

GENETIC STOCK STRUCTURE OF SNAPPER ON THE AUSTRALIAN EAST COAST

Snapper is an important recreational and commercial fishing species in many parts of Australia. Off the east coast, a range of different methods including line fishing, trapping and trawling, are used to catch snapper in Queensland, New South Wales, Victoria and Tasmania.

Recent genetic research carried out as part of the present project has shown there are two regions of genetically different snapper off the Australian east coast, where it was previously believed all snapper were part of a single genetic stock (see Map).

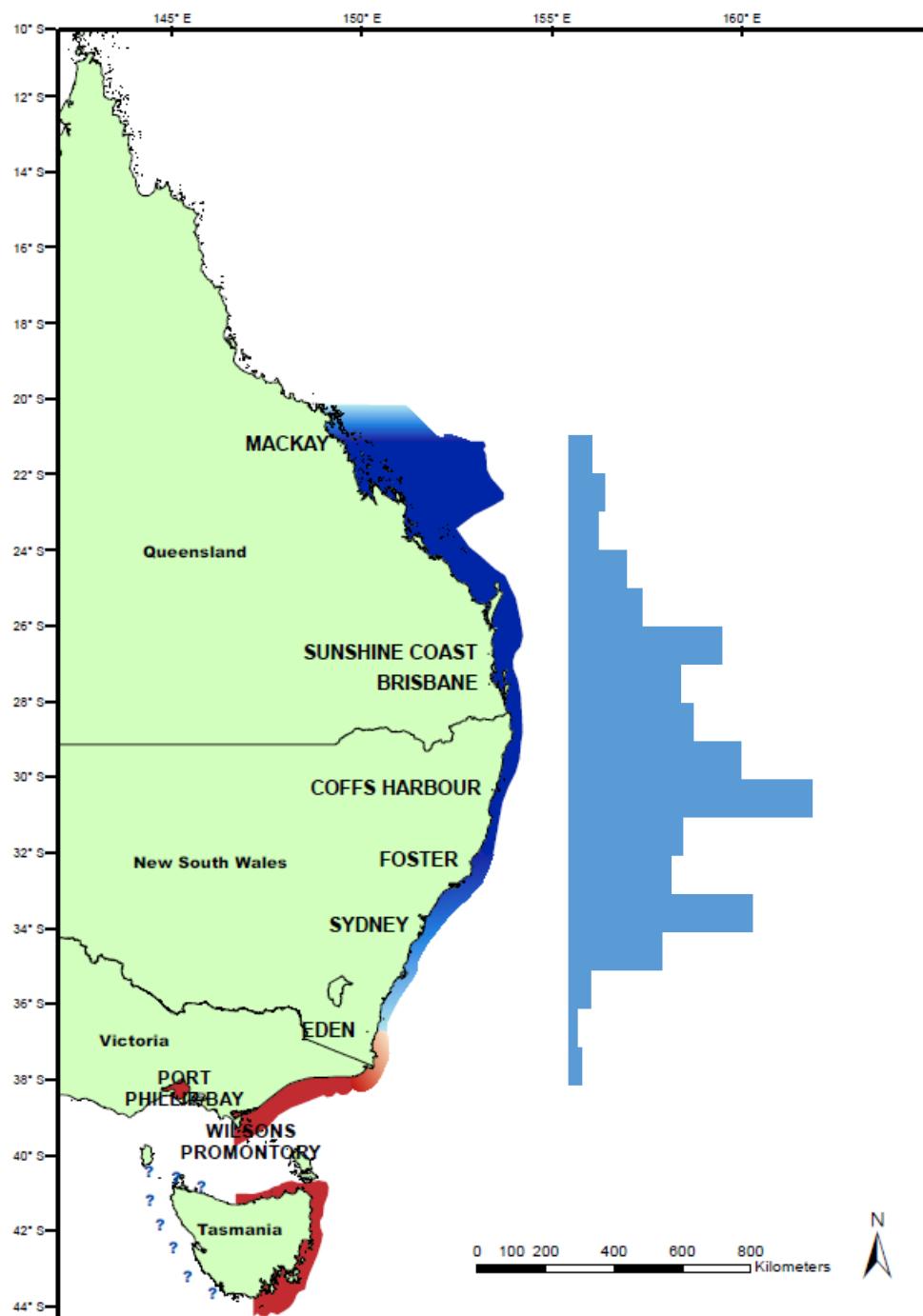
The new information indicates there is one broad region of genetic similarity from the top of the species' range in north Queensland extending into southern New South Wales (now referred to as the 'northern' genetic stock – coloured blue) and a second, genetically different region is found from southern New South Wales south to Victoria and Tasmania ('southern' genetic stock). Interestingly, a sample of fish obtained from Port Phillip Bay showed a close genetic similarity with the eastern Victorian samples. This suggests that some reproductive mixing of snapper between eastern and western Victoria has occurred over a long period of time, although tagging data suggest little movement of snapper between west and east Victoria across Wilsons Promontory.

There is a high level of genetic mixing across the range in Queensland and extending into central New South Wales as a result of movements undertaken by some snapper and the effects of the East Australian Current on dispersal of larval stages. The area where the genetic composition changes is a very broad transition zone extending over several hundred kilometres from southern New South Wales (near Forster) into Victoria (shown as a shaded blue and orange gradient). This area is affected by the East Australian Current and other environmental conditions that may influence fish movement and population processes. It is likely that the position and extent of the transition zone changes over relatively small time scales (several years).

While the new results show a large region of genetic mixing along the east coast, variable mixing of eggs and larvae as well as different movement and residency patterns of older fish can result in complicated localised population structures, therefore depletions of local populations within the broader ranging genetic stock can still occur.

Stock assessment modelling needs to consider data across the entire stock if the status of snapper is to be assessed. The new genetic data support the current east coast stock assessment in considering information gathered by Queensland and New South Wales to assess the "northern" stock, but that inclusion of data from Victoria or Tasmania is not appropriate.

For more information about the project and to see future updates visit
http://frdc.com.au/research/current_research_projects/Documents/2015-216-East-Coast-Snapper.aspx



Map of eastern Australia showing location of snapper genetic stocks and broad location of the stock mixing area (shown as a blue and orange gradient between about Forster and the northern Victorian coast. Horizontal bars at the side show how the relative size of the commercial line and trap fishery catch varies with latitude.