

Blue Pricing of Undersea Treasures

Needs and Opportunities for Environmental Economics Research on Coral Reef Management in South East Asia

Annexes

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Annexes

This annex volume contains resource material that is intended for the use of current and prospective EEPSEA researchers in designing or implementing a research project relating to the marine protected areas in EEPSEA countries.

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Annex A – ICRI Framework for Action

This annex reproduces the ICRI Framework for Action adopted in 1995 to improve management of coral reefs.

International Coral Reef Initiative Framework for Action June 2, 1995

Preamble

Maintaining the biological diversity, condition, resources, and values of coral reefs and related ecosystems is a matter of global urgency. While the majority of countries which have coral reefs are developing countries, there are many reefs in the waters of developed countries. This unites the developed and developing countries and should command the attention of the international community. Coral reef survival depends upon the world community acquiring and maintaining the knowledge and capacity to conserve and sustainably use coral reefs and related ecosystems. This requires that all uses and impacts be brought within and maintained at levels which do not exceed these systems' natural capacity for production and regeneration.

The International Coral Reef Initiative (ICRI) Workshop was held at Silliman University in Dumaguete City, Philippines in May, 1995 to enable countries, donors, development and funding agencies to work with coral reef managers, private sector representatives, non-governmental organisations and scientists to develop this Framework as a basis for achieving sustainable management of coral reefs and related ecosystems.

The ICRI Framework for Action builds upon and reflects the principles and processes established by Agenda 21, the UN Commission on Sustainable Development, the Convention on Biological Diversity, the UN Framework Convention on Climate Change, the Global Conference on Sustainable Development of Small Island Developing States, the UN Convention on the Law of the Sea, Convention on International Trade in Endangered Species of Wild Flora and Fauna, Global Program of Action to Protect the Marine Environment from Land-Based Activities and other relevant international programs. It has been developed as a succinct statement which should be read and interpreted in light of these documents.

This Framework addresses the four elements of the ICRI Call to Action, which are:

- management;
- capacity building;
- research and monitoring; and
- review.

Framework Purpose

The purpose of this Framework for Action is to mobilise governments and the wide range of other stakeholders whose

coordinated, vigorous and effective actions are required to implement the Call to Action.

Principles

The ICRI recognises the following principles:

Achieving the ICRI's purpose requires the full participation and commitment of governments, local communities, donors, NGOs, the private sector, resource users and scientists; therefore true partnerships, cooperation and collaboration exemplify the ICRI activities.

The over-riding priority is to support actions that will have tangible, positive and measurable effects on coral reefs and related ecosystems and on the well-being of the communities which depend upon them.

Human activities are the major cause of coral reef degradation; therefore managing coral reefs means managing those human activities. Individuals whose decisions and actions affect coral reefs--from board rooms to beaches--need to become aware of and committed to the conservation and sustainable use of coral reefs and related ecosystems.

The diversity of cultures, traditions and governance within nations and regions should be recognised and built upon in all the ICRI activities.

Integrated coastal management, with special emphasis on community participation and benefit, provides a framework for effective coral reef and related ecosystem management.

Developing national capacity to conserve and sustainably use coral reefs and related ecosystems requires a long term (decadal) commitment. Improvement of coral reef management requires a permanent commitment and an adaptive approach.

Strategic research and monitoring programs should be an integral part of the ICRI because management of coral reefs and

related ecosystems should be based on the most relevant scientific information.

Actions promoted under this framework should take account of, and fully use, the extensive body of international agreements and organisations that address issues related to coral reefs and related ecosystems. The ICRI will facilitate the leveraging and channeling of existing resources among all sectors for the benefit of coral reefs and related ecosystems.

Action

All those committed to supporting the ICRI and this Framework for Action are called upon to take account of and to act on the following at the international, regional and national levels.

Support national and regional efforts to establish and coordinate strategies, priorities and programs to implement the ICRI Framework for Action, starting with regional workshops to be held by early 1996.

Ensure that sustainable management of coral reefs and related ecosystems is considered at future relevant international meetings.

Develop and/or strengthen national, regional and international mechanisms for gathering and sharing information and expertise on the sustainable management of coral reefs and related ecosystems.

Promote improved access to financial and technological resources to enable institutions, regional centres and networks to assist and inform governments, industries and communities.

Addressing conservation and sustainable use of coral reefs and related ecosystems requires activities in the following areas:

- integrated coastal management;
- public awareness, education and training;

- ratification of or accession to relevant international instruments;
- stakeholder participation at all levels;
 - i. training policy makers and private sector decision makers in the development and implementation of coral reef management;
 - ii. marine science and technology;
 - iii. environmental law, particularly environmental impact assessment regulations; and
 - iv. assessing the potential for micro-enterprise development and facilitating access to financing on a small to medium scale.

Management

Encourage governments to develop and adopt integrated coastal management measures, including:

- protection of the marine environment from land based sources of marine pollution;
- environmentally sound land use practices, including zoning where appropriate;
- measures to protect the marine environment from the adverse effect of maritime activities;
- national and regional disaster strategies;
- measures to prevent illegal fishing practices, achieve sustainable fisheries and protect the ecological systems that support them;
- tourism management and planning;
- cultural aspects of resource use; and
- enforcement of regulations.

Encourage governments and funding agencies to consider the ICRI Framework in project and program design and implementation.

Encourage, where appropriate, an intersectoral systems approach to planning and management.

Encourage improved coordination among international organisations, donors and NGOs to provide more effective programs at the regional and national level.

Encourage prompt implementation of the outcomes of FAO Code of Conduct for Responsible Fisheries and the Global Program of Action to Protect the Marine Environment from Land-Based Activities.

Promote awareness and action by the global tourist community to minimise individual and collective impacts of tourism on coral reefs and related ecosystems.

Promote the establishment and effective management of coastal and marine protected areas for coral reefs and related ecosystems, within the framework of customary international law as exemplified by the UN Convention on the Law of the Sea. This will contribute to the development of the Global Representative System of Marine Protected Areas as proposed by the World Bank, IUCN and Great Barrier Reef Marine Park Authority.

Promote the regulation of international trade in endangered and threatened reef-associated species through the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), and improve its implementation where required.

Encourage governments to develop and promote mechanisms for regulating international trade in species that are illegally harvested.

Encourage governments to develop legislation, policy and institutional capacity to apply environmental assessment to development activities.

Promote appropriate technologies, including voluntary programs and economic incentives and best management practices, for control of land-based causes of marine pollution.

Promote and replicate successes in integrated coastal management, including community based management, as appropriate.

Support management measures to improve the socio-economic condition of local communities through such means as retraining and sustainable alternative livelihood development.

Capacity Building

Capacity building includes establishing and strengthening human resource and institutional capabilities for coastal management, science, training and education.

Encourage regional organisations to assist countries and communities implementing ICRI, for example through measures including:

- preparation of project proposals
- implementation of small grant programs.

Establish, strengthen and sustain mutually supportive networks of centres of expertise in management of coral reefs and related ecosystems.

Base human resource development strategies on needs assessments and ensure that they address:

- the diversity of cultures traditions and governance structures;
- increased community awareness and involvement;
- improving the capacity of today's managers;
- providing for the education of tomorrow's managers;
- coverage of coral reef management issues in the training of all professionals whose work involves decisions which affect coral reefs and coastal resource management;
- technical training needs for people at the field level;

- training and supporting trainers to work at the community and field level;
- evaluation of the effectiveness of training; and
- the need to target children in awareness raising.

Improve coordination and targeting of the education and human resource development programs provided by development partners.

Support formal and informal environmental education programs for all levels of the community on the subject of coral reefs and related ecosystems, with curricula and materials tailored to the interests and needs of the regions and end-users.

Encourage maximum use of national and regional expertise in management, research and capacity building activities.

Support the development, identification and dissemination of materials which address the interests and needs of the regions, including:

- the value of coral reefs and related ecosystems;
- practical monitoring and management techniques;
- inventories of formal and on-the-job training opportunities;
- case studies of management, including success stories as well as examples which have not been successful; and
- case studies of human impact and natural variation in coral reefs and related ecosystems.
- Increase the relevance to ICRI of existing donor scholarship programs by:
 - devoting a proportion of scholarship awards to environmental studies; and
 - encouraging thesis and dissertation studies carried out in home countries.

Encourage the private sector's role in management of coral reefs and related ecosystems through:

- use of appropriate technologies;
- development of a trained and educated workforce; and
- innovative approaches to better environmental operating standards.

Research & Monitoring

Research and monitoring are needed to assess the status of coral reefs, evaluate the success of management and conservation actions and develop more effective management practices. As tropical ecosystems, coral reefs and related ecosystems are subject to dynamics which are generally less well understood than temperate systems. Therefore, without evidence it should not be assumed that they will react to natural and human disturbances in the same way as temperate systems.

Research and monitoring programs should address biological, physical, social, cultural and economic studies and should be carried out over time periods appropriate to their objectives. They should be supported by information management, interpretation and dissemination. In the collection of data for both research and monitoring, resource users should be involved to the maximum extent practicable.

Promote the involvement of managers in the development, conduct, interpretation and application of research and monitoring programs.

Promote and assist the development and application of resource assessment methods that:

- allow for rapid assessment to establish baselines and initiate management
- can be used in Geographic Information and Decision Support Systems

Promote the development of a Global Coral Reef Monitoring Network under the

Coastal Zone Module of the Global Ocean Observing System by incorporating and, as necessary, establishing or strengthening regional nodes.

Encourage studies of coral reefs and related ecosystems which:

- address priority management issues in individual countries or regions;
- address the synergies between human effects and natural variations as causes of stress and degradation in coral reefs and related ecosystems;
- involve interdisciplinary research into human impacts with initial priority of fisheries and tourism;
- integrate traditional knowledge;
- quantify the socio-economic impacts of conservation and habitat destruction;
- address the scales and linkages of the biological communities; and
- develop methods for impact mitigation and reef restoration.

Develop programs to involve communities, resource users, the private sector and others in monitoring the condition of coral reefs and related ecosystems.

Encourage regional and international forums which bring together managers and scientists to identify priority information requirements for management of coral reefs and related ecosystems.

Review

Review of the state of coral reefs and related ecosystems and of action taken to implement the ICRI Framework for Action should be conducted at national, regional and international levels on a regular basis.

The four yearly cycle of the international coral reef symposia provides an excellent opportunity to discuss the ecological condition of coral reefs. This should be matched by an equivalent program to review the effectiveness of implementation of

actions in accordance with the ICRI Framework For Action.

At the international level, the UN Commission on Sustainable Development provides an appropriate forum for review of international actions taken at all levels by governments, international organisations and agencies. The 1996 session of the Commission on Sustainable Development, with its focus on Chapter 17 (Protection of Oceans) of Agenda 21 will deal, inter alia, with coral reefs and related ecosystems.

UNEP should be encouraged to review the implementation and success of the ICRI Framework For Action through relevant programs including the Regional Seas Programmes.

Similarly the IOC through the Global Coral Reef Monitoring Network, should be encouraged to produce reports on the ecological condition of coral reefs and related ecosystems for discussion at the quadrennial International Coral Reef Symposia and other relevant international forums.

Annex B – Marine Protected Areas in EEPSEA Countries

Marine Protected Area List

Table B1 includes a list of all marine protected areas relating to EEPSEA countries within the World Conservation Monitoring Centre database. The database specifies areas according to current IUCN Category (I-VI), or lists sites according to those being proposed or under development (UP, DEV, DE). In some cases, “old designations” are still maintained in the database (e.g., REC=recreation; VIII = Protected Area under 1970s definitions). Where the site does not meet the internationally recognized definition of a protected area, application of a management category is not appropriate. This is indicated as category unassigned (UA) in WCMC protected area lists. The list is maintained by WCMC and that reproduced in Table B1 was taken for EEPSEA countries from the WCMC web site:

[http:// www.wcmc.org.uk /](http://www.wcmc.org.uk/)

More up to date information may be obtained from:

Information Officer, World Conservation Monitoring Centre, 219 Huntingdon Road,
Cambridge CB3 0DL, United Kingdom. Tel: +44 1223 277314; Fax: +44 1223 277136.

Email: info@wcmc.org.uk

It should be noted that there are no database entries for the following EEPSEA countries having coastal areas:

- Cambodia
- China other than Taiwan

Protected Area Categories

The following definitions are taken from IUCN (1994). Guidelines for Protected Areas Management Categories. IUCN, Cambridge, UK and Gland, Switzerland. 261pp.

The definition of a protected area adopted by IUCN is:

An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

IUCN has defined a series of protected area management categories based on management objective. Definitions of these categories, and examples of each, are provided in Guidelines for Protected Area Management Categories (IUCN, 1994). The six categories are:

- CATEGORY Ia: Strict Nature Reserve: protected area managed mainly for science.
Definition: Area of land and/or sea possessing some outstanding or representative

ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.

- **CATEGORY Ib: Wilderness Area:** protected area managed mainly for wilderness protection. Definition: Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.
- **CATEGORY II: National Park:** protected area managed mainly for ecosystem protection and recreation. Definition: Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
- **CATEGORY III: Natural Monument:** protected area managed mainly for conservation of specific natural features. Definition: Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.
- **CATEGORY IV: Habitat/Species Management Area:** protected area managed mainly for conservation through management intervention. Definition: Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.
- **CATEGORY V: Protected Landscape/Seascape:** protected area managed mainly for landscape/seascape conservation and recreation. Definition: Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.
- **CATEGORY VI: Managed Resource Protected Area:** protected area managed mainly for the sustainable use of natural ecosystems. Definition: Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Table B1. Marine Protected Areas in EEPSEA Countries. The following list of marine protected areas has been derived from the WCMC Protected Areas Database. It should be noted that sites have been selected based on the IUCN definition of marine protected areas which describes them as "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment" (resolution GA17.38, 17th General Assembly, IUCN). This definition includes sites with only a very small subtidal or intertidal territory which might otherwise be regarded as wholly terrestrial. Also included within this list are sites described as recommended and proposed. Such sites are thought to have no current legal protection status.

