing to the lack of agreement and control, there is inequality of access and development as between nations rich and poor and between those who can afford to explore and exploit and those who cannot, not to mention the unregulated exploitation and damage that can result.

While most readers may have a passing acquaintance with the impacts of climate change on the ice coverage of polar regions, this volume goes beyond the loss of habitat for sea creatures, the rising water levels, and changing ocean currents. Heffernan details efforts of pioneering scientific initiatives to cool the ocean to fix the climate. She details many fascinating initiatives such as the work of one scientist who is experimenting with increasing the reflective capacity of snow and ice to reduce heat absorption, and thus reduce melting in key areas of the arctic through the use of minute glass silica beads. There are other ocean-based climate interventions but increasingly the danger is that as with so many things in connection with the high seas, there is limited international cooperation and an almost total lack of governance of these initiatives.

Heffernan's final chapter, "Hope for the High Seas," attempts to be a seemingly obligatory positive conclusion for the volume, citing a number of instances where yet-to-be accepted international agreements and treaties in such sectors as marine protected areas show how things could change. However, the muted optimism of the final chapter does little to stem the tide of damages flowing from the waves of abuse against the resources of the majority of the earth's surface. In ringing the alarm bells loudly and long, Heffernan almost deafens the reader to anything but a doomsday scenario. She has done her work too well and the ordinary sailor, fishermen, or scientist may feel defeated by the evidence she presents. There is marine history aplenty in the volume, but it makes for uncomfortable reading and like a poorly written detective novel, the identity of the criminal is evident from the very beginning. Heffernan argues that we have all taken, and continue to take, so much and our assumed entitlement will destroy the seas in the same way as we have critically damaged the land and atmosphere.

And yet, this is a book that should be widely read, both by those who treasure the seas and those who do not. It is not an alarmist tract and unlike some recent volumes on how we have abused our environment, it is interesting, well reasoned, and rational rather than inflammatory. The reader will come away with a heightened sense of what is happening in, on, and under the seas. It is an important volume and shows not only how we got here but also where we could well be going.

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