

New report puts real numbers behind history of oyster reefs

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In an effort to advance the field of coastal restoration, The Nature Conservancy and a team of scientists from more than a dozen management agencies and research institutions led by the University of Cambridge conducted an in-depth study of oyster reef area and, for the first time, the actual biomass (the "living weight") of oyster reefs in dozens of estuaries throughout the United States.

'Historical ecology with real numbers', published today in [Proceedings of the Royal Society B](#), presents the first truly quantitative estimates of decline in oyster habitat over such a large spatial and temporal scale.

The findings show that while that oyster reef area declined by 64% over the last century, the total [biomass](#), or living weight of [oysters](#) on reefs, had dropped by 88% during this period, revealing that simple physical area is an unreliable indicator of habitat status.

The good news, according to lead author Dr. Philine zu Ermgassen of University of Cambridge, is that the study gives a much-needed historical picture of conditions in specific bays and estuaries, something that will aid in future [restoration efforts](#).

"Oysters were a valuable resource, even a century ago, so government surveyors mapped vast acreages and built up a story of a critically important habitat in wonderful detail," said Dr. zu Ermgassen. "Although somewhat unfamiliar to us here in Europe the humble oyster was once so numerous, both here and in the United States, that it formed large

physical structures – oyster reefs – that rose up in banks off the sea bed.

"Using meticulous records compiled 100 years ago, we have been able to accurately quantify the changes in oyster reefs over time. Anecdotes have been converted to hard facts. Of course there have been huge losses in area, but that is only part of the story. We've also noted changes in density and structure of the remaining oysters, such that what is left is a much depleted habitat. Managers and scientists need to pay closer attention to density when setting restoration or conservation objectives."

"In addition to aiding restoration, the study will inspire it," says co-author Dr. Mark Spalding, a lead scientist with The Nature Conservancy's Global Marine Program, and also based at Cambridge. Indeed, the authors are keen to point out that the US is leading the world in turning things around for these habitats, with restoration work underway in numerous estuaries to restore oyster habitat.

"This is a call to action, and these findings will provide funders and managers with a powerful baseline – a clear vision of how things were – and an opportunity to establish meaningful goals and targets. The findings have implications beyond [oyster reefs](#), however. Almost all of our concerns about the loss of natural areas – from forests and wetlands to seagrass meadows and kelp beds – are based on an estimation of change in area," said Dr. Spalding. "This study shows that the losses may be even worse than we thought, because the quality of the remaining patches of habitat may be so diminished that it is not providing the function we expect from any given area."

More information: Zu Ermgassen, P. S. E., Spalding, M. D., Blake, B., Coen, L. D., Dumbauld, B., Geiger, S., Grabowski, J. H., Grizzle, R., Luckenbach, M., McGraw, K., Rodney, B., Ruesink, J. L., Powers, S. P., and Brumbaugh, R., 2012, Historical ecology with real numbers: Past and present extent and biomass of an imperilled estuarine habitat:

Proceedings of the Royal Society B: Biological Sciences. The paper was published on Wednesday 13 June.

Provided by University of Cambridge

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