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Indonesia					
GAME RESERVE					
Bakau Muara Kampar	PRO	0°35'N	102°57'E	70000	
Bakau Selat Dumai	PRO	1°57'N	101°15'E	60000	
Bangkiriang	PRO	1°18'S	122°19'E	1000	
Banyuwangi	IV	8°41'S	114°28'E	62000	1919
Batugandang Forest	PRO	8°50'S	116°00'E	10000	
Bawean	IV	5°47'S	112°39'E	3832	1979
Cikepuh	IV	7°15'S	106°25'E	8128	1973
Dolongan	IV	1°22'N	120°53'E	463	1981
Gili Air (Pulau Pemanang) GR	PRO			2000	
Gunung Wanggameti	DE	10°06'S	120°13'E	6000	
Jogo Tamu/Ponco Moyo	PRO			1860	
Kakinawe	PRO			5000	
Karang Gading	IV	3°52'N	98°36'E	15765	1980
Kelompok Hutan Kahayan	PRO	3°21'S	113°48'E	150000	
Kepulauan Asia and Ayu	PRO	0°26'N	131°05'E	76406	
Kepulauan Tukang Besi	PRO	5°43'S	123°39'E	200000	
Lampoko Mampie	IV	3°26'S	119°15'E	2000	1978
Landu Mangrove Swamp	PRO			1000	
Manipo	DE	10°08'S	124°13'E	2450	
Marisa Complex	PRO			94000	
Meru Betiri	DE	8°29'S	113°48'E	58000	1972
Muara Bobos	PRO	5°59'S	107°18'E	5000	
Pahatu Mangrove Swamp	PRO			1000	
Pantai Lunjuk GR (Sumbawa Is.)	PRO			1000	
Pati-Pati	IV	0°35'S	123°06'E	198	1936
Perairan Kangean	PRO	6°51'S	115°44'E	3000	
Pleihari Tanah Laut	IV	4°04'S	114°47'E	35000	1975
Pulau Anggrameos	IV	2°42'S	134°50'E	2500	1981
Pulau Baun	IV	6°30'S	134°41'E	13000	1974
Pulau Bulan	PRO	0°58'N	103°53'E	12000	
Pulau Dana	PRO	10°49'S	122°39'E	1000	
Pulau Dolok	IV	8°09'S	138°13'E	600000	1978
Pulau Kambing	PRO	8°16'S	125°34'E	4000	
Pulau Kassa	IV	3°18'S	128°07'E	900	1978
Pulau Kobroor	PRO	6°14'S	134°29'E	170000	
Pulau Manuk	IV	5°33'S	130°18'E	100	1981
Pulau Mapia	PRO	0°56'N	134°20'E	4015	
Pulau Menipo GR (West Timor Is.)	DE	10°10'S	124°21'E	2000	1977
Pulau Panjang	PRO	8°25'S	116°57'E	10000	
Pulau Pasoso	PRO			150	
Pulau Pemanang	PRO			2000	
Pulau Rakit	PRO			50	
Pulau Rusa	PRO	8°23'S	123°49'E	1406	
Pulau Samama	IV	2°09'N	118°20'E	220	1982
Pulau Sangiang	PRO	8°11'S	119°03'E	16000	
Pulau Sayang	PRO	0°16'N	130°05'E	10468	
Pulau Simeulue	PRO	2°38'N	95°58'E	26750	
Sabuda Tataruga	IV	2°38'S	131°36'E	5000	1993
Sancang Cipatujah	PRO			3000	
Selat Muna	PRO	5°13'S	122°15'E		
Tanjung Amelango	IV	4°24'S	122°49'E	850	1975
Tanjung Batikolo	IV	4°18'S	121°34'E	5500	1980
Tanjung Kerita Mese	PRO	8°43'S	119°55'E	15000	
Tanjung Oisina Mangrove Swamp	PRO			500	

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Tanjung Peropa	IV	4°12'S	122°48'E	38000	1986
Tanjung Pukuwatu	PRO	10°31'S	123°18'E	6000	
Tanjung Watupayang	PRO	8°10'S	122°47'E	5	
Teluk Lasolo-Teluk Dalam	PRO	3°36'S	122°22'E	80000	
Teluk Lelintah	PRO	2°08'S	130°19'E	2500	
Way Kambas	DE	4°52'S	105°36'E	130000	1937
HUNTING PARK					
Dataran Bena	VI	10°06'S	124°17'E	11000	1978
Pulau Moyo	VI	8°16'S	117°33'E	22250	1986
Pulau Moyo HP (Sumbawa)	PRO			22250	
MARINE MULTIPLE USE RESERVE					
Teluk Ambon	PRO	3°43'S	128°10'E	50000	
MARINE NATURE RESERVE					
Arakan Wowontulap	I	1°21'N	124°29'E	13800	1986
Kepulauan Togian	I	0°20'S	122°05'E	100000	1989
Marine Kepulauan Take Bone Rate	I	6°30'S	121°08'E	530765	1992
Pulau Bunaken	I	1°42'N	124°46'E	75265	1986
MARINE PARK					
Kep. Aru Tenggara	I	6°48'S	134°33'E	114000	1991
Laut Banda	I	4°33'S	129°54'E	2500	1977
P.Pombo	I	3°31'S	128°22'E	1000	1973
Pulau Sangiang	I			750	1991
Pulau Weh	IV	05°51'N	095°17'E	2600	1978
Sangalaki	IV	2°08'N	118°19'E	280	1982
Teluk Maumere	I	8°27'S	122°23'E	59450	1986
NATIONAL PARK					
Bali Barat (Bali)	II	8°14'S	114°40'E	77727	1982
Baluran	II	7°50'S	114°22'E	25000	1980
Berbak	II	1°25'S	104°18'E	162700	1935
Bukit Barisan Selatan	II	5°09'S	104°08'E	365000	1982
Gunung Gede Pangrango	II	6°47'S	106°58'E	15000	1980
Gunung Leuser	II	3°49'N	97°38'E	792675	1980
Gunung Lorentz	PRO			1483200	
Gunung Palung	II	1°09'S	110°13'E	90000	1990
Gunung Rinjani	II	8°24'S	116°24'E	40000	1990
Komodo	II	8°38'S	119°34'E	173500	1980
Kutai	II	0°23'N	117°16'E	198629	1982
Laut Cendrawasih	II	2°23'S	134°47'E	1453000	1990
Mamberamo-Pegunungan Foja	PRO	3°02'S	139°02'E	1442500	
Manusela	II	3°06'S	129°29'E	189000	1982
Marine Bunaken Menado Tua	II	1°41'N	124°42'E	89065	1989
Marine Kepulauan Karimun Jawa	II	5°49'S	110°24'E	111625	1986
Marine Kepulauan Seribu	II	5°33'S	106°33'E	110000	1982
Meru Betiri	II	8°25'S	113°49'E	58000	1982
Pangandaran	PRO	07°45'S	108°30'E	530	
Rawa Aopa Watumohai	II	4°27'S	122°01'E	96804	1989
Siberut	PRO			56000	
Tanjung Puting	II	2°54'S	111°59'E	355000	1982
Ujung Kulon	II	6°46'S	105°23'E	122936	1992
Wasur	II	8°41'S	140°44'E	308000	1990
Way Kambas	II	4°54'S	105°43'E	130000	1989
NATURE RESERVE					
Apar Besar	PRO	1°57'S	116°15'E	90000	
Batanta Barat	I	0°51'S	130°37'E	10000	1981
Biak Utara	I	0°45'S	135°51'E	11000	1982
Cibanteng	I	7°10'S	106°28'E	447	1925
Dua Saudara	I	1°31'N	125°10'E	4299	1978
Gunung Api	DE	6°38'S	126°39'E	80	1937
Gunung Lorentz	I	4°20'S	137°39'E	2150000	1978
Gunung Palung	DE			30000	1937
Hutan Angrrek dan Tanah Merah	PRO			3000	
Hutan Sambas	PRO	1°43'N	109°29'E	120000	
Inggresau	PRO	1°43'S	136°32'E	280	
Jamdena	PRO	7°34'S	131°23'E	60000	
Jamursba-Mandi	PRO	0°21'S	132°32'E	900	

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Karang Bolong	I			1	1937
Karang Kamulyan	PRO			25	
Karimata	PRO			150000	
Kelompok Hutan Bakau Pantai Timur	I	1°00'S	103°55'E	6500	1981
Kuala Jambu Aye	PRO	5°10'N	97°31'E	3000	
Kuala Langsa	PRO	4°27'N	98°03'E	7000	
Leuwang Sancang	I	7°43'S	107°52'E	2157	1978
Mas Popaya Raja	I	1°00'N	122°38'E	160	1939
Maubesi	I	9°39'S	124°54'E	1830	1981
Misool Selatan	I	1°55'S	130°03'E	84000	1982
Morowali	I	1°35'S	121°30'E	225000	1986
Muara Cimanuk	PRO	6°16'S	108°15'E	7100	
Muara Gembong	PRO	5°58'S	107°01'E	800	
Muara Kayan	PRO	2°58'N	117°30'E	80000	
Muara Kendawangan	PRO	2°41'S	110°20'E	150000	
Muara Sebuk	PRO	4°10'N	117°23'E	110000	
Muara Siberut	PRO	1°30'S	99°14'E	12000	
Muara Sungai Guntung	PRO	0°25'N	103°33'E	26000	
Mubrani-Kaironi	PRO	0°44'S	133°30'E	1000	
Napabalano	I	4°39'S	122°42'E	9	1919
Nusa Barung	I	8°28'S	113°20'E	6100	1920
Nusa Gede Pandjalu	I	7°07'S	108°17'E	16	1919
Nusa Kambangan (Perluasan)	PRO	7°35'S	108°45'E	22077	
P.Sempu	I	8°26'S	112°42'E	877	1928
Pamukan	PRO	2°30'S	116°19'E	10000	
Pangandaran	DE	7°43'S	108°40'E	419	1934
Pangumbahan	PRO				
Pantai Samarinda	PRO	0°25'S	117°21'E	95000	
Panua	I	0°34'N	121°53'E	45000	1984
Peg. Cycloop	I	2°30'S	140°31'E	22500	1978
Pegunungan Fakfak	PRO	2°59'S	132°32'E	51000	
Pegunungan Kumawa	PRO	3°50'S	132°58'E	118000	
Peleng-Pulau Pulau Banggai	PRO	1°46'S	123°07'E		
Perairan Pulau Weh & P. Beras	PRO	5°42'N	95°04'E		
Pulau Angwarmase	I	8°02'S	131°05'E	800	1978
Pulau Bengkaru	PRO	2°03'N	97°06'E	400	
Pulau Berkeh	I	2°06'N	100°44'E	500	1968
Pulau Bokor	I			15	1921
Pulau Burung	I	0°26'N	103°25'E	200	1968
Pulau Dua	I	6°01'S	106°12'E	30	1984
Pulau Kaget	I			85	1976
Pulau Kakabia (Kawi-Kawi)	PRO				
Pulau Kalambau dan Pulau Birah	PRO			1000	
Pulau Laut	I			400	1968
Pulau Maratua-Karang Muaras	PRO	2°05'N	118°45'E	110000	
Pulau Mas Popaya Raja	DE			160	1919
Pulau Noko dan Pulau Nusa	I			15	1926
Pulau Nuswotar	I	7°20'S	131°15'E	7500	1978
Pulau Panaitan/Pulau Peucang	DE	6°36'S	105°09'E	17500	1937
Pulau Peny	PRO	5°40'S	127°50'E	2000	
Pulau Pombo	I	7°52'S	138°57'E	100	1973
Pulau Rambut	I	5°58'S	106°42'E	18	1939
Pulau Samalona	PRO			5000	
Pulau Saobi (Kangean Islands)	DE	6°52'S	115°22'E	430	1919
Pulau Seho	I	1°59'S	124°19'E	1250	1972
Pulau Supriori	I	0°44'S	135°34'E	42000	1982
Pulau Taliabu	PRO	1°44'S	124°40'E	70000	
Pulau Waigeo	I	0°13'S	130°32'E	153000	1982
Raja Ampat	PRO	0°25'S	130°23'E	2976	
Rantau Pala Gajah	PRO	3°51'N	96°23'E	1600	
Rawa Biru	DE	8°42'S	140°52'E	4000	1978
Salawati Utara	I	1°00'S	130°48'E	57000	1982

