

Comparative Evaluations of Innovative Fisheries Management

Comparative Evaluations of Innovative Fisheries Management

Global Experiences and European Prospects

Edited by

Kjellrun Hiis Hauge

Institute of Marine Research, Bergen, Norway

Douglas Clyde Wilson

*Innovative Fisheries Management, IFM – an Aalborg University
Research Centre, Hirtshals, Denmark*



Editors

Dr. Kjellrun Hiis Hauge
Institute of Marine Research
Nordnesgaten 50
N-5817 Bergen
Norway
kjellrun.hiis.hauge@imr.no

Dr. Douglas Clyde Wilson
Innovative Fisheries Management, IFM –
an Aalborg University Research Centre
North Sea Science Park
Willemoesvej 2
DK-9850 Hirtshals
Denmark
dw@ifm.aau.dk

ISBN 978-90-481-2662-0 e-ISBN 978-90-481-2663-7

DOI 10.1007/978-90-481-2663-7

Springer Dordrecht Heidelberg London New York

Library of Congress Control Number: 2009926870

© Springer Science+Business Media B.V. 2009

No part of this work may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, microfilming, recording or otherwise, without written permission from the Publisher, with the exception of any material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work.

Cover Image: © Hans Christian Jacobsen

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Acknowledgements

We are very grateful to Elen Hals and Kirsten Klitmøller and would like to thank them for their help on proof-reading the book. The CEVIS partnership is also grateful to its advisory committee, consisting of Denis Bailly, Poul Degnbol, Hans Lassen, Bonnie J. McCay, Ragnar Arnason, Niki Sporrong, Nathalie Steins and David Symes, for their unremunerated contributions that did so much to improve the quality of this volume. This study was funded by the Commission of the European Communities Sixth Framework Program, project N° 022686 ‘Comparative Evaluations of Innovative Solutions in European Fisheries Management’ (CEVIS). The book does not necessarily reflect the Commission’s views on its future policy in this area.

Contents

1	Introduction: The CEVIS Idea	1
	Douglas Clyde Wilson and Kjellrun Hiis Hauge	
2	The New Zealand's Quota Management System (QMS) and its Complementary Mechanisms	19
	Martin Aranda and Anne-Sofie Christensen	
3	Rights-Based Management and Participatory Governance in Southwest Nova Scotia	43
	Clara Ulrich and Douglas Clyde Wilson	
4	Abundant Fish Stocks and Profitable Fisheries off Alaska – A Study on Harvest Control Rules and Pollock Cooperatives	69
	Franziska Wolff and Kjellrun Hiis Hauge	
5	The Icelandic ITQ System	97
	Anne-Sofie Christensen, Troels Jacob Hegland, and Geir Oddsson	
6	Evaluating Biological Robustness of Innovative Management Alternatives	119
	Francois Bastardie, Alan Baudron, Richard Bilocca, Jesper Boje, Tammo P. Bult, Dorleta Garcia, Niels T. Hintzen, J. Rasmus Nielsen, Gudrun Petursdottir, Sonia Sanchez, and Clara Ulrich	
7	Evaluating Economic Efficiency of Innovative Management Regimes	143
	Erik Buisman, Hans Frost, Ayoe Hoff, Arantza Murillas, and Jeffrey P. Powell	
8	Understanding Social Robustness in Selected European Fisheries Management Systems	163
	Anne-Sofie Christensen, Martin Aranda, Bonnie McCay, H. Anne McLay, Carl Rova, Andrea Leme da Silva, and Franziska Wolff	

9 Costs of Management in Selected Fisheries	191
Sarunas Zableckis, Tiit Raid, Ragnar Arnason, Arantza Murillas, Søren Eliasen, Sten Sverdrup-Jensen, and Emil Kuzebski	
10 Legal Aspects of Individual Transferable Quotas	211
Miriam Dross and Hendrik Acker	
11 How to Compare (the Efficiency of) Fisheries Management Systems?	233
Ragnar Arnason	
12 Conclusion: The Innovation Evaluation Framework	247
Douglas Clyde Wilson, Kjellrun Hiis Hauge, and Martin Aranda	
Index	271

Contributors

Hendrik Acker Öko-Institut, Novalisstrasse 10, 10115 Berlin, Germany,
h.acker@oeko.de

Martin Aranda AZTI Tecnalia, Food and Research Division, Herrera
Kaia-Portualdea, Z/G E-20110 Pasaia (Gipuzcoa), Spain, maranda@pas.azti.es

