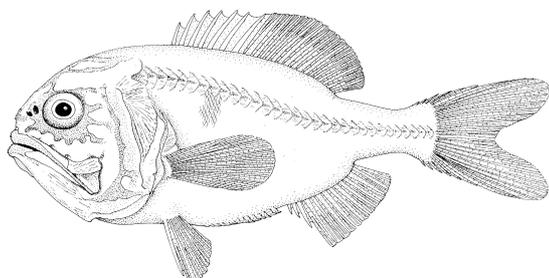


New Zealand Orange Roughy

Responsible Science-Based Management

Hoplostethus atlanticus
Hiuchidai
Beryx de Nouvelle-Zélande
Granatbrasch
New Zealand redfish

Version 4: February 2010



- Government Catch Limit: 11,000 tonnes
- Science-based management
- Year-round trawl-caught fishery
- Managed to minimise seabed impacts

Biology and Management

Orange roughy are slow-growing and long-lived. They recruit to the fisheries after the onset of sexual maturity, which is estimated to be at 23 to 31 years of age. The orange roughy fisheries operate year-round. New Zealand manages orange roughy under the Quota Management System (QMS), with the goal of maintaining stocks at or above a level of biomass that will support the Maximum Sustainable Yield (B_{MSY}). For orange roughy this is 30% of the stock size that would be expected in the absence of fishing (B_0).

New Zealand waters are divided into eight orange roughy Quota Management Areas (QMAs), each with a separate Total Allowable Catch (TAC), set by the New Zealand Government. Where more than one orange roughy stock occurs within a QMA, separate stock assessments and catch limits are applied to each stock. Ownership of quota has resulted in the adoption of a custodial approach to the utilisation of fishery resources in New Zealand and to the active involvement by Industry in the sustainable management of these resources. Quota owners support current management.

Research and Stock Assessment

Fisheries management is based on the best available science. New Zealand scientists undertake stock assessment reviews on orange roughy fisheries every two to three years. These incorporate information from research surveys, biological information collected by at-sea observers and catch data from commercial catches. These stock assessments are public, transparent and subject to peer-review. The Ministry of Fisheries publishes the outcomes of these stock assessments and management measures. Statutory catch limits are set based on this information.

Stock Management

The management strategy in the early years of a fishery is to reduce the stock down to the most productive level where the long-term annual yield is maximised (i.e. B_{MSY}). During this “fish-down” phase, catches are higher than are sustainable over the long-term. Once the stock has been reduced to the B_{MSY} level, annual catch limits are reduced in order to maintain the stock size at, or above, B_{MSY} .

The oldest and largest orange roughy fishery in the world is in New Zealand waters on the Chatham Rise. This fishery began in the late 1970s, annual catches peaked at about 32,000 tonnes by the late 1980s and the fish-down phase reached an end by the late 1990s. A recent review of the science and management has led to a stepped reduction in catch to transition the fishery to its long-term sustainable level, where the catch limit (F_{MSY}) is set at 4.5% of the current biomass, and where $F_{MSY} = M$, the estimated natural mortality rate for the stock. The catch limit for 2010 is 5,100 tonnes.

Stock Rebuilding

In the earlier years of the fishery, the productivity (i.e. growth and regeneration rates) of orange roughy was over-estimated, leading to some New Zealand orange roughy stocks being fished to levels below B_{MSY} . As a result, three fisheries are currently closed to fishing to allow stocks to rebuild at the maximum rate and others have had catch limits lowered to provide for rebuilding in the medium-term while maintaining commercial fisheries.

Incidental Interactions with Seabirds and Marine Mammals

Mitigation devices (e.g. bird bafflers and Tori lines) are used to avoid incidental interactions between fishing gear and seabirds. The active management of fish waste discarding further reduces interactions with both seabirds and marine mammals.

Benthic Impacts

Orange roughy fishing in New Zealand waters occurs mostly over flat ground and on underwater hill features. Trawling on underwater hills is restricted by the steepness and roughness of the terrain and in most cases, only a minor proportion of a hill's surface area is contacted by the gear. Few true seamounts (i.e. those with elevations of >1,000 metres) are fished for orange roughy.

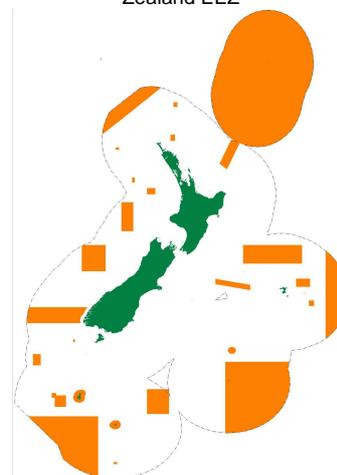
Orange roughy trawl nets are relatively small, with a horizontal opening of 18 to 25 metres. When hill fishing, the trawl gear is typically in contact with the seabed for five to ten minutes, equivalent to a distance over the ground of 500 to 1,000 metres.

Analysis of the trawl footprint within the EEZ has revealed that about 90% of the depth range of orange roughy (i.e. 750 to 1,500 metres) has never been fished by bottom trawl. There has been relatively little exploratory fishing over "new" grounds in recent years.

Over 30% of the New Zealand Exclusive Economic Zone (EEZ) is now closed by law to bottom trawling, a measure promoted by industry. These closures exclude bottom trawling from 18% of the orange roughy depth range, 52% of seamounts and 88% of known hydrothermal vents. These areas are broadly representative of the entire range of seabed habitats, particularly in the deep water, have been selected to encompass many pristine areas that have not been impacted by trawling, and provide considerable refuge for deep water corals (see map).

The New Zealand Government is committed to establishing a comprehensive Marine Protected Area network that will ensure protection for representative and unique marine ecosystems.

Areas closed to bottom trawling in the New Zealand EEZ



Web Resources

New Zealand Government: <http://fs.fish.govt.nz/Page.aspx?pk=22&filST=orh>

Deepwater Group Ltd: www.deepwater.co.nz

New Zealand Seafood: www.greatestmeal.co.nz

New Zealand Seafood Industry Council: www.seafood.co.nz