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Sausapor	PRO	0°32'S	132°02'E		
Segara Anakan	PRO	7°41'S	108°53'E	15352	
Simandulang	PRO	2°39'N	100°09'E	2900	
Sidei-Wibain	PRO	0°44'S	133°40'E	900	
Singkil Barat	PRO			65000	
Sukawayang	I			31	1919
Tanah Pedauh	I			544	1975
Tangkoko Batu Angus	I	1°29'N	125°11'E	3196	1981
Tangkoko-Dua Saudara	DE	1°29'N	125°11'E	8745	1978
Tanjung Api	I	0°49'S	121°37'E	4246	1977
Tanjung Datuk	PRO	0°04'N	103°44'E	28800	
Tanjung Panjang	PRO			3000	
Tanjung Sedari	PRO	6°15'S	107°43'E	8200	
Teluk Adang dan					
Teluk Apar	PRO	1°55'S	116°23'E	130000	
Teluk Baron	I			2	1937
Teluk Bintuni	PRO	2°14'S	133°52'E	450000	
Teluk Kelumpang Selat Laut / Sebuku	PRO	3°00'S	116°07'E	66650	
Teluk Kelumpang Selat Laut / Sebuku	PRO	3°30'S	116°23'E	66650	
Teluk Kelumpang Selat Laut / Sebuku	PRO	3°22'S	116°06'E	66650	
Teluk Kelumpang Selat Laut / Sebuku	PRO	3°11'S	116°05'E	66650	
Teluk Kelumpang/Selat Laut/Selat Sebuku	I			66650	1981
Teluk Lenggassana	PRO	8°21'S	112°52'E	16000	
Teluk Pelikan	PRO	10°13'S	123°23'E	10	
Tujuh Belas Pulau	I	08°16'S	109°37'E	11900	1987
Wae Bula	PRO	3°07'S	130°14'E	60000	
Waeapo	PRO	3°22'S	127°03'E	3000	
Wewe-Koor	PRO	0°24'S	132°15'E		
Wijayakusuma	I			1	1937
Wondiwoi	PRO	2°43'S	134°35'E	79500	
Yapen Tengah	I	1°45'S	136°15'E	59000	1982
OTHER AREA					
Tanjung Penghujan					
NR/RP	PRO	2°57'S	111°34'E	40000	
RECREATION PARK					
Gunung Selok	V	7°40'S	109°12'E	126	1975
Nabire	V			100	1980
Pananjung					
Pangandaran	DE	7°43'S	108°40'E	38	1978
Pantai Palolowaru	PRO	8°54'S	116°11'E	100	
Pasir Putih/Besuki	PRO			96	
Pulau Kembang	V	3°16'S	114°33'E	60	1976
Pulau Kera	PRO			8	
Pulau Merah	PRO			196	
Pulau Pasir Panjang	PRO	0°54'N	103°20'E	10	
Pulau Penyengat	PRO	0°52'N	104°27'E	10	
Pulau Rakit	PRO	8°39'S	117°58'E	2000	
Pulau Satonda	PRO			1000	
Pulau Tikus dan perairannya	PRO			300	
Pulau Weh	V			1300	1982
Tanjung Keluang	V			2000	1984
Tanjung Pasir	PRO	6°03'S	106°41'E	500	
Teluk Yotefa	V	2°37'S	140°44'E	1650	1981
STRICT NATURE RESERVE					
Kepulauan Krakatau	I	6°06'S	105°25'E	2500	1919
Malaysia					
BIRD SANCTUARY					
Kota Belud	UA	6°20'N	116°30'E	12200	1960
Pulau Bohay Dulang	DE	4°37'N	118°46'E	300	1937
Pulau Burong, Pulau Babi, Pulau Perjudi	UA			1	1926
Pulau Lima, Besar Pulau, Lima Kechil, Tokong Raket BS	UA			2	1954

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Pulau Mantanani	UA			300	1962
Pulau Sipadan	UA	4°12'N	118°33'E	15	1937
COMMUNAL FOREST					
Tanjong Kelepu	UA	2°28'N	111°51'E	73	1959
FOREST RESERVE					
Balok Mangrove	UA	4°07'N	103°20'E		
Banjar North FOR	UA	3°24'N	101°11'E	268	
Banjar South	UA	3°18'N	101°16'E	111	
Bebar Mangrove	UA	3°05'N	103°26'E		
Beserah	UA	3°51'N	103°21'E		
Cape Rachado	UA	2°24'N	101°51'E	64	
Cherating Mangrove	UA	4°07'N	103°23'E		
Kampar	UA	4°20'N	101°05'E		
Kapar	UA	3°05'N	101°21'E	3836	
Kayangeran	UA	4°55'N	115°26'E	4798	1925
Kuala Sedili	UA	1°55'N	104°09'E	433	1982
Maludam	UA	1°36'N	111°09'E	16593	1962
Niah	UA	3°40'N	113°41'E	6111	1936
Pontian Mangrove	UA	2°47'N	103°31'E	193	
Pulau Che Mat Zin	UA	2°57'N	101°18'E	1338	
Pulau Kechil	UA	4°50'N	100°37'E		
Pulau Klang	UA	3°01'N	101°17'E	8785	
Pulau Kukup	UA	1°19'N	103°25'E		
Pulau Langgun	UA				
Pulau Lumut	UA	2°56'N	101°20'E	4559	
Pulau Pintu Gedong	UA	2°56'N	101°15'E	1115	
Pulau Redang	UA				
Pulau Selat Kering	UA	2°57'N	101°15'E	1220	
Pulau Singa	UA	6°13'N	99°44'E	628	
Pulau Tanjong Barat	UA			5488	
Pulau Tanjong Timur	UA			2928	
Pulau Tengah	UA	2°58'N	101°14'E	597	
Pulau Tiga	UA	4°15'N	100°56'E		
Pulau Timun	UA	6°19'N	99°54'E	821	
Pulau Tongkok	UA	2°59'N	101°23'E		
Pulau Tuba	UA	6°14'N	99°50'E	498	
Rajang Mangrove	UA	2°06'N	111°16'E	6475	1929
Rompin Mangrove	UA	2°49'N	103°29'E	157	
Sampadi	UA	1°35'N	109°57'E	23920	1920
Sarawak Mangrove	UA	1°38'N	110°18'E	8728	1920
Selat Panchor	UA	6°20'N	99°54'E	1335	
Sibuti Mangrove	UA	3°59'N	113°44'E	245	1930
Sungai Miang Mangrove	UA	3°26'N	103°26'E		
Sungei Buloh	UA	3°10'N	101°34'E	3114	
Tanjung Dagu	UA	6°24'N	99°54'E	728	
Tanjung Gelang	UA	3°58'N	103°26'E		
Tanjung Hantu	UA	4°19'N	100°34'E		
Tanjung Tuallang	UA	4°17'N	101°01'E		
HUNTING RESERVE					
Matang	UA	4°48'N	100°37'E	40929	1904
MANGROVE FOREST RESERVE					
Abai	UA	6°23'N	116°21'E	1396	1984
Benkoka Penninsular	UA	6°50'N	117°15'E	13283	1984
Elopura	UA	5°50'N	118°07'E	24674	1984
Gum Gum	UA	6°02'N	118°00'E	3086	1984
Kuala Bonggaya and Kuala Labuk	UA	6°04'N	117°36'E	56912	1984
Kuala Segama and Kuala Maruap	UA	5°30'N	118°50'E	23993	1984
Kuala Tingkaya	UA	4°49'N	118°10'E	4745	1984
Kudat and Marudu	UA	6°33'N	116°47'E	13636	1984
Lahad Datu	UA	4°59'N	118°29'E	11066	1984
Menumbok	UA	5°18'N	115°25'E	5710	1984
Pulau Banggi	UA	7°15'N	117°15'E	11504	1984
Semporna	UA	4°27'N	118°30'E	23400	1984
Sulaman Lake	UA	6°15'N	116°15'E	2635	1984
Sungai Sugut,Paitan,Pulau Jambangan	UA	6°32'N	117°28'E	38564	1984

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Tawau	UA	4°19'N	117°34'E	39018	1984
Trusan Kinabatangan	UA	5°45'N	118°23'E	40471	1984
MARINE PARK					
Pulau Babi Besar	PRO				
Pulau Banting	PRO				
Pulau Kapas	PRO				
Pulau Lang Tengah	PRO				
Pulau Lembu, Kacha, Paya, Segatang	IV	6°04'N	99°59'E	130	1988
Pulau Perak	REC	5°43'N	98°56'E		
Pulau Perhentian Besar	PRO				
Pulau Redang	PRO	5°47'N	103°00'E	25000	
Pulau Sembilang	PRO				
Pulau Sibul	PRO				
Pulau Tenggol	PRO				
Pulau Tinggi	PRO	2°15'N	104°10'E		
Pulau Tioman	PRO	2°46'N	104°10'E		
Semporna	PRO	4°38'N	118°46'E	8823	1977
MARINE RESERVE					
Pulau Sipadan	PRO	4°05'N	118°40'E	710	
NATIONAL PARK					
Bako	II	1°43'N	110°31'E	2728	1957
Limbang Mangroves	DE	4°51'N	115°00'E	4500	
Similajau	II	3°26'N	113°15'E	7067	1979
Tanjung Datu	PRO	2°13'N	109°39'E	1379	
NATURE MONUMENT					
Kuala Selangor	PRO	3°20'N	101°15'E	567	
NATURE PARK					
Kuala Selangor	UA	3°20'N	101°15'E	240	1989
OTHER AREA					
Klang Islands	REC	2°59'N	101°27'E		
PARK					
Pulau Penyulung (Turtle Islands)	II	6°10'N	118°05'E	1740	1977
Pulau Tiga	II	5°44'N	115°40'E	15864	1978
Tunku Abdul Rahman	II	6°00'N	116°02'E	4929	1974
PROTECTED FOREST					
Loba Pulau	UA	2°15'N	111°22'E	9272	1951
Pulau Bruit	UA			25149	1951
PROTECTION FOREST RESERVE					
Banggi Island	UA	7°17'N	117°09'E	11206	1992
Klias	UA	5°18'N	115°37'E	3630	1992
Selangor Island	UA	4°34'N	118°30'E	120	1984
Tanjong Nagas	UA	4°20'N	118°24'E	1084	1984
TURTLE SANCTUARY					
Pulau Pangkor	PRO	4°15'N	100°30'E		
Rantau Abang/Dungun (Extension)	PRO			295	
VIRGIN JUNGLE RESERVE					
Batupapun Mangrove	Ia	4°24'N	117°39'E	164	1984
Mengalong	Ia	5°00'N	115°29'E	1008	1984
Pangkor (North)	Ia	4°15'N	100°32'E	78	1960
Pulau Batik	Ia	4°43'N	118°27'E	353	1984
Pulau Berhala	Ia	5°51'N	118°09'E	173	1984
Pulau Sakar	Ia	4°58'N	118°20'E	760	1984
Segari Melintang	Ia	4°23'N	100°35'E	407	1957
Sepilok (Mangrove)	Ia	5°48'N	117°57'E	1235	1931
Tabawan, Bohayan, Maganting, Silumpat Islands	Ia	4°48'N	118°23'E	1009	1984
Tanjung Tuan	UA	2°25'N	101°51'E	121	1953
WILDLIFE RESERVE					
Kuala Gula	PRO	5°50'N	101°30'E	890	
Kuala Selangor	UA	3°21'N	101°14'E	44	1922
Kulamba	VI	5°32'N	118°40'E	20682	1984
Pulau Tioman	UA	2°46'N	104°10'E	7160	1972
Sungei Dusun	IV	3°39'N	101°22'E	4330	1964
Tabin	IV	5°15'N	118°45'E	111971	1984

	IUCN Category	Latitude	Longitude	Size (ha)	Year
WILDLIFE SANCTUARY					
Kuala Rejang	PRO	2°42'N	111°21'E	1000	
Maludam	PRO	1°29'N	111°15'E	43365	
Pulau Ketam	PRO	3°02'N	101°14'E	4000	
Pulau Tukong Ara-Banun	IV	1°47'N	110°12'E	1	1985
Samunsam	IV	1°57'N	109°35'E	6092	1979
Papua New Guinea					
MARINE PARK					
Abau Marine Park/Reserve	PRO	10°11'S	148°42'E		
Hansa Bay	PRO	4°11'S	144°55'E		
Horseshoe Reef	UA	9°35'S	147°19'E	396	
Lea Lea Salt Flats	PRO	9°18'S	146°59'E		
NATURE RESERVE					
Talele Islands	IV	4°10'S	151°35'E	40	1973
PARK					
Cape Wom International Memorial Park	UA	3°45'S	143°40'E	105	1973
PROVINCIAL PARK					
Nanuk Island	IV	4°10'S	152°19'E	12	1973
Talele Islands					
Provincial Park	IV	4°10'S	151°34'E	40	1973
WILDLIFE MANAGEMENT AREA					
Bagiai (I)	VIII	4°40'S	146°00'E	13760	1977
Baniara Island (II)	VIII	10°38'S	150°37'E	15	1975
Garu (I)	VIII	5°15'S	150°23'E	8700	1976
Long Island (III)	IV	5°20'S	147°06'E	15724	1977
Lou Island	PRO	2°25'S	147°22'E		
Maza (I)	VIII	9°13'S	143°13'E	184230	1978
Motupore Island	PRO	9°32'S	147°17'E		
Ndrolowa (I)	VIII	2°03'S	147°16'E	5850	1985
Sawataetae (I)	VIII	9°57'S	151°02'E	700	1977
Philippines					
BIOLOGICAL STATION					
Macajalar Bay Marine	UP				
Puerto Galera Marine	UP	13°32'N	120°55'E		
Southern Luzon Institute Marine	UP				
BIRD SANCTUARY					
Ursula Island	Ia	8°12'N	117°40'E	20	1960
CONSERVATION AREA					
Moalboal	IV	10°58'N	123°24'E		1980
HISTORICAL SANCTUARY					
Quezon Memorial Park	III	14°00'N	121°49'E	24	1940
MARINE PARK					
Balicasag	PRO				
Sumilon Island	Ia	9°21'N	123°23'E	23	1974
Tubbataha Reefs National Marine Park	II	8°53'N	119°53'E	33200	1988
MARINE RESERVE					
Calayan Island	PRO				
Heron Island Reef	IV				1965
Matabungkay Bay	UP				
Tagbilaran	IV				1980
MARINE RESERVE/TOURIST ZONE					
Al-Sulnuan Point	UA				1978
Aligway Island	UA				1978
Anilao-Maricaban Island	UA				1978
Apo Island	UA	9°05'N	123°16'E		1978
Apo Reef	UA				1978
Aslom Island	UA				1978
Ayala/San Ramon	UA				1978
Bacuit Bay Island	UA				1978
Balabac Island	UA				1978
Balatasan Cove	UA				1978
Balatero Cove	UA				1978

