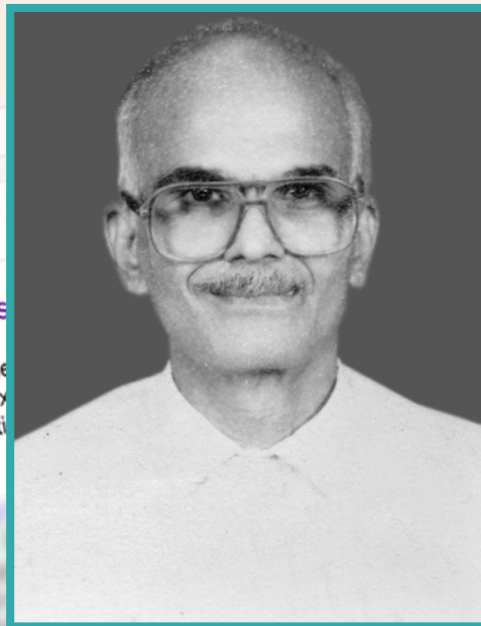# Director & Staff

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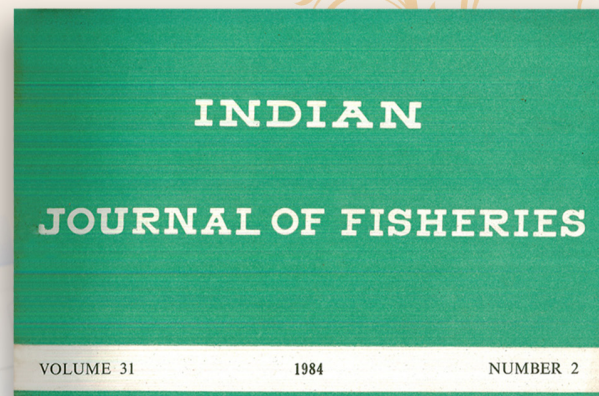Kochi

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SIMPLE METHODS FOR ESTIMATION OF PARAMETERS
FOR ASSESSING EXPLOITED FISH STOCKS

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ABSTRACT

New methods for estimation of growth and mortality parameters, together
with their error estimations, are given, discussing in detail their advantages over
the existing ones. A new model called Relative Response model has been designed
for estimation of such stocks that are common in tropics where the application
of other models are not effective. Demonstrative worksheets are provided to illus-
trate easy working of the methods. Various proformae for collection of data are
appended.

INTRODUCTION

To assess fish stocks there are different approaches, depending on the
condition of stocks and the nature of the data base. Stocks may be broadly
grouped into 'virgin' stocks and 'exploited' stocks. Assessment of the virgin
stocks may be done by: (1) sweep-out-area method, or area'sampling; (2) pro-
duction analysis, using biomass and the productivity of the water body (C₁₄
technique); (3) comparison method; and (4) aerial and accoustic surveys. For
exploited stocks, there are many methods by applying macro- and micro-analytic
models. The present account explains some of these.

Fish stocks, coming under renewable resources, have to be scientifically
managed, should they return sustainable yields. It is known that unscientific ex-
ploitation of stocks, leading to their depletion and eventual disappearance, is but
killing the goose that lays the golden eggs; haddock stock in German waters,
Californian sardines, Peruvian anchovies and Antartic whales are some of the
examples. These stocks would have sustained had there been some control in-
troduced on the rate of their exploitation.

Among the living resources, fishery resources stand apart at least on two
accounts. The variations in their availability are not only wide but also wild due to
many factors which are not normally encountered in any other living resources,
especially in tropical conditions. Secondly, these resources [...] the
visual horizon, many of their behavioural aspect [...] fore,
to arrive at a reasonable picture of th[...]

# Dr. K. Alagaraja

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03 February 2015, Tue.