Ragnar Arnason Department of Economics, Oddi v. Sudurgotu, University of
Iceland, IS-101 Reykjavik, Iceland, ragnara@hi.is

Francois Bastardie Technical University of Denmark, National Institute of
Aquatic Resources, Charlottenlund Slot, DK-2920 Charlottenlund, Denmark,
fba@aqua.dtu.dk

Alan Baudron University of Aberdeen, Old Aberdeen, AB24 2TZ, UK,
r01arb8@abdn.ac.uk

Richard Bilocca FRI (Iceland), University of Iceland, Reykjavik, Iceland,
reydyr@hotmail.com

Jesper Boje Technical University of Denmark, National Institute of Aquatic
Resources, Charlottenlund Slot, DK-2920 Charlottenlund, Denmark,
jbo@aqua.dtu.dk

Erik Buisman LEI, Alexanderveld 5, 2585 DB Den haag, The Netherlands,
erik.buisman@wur.nl

Tammo P. Bult Wageningen IMARES, Haringkade 1, 1970 AB IJmuiden,
The Netherlands, tammo.bult@wur.nl

Anne-Sofie Christensen Institute for Innovative Management (IFM) – An
Aalborg University Research Centre, North Sea Centre, Willemoesvej 2, Hirtshals,
Denmark, asc@ifm.dk

Andrea Leme da Silva IFM, Innovative Fisheries Management – an Aalborg
University, Research Centre, Willemoesgade 2, 9850 Hirtshals, Denmark,
andreale@unicamp.br

Miriam Dross German Advisory Council in the Environment, Reichpietschufer
60, 10785 Berlin, Germany, miriam.dross@uba.de

Søren Eliasen Innovative Fisheries Management, IFM, Aalborg University Copenhagen, Lautrupvang 2B, DK-2750 Ballerup, Denmark, se@ifm.aau.dk

Hans Frost Institute of Food and Resource Economics, Rolighedsvej 25, 1958 Frederiksberg C, DK-Denmark, hf@foi.dk

Dorleta Garcia AZTI – Tecnalia, Txatxarramendi ugartea z/g, 48395 Sukarrieta, Bizkaia, Spain, dgarcia@azti.es

Kjellrun Hiis Hauge Institute of Marine Research, Nordnes, N-5817 Bergen, Norway, kjellrun.hiis.hauge@imr.no

Troels Jacob Hegland Innovative Fisheries Management – An Aalborg University Research Centre, North Sea Centre, Willemoesvej 2, Hirtshals 9850 Denmark, th@ifm.dk

Niels T. Hintzen Wageningen IMARES, Haringkade 1, 1970 AB IJmuiden, The Netherlands, niels_hintzen@wur.nl

Ayoe Hoff Institute of Food and Resource Economics, Rolighedsvej 25, 1958 Frederiksberg C, DK-Denmark, ah@foi.dk

Emil Kuzebski Sea Fisheries Institute, Gdynia, ul. Kollataja 1, 81-332 Gdynia, Poland, emil@mir.gdynia.p

Bonnie McCay Rutgers University, Department of Human Ecology, SEBS, George H. Cook Campus, New Jersey, USA, mccay@aesop.rutgers.edu

H. Anne McLay FRS Marine Laboratory, 375 Victoria Road, Aberdeen, Scotland, UK, A.McLay@MARLAB.AC.UK

Arantza Murillas AZTI – Tecnalia/Marine Research Division, Txatxarramendi ugartea z/g, 48395 Sukarrieta, Bizkaia, Spain, amurillas@suk.azti.es

J. Rasmus Nielsen Technical University of Denmark, National Institute of Aquatic Resources, Charlottenlund Slot, DK-2920 Charlottenlund, Denmark, rn@aqua.dtu.dk

Geir Oddsson Encargado de Negocios a.i. Embajada de Islandia, Embassy of Iceland, Managua, Nicaragua, geir@iceida.is.

Gudrun Petursdottir Fisheries Research Institute. University of Iceland, Sudurgata, IS 101 Reykjavík, gudrun@hi.is

Jeffrey P. Powell LEI, Alexanderveld 5, 2585 DB Den haag, The Netherlands, jeff.powell@wur.nl

Clara Ulrich National Institute of Aquatic Resources, Technical University of Denmark, Charlottenlund Slot, DK-2920 Denmark, clu@aqua.dtu.dk

Tiit Raid European Commission, DG Joint Research Centre, Institute for the Protection and Security of the Citizen, Maritime Affairs, Via E. Fermi 1, I-21020 Ispra (VA), Italy, tiit.raid@jrc.it.