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Balicasag Island	UA				1978
Batangas Coastline	UA				1978
Bating Peninsula	UA				1978
Boracay Island	UA				1978
Busuanga Island	UA				1978
Buyallao Peninsula	UA				1978
Buyayao Island	UA				1978
Buyong Beach	UA				1978
Cabilao Island	UA				1978
Camiguin Island	UA	09°09'N	124°40'E		1978
Canaron Island	UA				1978
Coron Island	UA			5000	1978
Fort Burton	UA				1978
Fortune Island	UA	14°04'N	120°34'E		1978
Fugo Island	UA	18°50'N	121°13'E		1978
Gaban Island	UA				1978
Gaubian Island and vicinity	UA				1978
Gigantangan Island	UA				1978
Libago Island	UA				1978
Ligig Island	UA				1978
Ligpo Island	UA				1978
Maasim Island	UA				1978
Malahibang Island	UA				1978
Malampaya Sound	UA			25000	
Malanina Island	UA				1978
Maliputo Island-Talicut Island	UA				1978
Medio Island	UA				1978
Olango Island Complex	UA	10°16'N	124°03'E		1978
Opao Island	UA				1978
Pambaron Island	UA				1978
Panglao Island-Balicasag Area	UA	9°35'N	123°45'E		1978
Pocanel Island	UA				1978
Puerto Princesa	UA				1978
Sacol Island	UA				1978
Samal Island (eastern side) MR	UA				1978
Sangali Cove	UA				1978
Santa Cruz Island (Big & Small) NP/MR/TZ	UA	13°30'N	122°10'E		1975
Selinog Island	UA				1978
Sibalat Island	UA				1978
Siguijor Island	UA				1978
Sogod	UA				1978
Solitario Island	UA				1978
Sombrero Island	?	13°42'N	120°49'E		1977
Sugicay Island	UA				1978
Verde Island	UA	13°40'N	120°40'E		1978
MARINE SANCTUARY					
El Nido Marine					
Turtle Sanctuary	IV	11°13'N	119°25'E	96	1984
Guiuan	UA	10°58'N	125°43'E		1970
Nasugbu	UP	14°04'N	120°36'E		1970
Panguil Bay	UP	8°00'N	123°41'E		1970
Pollilio Island	UP	14°45'N	121°55'E		1970
MUNICIPAL PARK					
Carbin Reef (Sagay)	?	10°59'N	123°30'E		
NATIONAL INTEGRATED PROTECTED AREA					
Bantayan Islands	PRO			1000	
Honda Bay	PRO	9°55'N	118°52'E	5000	
Manila Bay	PRO			1000	
NATIONAL PARK					
Agoo-Damortis					
National Seashore Park	VI	16°21'N	120°20'E	10947	1965
Hundred Islands NP/TZ/MR	UP	16°14'N	120°03'E	1676	1940
MacArthur Landing	UA	11°11'N	125°00'E	7	1977
Manila Bay Beach Resort	UP	14°45'N	120°45'E	465	1954
St Paul Subterranean River	II	10°10'N	118°55'E	3901	1971

	IUCN Category	Latitude	Longitude	Size (ha)	Year
Taal Volcano	III	14°02'N	120°59'E	4537	1967
OTHER AREA					
Cagayan Island	UP	9°43'N	120°46'E		1970
Gaubian Island	?				1978
Guindolman	?	09°43'N	124°29'E		
Malampaya Sound MS/TZ	UP	10°53'N	119°28'E		1970
Pangasinan Watershores	?				
Sulpa Island	?				1978
PARK					
Moalboal/Pescador MunP	PRO	10°58'N	123°24'E		
SANCTUARY					
Sumilon National Fish	?				1980
WILDERNESS AREA					
Abanay	UA			25	1981
Alibijahan Island	UA			430	1981
Awasan	UA			707	1981
Bambanon	UA			67	1981
Banacon	UA			425	1981
Bancuya	UA			48	1981
Bantayan Island	UA	11°15'N	123°45'E	11210	1981
Budlaan	UA			19	1981
Bugatusan	UA			8	1981
Cabgan	UA			96	1981
Cabgan	UA			96	1981
Cabilan	UA			29	1981
Cabilan	UA			29	1981
Cabilan	UA			29	1981
Calamgaman	UA			6	1965
Cancostino	UA			30	1981
Cancostino	UA			30	1981
Capaquian	UA			217	1981
Catiil	UA			32	1981
Catill	UA			32	1981
Cepaya	UA			224	1981
Cobeto	UA			217	1981
Dahican	UA			92	1981
Islet of Basilan	UA			79	1981
Islet of Hayaan	UA			15	1981
Islet of Inanoran	UA			12	1981
Islet of Pamasuan	UA			21	1981
Islet of Poom point	UA			116	1981
Lamagon	UA			188	1981
Laonan	UA				1981
Lumislis	UA			120	1981
Magapit	UA			18	1981
Pandasas Island	UA			15	1981
Panga	UA			18	1981
Ponas	UA			1744	1981
Rasa	UA			42	1981
Saae	UA			48	1981
Siargao	UA				1981
Silo	UA			13	1981
Sugbuan	UA			7	1981
Tabaon	UA			11	1981
Tabboaba	UA			5	1981
Tambu	UA			120	1981
Tintiman	UA			28	1981
Tona	UA			612	1981
Tubangdio	UA			12	1981
WILDLIFE RESERVE					
Dampalit Island	IV				1980
Mayaba and Napayauan Island	IV				1980

	IUCN Category	Latitude	Longitude	Size (ha)	Year
WILDLIFE SANCTUARY					
Culion Island	IV				
Magapit	IV			6002	1932
Palawan	UA	9°58'N	118°43'E	763399	1967
Sri Lanka					
NATIONAL PARK					
Dutch Bay (+ Portugal Bay)	PRO				
Ruhuna (Yala) Block 1	II	6°29'N	81°28'E	13679	1938
Wilpattu Block 1	II	8°34'N	80°01'E	54953	1938
SANCTUARY					
Bar Reef Marine	IV	8°22'N	79°44'E	30670	1992
Chundikulam	IV	9°29'N	80°31'E	11149	1938
Great Sober Island	IV	8°32'N	81°13'E	65	1963
Hikkaduwa Marine	IV	6°07'N	80°07'E	45	1979
Honduwa Island	IV			8	1973
Kokilai Lagoon	IV	8°59'N	80°55'E	2995	1951
Little Sober Island	IV			7	1963
Parititivu Island	IV			97	1973
Pigeon Island	IV			5	1974
Seruwila-Allai	IV	8°23'N	81°22'E	15540	1970
Trincomalee Naval Headworks	IV	8°31'N	81°03'E	18130	1963
STRICT NATURAL RESERVE					
Yala	I	6°29'N	81°28'E	28905	1938
Taiwan (Province of China)					
NATIONAL PARK					
Kenting	II	21°57'N	120°46'E	32631	1982
Taroko	II	24°13'N	121°28'E	92000	1986
NATURE RESERVE					
Tan-Shui River Mangrove	IV	25°09'N	121°26'E	76	1986
PROTECTED AREA					
Bei-Men Coast	IV	23°19'N	120°03'E	2980	1987
Hua-Tung Coast	VIII	23°23'N	121°27'E	53470	1984
Jeou-Perng Coast	IV	22°09'N	120°53'E	530	1987
North Coast	VIII	25°17'N	121°34'E	5695	1987
Northeast Coast	VIII	25°02'N	121°56'E	13725	1984
Sue-Hua Coast	IV	24°18'N	121°45'E	7145	1984
Thailand					
NATIONAL PARK					
Ao Phangnga	II	8°17'N	98°36'E	40000	1989
Hat Chao Mai	II	7°22'N	99°20'E	23086	1981
Hat Nai Yang	II	8°07'N	98°17'E	9000	1981
Hat Noppharat Thara - Mu Ko Phi Phi	II	7°52'N	98°50'E	38996	1983
Khao Laem Ya - Mu Ko Samet	V	12°32'N	101°27'E	13100	1981
Khao Lam Pi - Hat Thai Muang	II	8°27'N	98°15'E	7200	1986
Khao Sam Roi Yot	II	12°12'N	100°00'E	9808	1966
Laem Son	II	9°30'N	98°25'E	31500	1983
Mu Ko Ang Thong	UA	9°33'N	99°41'E	10200	1980
Mu Ko Chang Islands	II	12°00'N	102°15'E	65000	1982
Mu Ko Lanta	II	7°32'N	99°07'E	13400	1990
Mu Ko Phetra	II	6°57'N	99°35'E	49438	1984
Mu Ko Similan	II	8°32'N	97°25'E	12800	1982
Mu Ko Surin	II	9°10'N	97°47'E	13500	1981
Tarutao	II	6°42'N	99°42'E	149000	1974
NON HUNTING AREA					
Mu Ko Libong	UA			44749	1979
Pa Len Pak Phanang-Pa Len Ko Chai	UA			5670	1984
Viet Nam					
NATIONAL PARK					
Cat Ba	II	20°48'N	107°02'E	15200	1986
Con Dao	II	8°42'N	106°38'E	15043	1982

Annex C – Map Atlas

General Map Descriptions

This annex contains a series of maps specifically selected to assist EEPSEA researchers in defining and undertaking researching projects related to marine system management. Maps C1 to C5 are based on Jameson *et al.* (1995) and provide global background information on key stresses on the coral reef environment. Map C6 relating to coral bleaching is based on research conducted through ReefCheck (Hong Kong University of Science and Technology 1998).

Maps C7 to C20 provide region-specific maps for EEPSEA countries, and are modified and/or reproduced with the permission of the World Conservation Monitoring Centre (WCMC). The reader is cautioned that more up to date information may be obtained directly from WCMC, and that other maps are available on the comprehensive map database accessible via the WCMC web site. The WCMC contacts are:

Information Officer, World Conservation Monitoring Centre, 219 Huntingdon Road,
Cambridge CB3 0DL, United Kingdom. Tel: +44 1223 277314; Fax: +44 1223 277136.

Email: info@wcmc.org.uk

<http://www.wcmc.org.uk/>

WCMC Global Map and Regional Map for EEPSEA (Map C7)

Global maps have been generated from a large number of different sources. Key among these are Petroconsultants SA (1990), UNEP/IUCN (1988a, 1988b) for coral reefs. Mangrove data are individually referenced by country, but all data have been taken from Spalding *et al.*, (in press). For full details and references for individual countries, reference should be made to the individual national and sub-national maps. Map C7 has been modified from the global map, specifically for EEPSEA use to permit viewing of regional coral and mangrove areas.

WCMC Map of Cambodia and Southern Vietnam (Map C8)

Coastline and coral reefs have been taken from Petroconsultants SA (1990), a 1:1,000,000 digital map which plots reefs as arcs which approximately conform to emergent reef crest. Mangrove data for Cambodia were digitised from Mekong Secretariat (1991) which is based on 1988/9 LANDSAT TM images interpreted without ground-truthing. More recent maps Mekong Secretariat (1994) showing mangroves (c.1:400,000 to 1:1,000,000) are now available - differences in the mangrove coverages between these two sources are not significant at the scales used here. For Vietnam, data showing mangrove in the Mekong Delta only are taken from Anon (1987), believed to be the result of a forest inventory in 1987. Further approximate areas were added from edits provided by François Blasco.

WCMC Maps of South East China and North Vietnam (Map C9, C20)

Coral reefs and coastline taken from Petroconsultants SA (1990), a 1:1,000,000 digital map which plots reefs as arcs which approximately conform to emergent reef crest. Mangrove

coverage gathered from sketch maps drawn over 1:500,000-1:1,000,000 base maps, prepared for this work by Professor Lin Peng, Xiamen University (mainland China) and Dr Jane Lewis, National Taiwan Ocean University (Taiwan).

WCMC Maps of Indonesia (Maps C10 to C14)

Reefs and coastline have been taken from Petroconsultants SA (1990), a 1:1,000,000 digital world map which plots reefs as arcs which approximately conform to emergent reef crest.

Mangrove data are based on the Regional Physical Planning Programme for Transmigration (RePPPProT) work begun in 1984 in association with the National Centre for Coordination of Surveys and Mapping (BAKOSURTANAL). Surveys were based on existing reports, air photographs and satellite or radar imagery with selective field checking. Data were generously provided to WCMC by the RePPPProT team in the form of hand-coloured draft maps at 1:2.5 million scale, dating from 1985 and 1987 for Kalimantan, from 1986 for Irian Jaya, from 1989 for Nusa Tenggara and from 1988 for Sulawesi. The maps for Irian Jaya, Nusa Tenggara, and Sulawesi have been further updated from maps provided by Wim Giesen of the Asian Wetlands Bureau showing key mangrove areas. A small number of additional edits were provided by Dr Jim Davie, University of Queensland, Australia, and by François Blasco.

WCMC Map of Sumatra and Peninsular Malaysia (Map C15)

Reefs and coastline have been taken from Petroconsultants SA (1990), a 1:1,000,000 digital world map which plots reefs as arcs which approximately conform to emergent reef crest.

