

University of Wollongong - Research Online

Thesis Collection

Title: Marine environment protection and biodiversity conservation: the application and future development of the IMO's particularly sensitive sea area concept

Author: Julian Roberts

Year: 2006

Repository DOI:

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

Research Online is the open access repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

2006

Marine environment protection and biodiversity conservation: the application and future development of the IMO's particularly sensitive sea area concept

Julian Roberts

University of Wollongong, julianr@uow.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/theses>

University of Wollongong

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following: This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part of this work may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of the author. Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material.

Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

Unless otherwise indicated, the views expressed in this thesis are those of the author and do not necessarily represent the views of the University of Wollongong.

Recommended Citation

Roberts, Julian Peter, Marine environment protection and biodiversity conservation the application and future development of the IMO's particularly sensitive sea area concept, PhD thesis, Centre for Maritime Policy, University of Wollongong, 2006. <http://ro.uow.edu.au/theses/547>

NOTE

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

**Marine Environment Protection and
Biodiversity Conservation:
The Application and Future Development of the IMO's
Particularly Sensitive Sea Area Concept**

**A thesis submitted in fulfillment of the requirements
for the award of the degree**

Doctor of Philosophy

from

UNIVERSITY OF WOLLONGONG

By

**Julian Peter Roberts
MSc (Herriot-Watt University, Edinburgh)**

**Centre for Maritime Policy
Faculty of Law
University of Wollongong
2006**

CERTIFICATION

I, Julian Roberts, declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Centre for Maritime Policy, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Julian Roberts

1 August 2006

I really don't know why it is that all of us are so committed to the sea, except I think it's because in addition to the fact that the sea changes, and the light changes, and ships change, it's because we all came from the sea. And it is an interesting biological fact that all of us have, in our veins the exact same percentage of salt in our blood that exists in the ocean, and therefore, we have salt in our blood, in our sweat, in our tears. We are tied to the ocean. And when we go back to the sea, whether it is to sail or to watch it - we are going back from whence we came.

John F. Kennedy, 14 September 1962

ABSTRACT

In the context of marine environment protection and biodiversity conservation, a number of measures adopted by the International Maritime Organization (IMO) can be viewed as implementing obligations and recommendations of the 1982 United Nations Convention on the Law of the Sea, Chapter 17 of Agenda 21 and the 1992 Convention on Biological Diversity respectively. Pre-eminent among these measures is the particularly sensitive sea area (PSSA) concept; a tool that can be applied in an integrated manner, irrespective of maritime jurisdictional boundaries. However, despite the potential benefits that PSSA designation can deliver, recent practice both within the IMO and by individual member States, has considerably undermined confidence in this emerging concept, calling into question its whole basis as an effective management tool.

Recent nominations by individual member States, for PSSA designation, have had the effect of dividing the IMO community over the scope and application of the PSSA concept, resulting in demands by several States to re-examine and constrain the concept. Some observers consider that the manner by which the IMO considers and decides upon applications for PSSA designation has aggravated this situation and have called for a review of the IMO approval process in its entirety. That this should occur at a time when many observers and coastal State members are increasingly realising the potential benefits of the PSSA concept is all the more cause for concern.

The focus of this thesis is on the events within the IMO that have led to this lack of confidence arising. The central theme of the investigation is that the current situation can largely be attributed to the actions of certain member States, in their interpretation and implementation of the PSSA concept, and to the current mechanisms adopted by the IMO for reviewing and approving individual submissions for PSSA designation. A number of specific issues can also be identified with the PSSA Guidelines themselves.

This thesis presents an examination of coastal State practice with the PSSA concept, and seeks to address how confidence in the measure can be restored, while satisfying both coastal and maritime States' interests. In undertaking this analysis, the research provides evidence of the value of the PSSA concept, but also demonstrates its limitations. In this regard, the thesis presents a 'reality check' which seeks to rationalise some of the heightened expectations with the concept that are apparent in the current debate. The research argues that States may seek to designate PSSAs more for their 'iconic status' than for any demonstrable environmental benefits that may be realised. Such an approach will contribute to the current lack of confidence in the measure and could conceivably result in a complete and irrevocable loss of confidence in the measure by the shipping community.

On the basis of the empirical analysis presented and the comparison with alternative protection strategies, this thesis draws conclusions over the value of the PSSA concept and makes recommendations for the future development of the concept. A number of specific amendments are suggested for the PSSA Guidelines themselves, as well as changes to the institutional arrangements for reviewing and approving PSSA nominations.

