

Management of Queensland sea cucumber stocks by rotational zoning

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Globally, concerns have been raised about the unsustainable rates of harvest of tropical sea cucumber stocks. The sedentary nature of these creatures and the comparatively clear shallow waters they inhabit makes them susceptible to over exploitation.

Government authorities in Queensland (Australia) have expressed concern that localized depletion of sea cucumber stocks may be occurring on the Great Barrier Reef (GBR). The sea cucumber fishing industry does not support these concerns; however, to allay fears that localized depletion is occurring, industry members have decided to implement the Rotational Zoning System (RZS), which is a new approach to sea cucumber fisheries management.

Prior to the introduction of the RZS on 1 July 2004, sea cucumber stocks in Queensland were managed by a mixed-species total allowable catch (TAC) of 380 tonnes (t), with around 5 vessels operating. Given the size of the GBR this figure is considered very conservative; the Torres Strait fishery (an area only around 20% the size of the GBR) has a recommended TAC in excess of 420 t.

The RZS allows for all coral reef areas open to harvesting to be divided into 156 zones. The size of the zones varies from approximately 100 square nautical miles (nm²) to 200+ nm² (1 nm² = 3.43 km²). A maximum of 15 d fishing zone² y⁻¹ is allowed, and only 52 zones are open each year. This allows limited harvesting of a zone once every three years. Zones are allocated according to an operator's share of the TAC; i.e., someone with 10% of the TAC will receive 10% of the zones open to fishing in that year.

By allocating operators their own zones each year, each location will be fished a maximum of once every three years. Parts of some zones may not be targeted even when they are open to fishing, as the design of the RZS makes it extremely difficult to fish an entire 100+ nm² zone in 15 days.

Size limits for all sea cucumber species were increased so that no harvesting occurs until the animals are well past sexual maturity, thus giving them time to spawn at least once prior to harvesting.

Some species have been allocated their own TAC. For other species, catch trigger points have been set. Once a trigger point is reached, the sea cucumber industry must carry out a stock assessment of that particular species to determine an adequate TAC. We have recently completed our first stock assessment for an individual species.

Rotational Zoning has come at a cost to the sea cucumber industry. Given all the restraints of the system, catches are expected to be down from previous years. However, because Australia is the only developed country with tropical sea cucumber stocks, we see a bright future for this fishery as developing nations continue to overfish their sea cucumber resources.

The Rotational Zoning System is an initiative of the Queensland Sea Cucumber Industry Association and has the full support of the Queensland Fisheries Service, Great Barrier Reef Marine Park Authority and Commonwealth Department of Environment and Heritage.

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