

Economics for Fisheries Management

R. QUENTIN GRAFTON The Australian National University, Australia

JAMES KIRKLEY Virginia Institute of Marine Sciences, USA

TOM KOMPAS The Australian National University, Australia

DALE SQUIRES National Marine Fisheries Service, and University of California, San Diego, USA

ASHGATE

Contents

| List of Figures | | vii |
|--|---|------|
| List of Tables | | viii |
| Foreword | | ix |
| Preface | | xi |
| Acknowledgements | | xiii |
| List o | f Abbreviations | xiv |
| 1 Th | e Economics of Fishing and Fisheries Economics | 1 |
| 1.1 | Introduction | 1 |
| 1.2 | An All Too Common Tragedy | 2 |
| 1.3 | An Economic Perspective of Fisheries Management | 3 |
| 1.4 | Economics of Fishing | 5 |
| 1.5 | Beyond Maximum Economic Yield | 11 |
| 1.6 | Bioeconomic Modeling and the MEY Target | 13 |
| 1.7 | An Economic Guide to Fisheries Management | 21 |
| 2 Data for Economic Analysis of Commercial Fisheries | | 25 |
| 2.1 | Introduction | 25 |
| 2.2 | Unique Challenges of Economic Data Collection for Fisheries | 25 |
| 2.3 | Priorities in Data Collection | 26 |
| 2.4 | Types of Economic Data | 27 |
| 2.5 | Experimental and Non-Experimental Nature of Data | 29 |
| 2.6 | Aggregate and Microeconomic Data | 34 |
| 2.7 | Administrative Data | 36 |
| 2.8 | Survey Data | 39 |
| 2.9 | Measurement Issues | 44 |
| 2.10 | Outliers and Influential Observations | 46 |
| 2.11 | Missing Observations and Incomplete Data | 46 |
| | What Type of Data Should be Collected? | 47 |
| 2.13 | Conclusions | 54 |
| 3 M | leasurement and Analysis of Efficiency in Fisheries | 57 |
| 3.1. | Introduction | 57 |
| 3.2 | Efficiency and the Common Pool Problem | 57 |
| 3.3 | Allocative, Technical, Scale and Overall Efficiency | 59 |
| 3.4 | Predicting Efficiency | 68 |

| vi | Economics for Fisheries Management | |
|---|--|-----|
| 3.5 | Fisheries Applications | 74 |
| 3.6 | Conclusions | 81 |
| 4 Understanding and Measuring Capacity in Fisheries | | |
| 4.1 | Introduction | 83 |
| 4.2 | Defining Capacity and Related Concepts | 83 |
| 4.3 | Capacity Output and Capacity Utilization | 93 |
| 4.4 | Methods for Measuring Capacity | 96 |
| 4.5 | Fisheries Applications | 98 |
| 4.6 | Conclusions | 101 |
| 5 M | easuring Productivity and Decomposing Profits in Fisheries | 105 |
| 5.1 | Introduction | 105 |
| 5.2 | Productivity Measures in Fisheries | 108 |
| 5.3 | Output, Input and Productivity Indexes | 109 |
| 5.4 | 'Decomposing' Profits and Measuring Productivity | 114 |
| 5.5 | Fisheries Applications | 121 |
| 5.6 | Conclusions | 126 |
| 6 Eq | conomics for Fisheries Management | 127 |
| 6.1 | Introduction | 127 |
| 6.2 | Economic Insights for Fisheries Management | 127 |
| 6.3 | Problems with Input Controls | 129 |
| 6.4 | Policy Choices and Fisheries Management | 130 |
| 6.5 | Challenges of Uncertainty | 132 |
| 6.6 | Adaptive Management in Fisheries | 134 |
| 6.7 | Overcoming Failures in Fisheries | 136 |
| 6.8 | Future of Fisheries | 137 |
| Glos | isary | 141 |
| Inde | x | 157 |
| | | |