ACKNOWLEDGEMENTS

The undertaking of this thesis has been an intensely personal experience. The research was largely undertaken on a part time basis, while I worked for the New Zealand Maritime Safety Authority, as an environmental advisor. While undertaking any research under such circumstances clearly has the potential to create stress, this drawback was more than compensated for by the unique circumstances I found myself in, as a New Zealand delegate to the IMO for five years. Rather than observe the mechanics and procedures from outside the organisation, as many researchers do, I actively participated in developments that are the focus of this research. In my view this has contributed to a more insightful study of this particular aspect of the IMO's work.

Achieving the completion of this thesis, within the existing time frame, would not have been possible without the guidance and support of my two supervisors and mentors, Professor Martin Tsamenyi and Professor John Morrison. Their insightful comments and suggestions and above all their friendship throughout the process, gave me constant support and encouragement to continue the research and to explore areas that I had not fully considered.

A large number of other people have provided invaluable assistance throughout the duration of this research. Moreover, the undertaking of this research has led to the establishment of a number of friendships which I hope will endure well beyond the completion of this thesis. Special thanks must be made to both Lindy Johnson and Kristina Gjerde, my two 'PSSA gurus' and PhD mentors, who provided a constant sounding board for ideas and who also provided comments and constructive criticisms on draft manuscripts for publication.

Thanks are extended to Sian Pullen, Simon Walmsley and Alison Champion of WWF-UK and to David Johnson of the Southampton Institute, for their thoughts on the application of the PSSA concept; to Phillip Fox at the World Conservation Monitoring Centre in Cambridge, for his assistance with the provision of GIS data; to Joquan Trinanés of NOAA for his assistance in obtaining and disseminating vessel tracking data; to the many State delegates and Secretariat staff of the IMO who assisted me, or who contributed to the meetings I attended. Particular thanks are extended to the many staff of the New Zealand Maritime Safety Authority who supported me in the undertaking of this research and who made the regular visits to the IMO possible. Thanks also to all those who assisted with the circulation and completion of the research questionnaire that formed part of this research, in particular, to David Wilcox of the Southampton Institute.

To Chris Rahman for his friendship and support while visiting Wollongong, and to Myree Mitchell for all her help in organising my visits. Special thanks goes to Heather Mills for her diligent proof reading of the final draft of this thesis.

Above all, my deepest and sincerest thanks go to my wife, Janet, who has provided unquestioned love, support and encouragement throughout the duration of this PhD, who has given me the ability to complete this work, and who has tirelessly proof read chapter after chapter and rewrite after rewrite, until final completion of the thesis was achieved. Without her undiminished support, this thesis would not have been possible.

TABLE OF CONTENTS

Certification	i
Abstract	iii
Acknowledgements	iv
Table of Contents	v
List of Tables	x
List of Figures	xi
Publications Arising from this Thesis	xii
Acronyms and Abbreviations.....	xiii

Chapter 1

INTRODUCTION.....	1
1.1 Background.....	1
1.1.1 Shipping and Marine Protected Areas	3
1.2 Problem Definition	8
1.2.1 Research Questions.....	10
1.3 Contribution of this Thesis	12
1.3.1 Contribution to the Literature	14
1.4 Study Methods	14
1.4.1 Existing Literature	15
1.4.2 Research Visits	15
1.4.3 Other Research Methods	16
1.5 Structure of the Thesis	17

Chapter 2

INTERNATIONAL LEGAL FRAMEWORK FOR THE PROTECTION OF THE MARINE ENVIRONMENT	19
2.1 Introduction	19
2.2 International Instruments	21
2.2.1 1958 Geneva Conventions.....	22
2.2.2 United Nations Conference on the Human Environment.....	24
2.2.3 United Nations Convention on the Law of the Sea	28
2.2.4 United Nations Conference on Environment and Development	35
2.3 The Concept of Marine Protected Areas	41
2.3.1 Defining Marine Protected Areas	42
2.4 The Marine Protected Area Concept in International Law.....	44
2.4.1 United Nations Convention on the Law of the Sea	45
2.4.2 Convention on Biological Diversity	47
2.4.3 International Biodiversity Conventions and Initiatives	53
2.5 Conclusions	62

