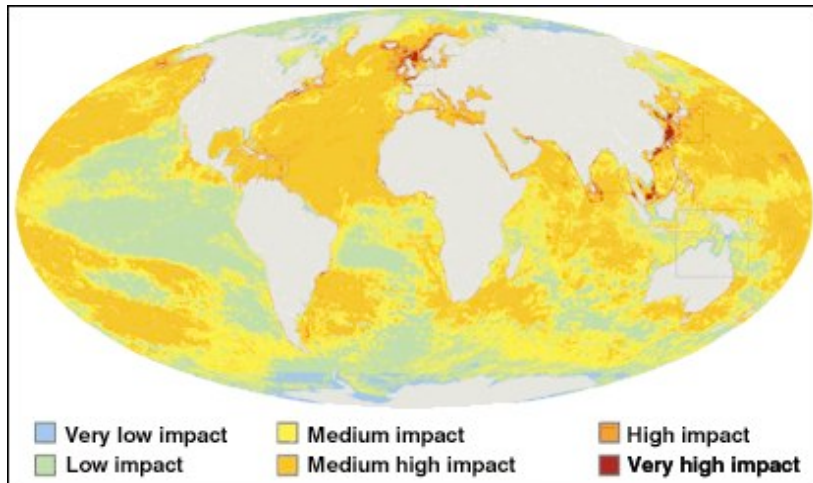


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## Map shows toll on world's oceans

By Helen Briggs  
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### 'Fly-over' of impacted oceans

Only about 4% of the world's oceans remain undamaged by human activity, according to the first detailed global map of human impacts on the seas.

A study in Science journal says climate change, fishing, pollution and other human factors have exacted a heavy toll on almost half of the marine waters.

Only remote icy areas near the poles are relatively pristine, but they face threats as ice sheets melt, they warn.

The authors say the data is a "wake-up call" to policymakers.

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Dr Mark Spalding, The Nature Conservancy

Lead scientist, Dr Benjamin Halpern, of the National Center for Ecological Analysis and Synthesis in Santa Barbara, US, said humans were having a major impact on the oceans and the marine ecosystems within them.

"In the past, many studies have shown the impact of individual activities," he said. "But here for the first time we have produced a global map of all of these different activities layered on top of each other so that we can get this big picture of the overall impact that humans are having rather than just single impacts."

Co-author Dr Mark Spalding told BBC News that the map was the first attempt to describe and quantify the combined threats facing the world's oceans from human factors, ranging from commercial shipping to over-fishing.

"There's an element of wake-up call when you get maps like this," he said. "Human threats are all pervasive across the world's oceans."

"The map is an impetus for action, I think that it is a real signal to roll up our sleeves and start managing our coast and oceans."

### Complex model

The international team of 20 scientists in the US, Canada and UK built a complex model to handle large amounts of information on 17 different human threats.

They divided the world's oceans into 1km-square sections and examined all real data available on how humankind is influencing the marine environment.

They then calculated "human impact scores" for each location, presenting this as a global map of the toll people have exacted on the seas.

The researchers say they were shocked by the findings.

"I think the big surprise from all of this was seeing what the complete coverage of human impacts was," said Dr Spalding, senior marine scientist at the conservation group, The Nature Conservancy, in Newmarket, UK. "There's nowhere really that escaped. It's quite a shocking map to see."

He said the two biggest drivers in destroying marine habitats were climate change and over-fishing.

"Out on the high seas, climate change and fishing were far and away the strongest influences," he explained. "The least impacted areas are the polar regions but they are not untouched."

### Clear message

The scientists hope the map will be used to prioritise marine conservation efforts.

Andrew Rosenberg, a professor of natural resources at the University of New Hampshire, US, who was not part of the study, said policymakers could no longer focus on fishing or pollution as if they were separate effects.

"These human impacts overlap in space and time, and in far too many cases the magnitude is frighteningly high," he said.

"The message for policymakers seems clear to me: conservation action that cuts across the whole set of human impacts is needed now in many places around the globe."

The findings of the study were presented at the annual meeting of the American Association for Advancement of Science (AAAS) in Boston, US.