

The Arctic

ENVIRONMENT, PEOPLE, POLICY

Edited by

Mark Nuttall

University of Aberdeen, UK

and

Terry V. Callaghan

University of Sheffield, UK



harwood academic publishers

Australia • Canada • France • Germany • India • Japan •
Luxembourg • Malaysia • The Netherlands • Russia • Singapore •
Switzerland

Contents

List of Figures	vii
List of Colour Illustrations	xiii
List of Tables	xv
Contributors	xvii
Foreword	xix
Map	xxiv
Introduction <i>Mark Nuttall and Terry V. Callaghan</i>	xxv
Part 1 The Physical Structure and Processes of the Arctic	1
1. The geological development of the Arctic <i>Maurits Lindström</i>	3
2. Glaciology <i>Martin J. Siegert and Julian A. Dowdeswell</i>	27
3. Permafrost and hydrology <i>Ming-Koo Woo</i>	57
4. Arctic oceanography, sea ice and climate <i>Norman Davis</i>	97
5. Upper atmosphere physics and chemistry <i>Sheila Kirkwood</i>	117
6. The weather and climate of the Arctic <i>Gunter Weller</i>	143
Part 2 Life Sciences in the Arctic	161
7. Marine biology: Biomass productivity distributions and their variability in the Barents and Bering Seas <i>Egil Sakshaug and John Walsh</i>	163
8. Ecology of Arctic lakes and rivers <i>Warwick F. Vincent and John E. Hobbie</i>	197

9.	Biodiversity of terrestrial ecosystems <i>Nadya Matveyeva and Yuri Chernov</i>	233
10.	Arctic terrestrial ecosystems and ecosystem function <i>Sven Jönasson, Terry V. Callaghan, Gaius R. Shaver and Lena A. Nielsen</i>	275
11.	Arctic medical science <i>Bent Harvald and the late Jens Peder Hart Hansen</i>	315
12.	Physical anthropology of the Arctic <i>G. Richard Scott, Scott Legge, Robert W. Lane, Susan L. Steen and Steven R. Street</i>	339
Part 3	Social and Political Dimensions of the Arctic	375
13.	Indigenous peoples, self-determination and the Arctic environment <i>Mark Nuttall</i>	377
14.	The social anthropology of the Russian Far North <i>Peter P. Schweitzer</i>	411
15.	Arctic geopolitics then and now <i>Sanjay Chaturvedi</i>	441
16.	The population of the circumpolar north <i>Gunnar Knapp</i>	459
17.	The political economy of renewable resource management in the Arctic <i>Richard A. Caulfield</i>	485
Part 4	Anthropogenic Impacts on the Arctic Environment: Regional and Global Consequences and Policy Responses	515
18.	Integrated global change impact assessments <i>Manfred A. Lange</i>	517
19.	Ozone depletion and UV-B radiation <i>Edward De Fabo and Lars Olof Björn</i>	555
20.	Local and transboundary pollution <i>Lars Otto Reiersen</i>	575
21.	International co-operation in the Arctic environment <i>Clive Archer and David Scrivener</i>	601
22.	Indigenous peoples' organisations and Arctic environmental co-operation <i>Mark Nuttall</i>	621
	Index	639