Chapter 3

INTERNATIONAL REGULATION OF SHIPPING FOR THE PROTECTION OF THE MARINE ENVIRONMENT 63

3.1	Introduction	63
3.2	Nature of the Impacts of Shipping.....	65
3.2.1	Operational Discharges.....	65
3.2.2	Accidental Discharges	67
3.2.3	Physical Harm	69
3.3	The Establishment and Role of the International Maritime Organization.....	70
3.3.1	Background to the Organisation	70
3.3.2	Standard Setting.....	75
3.4	Existing Instruments Administered by the IMO	80
3.4.1	International Convention for the Safety of Life at Sea.....	81
3.4.2	International Convention for the Prevention of Pollution from Ships.....	83
3.5	Coastal State Versus Flag State Jurisdiction	87
3.5.1	Flag State Obligations and Jurisdiction	90
3.5.2	Coastal State Jurisdiction.....	93
3.6	Conclusions	112

Chapter 4

THE PARTICULARLY SENSITIVE SEA AREA CONCEPT 115

4.1	Introduction	115
4.2	PSSA Overview.....	116
4.3	Historical Development of the PSSA Concept.....	123
4.3.1	1991 PSSA Guidelines	126
4.3.2	Review of the 1991 Guidelines	128
4.3.3	The Revised Guidelines - Resolution A.927(22).....	132
4.4	The PSSA Concept in International Law	135
4.4.1	The Legal Basis of the PSSA Concept	137
4.4.2	Relationship Between PSSAs and Marine Protected Areas	147
4.4.3	PSSA Links to the CBD	152
4.5	Conclusions	155

Chapter 5

REQUIREMENTS FOR PSSA DESIGNATION AND IMPLEMENTATION OF THE PSSA GUIDELINES BY THE IMO 157

5.1	Introduction	157
5.2	Submitting a Proposal for PSSA Designation	158
5.2.1	PSSA Identification	160
5.3	Protection of PSSAs	163
5.3.1	Special Discharge Restrictions	164
5.3.2	Regulation of Navigation for Protection of the Environment	169

5.3.3	Application of Ships' Routeing Measures	170
5.3.4	Update of IMO Measures to Protect the Marine Environment	173
5.3.5	Case Study - New Zealand's Application for a Mandatory Area to be Avoided	174
5.3.6	Vessel Traffic Services	179
5.3.7	Ship Reporting Systems	185
5.3.8	To PSSA or not to PSSA?	187
5.4	Assessment and Approval of PSSA Proposals by the IMO	188
5.4.1	Consideration by MEPC	192
5.4.2	Consideration by NAV and MSC	196
5.4.3	Approval of a PSSA	199
5.4	Conclusion	199

Chapter 6

STATE PRACTICE: APPLICATION OF THE PSSA CONCEPT		201
6.1	Introduction	201
6.2	The Western European PSSA	203
6.2.1	Background	203
6.2.2	Existing Navigation Regime	206
6.2.3	Associated Protective Measures	208
6.2.4	Consideration by IMO	209
6.3	Extension of the Great Barrier Reef PSSA to Include the Torres Strait	213
6.3.1	Background	213
6.3.2	Existing Navigation Regime	217
6.3.3	Associated Protective Measures	221
6.3.4	Consideration by IMO	222
6.4	The Baltic Sea	226
6.4.1	Background	226
6.4.2	Existing Navigation Regime	229
6.4.3	Associated Protective Measures	230
6.4.4	Consideration by IMO	231
6.5	Florida Keys National Marine Sanctuary	234
6.5.1	Background	234
6.5.2	Existing Navigation Regime	237
6.5.3	Associated Protective Measures	239
6.5.4	Consideration by IMO	241
6.6	Analysing the Benefits of PSSA Designation	241
6.6.1	Comprehensive Management Tool	243
6.6.2	Adoption of Additional Protective Measures	249
6.6.3	Approval of Exceptional Measures	250
6.6.4	Intrinsic Benefits of PSSA Designation	261
6.7	Conclusions	273

Chapter 7

ISSUES IDENTIFIED WITH THE PSSA CONCEPT THROUGH AN EXAMINATION OF STATE AND IMO PRACTICE 277

7.1	Introduction	277
7.2	Issues Identified with State Practice	278
7.2.1	Defining the Scope of a PSSA	279
7.2.2	Linkage Between Vulnerability and APMs	284
7.2.3	Appropriate APMS	284
7.2.4	IMO Process	286
7.2.5	Strategic Framework	290
7.3	Revision of the PSSA Guidelines	291
7.3.1	PSSA Definition	294
7.3.2	Linking the Identified Vulnerability with an APM	295
7.3.3	The Legal Basis for Associated Protective Measures	295
7.3.4	Procedural Issues	302
7.3.5	Effect of the Revisions	302
7.4	Unresolved Issues	303
7.4.1	Application of the PSSA Concept to Wide Geographic Areas	303
7.4.2	IMO Process	307
7.4.3	Strategic Approach	315
7.5	Conclusions	316