Carl Rova Luleå University of Technology (LTU), Department of Business Administration and Social Science, Division of Political Sciences, 971 87 Luleå, Sweden, Carl.Rova@ltu.se

Sonia Sanchez AZTI – Tecnalia, Herrera kaia portualdea z/g, 20110 Pasaia, Gipuzkoa, Spain, ssanchez@azti.es

Sten Sverdrup-Jensen Innovative Fisheries Management IFM, Aalborg University Copenhagen, Lautrupvang 2B, DK-2750 Ballerup, Denmark, ssj@ifm.aau.dk

Douglas Clyde Wilson Innovative Fisheries Management – An Aalborg University Research Centre, North Sea Centre, Willemoesvej 2, Hirtshals 9850 Denmark, dw@ifm.dk

Franziska Wolff Öko-Institut e.V., Novalisstr. 10, 10115 Berlin, Germany, f.wolff@oeko.de

Sarunas Zableckis European Commission, DG Joint Research Centre, Institute for the Protection and Security of the Citizen, Maritime Affairs, Via E. Fermi 1, I-21020 Ispra, VA, Italy, szableckis@gmail.com

Abbreviations

ABC	Acceptable Biological Catch
ACE	Annual Catch Entitlement
BR	Biological Robustness
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCR	Cost Recovery Regime
CEVIS	The Comparative Evaluations of Innovative Solutions in European Fisheries Management
CFP	Common Fisheries Policy
CMB	Community Management Boards
CPUE	Catch Per Unit Effort
CRP	Cost Recovery Programme
CSO	Commercial Stakeholder Organisation
CSY	Competitive Sustainable Yield
CTE	WTO Committee on Trade and Environment
DAS	Deepwater Allocation System
DFO	Department of Fisheries and Oceans
DV	Deemed Value
DVS	Deemed Value System
DWFF	Distant Waters Fishing Fleets
EA	Ecosystem Approach
EAFM	Ecosystem Approach to Fisheries Management
EBFM	Ecosystem-Based Fisheries Management
EC	European Community
ECJ	European Court of Justice
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EFJ	Extended Fisheries Jurisdiction
EU	European Union
F	Fishing mortality
FAO	Food and Agriculture Organisation of the United Nations

FMA	Fisheries Management Areas
FMS	Fisheries Management System
FQA	Fixed Quota Allocations
FRCC	Fisheries Resource Conservation Council
FRML	Fishery Related Mortality Limit
FSRS	Fishermen and Scientists Research Society
GDP	Gross Domestic Product
GMP	Groundfish Management Plan
HCR	Harvest Control Rules
HRC	Human Rights Committee
ICA	Integrated Catch-at-Age Analysis
ICCPR	International Covenant on Civil and Political Rights
ICES	International Council for the Exploration of the Sea
IEF	Innovation Evaluation Framework
IFMP	Integrated Fishery Management Plans
IFQ	Individual Fishing Quota
IFRI	International Forestry Resources and Institutions
ILO	International Labour Organisation
IPOAMC	International Plan of Action for the Management of Fishing Capacity
IQ	Individual Quota
ITQ	Individual Transferable Quota
IVQ	Individual Vessel Quota
MCS	Monitoring Control and Surveillance
MPA	Marine Protected Area
MSE	Management Strategies Evaluations
NAFO	North Atlantic Fisheries Organization
NEAFC	North East Atlantic Fisheries Commission
NGO	Non-Governmental Organization
NIWA	National Institute of Water & Atmospheric Research Limited
NPV	Net Present Value
NWW RAC	North Western Waters Regional Advisory Council
OFL	Overfishing Level
OSY	Optimum Sustainable Yield
PA	Precautionary Approach
PO	Producer Organization
QMS	Quota Management System
RAC	Regional Advisory Council
RAP	Regional Advisory Process
RBM	Rights-Based Management
S&DT	Special and Differential Treatment
SCM	Subsidies and Countervailing Measures
SIS	Sustainability Indicators Systems
SSB	Spawning Stock Biomass

SWW RAC	South Western Waters Regional Advisory Council
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TAE	Total Allowable Effort
TURF	Territorial Use Rights in Fisheries
UN	United Nations
VMS	Vessel Monitoring System
VPA	Virtual Population Analysis
WTO	World Trade Organization