For Sumatra, mangrove data are based on the Regional Physical Planning Programme for Transmigration (RePPPProT) work begun in 1984 in association with the National Centre for Coordination of Surveys and Mapping (BAKOSURTANAL). Surveys were based on existing reports, air photographs and satellite or radar imagery with selective field checking. Data were generously provided to WCMC by the RePPPProT team in the form of hand-coloured draft maps at 1:2.5 million scale, dating from 1986 for Irian Jaya. These maps have been further updated from a series of maps provided by Wim Giesen of the Asian Wetlands Bureau showing key mangrove areas. A small number of additional edits were provided by Dr Jim Davie, University of Queensland, Australia, and by François Blasco.

Mangrove data for Peninsula Malaysia are taken from Forest Department (n.d.). Although undated, this unpublished map is an updated version of a map published in 1986.

WCMC Map of Papua New Guinea (Map C16)

Reefs and coastline have been taken from Petroconsultants SA (1990), a 1:1,000,000 digital world map which plots reefs as arcs which approximately conform to emergent reef crest. Digital mapped data for mangroves have kindly been provided by the Australian National University, with generous permission from the Department of Agriculture and Livestock, Papua New Guinea. These data are taken from the Papua New Guinea Resource Information System.

The source data have been generated from air photo interpretation of 1:50,000 and 1:80,000 images taken in the 1960s and 1970s, and mapped at a scale of 1:500,000. Although data are old it is thought that rates of change may not be large in this country, while these data are thought to be the most accurate available for this country.

WCMC Map of Philippines (Map C17)

Reefs and coastline have been taken from Petroconsultants SA (1990), a 1:1,000,000 digital world map which plots reefs as arcs which approximately conform to emergent reef crest. Additional reefs have been taken from UNEP/IUCN (1988), digitised at a scale of 1:4,800,000; and from NAMRIA (1988).

Mangrove data were also kindly provided by the NAMRIA (1988). These data represent processed satellite imagery, prepared from SPOT images taken in 1987, at a scale of 1:250,000. Some of the smallest islands in the southwest, central and northern parts of the country are not included in the coverage, but are not likely to make a significant difference to the total area.

WCMC Map of Sri Lanka (Map C18)

Coastline is taken from Petroconsultants SA (1990). Coral reefs have been digitised at a scale of 1:1,200,000 from UNEP/IUCN (1988). Mangrove data were kindly provided by the ODA Forest Mapping and Planting Project of the Forest Department in Sri Lanka. These were prepared from Landsat TM imagery, incorporated onto a 1:50,000 base-map. Most source images were from 1992, with analysis and ground-truthing completed by 1994. Details of the dataset provided in Legg and Jewell (1997).

WCMC Map of Thailand (Map C19)

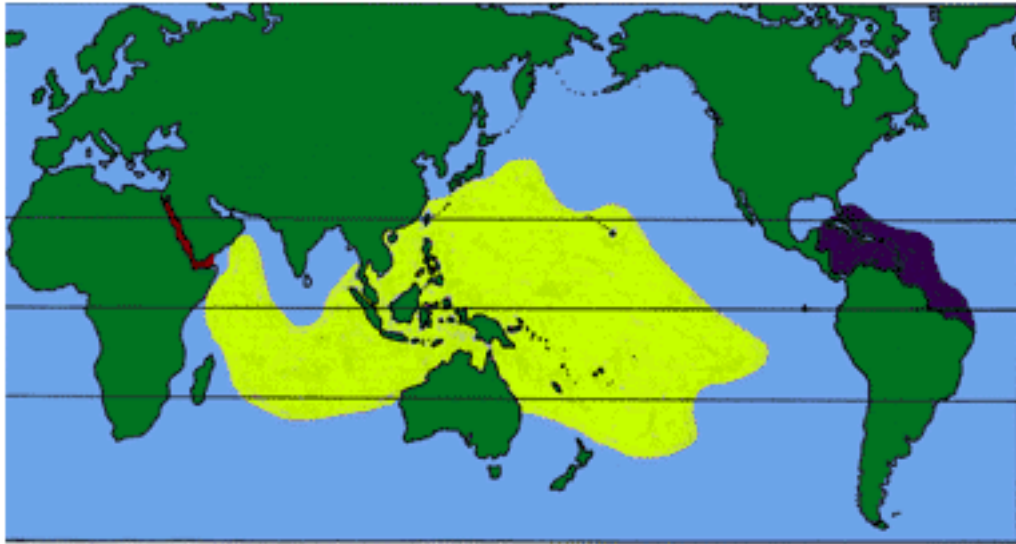
The coastline is taken from Petroconsultants SA (1990). Coral reefs have been digitised at 1:2,800,000 (and at 1:835,000 for Phuket and 1:500,000 for Samet, Kut and Thalu) from UNEP/IUCN (1988). Mangrove polygons were prepared from the four-map series (IDRC/NRCT/RFD, 1991) produced as a part of the Remote Sensing and Mangroves Project (Thailand) at a scale of 1:500,000. Sources for these maps were Landsat-MSS data recorded in 1986-1987.

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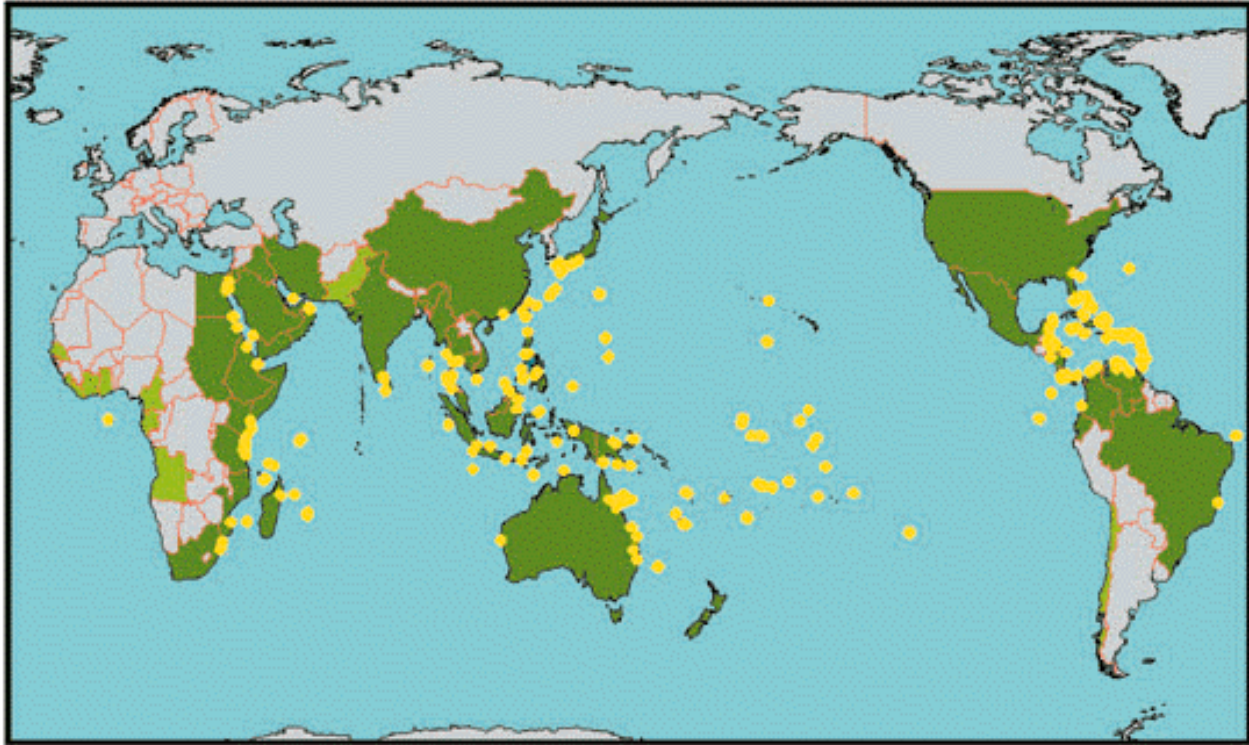
Map C1. Coral reef regions of the world. (Based on: Jameson SC, McManus JW, Spalding MD. 1995. State of the reefs: regional and global perspectives. Background paper for International Coral Reef Initiative. May.)



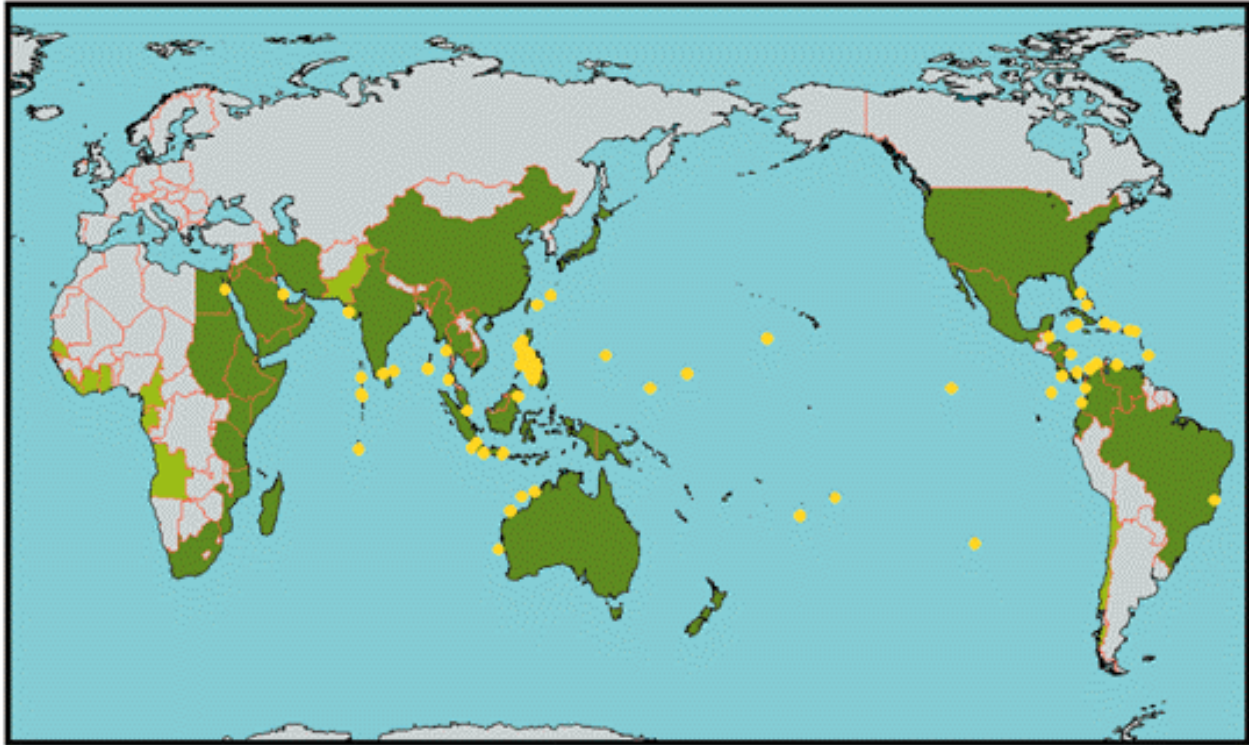
Coral Reef Regions of the World

- Indo-Pacific
- Red Sea
- Western Atlantic

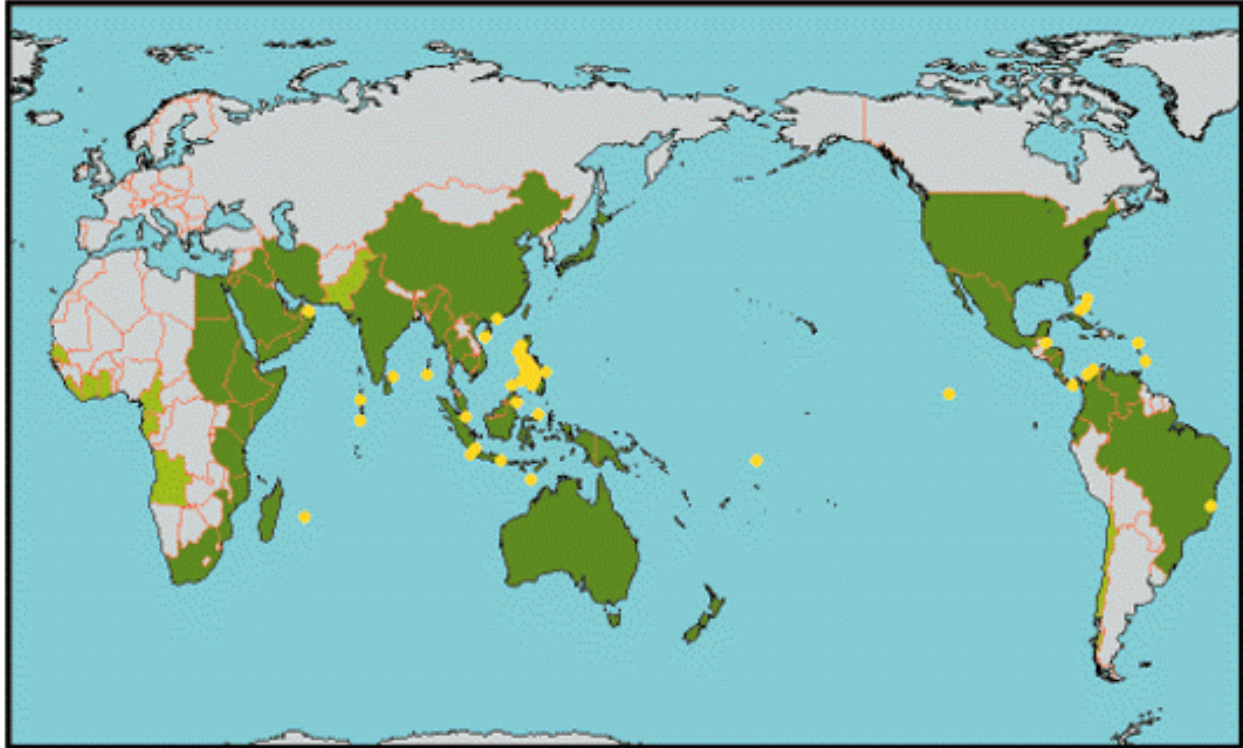
Map C2. Distribution of Marine Protected Areas. Countries or island states with significant coral reef management responsibilities are shown in dark green; light green shading depicts countries with less developed coral communities. (Based on: Jameson SC, McManus JW, Spalding MD. 1995. State of the reefs: regional and global perspectives. Background paper for International Coral Reef Initiative. May.)