Chapter 8

DEVELOPMENT OF A STRATEGIC FRAMEWORK FOR THE PSSA CONCEPT 319

8.1	Introduction	319
8.2	A Strategic Approach for the Identification of Sites for PSSA Designation	320
8.2.1	Strategic Environmental Assessment	321
8.2.2	Marine Spatial Planning	325
8.3	Application of Marine Spatial Planning Techniques to PSSA Identification	331
8.3.1	Global Level Assessment	332
8.3.2	Identification of Sites Vulnerable to the Impacts of Shipping	343
8.3.3	Outcome of the Analysis	348
8.4	Regional and Local Approaches for Identifying Candidate PSSA Sites	356
8.4.1	Application to PSSA Identification	358
8.5	Conclusions	361

Chapter 9

CONCLUSIONS AND RECOMMENDATIONS..... 363

9.1	Introduction	363
9.2	Role of the IMO	363
9.3	The PSSA Concept in International Law	365

9.4	Benefits of PSSA Designation.....	366
9.5	Current Status of the PSSA Concept	368
9.6	Future Development of the PSSA Concept	370
9.7	Recommendations	371
9.8	Concluding Comments	375
REFERENCES.....		377
Bibliography.....		377
	Journal Articles, Books and Conference Proceedings.....	377
	Reports, Briefing Papers and Other Documents.....	399
	Online Sources.....	402
Official Documents		405
	IMO Documents	405
	OECD Documents	416
	OSPAR Documents	416
	UNESCO	416
	UN General Assembly	417
	United Nations Environment Programme	417
	International Instruments.....	417
	European Union Documents.....	420
	National and Regional Legislation, Statements and Declarations.....	420
Appendix A		423
Appendix B		451
Appendix C		469
Appendix D		471
Appendix E		475
Appendix F.....		480

LIST OF TABLES

Table 3.1. Summary of Compensation Costs Associated with Maritime Casualties in Western European Waters Between 1992 and 2002	68
Table 3.2. MARPOL 73/78 Annexes and Pollutant Categories.....	86
Table 4.1. PSSAs Designated to Date	122
Table 4.2. Criteria for the Identification of a PSSA.....	133
Table 4.3. Special Area Criteria as Defined Under Annex I to Resolution A.927(22)	151
Table 5.1. Special Areas Designated Under Annexes I, II and V of MARPOL 73/78	165
Table 5.2. IMO Resolutions Encouraging the Use of Ships' Pilots in Certain Areas.	184
Table 8.1. UNESCO Site Selection Criteria	338

LIST OF FIGURES

Figure 4.1. Global Distribution of PSSAs Designated to Date.....	121
Figure 5.1. Extent of the Mandatory Area to be Avoided	175
Figure 5.2. IMO Procedure for Consideration and Designation of PSSAs	191
Figure 5.3. Consideration and Adoption of Proposals for Ships Routeing Measures and Ship Reporting Systems	197
Figure 6.1. Limits of the Western European PSSA	205
Figure 6.2. Torres Strait and the Boundary of the PSSA.....	216
Figure 6.3. The Baltic Sea and the Boundary of the PSSA	227
Figure 6.4. Limits of the Florida Keys PSSA.....	236
Figure 8.1. Global Distribution of Marine Protected Areas and Global 200 Ecoregions	335
Figure 8.2. Potential Tropical Coastal, Marine and Small Island World Heritage Sites	342
Figure 8.3. Global Distribution of Oil Spills (Greater than 7 Tonnes) Between 1970 and 2004.....	344
Figure 8.4. Global Shipping Movements Mapped from Reported Positions of Ships Participating in the WMO VOS Programme.....	345
Figure 8.5. Relative Shipping Densities Mapped to a 60 Nautical Mile Global Grid..	347
Figure 8.6(a). Areas for Consideration for Potential PSSA Sites - North Atlantic.....	349
Figure 8.6(b). Areas for Consideration for Potential PSSA Sites - South Atlantic	350
Figure 8.6(c). Areas for Consideration for Potential PSSA Sites - Indian Ocean	351
Figure 8.6(d). Areas for Consideration for Potential PSSA Sites - SW Pacific.....	352
Figure 8.6(e). Areas for Consideration for Potential PSSA Sites - NW Pacific	353
Figure 8.6(f). Areas for Consideration for Potential PSSA Sites - NE Pacific.....	354

