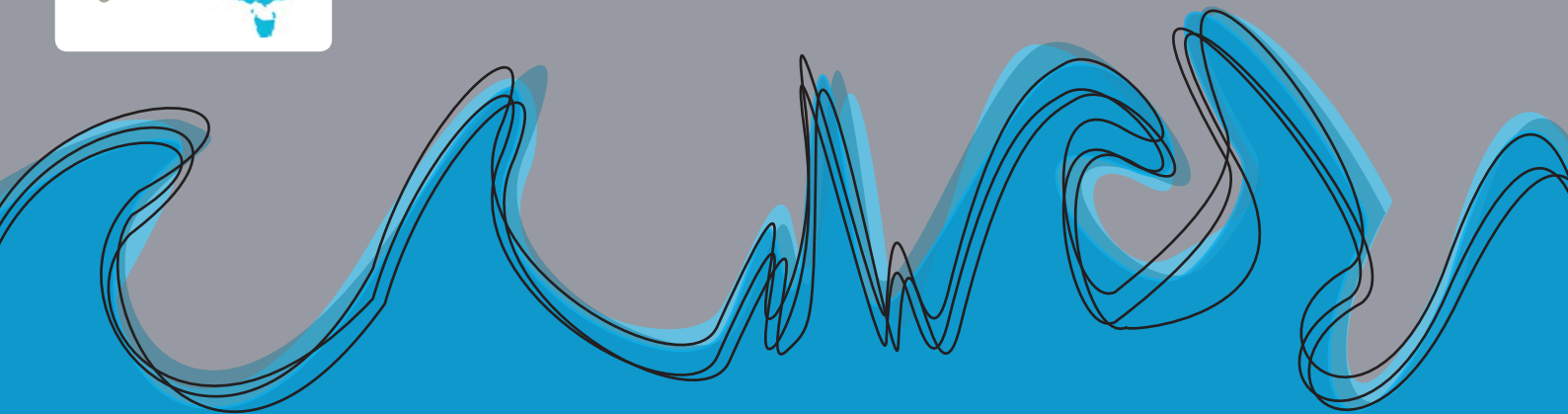


Management implications of climate change effects on fisheries in Western Australia



Project Background

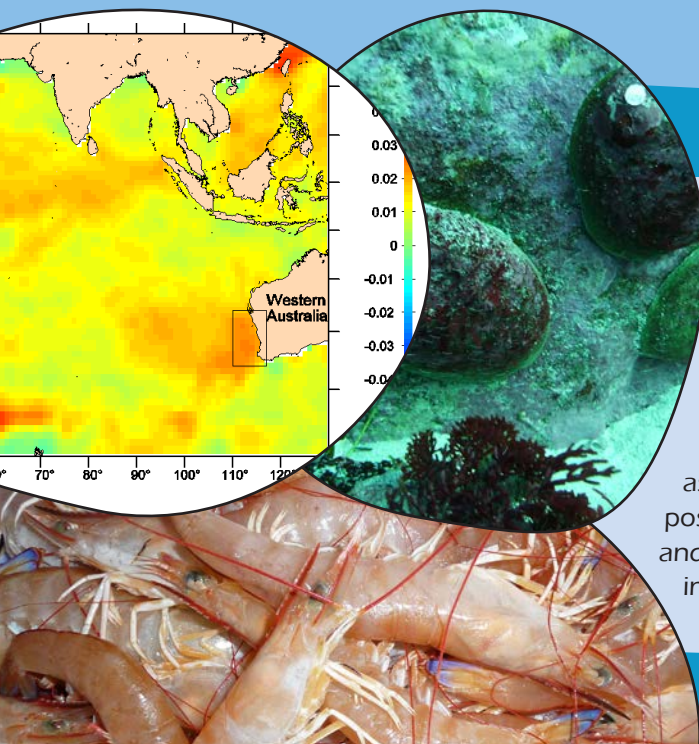
Fisheries scientists and managers worldwide face the challenge of understanding, predicting and incorporating the effects of climate change when assessing the sustainability of our marine resource. This project aims to understand the stock assessment and management implications that climate change may be having on fish stocks in Western Australia. Both short and long-term changes in climate patterns

will impact on the marine environment, which in turn will affect the life cycle of fish stocks, their food source, and important biological aspects such as growth and distribution. If the biology and habitat of fish stocks slowly change then it is also important to develop appropriate management policies for dealing with possible future changes.

