



**Management Options for the Inland Fisheries
Resource in South Sumatra, Indonesia**

by

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Declaration

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree.

I certify that, to the best of my knowledge, any help received in preparing this thesis, and all sources used, have been acknowledged.



Abstract

The objective of this study was to develop an appropriate analytical model for identifying an efficient level of exploitation of the inland fishery resource in South Sumatra, Indonesia. This study involved the evaluation of the existing status of fish stock and assessment of various possible policies for the fishery.

The main problem for the inland fishery in South Sumatra is the tendency for the resource to be over-fished, which has been well recognised as shown by some overall indicators, such as virtual disappearance of certain important species and continuous reduction in the size of harvested fish. These problems indicate that proper management is required. This was approached by formulating an analytical framework which includes biological, economic and social aspects of the fishery.

Using the biological surplus production model, a bioeconomic model for the inland fishery was developed. Based on the models of Gordon-Schaefer, Gordon-Fox and Copes, supply models for the fishery were estimated. Demand for freshwater fish in the region was assumed to be perfectly elastic.

Primary data were used to describe recent cost of fishing effort. Secondary data, combined with results of analysis of primary data, were used to derive a supply function for the fishery. Given the available data, and in order to satisfy the requirements for applying the selected model, different types of fishing gear were standardised into a single fishing unit and mixed species of harvested fish were treated as an aggregated fish stock.

Empirical results revealed that both riverine and swamp fisheries in South Sumatra, Indonesia, were biologically and economically over-fished during the period of study. This implies that proper regulation is required to reduce the level of fishing effort.

Using simulation procedures, the relative effects of alternative policy options were analysed. Simulation results indicated the levels by which policy options producing an increase in total cost of fishing effort would reduce total fishing effort and increase stock biomass, and hence cause total catch to increase. It is argued that policy options directly restricting total fishing effort, although effective in protecting the fishery, should be accompanied by other regulatory regimes. Limited-entry regulations alone were undesirable in the long run because of their requirements in terms of considerable costs in maintaining and controlling the policies. One suggestion for overcoming this enforcement problem is for the government to decentralise management of the fishery to the local level. In addition, the limited-entry regulations can be combined with regulatory regimes such as increased licence fees. Model results also suggest that the current trend of increasing fish price may negatively affect fishermen, consumers and the fishery resource, which means that the government may wish to control the fish price at an appropriate level.

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