



**Overfishing in our oceans is not a new problem. Research shows that humans have been plundering the seas for centuries, with dire ecological results, Story by DANNY MORTISON**

“While grand-dad’s observation that the fish used to be bigger in his youth is undoubtedly true, few people realise the antiquity of overfishing,” Professor Hughes said.

“Industrial-scale fishing occurred throughout the Great Barrier Reef from Torres Strait to Moreton Bay by the late 19th century. Whales, dugong, turtles, pearl oyster and trochus shell were all heavily exploited and all have failed to regain their former abundance,” he said.

“A full understanding of modern ecosystems requires a knowledge of the past. Yet most studies and most management or marine habitats began only very recently, long after human impacts had taken a heavy toll.

“Worldwide, current management practices are aimed at preserving remnants. We need to recognise what has been lost and to gain a historical perspective that will guide the restoration of ecosystems.”

Examples of the negative chain reactions brought on by overfishing include:

- The degradation of Chesapeake Bay US, where the removal of large oyster reefs upset phytoplankton levels
- The overfishing of large fish species leading to overgrowth of algae on coral reefs, which smothers the coral and affects thousands of reef-dependent species
- The widespread killing of the green turtle and other seagrass grazers in Florida Bay, US, which has seen a rise in outbreaks of disease in seagrass beds, normally used as a food source and breeding ground for many species
- The overfishing of great whales in the Bering Sea, forcing killer whales to revert to sea lions and otters as a food source, thereby affecting sea urchin populations and the state of kelp forests

However the scientists say most species which are ecologically extinct probably still survive in sufficient numbers for successful restoration, with proper management based on the historical data they have compiled.

The research paper, entitled “Historical Overfishing and the Recent Collapse of Coastal Ecosystems” says there were three different but overlapping periods of human impact on marine ecosystems: Aboriginal, colonial and global.

“Comparing the magnitude of the mass ecological extinctions in the ocean to those on land may not be enough,” study co-author Dr Roger Bradbury of the Australian National University in Canberra said. “On the land, as we killed off the giant mammals and destroyed the ancient forests, we replaced them with a new suite of farmed species. In the coastal seas, we took out animals and replaced them with nothing.”

# Emptying oceans

**P**AST generations are to blame for the depletion of fish stocks around the world according to a scientist from James Cook University.

Professor Terry Hughes, above, from the university’s School of Marine Biology and Aquaculture and his colleague from the Australian National University, Dr Roger Bradbury, have contributed to international research identifying overfishing of the world’s oceans.

Their efforts are contained within an international research effort published in the next issue of the international magazine, *Science*, the weekly journal of the American Association for the Advancement

of Science. The international team of 18 leading marine researchers used archaeological, paleoecological and historical data to reveal past evidence of seas teeming with large animals as well as oyster and shellfish populations so vast they posed hazards to navigation.

The data demonstrate that overfishing triggered changes in ecosystem structure and function as early as the late Aboriginal and early colonial stages. Even more chilling, the scientists show that grinding down marine food webs is responsible for many of the problems we face today. Removal of key predators and entire layers of the food chain set off sequences of events that are now culminating in toxic algal blooms, dead zones, outbreaks of diseases and other symptoms of ecological instability.

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