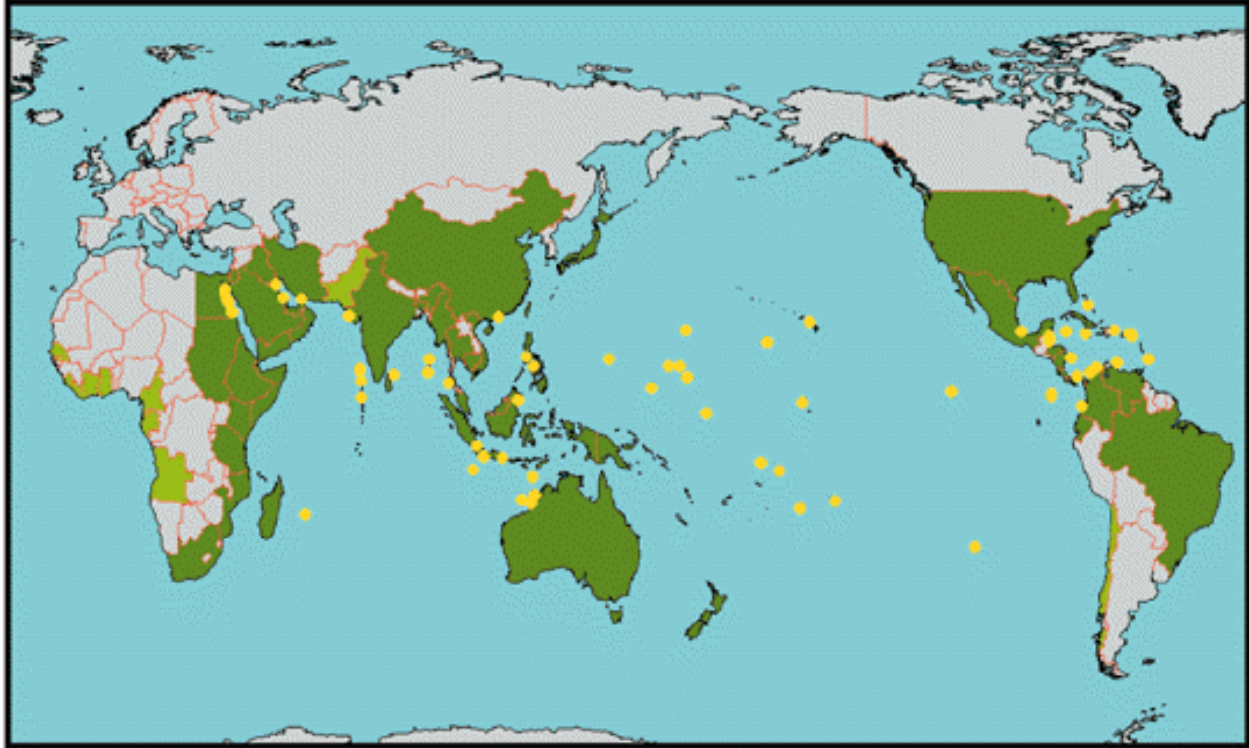
Map C3. Sedimentation on coral reefs. Distribution of reports relating to damages on coral reefs caused by sedimentation. Sedimentation problems combine impacts of runoffs from deforestation, dumping of mine tailings, and construction sedminents. Countries or island states with significant coral reef management responsibilities are shown in dark green; light green shading depicts countries with less developed coral communities. (Based on: Jameson SC, McManus JW, Spalding MD. 1995. State of the reefs: regional and global perspectives. Background paper for International Coral Reef Initiative. May.)



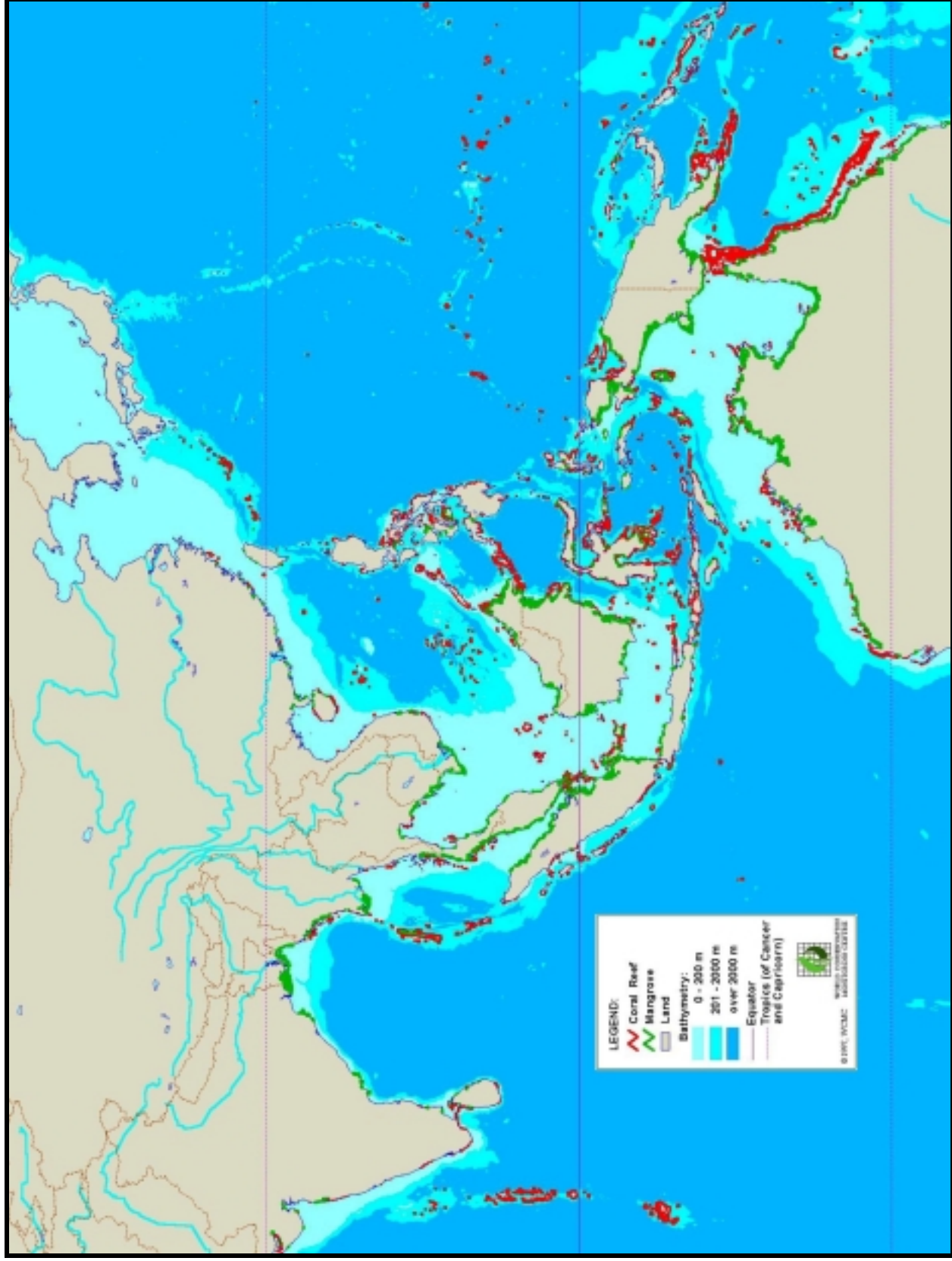
Map C4. Blast fishing on coral reefs. Distribution of reports relating to damage arising from blast fishing on coral reefs. Countries or island states with significant coral reef management responsibilities are shown in dark green; light green shading depicts countries with less developed coral communities. (Based on: Jameson SC, McManus JW, Spalding MD. 1995. State of the reefs: regional and global perspectives. Background paper for International Coral Reef Initiative. May.)



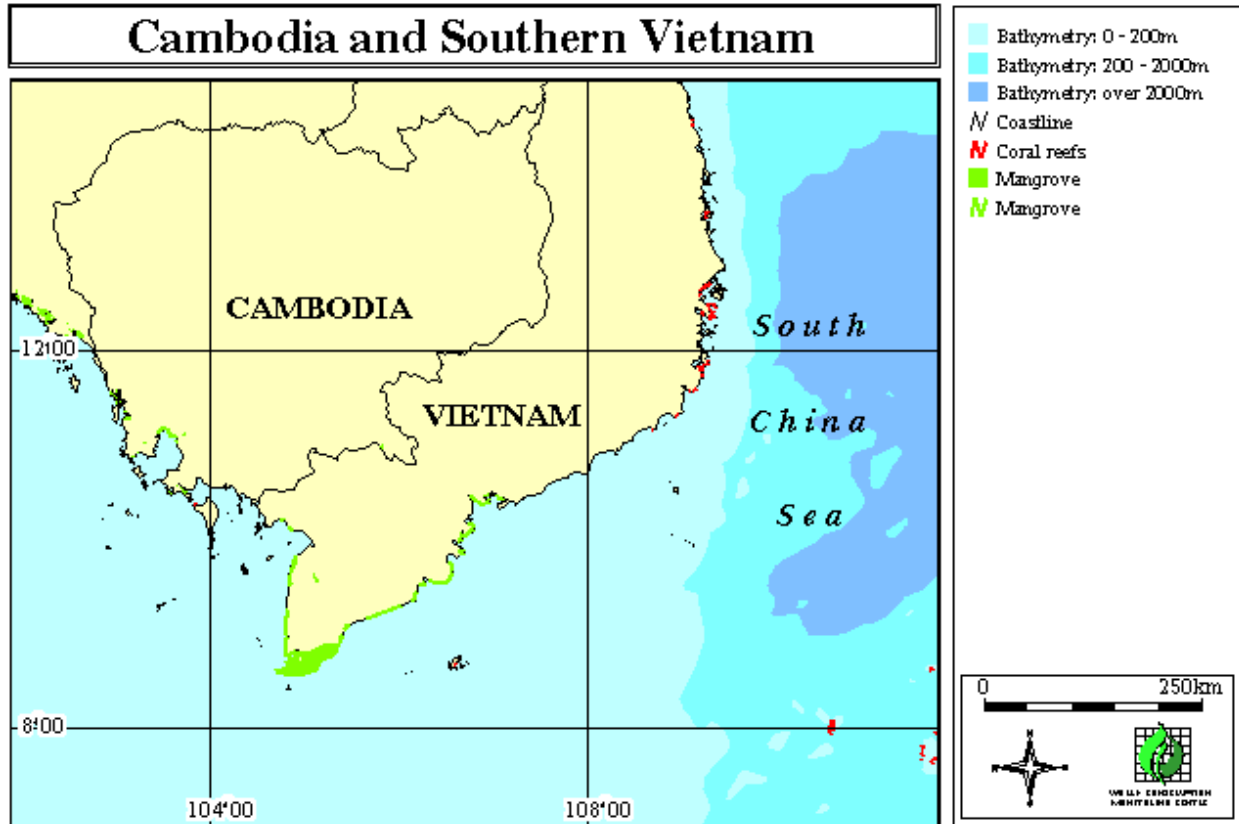
Map C5. Pollution on coral reefs. Distribution of reports relating to (primarily organic) pollution affecting coral reefs. Countries or island states with significant coral reef management responsibilities are shown in dark green; light green shading depicts countries with less developed coral communities. (Based on: Jameson SC, McManus JW, Spalding MD. 1995. State of the reefs: regional and global perspectives. Background paper for International Coral Reef Initiative. May.)



