

## SEPARATE STOCKS OF RED SNAPPER EXPLOITATION AND MANAGEMENT IN THE INDONESIAN SECTOR OF THE ARAFURA SEA

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### ABSTRACT

Red snapper resources in the Arafura Sea have been effectively exploited by the industrial scale of bottom long line, fish trawl and shrimp trawl fisheries. Research activities carried out by the ACIAR-RCCF revealed that there were genetic similarity of the three red snapper species between the Australian and Indonesian sectors of the Arafura Sea. These findings led the Australian side to conclude that these resources belong to one unit stock and therefore should be managed collaboratively under the framework of the '*Indonesia-Australia shared snapper management plan*'. Based on the economic aspect this collaborative management has a wide implication that lead to some potential losses to Indonesia. Further studies on some population dynamics aspects and analysis of the available data and information two main indicators determining unit stock, the 'spawning location' and 'population parameter' were found. From the surveys carried out by the Australian the red snapper juveniles were found in the north coast of Darwin, Gove and Weipa, northern Australia, while in Indonesian side some juveniles were found in coastal area of Sape and from the fish trawl landed in Merauke. These findings indicate that the spawning location are spread over the area of the Arafura Sea and consequently the Australian red snapper stocks are fully separated from their counterpart in the Indonesian sector. From the Australian reference it was reported that the high primary productivity of the waters surrounding Australia are absence. This high fertility of the waters has led to the higher growth rate and mortality rate of the red snappers in Indonesian waters compare with their counterpart in the Australian sector. From these aspects it could definitely be concluded that the unit stock of red snappers in the two sectors of the Arafura Sea are separated. It is further stated that the Australian and Indonesian populations of red snapper provide separate mega stocks. Back to the intention of the collaborative research on red snappers stock in the Arafura Sea that; if these snappers belong to one unit stock then collaborative management for sustainable benefit would be mandatory. In case otherwise all management measures would be under respective country in accordance with their respective jurisdictions and the long-term implications of the fishery management regimes of the two countries are likely to be independent.

**KEYWORDS:** red snapper, stock assessment, management, Arafura Sea

### INTRODUCTIONS

The shallow waters of the continental shelf of Arafura Sea provide the most productive fishing ground in Indonesia. The waters has been regularly enriched by the nutrient rich upwelling from the Banda Sea and additional nutrient from rivers originated from densely mangrove terrestrial areas of Papua. Such condition has triggered the higher productivity of the Arafura Sea that resulted in the flourishing of demersal fish population including red snappers in the Indonesian sector of the Arafura Sea. Compare with the adjacent waters of the Arafura Sea, the highest primary productivity was occurred in the southwest of the Papua (Figure 1). The Arafura Sea is part of the Sahul Shelf where the waters provide part of Indonesian Fisheries Management Area (WPP 718) while the other is part of the Australian shelf of the Arafura Sea.

In the introduction of the Australian Government policy statement explaining basic characteristics of the Australian fishing industry it is cited that primary productivity of the waters is determined by the availability of nutrient. All of the major fisheries of the world are located where the supply of nutrient is high. There are two major causes of regionally high nutrient levels. The first is a major river system which carries nutrients from the terrestrial environment into the ocean, for example the Mississippi river carries nutrients into the Gulf of Mexico. The second cause is currents raising nutrient rich waters to the surface where sunlight provides the energy for photosynthesis. The combined effect of nutrients and sunlight causes a virtual biological explosion which results in rich fisheries like those of the west coast of South America and southern Africa. Unfortunately the conditions for high nutrient level are largely absent from waters around Australia (Anonymous, 1989).