List of Figures

2.1	Evolution of the Hake Fishery During the Last 30 Years. Notice that after the QMS inception the fishery has experienced a substantial growth in terms of catches. Data source: Ministry of Fisheries	31
2.2	The Rise and Fall of the Orange Roughy Fishery. The fishery collapsed in 2001 and was finally closed. Data source: Ministry of Fisheries	36
3.1	Example of Traffic Light Analysis (DFO, 2005)	63
4.1	The System of BSAI Pollock Cooperatives (2007/2008) Source: Authors' interpretation, based on NOAA (2008); Herrmann & Haynie (2007); PCC & HSCC (2007).	81
5.1	TACs for Cod, Haddock, Herring and Offshore Shrimp from 1984 to 2007/08 (Data Obtained from Directorate of Fisheries Through Personal Correspondence)	102
5.2	Vessel Types and Their Share of the (1) Fleet in Numbers, (2) Catch Volume and (3) Catch Value in 2005 (Data from Website of Icelandic Ministry of Fisheries)	107
5.3	The Icelandic Fishing Fleet in Numbers by Type of Vessel from 1980 to 2005 (Data Obtained Through Personal Correspondence; Original Data for 1980 to 1997 is from the Icelandic Fishing Society (Fiskifélag Íslands) and Data from 1999 to 2005 is from Hagstofa – Bureau of Statistics Iceland; 1998 is Estimated)	108
5.4	The Icelandic Fishing Fleet in GRT by Type of Vessel from 1980 to 2005 (Data Obtained Through Personal Correspondence; Original Data for 1980 to 1997 is from the Icelandic Fishing Society (Fiskifélag Íslands) and Data from 1999 to 2005 is from Hagstofa – Bureau of Statistics Iceland; 1998 is Estimated)	109
7.1	Basic Structure of the Bio-economic Models Used to Assess Economic Performance	149
9.1	Relative Average Spending on Administration, Enforcement and Research in Selected Case Studies	203

11.1	The Equilibrium Fisheries Model	235
11.2	Property Rights Characteristics	238
11.3	Characteristic Footprints of an Actual and a Perfect Property Right	238
11.4	Possible Relationship Between Property Rights Quality and Economic Efficiency	241
11.5	Characteristic Footprints	243

List of Tables

1.1	Characteristics of the Four Regime-Level Innovations	9
2.1	Professional Affiliations and Academic Background of the Interview Participants	21
2.2	Overview of the Four Evaluation Criteria	37
3.1	Nova Scotia Groundfish Fleets and Their Allocations – 2000	46
4.1	Expert and Stakeholder Interviews	70
4.2	Various Figures Related to the Tier System for the Groundfish Stocks in the BSAI Area	72
4.3	The Tier System Expressing the Information Requirements and HCRs for Each Tier	75
5.1	Profiles of Interviewees	99
5.2	Main Icelandic Fisheries Policy Developments (Gudmundsson et al., 2004; Ministry of Fisheries, 2005b)	101
5.3	Cod Equivalent Indexes for Selected Commercial Species from 2000/01 to 2007/08 (Website of Directorate of Fisheries)	105
5.4	Employment in the Fishing Industry as Percentage of Total Employment (Website of Statistics Iceland under ‘Fish and Agriculture’)	112
6.1	A List of Tested Hypotheses Indicating Which Case Studies were Used	121
7.1	Hypotheses Connected to Case Studies Assessing Economic Efficiency	148
7.2	Comparison of NPV in Million Euros in the Three Scenarios for the North Sea Case	157
7.3	Net Present Value Profit (Million Euros) for the Faroese Fleet Segments in Each Scenario	158
7.4	Net Present Values (Million Euros) Aggregated Over all Vessels for Basque Baka Fleet and Pair Trawlers in the Western Shelf Case Study	158
7.5	Average Present Value Profit per Vessel (Million Euros) in Scenario 0, 1 and 2 in the Baltic Case	159
8.1	Professional Profile of Interviewees	165

8.2	The Five Hypotheses Concerning Social Robustness	167
8.3	Key Changes and Institutional Learning in the Faroe Islands Case Study	172
9.1	Personal Communication (Full Interviews Based on the Questionnaire, Phone Conversation and E-mails Based Communication)	192
9.2	Research Hypotheses. Each Hypothesis Assumes, Based on the <i>a priori</i> Information, that the Management Costs Would go Up, Down or Remain Constant with the Introduction of the Corresponding Management Innovation	200
9.3	The Result of the Hypothesis Testing. Analysed Change in Management Costs when Implementing New Management Regimes	208
11.1	Property Rights Characteristics: Quality	242
11.2	Parameters Adopted for Expression (11.2)	243
11.3	Property Rights Q-Values	244
12.1	Concepts and Indicators for the Innovation Evaluation Framework	250