Trophic Modelling of the Arabian Sea Ecosystem off Karnataka and Simulation of Fishery Yields

K.S. Mohamed, P.U. Zacharia, C. Muthiah, K.P. Abdurahiman and T.H. Nayak

Central Marine Fisheries Research Institute
PB No. 1603, Cochin 682018, Kerala
Phone: +91 0484 2394867; Fax: +91 0484 2394909
www.cmfri.org.in
Contents

Foreword
Acknowledgements

INTRODUCTION
Ecosystem based fisheries management
Background
An overview of ECOPATH & ECOSIM
Principles of ECOPATH Model
ECOSIM – dynamic mass balance

DATA COLLECTION & METHODOLOGY
Study area – defining the system
Fishery catch & effort data
Length frequency data
Stomach contents & diet matrix
Ecological groupings
Estimates of P/B
Estimates of Q/B
Estimates of biomass
Group-wise parameter estimates
Data pedigree & pedigree index
ECOPATH runs for mass balance

RESULTS OF KARNATAKA ECOPATH MODEL
Total system throughput
Key indices and mortality
Consumption
Respiration and assimilation
Niche overlap
Electivity
Network analysis
Primary production required
Mixed trophic impact
Ascendancy
Flow diagram
Comparison with other ecosystems
Dynamic simulation with ECOSIM
ECOSIM simulation results
Summary & conclusions
Literature cited
Output data appendices
Input data appendices
Diet content tables
Species life history sheets
Glossary & Acronyms