Project Outline

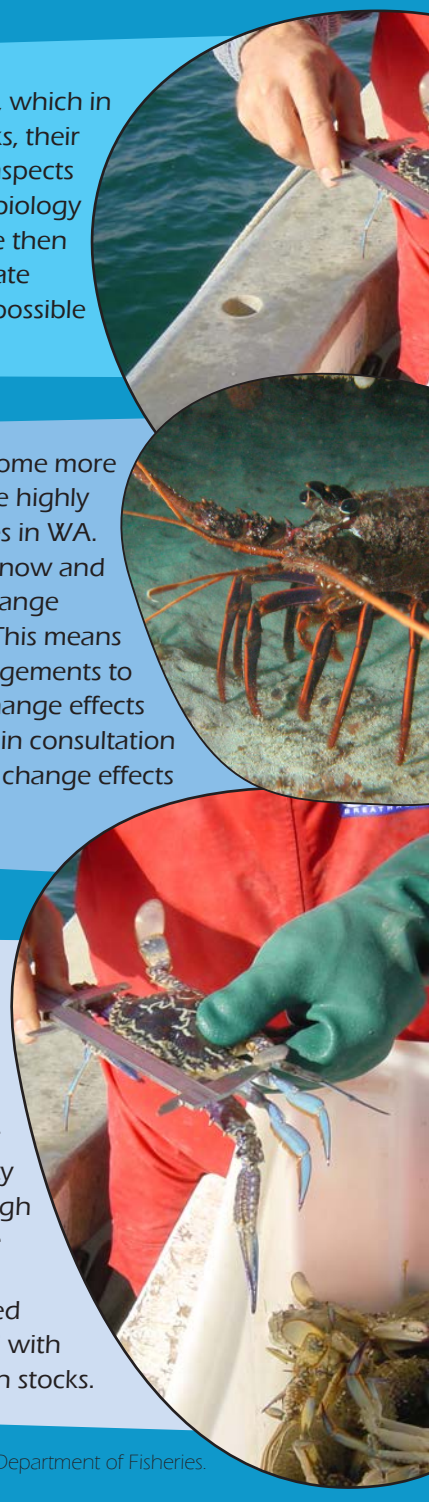
The first phase of the project is to understand how environmental factors such as water temperature and salinity affect the fish stocks in WA based on available historical data. The second phase looks at historical trends and possible future scenarios of WA marine environments using climate model projections. For example, If water temperatures off the south-west coast of WA will likely rise by another 2°C in 2070 compared to present, and the

occurrences of marine heatwaves become more frequently, how will this impact on the highly sensitive and valuable abalone fisheries in WA. Lastly, the changes that are occurring now and the expected changes from climate change requires management consideration. This means reviewing existing management arrangements to examine their robustness to climate change effects and developing management policies in consultation with stakeholders to deal with climate change effects on fish stocks.




Outcomes

The outcomes of this project will deliver greater understanding into the complex relationships between the environment and the biology of key WA commercial fisheries species. This knowledge will help our risk assessment of species vulnerability to the effects of climate change. Through assessing the level of risk climate change poses for key fisheries, research strategies and management policies will be developed in consultation with stakeholders to deal with potential climate change effects on fish stocks.





Benefit to the Community




We envisage both positive and negative impacts from climate change and these are likely to be different on different fish stocks. Therefore both commercial and recreational sectors would greatly benefit in understanding what the predicted changes are and how this will impact their future fishing operations and their economic viability. For example, range extension of tropical species further south

along the WA coastline may result in greater bycatch of these species by different commercial sectors and also greater fishing pressure from the recreational sector, especially if it is a popular catch.

Outcomes of this project will also inform fisheries managers in developing both short and long-term management policies to ensure on-going sustainability of fish stocks.

More Info



Caputi N, Pearce A and Lenanton R (2010) Fisheries-dependent indicators of climate change in Western Australia, WAMSI Sub-project 4.2.3. Fisheries Research Report No. 213. Department of Fisheries, Western Australia. 36pp.

Feng M and G Meyers (Eds.) (2011) Western Australian Marine Science Institution Project 2.2 final report, Dynamics and impact of the Leeuwin Current on the marine environment off Western Australia, Perth, Western Australia, 30 June 2011, 80pp.

Pearce A, Lenanton R, Jackson G, et al. (2011) The "marine heat wave" off Western Australia during the summer of 2010/11. Fisheries Research Report No. 222. Department of Fisheries, Western Australia. 40pp.

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Front: Map - Rate of increased sea surface temperature in the Indian Ocean during 1951-2004 (from Pearce and Feng, 2007). The box indicates the hot spot along the south-west of WA.

The National Climate Change Adaptation Research Plan (NARP) for Marine Biodiversity & Resources identifies research priorities in five sectoral areas: marine aquaculture, commercial & recreational fishing, conservation management, tourism & recreational uses, and cross-cutting issues.



Government of Western Australia
Department of Fisheries