

# Climate Change and the Economics of the World's Fisheries

**Examples of Small Pelagic Stocks** 

Edited by

# Rögnvaldur Hannesson

Professor of Economics, Norwegian School of Economics and Business Administration, Norway

# Manuel Barange

Director, GLOBEC International Project Office, Plymouth Marine Laboratory, UK

#### Samuel F. Herrick Jr

Industry Economist, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, USA

In Association with GLOBEC

**NEW HORIZONS IN ENVIRONMENTAL ECONOMICS** 

# **Edward Elgar**

Cheltenham, UK • Northampton, MA, USA

# Contents

List	of contributors	vii
Climate change and the economics of the world's fisheries: an introduction  Manuel Barange, Rögnvaldur Hannesson and Samuel F. Herrick Jr		xv
1.	Global warming, small pelagic fisheries and risk Ragnar Arnason	1
2.	The collapse of the Norwegian herring fisheries in the 1960s and 1970s: crisis, adaptation and recovery  Torbjørn Lorentzen and Rögnvaldur Hannesson	33
3.	Sharing the herring: fish migrations, strategic advantage and climate change	66
4.	human teleconnections  Lawrence Hamilton, Oddmund Otterstad and	100
5.	Helga Ögmundardóttir An optimal harvest policy for the recently renewed United States Pacific sardine fishery Samuel F. Herrick Jr, Kevin Hill and Christian Reiss	126
6.	Long-term harvest strategies for small pelagic fisheries under regime shifts: the South African fishery for pilchard and anchovy  José De Oliveira	151
7.	Declines in Namibia's pilchard catch: the reasons and consequences  Ussif Rashid Sumaila and Kevin Stephanus	205
8.	Climate change and small pelagic fisheries in developing Asia: the economic impact on fish producers and consumers	215
9.	Roehl Briones, Len Garces and Mahfuzuddin Ahmed Bi-national management of a transboundary marine fishery: modelling the destabilizing impacts of erratic climatic shifts Robert McKelvey, Peter Golubtsov, Kathleen Miller and Greg Cripe	236

10.	Prototype of an integrated model of the worldwide system of	
	small pelagic fisheries	262
	Christian Mullon and Pierre Fréon	
11.	On the consequences of climate change in pelagic fish	
	populations: a conclusion	296
	Rögnvaldur Hannesson, Samuel F. Herrick Jr and	
	Manuel Barange	
Inde	ex	305