PUBLICATIONS ARISING FROM THE THESIS

The following peer reviewed articles, focussing on different aspects of the research, have been published during the preparation of this thesis:

- J. Roberts, “Compulsory pilotage in international straits: The Torres Strait PSSA proposal,” *Ocean Development and International Law* 37 (2006), 93-112.
- J. Roberts, “Protecting sensitive marine environments: the role and application of ships’ routeing measures,” *International Journal of Marine and Coastal Law* 20 (2005), pp. 135-159.
- J. Roberts, T. Workman, M. Tsamenyi and L. Johnson. “The Western European PSSA: A “politically sensitive sea area,” *Marine Policy* 29 (2005), pp. 431-440.

ACRONYMS AND ABBREVIATIONS

AIS	Automatic Identification System
AMSA	Australian Maritime Safety Authority
APM	Associated Protective Measure
BIMCO	The Baltic and International Maritime Council
CBD	1992 Convention on Biological Diversity
CDEM	Construction, Design, Equipment and Manning
COLREGS	International Regulations for the Prevent of Collisions at Sea, 1972
COP	Conference of Parties
DOALOS	United Nations Division for Ocean Affairs and the Law of the Sea
dwt	Dead Weight Tonnage
EEZ	Exclusive Economic Zone
EU	European Union
FKNMS	Florida Keys National Marine Sanctuary
GEEP	IOC/IMO/UNEP Group of Experts on the Effects of Pollution
GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
GIS	Geographic Information System
GPSR	General Provisions on Ships' Routing
HELCOM	Helsinki Commission / Baltic Marine Environment Protection Commission
ICC-MAB	International Coordinating Council of the Man and the Biosphere Programme
ICS	The International Chamber of Shipping
I.L.M	International Legal Materials
IMCO	Intergovernmental Maritime Consultative Organization
IMO	International Maritime Organization
INTERCARGO	The International Association of Dry Cargo Ship Owners
INTERTANKO	The International Association of Independent Tanker Owners
IPIECA	International Petroleum Industry Environmental Conservation Association
IPTA	The International Parcel Tanker Owners Association
ITOPF	International Tanker Owners Pollution Federation Ltd
IUCN	The World Conservation Union - previously International Union for the Conservation of Nature
km	Kilometers
LOSC	United Nations Convention on the Law of the Sea, 1982 (Law of the Sea Convention)
MAB	Man and the Biosphere
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships as modified by the 1978 Protocol relating thereto
MCPA	Marine and Coastal Protected Area
MEPC	IMO Marine Environment Protection Committee
MoU	Memorandum of Understanding

MPA	Marine Protected Area
MSA	Maritime Safety Authority of New Zealand
MSANZ	Maritime Safety Authority of New Zealand
MSC	IMO Maritime Safety Committee
MSP	Marine Spatial Planning
NAV	IMO Sub-committee on Safety of Navigation
NGO	Non-Governmental Organisation
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen Oxides
OCIMF	Oil Companies International Marine Forum
OECD	Organisation for Economic Cooperation and Development
OUV	Outstanding Universal Value
PSC	Port State Control
PSSA	Particularly Sensitive Sea Area
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SEA	Strategic Environmental Assessment
SECA	SOx Emission Control Area
SOLAS	International Convention for the Safety of Life at Sea, 1974
SOx	Sulphur Oxides
SRS	Ship Reporting System
TSCZ	Territorial Sea and Contiguous Zone [Convention]
TSPP	Tanker Safety and Pollution Prevention [Conference]
TSS	Traffic Separation Scheme
U.K.T.S	United Kingdom Treaty Series
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCHE	United Conference on the Human Environment
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
U.N.T.S	United Nations Treaty Series
US	United States
USA	United States of America
VOS	Voluntary Observing Ship
VTs	Vessel Traffic Services
WCMC	UNEP World Conservation Monitoring Centre
WE PSSA	Western European Particularly Sensitive Sea Area
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development
WWF	Worldwide Fund for Nature