

The Last Beach by Orrin H. Pilkey and J. Andrew Cooper

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Source: Journal of Coastal Research, 32(1) : 225-226

Published By: Coastal Education and Research Foundation

URL: <https://doi.org/10.2112/JCOASTRES-D-14A-00011.1>

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The Last Beach. By Orrin H. Pilkey and J. Andrew Cooper, 2014. Durham, North Carolina: Duke University Press, 270p., color illustrations. \$19.95, paperback, ISBN: 978-0-8223-5809-1; \$69.95, cloth, ISBN: 978-0-8223-5798-8.

This is an important book that is critical to the future of the



world's beaches. The message from Orrin Pilkey and Andrew Cooper is received loud and clear—in most cases the sensible or logical way to save beaches is to retreat (fall back) from the shore. There are exceptions, of course, as possibly in the case of the Netherlands, but in general this is the philosophy that needs to be assimilated by laypersons, politicians, environmental managers, coastal engineers, geologists, and geographers among others. These people generally do not go out and deliberately destroy beaches, but there are groups that mine sand from beaches for construction projects and this activity is particularly insidious. Nevertheless, the aforementioned groups in one way or another end up destroying beaches by trying to protect the shore with engineered fortifications such as sea walls, groins, and breakwaters, or by pumping sediments from the seafloor onto eroding shores. Whether the method is hard engineering or soft stabilization, the result is the same because these efforts are but stopgaps in the face of rising sea levels. This latter point is the crux of the story, for Pilkey and Cooper correctly perceive that Nature in the end will triumph by reclaiming what has been won by humans from the sea. Shoreline stabilization is temporary and in fact might even be regarded as folly in the face of sea-level rise.

The key to the argument posited in the book depends on the rate of sea-level rise. If the range of Intergovernmental Panel on Climate Change projections are correct (no one knows for sure if they are), what is done today to “protect” beaches will be destroyed tomorrow. Although the rate of sea-level rise has slowed over the past couple of decades (see, for example, Houston and Dean, 2013; Watson, 2011), that does not mean the rate has stabilized nor that it will not rapidly accelerate. The only spoilers to the Pilkey–Cooper admonition would be a sudden stasis in water levels or a drop due to the onset of global or hemispheric cooling conditions. Neither of these events seems likely in the short term and so we are left the hypothesis that sea levels will continue to increase at some variable rate.

DOI: 10.2112/JCOASTRES-D-14A-00011.1

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Such being the case, the message brought forth in this book is one of increasing urgency for people to understand the nature of Earth systems and the peril facing coastal populations that chose to ignore the obvious. What Professors Pilkey and Cooper point out is not rocket science, but good old commonsense observations that humans can't possibly win the battle with the sea that rises up ever higher and higher.

Geography militates against engineering efforts to protect coastal lowlands when sea levels continue to rise. At some point in the not-too-distant future many low-lying coastal tracts such as southern Florida can no longer be defended against the sea. Inundation is inevitable. Sea dikes around coastal lowlands preclude beaches and invite an even greater disaster to populations behind the engineered structures to keep out the sea.

These facts are patently obvious to those familiar with coastal dynamics and the book does not pretend to preach to the choir. On the contrary, the authors are reaching out to all those who live, work, and deal with the coast but who are not especially savvy about the technical issues associated with geodynamics and eustatics nor the multiple interacting causes of sea-level rise. The authors thus explain with lucid clarity via carefully considered explanations supported by many color illustrations what must be done to save the world's beaches from extinction. Such a statement may at first glance seem brash and overreaching, but what Pilkey and Cooper report is the truth seen from the eyes of experienced geologists. By “truth” I mean that outcomes of present activities on beaches, as ably described by the authors, are predictable. There are many situations in life where there are not two sides to the story and this is one them. Seawalls destroy beaches (see, for example, Pilkey and Wright, 1988), whereas beach (re)nourishment gives beaches that are already destroyed some additional life but ultimately even that effort will fail in the face of rising sea levels (assuming rises in sea level occur at rates predicted by some authorities).

Realizing that something must be done to save the world's beaches, Orrin Pilkey and Andrew Cooper come to the conclusion that the only sensible thing to do is retreat from the shore and move people and infrastructure farther inland. One can hardly argue with this position from a logical point of view, but emotions often run high when the subject is broached. Part of the problem stems from lack of understanding what is at stake and this book attempts to inculcate appreciation of the value of beaches and what must be done to save them.

There is no other option or other side to the story. The solution on the one hand is simple but on the other it is exceedingly complex to convince people to leave the shore that they so dearly love for they know not the danger they are in nor problems they are exacerbating by attempting to hold the line in the face of forces that are beyond human comprehension. Retreat from the shore can be managed (e.g., Esteves, 2014) if initiated now in an appropriate manner. By waiting until uncontrolled flooding is imminent and the beaches are gone is

not an option that most would want to experience. Yet, today the ostrich approach is prevalent because most people do not want to consider what they perceive as an unpleasant experience. But, as the authors point out in the book, it will be a far worse experience to delay and do nothing. A decision by default is not a good decision for beaches.

This volume is critical reading. The book is full of the authors' positionalities and it is clear that they intend to evoke some philosophical entasis (from the Greek *enteino* to stretch or strain tight) in an effort to wake people up to the fact that beaches worldwide are threatened to the point of extinction by human activities. The substantialities of the book are evident even to the casual reader and as such the message is clear. Read the book, become informed, and take action. The action item is basically single purpose, convince politicians that they need to save beaches and not destroy them. Shore protection is such a large and costly enterprise that only governments can normally conduct these activities. Public projects that are funded to protect hinterlands, whether terrestrial grounds or wetlands, need to be rethought in a way that protects beaches through managed realignment.

Professors Orrin Pilkey and Andrew Cooper are to be congratulated for taking a stand for preserving the vitality of beaches and for recognizing that societies need to embrace

Nature and work with her, instead of trying to control natural processes. And as a rejoinder, let us not forget that Nature is infinite and always wins, as humans and their engineering works are finite. This book is required reading for all those interested in beaches and, indeed, in the very survival of their coastal habitations, infrastructure, and industrial-military complexes that are fronted by beaches.

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