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CLIMATE CHANGE – ADDITIONAL STRESS ON FISHERIES

Climate change will be an additional stress on the fisheries of Australia and New Zealand. If species cannot adapt to the pace of climate change, then major changes in distribution are likely, particularly for species at the edge of suitable habitat.

Elements expected to drive impacts on marine fisheries are changes in ocean temperature, currents, winds, rainfall, nutrient supply, and acidification affecting shell structure.

While few climate change impacts studies have been conducted for fisheries, a Contributing Author of the report, Dr Alistair Hobday from CSIRO, says changes in four emergent biological properties are likely to occur as a result of climate change –

- distribution and abundance of impacted species
- timing of breeding
- community composition
- community structure and dynamics including productivity.

Overall, future climate change impacts are likely to be greater for temperate species than for tropical species and on coastal and bottom-feeding fisheries relative to mid-water and deep-sea fisheries.

Projected changes in Southern Ocean circulation are likely to affect fisheries. Seasonal to interannual variability of westerly winds and strong wind events are associated with recruitment and catch rates in several species.

A decline in wind due to a poleward shift in climate systems underlies recent stock declines off south-east Australia and western Tasmania, and these are linked to larval growth rates and/or recruitment of juveniles in two fish species around Tasmania. Reductions in upwelling of nutrients and extension of warm water along the east Australian coast may reduce krill and jack mackerel abundance, on which many other species are reliant, including tuna, seals and seabirds.

In Australia, the gross value of fisheries production is A\$2.3 billion annually, of which 68% is wild-catch and 32% is aquaculture. In New Zealand, the combined value of fisheries production is A\$1 billion, of which 80% is from the commercial catch, and 20% from aquaculture which continues to grow. Little research has been completed on impacts of climate change on freshwater fisheries and aquaculture.

There has been a westward shift of Chilean jack mackerel in the Pacific and a subsequent invasion into New Zealand waters in the mid-1980s associated with increasing El Niño frequency.

Climate change is listed as a Key Threatening Process under the Federal Environment Protection and Biodiversity Conservation Act 1999. Climate change has been integrated into several State-based and regional strategies, such as the Queensland Coastal Management Plan and the Great Barrier Reef Climate Change Action Plan.

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