

Why we need to put the fish back into fisheries

May 20 2013

Overfishing has reduced fish populations and biodiversity across much of the world's oceans. In response, fisheries are increasingly reliant on a handful of highly valuable shellfish. However, new research by the University of York shows this approach to be extremely risky.

The research, published today in the journal *Fish and Fisheries*, shows that traditional fisheries targeting large [predators](#) such as cod and haddock, have declined over the past hundred years. In their place, catches of [shellfish](#) such as prawns, scallops and [lobsters](#) have rocketed as they begin to thrive in unnaturally predator-low environments often degraded by the passage of trawls and dredges.

In many places, including the UK, shellfish are now the most valuable marine resource. The research by the Environment

Department at York suggests that although a shellfish-dominated ecosystem appears beneficial from an economic perspective, it is highly risky. Like simplified agricultural systems, these shellfisheries are unstable in the long-term and at great risk of collapse from disease, species invasions and [climate change](#). Warming and acidification of our oceans due to [greenhouse gas emissions](#) is expected to affect shellfish worst. [Ocean acidification](#), in particular, will limit the ability of scallops and other shellfish to form proper shells, and lead to widespread mortality.

Lead author, Leigh Howarth, says: "Prawns are now the most valuable

fishery in the UK, with catches currently worth over £110 million a year. But this fishery has come to exist only after we overexploited populations of cod, haddock and other predators. If shellfish now collapsed the social consequences for [fishermen](#) would be devastating. There are simply very few remaining species left to target."

The study reports similar findings from all over the world. In the United States and Canada, catches of lobster, scallops and crab have also come to dominate following the collapse of cod. However, disease and climate change again put these species at great risk. While in the Black Sea, Baltic and off the west coast of Africa, overfishing of large predators have caused the ecosystems to become overrun with jellyfish, resulting in severe oxygen depletion and eruptions of hydrogen sulphide, thereby wiping out important food chains across 100,000 square kilometres of seabed.

Co-author Dr Bryce Stewart adds: "Shellfish make a valuable contribution to our fisheries. But we cannot just assume everything is rosy. There is an urgent need for continued improvements in management of finfish fisheries, and an ecosystem approach which rebuilds the diversity, resilience and productivity of our oceans into the future."

Co-author Professor Callum Roberts concludes: "The rise of shellfish has been welcomed by many as a lifeline for the fishing industry. However, such changes are not a result of successful management, but rather a result of management failure, a failure to protect stocks and their habitats in the face of industry innovation and overfishing. This study highlights why the UK needs to urgently act to protect our seas. We need more marine protected areas to stop our seas from becoming a wasteland and to restore the diversity and productivity of [fisheries](#) well into the future".

Provided by University of York

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