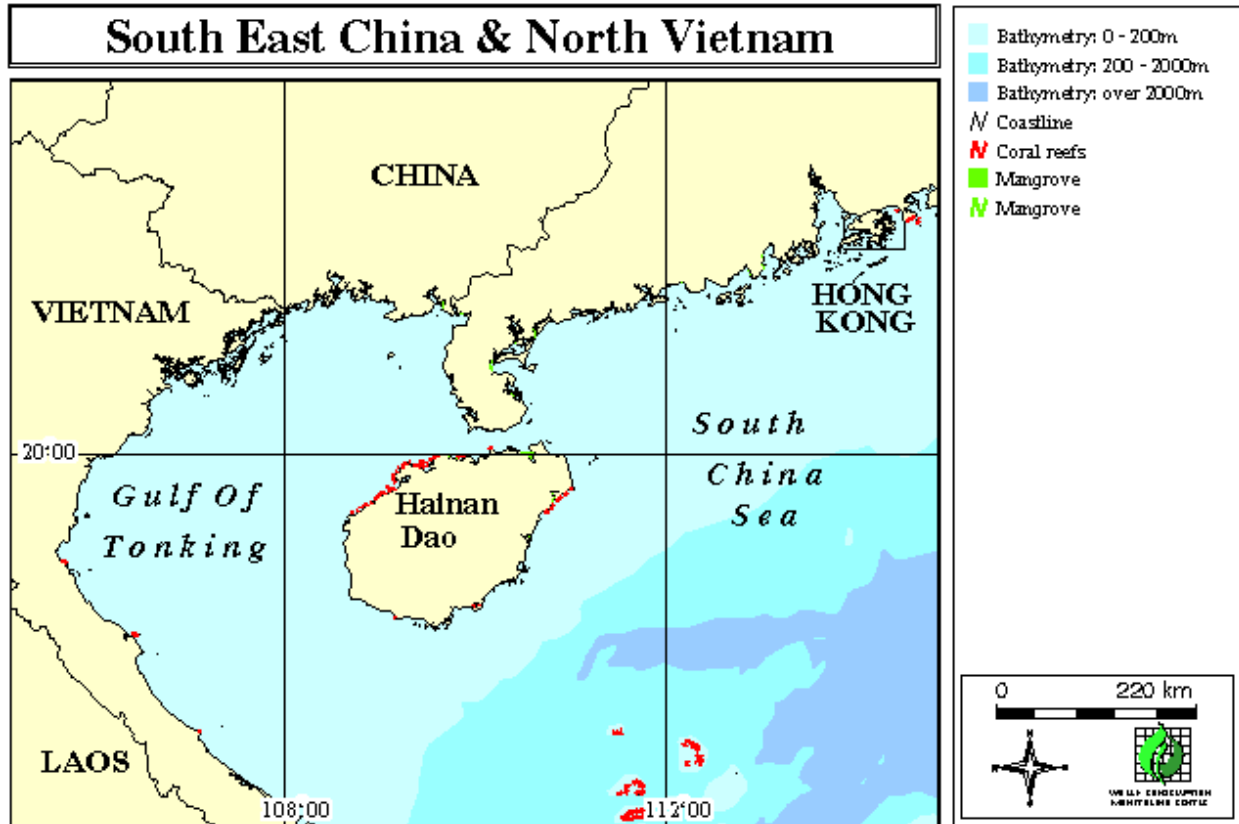
Map C7. Coral distribution in SE Asia with coverage of EEPSEA countries. This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. This map has been modified with permission from WCMC (4/99) to show the coverage in countries of and regions of particular interest to EEPSEA researchers. These include: Cambodia, China (including Taiwan), Indonesia, Malaysia, Papua New Guinea, Philippines, Sri Lanka, Thailand, and Vietnam. The reader is cautioned that more up-to-date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



Map C8. Coral distribution for Cambodia and Vietnam (Southern). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



Map C9. Coral distribution for China (South East) and Vietnam (North). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



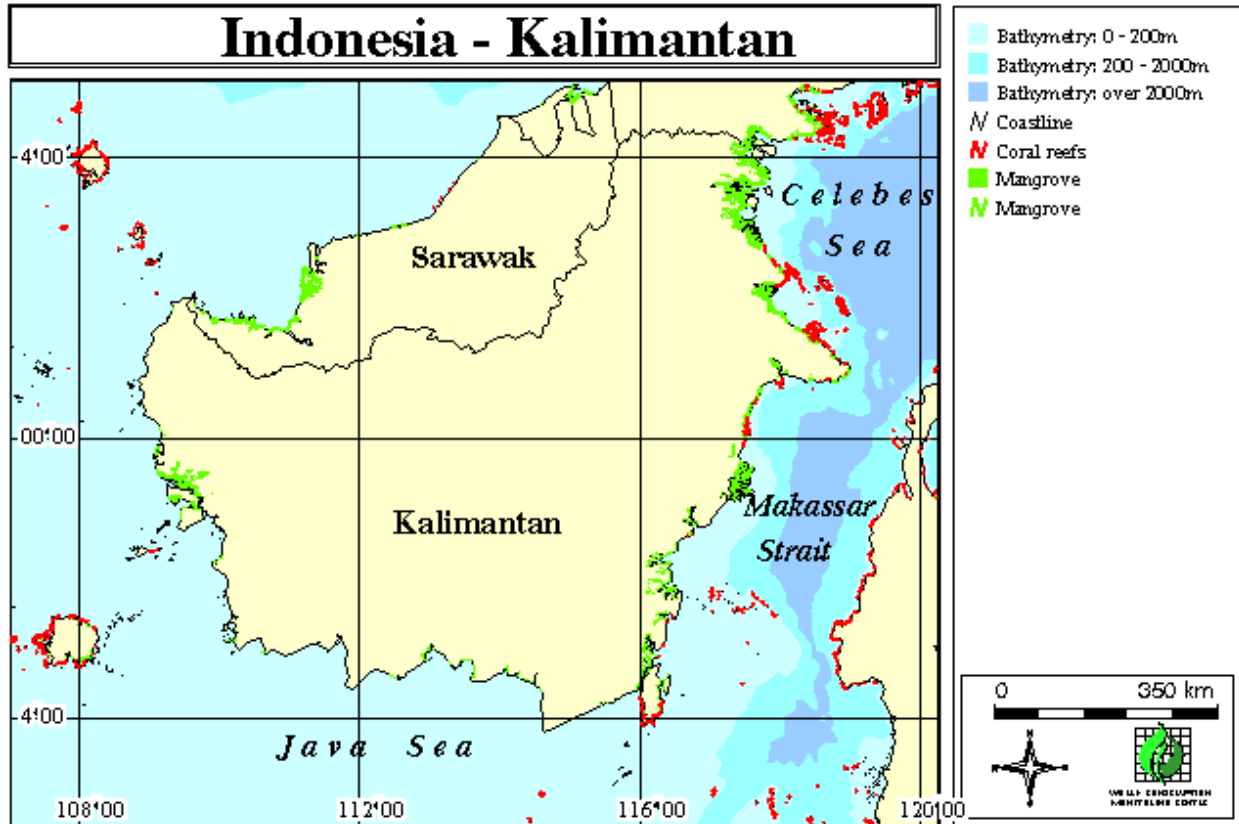
Map C10. Coral distribution for Indonesia (Irian Jaya). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



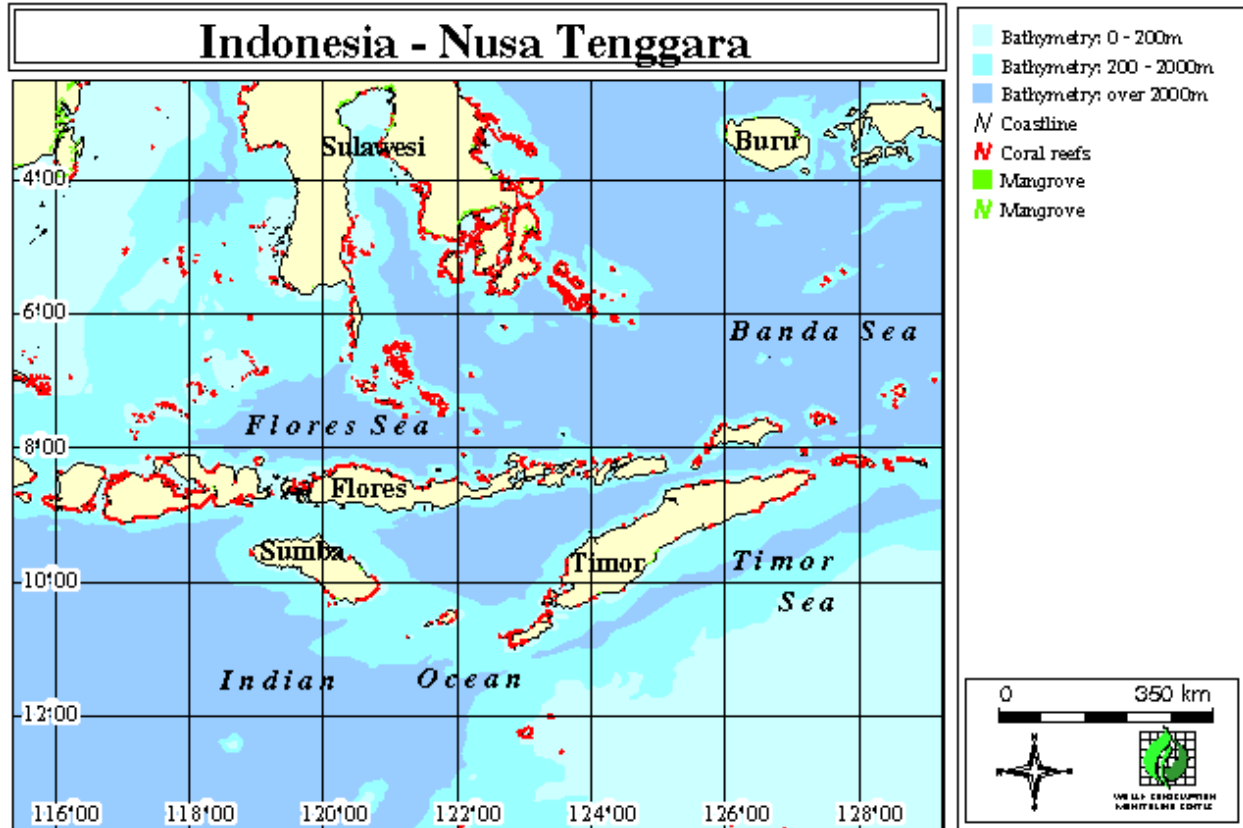
Map C11. Coral distribution for Indonesia (Java). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



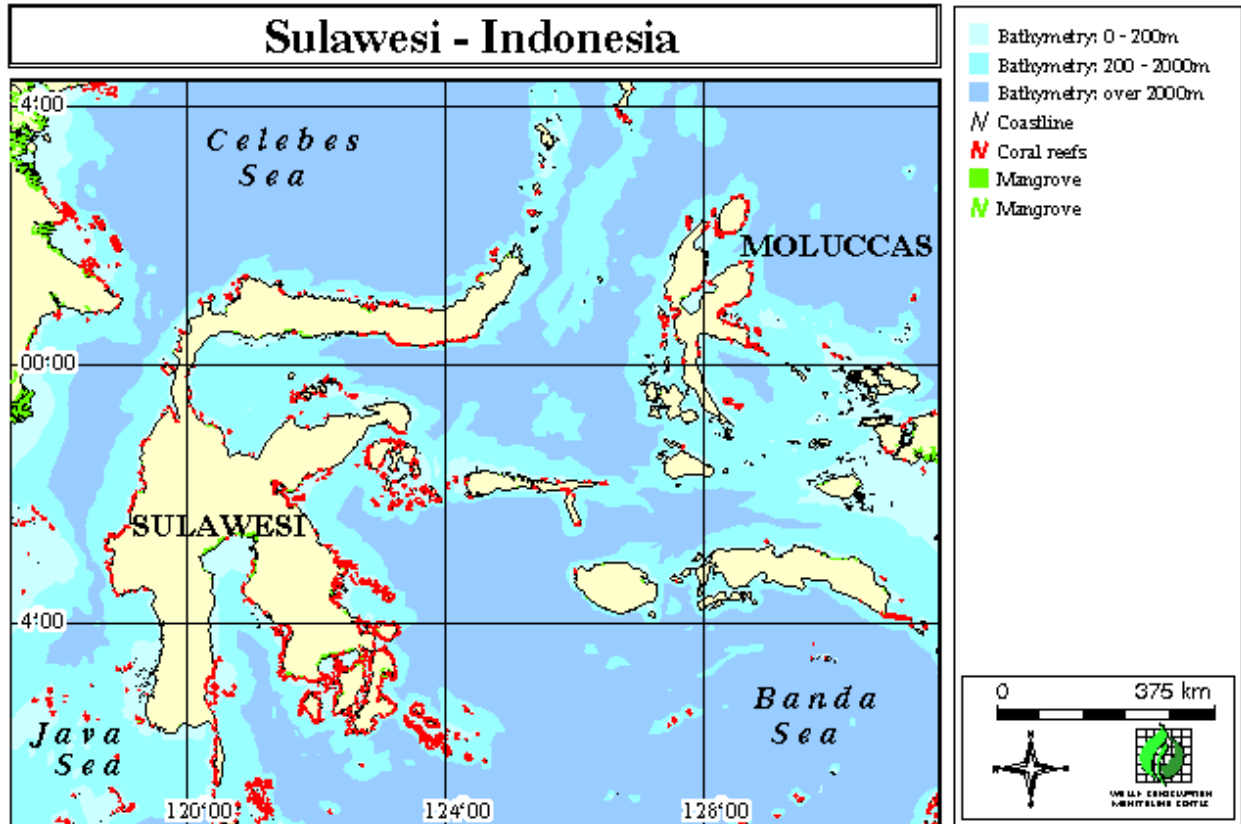
Map C12. Coral distribution for Indonesia (Kalimantan). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



