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## Orange roughy and other deep-sea fisheries 'unsustainable'

An international team of leading marine scientists is recommending an end to most commercial fishing in the deep sea, the Earth's largest ecosystem. Instead, they recommend fishing in shallower, more productive waters nearer to human populations.



Credit: ScienceImage

In a recent article published in the journal *Marine Policy*, marine ecologists, fisheries biologists, economists, mathematicians and international policy experts demonstrated that, with rare exceptions, deep-sea fisheries – particularly orange roughy – are unsustainable.

In the oceans' depths, far from the sunlight that fuels photosynthesis at the surface, food is scarce and life cycles slow. Some deep-sea fishes live more than a century; some deep-sea corals can live more than 4000 years.

Today's powerful and efficient bottom trawlers can cause massive damage to populations of animals adapted to life in 'deep-sea time'; they simply can't repopulate at human time scales.

'The deep sea is the world's worst place to catch fish,' says marine ecologist Dr Elliott Norse of the Marine Conservation Institute in the US. 'Deep-sea fishes are especially vulnerable because they can't repopulate quickly after being overfished.'

The deep sea provides less than 1 per cent of the world's seafood. Since the 1970s, when coastal fisheries became over-exploited, commercial fishing fleets began moving offshore into deeper waters. Some now fish more than a mile deep.

The researchers documented the collapse of many deep-sea fishes around the world, including sharks and orange roughy. Other commercially caught deep-sea fishes include grenadiers (rattails) and blue ling.

Orange roughy take 30 years to reach sexual maturity and can live 125 years. Compared with most coastal fishes, they live in 'slow-motion'.

'Fifty years ago no one ate orange roughy,' said fisheries biologist Dr Daniel Pauly from the University of British Columbia.

'In fact, it used to be called "slimehead", indicating no one ever thought we would eat it. But as we've overfished our coastal species, that changed and so did the name.'

The researchers say the best policy would be to end economically wasteful deep-sea fisheries, redirect subsidies to help displaced fishermen, and rebuild fish populations in productive waters closer to ports and markets.

In 2006, the orange roughy became Australia's first commercially harvested fish to be listed under the Environment Protection and Biodiversity Conservation Act 1999. The fishery is managed through a program implemented by the Australian Fisheries Management Authority (AFMA); it includes restricting targeted fishing of the species and reductions in total annual commercial catch.

Source: Marine Conservation Institute/AFMA

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