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***Junk Raft: An Ocean Voyage and a Rising Tide of Activism to Fight Plastic Pollution* Robert Marcus Eriksen**

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ENVIRONMENT

A voyage through plastic oceans

Richard Thompson applauds a chronicle alerting the world to marine polymer pollution.

The story of a voyage bearing witness to plastic pollution in the oceans, *Junk Raft* is a stimulating, thought-provoking and factually grounded read. Science educator and researcher Marcus Eriksen's navigational feat is gripping — 88 days crossing some 4,000 kilometres of open ocean between Los Angeles and Hawaii, on a raft crafted from 15,000 plastic bottles lashed into fishing nets. But it is more. Woven through the chronicle are two equally fascinating storylines: of Eriksen's evolution from soldier to head of the environmental non-profit 5 Gyres Institute, and of a journey that we all need to take toward a more sustainable use of plastics.

Around 75% of all the litter in our oceans is plastic, and an estimated 5 million metric tonnes of plastic waste enter the oceans annually. Inevitably, this litter contaminates marine habitats worldwide and as Eriksen explains, it is now also present at the sea surface and on shorelines, has accumulated in Arctic seas and is present on the seabed at depths of 3,500 metres. Around 700 species of marine organism, from sea turtles and corals to sperm whales and albatrosses, are known to come into contact with plastic debris — some are physically harmed or killed by ingesting or becoming entangled with it. There are also now concerns about the transfer of plastics to commercially important species of fish and shellfish. (The waters around Hawaii's islands and their shores are particularly heavily contaminated with plastic, giving a clear rationale for Eriksen's destination.)

This environmental challenge has attracted increasing scientific, media and societal attention in recent years, yet few accounts have conveyed the wider picture accessibly. *Junk Raft* does just this — while exposing our frustratingly slow progress on an issue of major importance to fisheries, tourism and, ultimately, the health of the world's oceans.

Eriksen comprehensively outlines the issues associated with the accumulation of marine plastic: the underlying causes, consequences and potential solutions. Those causes ultimately lie in our throw-away culture. For more than 60 years, society and industry have moved toward escalating the single use of items, particularly packaging, designed for disposability. Solutions lie in better capture of materials at the end of their 'lifecycle', in a circular economy (see <https://www.nature.com/nature/journal/v531/n7595/full/531443a.html>).

Eriksen contextualises the crisis with a timeline of scientific discovery and advancement in our understanding since the 1970s. Alongside this he gives a very personal, somewhat North American, perspective on the tribulations of industry and policy engagement: the side plots and blind alleys, and the tactics of avoidance, distraction and denial he has so often encountered over the course of his environmental work[**yes?**]. There are parallels, he shows, with obstacles facing those who have fought over decades to raise awareness around the health impacts of smoking. Eriksen also gives due credit to collaborators, notably oceanographer Charles Moore, discoverer of the 'garbage patch' in the North Pacific Gyre and head of the Algalita Marine Research Foundation, which cosponsored the Junk Raft project.

Throughout, we are regularly brought back to the realities of life aboard the raft with Eriksen's fellow sailor Joel Paschal. This is both mesmerising and eventful, from the slow, occasionally perilous progress to the moments when it seems the raft will disintegrate, littering the ocean with the detritus Eriksen is trying so hard to combat. We see the realities of day-to-day life working, eating and sleeping in the confined space of the raft's cabin — a light-aircraft fuselage. Alongside are high spots such as the culinary delights of fish and squid cooked straight from the sea. Eriksen's wider journey in the book takes him onto dry land and the accumulation of terrestrial plastic. He touches on the consumption of plastic bags by camels — a serious issue in desert countries in the Gulf, for instance — as he travels back to Kuwait and the highway to Basra where, 25 years earlier, he had fought as a US Marine in the Persian Gulf War.

[is something like this okay? He does seem to indicate this in the book?>] It is generally difficult to gauge the direct impact of projects like Eriksen's, but he notes rising consumer awareness of the risks of disposable plastic. Eriksen has also done much to publicise the environmental consequences of polymer microbeads in the US Great Lakes, providing key evidence that led to the introduction of legislation on them.

Junk Raft is permeated by the sense of an optimism that I share. Most of my scientific research over the last 20 years has been on the accumulation, distribution and impact of marine plastic litter. Despite our differing perspectives, like Eriksen I see this as a solvable problem — but one that demands urgent attention.

Richard Thompson is Professor of Marine Biology and leader of the International Marine Litter Research Unit at the University of Plymouth, UK <https://www.plymouth.ac.uk/research/marine-litter>. His team were the first to show the temporal accumulation of microscopic plastic fragments in waters around the UK, pieces they described as '*microplastics*'. Since then much of his research has focused on the accumulation of plastic debris, the associated environmental consequences and the potential solutions.[your preferred minibiography]

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