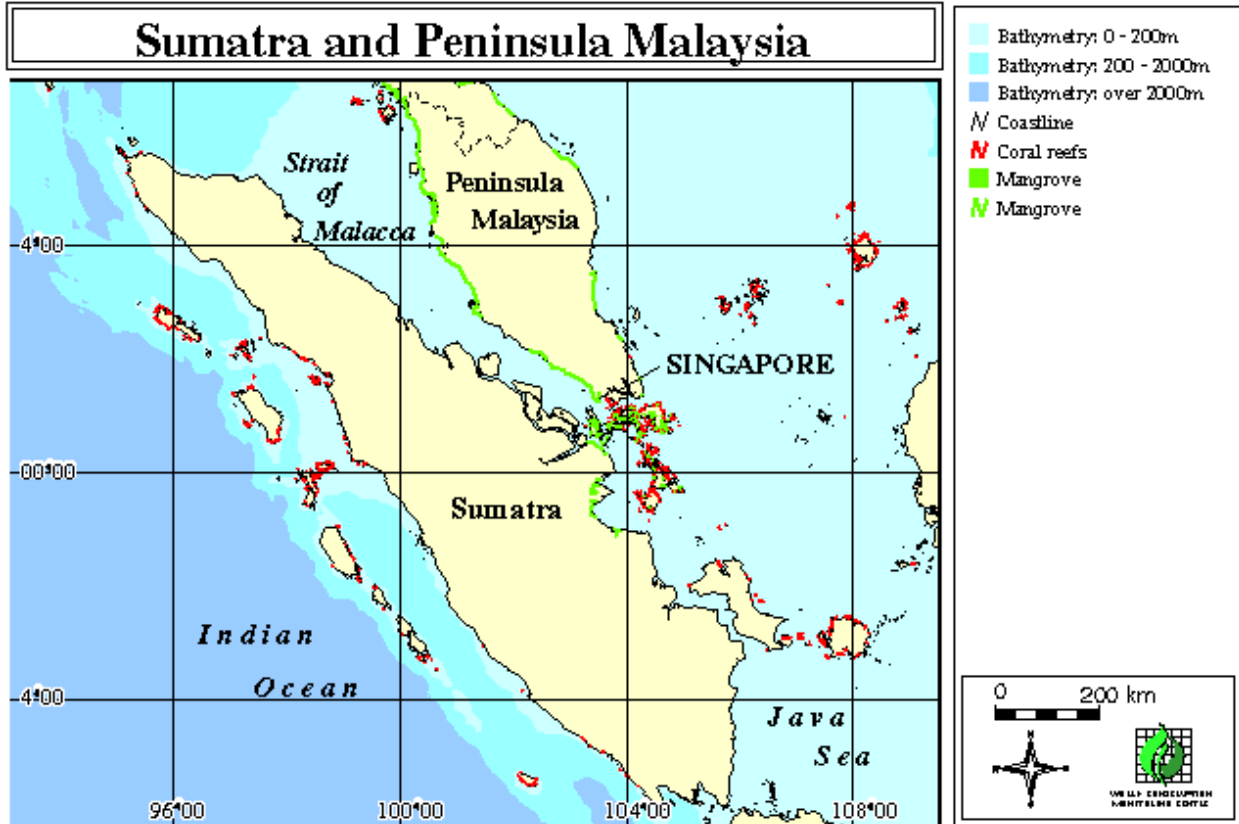
Map C13. Coral distribution for Indonesia (Nusa Tenggara). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



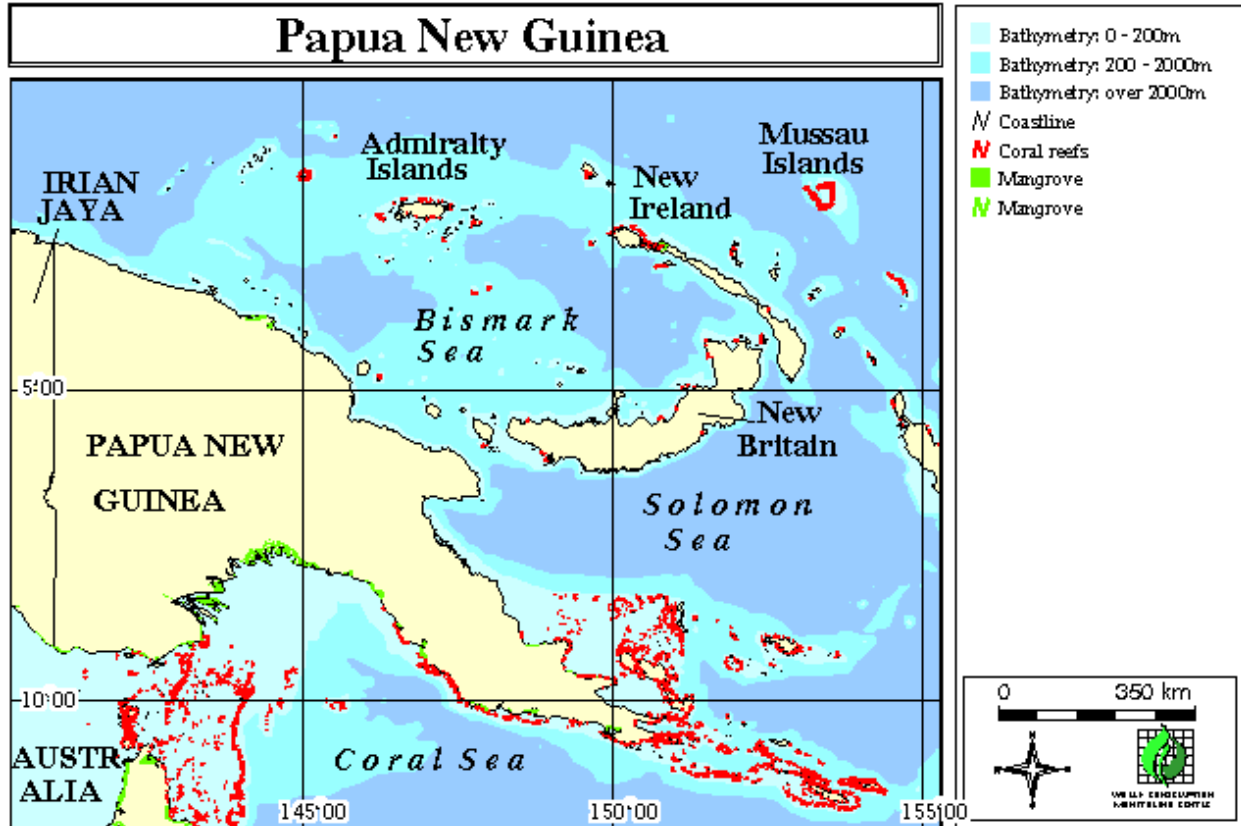
Map C14. Coral distribution for Indonesia (Sulawesi). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



Map C15. Coral distribution for Malaysia (peninsular), Singapore and Indonesia (Sumatra). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



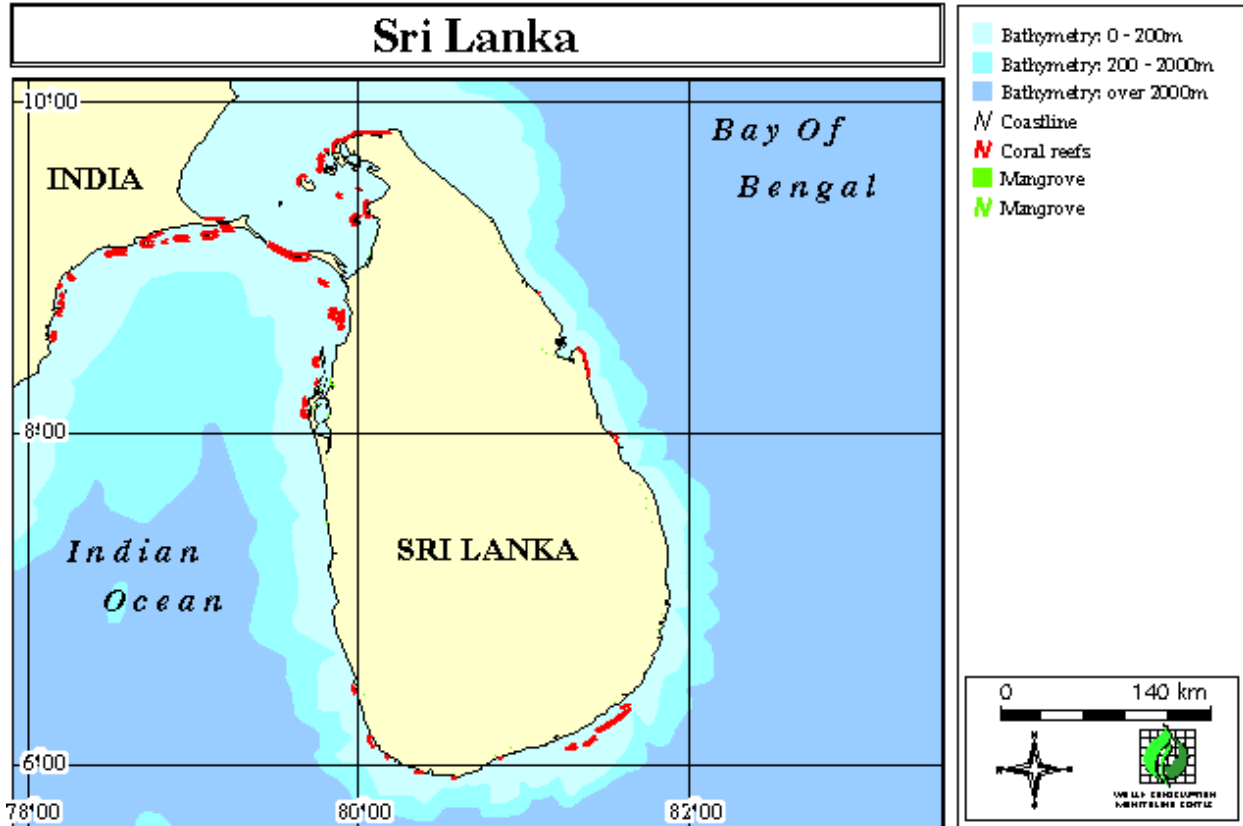
Map C16. Coral distribution for Papua New Guinea. This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



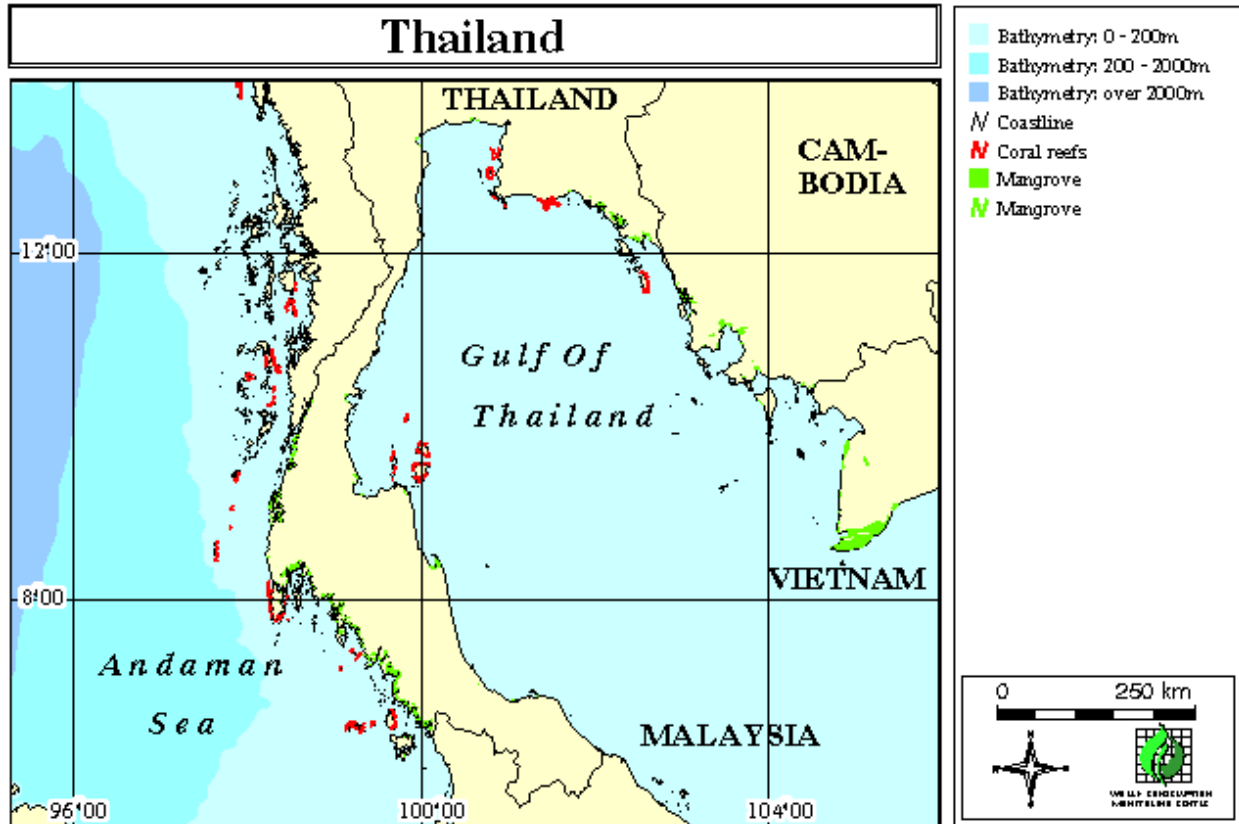
Map C17. Coral distribution for Philippines. This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk). The web site also shows more detailed maps for some of the main islands in the Philippines.



Map C18. Coral distribution for Sri Lanka. This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



Map C19. Coral distribution for Thailand. This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).



Map C20. Coral distribution for Vietnam (North East). This map shows approximate coverage of coral reef and mangrove ecosystems in early- and mid-1990s as documented by the World Conservation Monitoring Centre. Map has been reproduced with permission (4/99) from the WCMC web site, although the reader is cautioned that more up to date information may be available from the WCMC web site (<http://www.wcmc.org.uk>) or from WCMC directly (info@wcmc.org.uk).

