

Developing Australia's national system of marine reserves

A statement of concern about the proposal for Australia's South West Marine Region

Coordinator: Professor Hugh Possingham, The University of Queensland 5 August 2011

On 5th May 2011 the Australian Government released a draft proposal for a network of marine reserves in the Commonwealth waters of the South West bioregional marine planning region. Australia's South West is of global significance for marine life because it is a temperate region with an exceptionally high proportion of endemic species – species found nowhere else in the world.

Important industries, such as tourism and fisheries, depend on healthy marine ecosystems and the services they provide. Networks of protected areas, with large fully protected core zones, are essential to maintain healthy ecosystems over the long-term – complemented by responsible fisheries management¹.

The selection and establishment of marine reserves should rest on a strong scientific foundation. We are greatly concerned that what is currently proposed in the Draft South West Plan is not based on the three core science principles of reserve network design: comprehensiveness, adequacy and representation. These principles have been adopted by Australia for establishing our National Reserve System and are recognized internationally.²

Specifically, the draft plan fails on the most basic test of protecting a representative selection of habitats within the bioregions of the south-west. There are no highly protected areas proposed at all in three of the seven marine bioregions lying on the continental shelf.³ Overall less than 3.5% of the shelf, where resource use and biodiversity values are most intense, is highly protected. Further, six of the seven highly protected areas that are proposed on the shelf are small (< 20km in width)⁴ and all are separated by large distances (> 200km).⁵ The ability of such small isolated areas to maintain connectivity and fulfill the goal of protecting Australia's marine biodiversity is limited.

The gaps are further exemplified by the very patchy protection of identified unique features. We are concerned that 160 of the 165 areas identified as biologically important and thirteen of the sixteen key ecological features mapped during the planning process have either low levels of protection proposed (< 15% in highly protected areas) or very limited protection proposed (0% in highly protected areas). It is well recognized that where the habitat of a threatened species is spatially restricted full protection may be required.⁶

We have grave concerns about the lack of protection caused by these gaps in the proposed system of marine reserves. To protect marine biodiversity all habitat types should be represented to an adequate level within highly protected areas.⁵ If implemented as proposed, the marine reserves would cover less than half of the mapped habitat types within the South-west planning region within highly protected areas. This would be a major failure for the whole marine planning process and send a poor signal internationally.

We urge the Australian Government to amend the proposed network of marine reserves to address these concerns, by significantly increasing the level of protection to adequately cover all the continental shelf bioregions, and providing a high level of protection for key features such as the Abrolhos region, the Rottnest Shelf, the Perth Canyon, Geographe Bay and the Capes, the Albany Canyons, the Recherche region, the Great Australian Bight, Kangaroo Islands Canyons, and the Kangaroo Island upwelling system—one of Australia's most productive ocean areas.

Endorsements:

Endorsed by the AMSA Council on behalf of the Australian Marine Science Association.

Endorsed by the ACRS Council on behalf of the Australian Coral Reef Society.

Supporting scientists:

Adriana Verges, PhD, marine ecologist, Sydney Institute of Marine Science, University of NSW, Sydney.

Alastair Harborne, PhD, NERC Research Fellow, Spatial Ecology Lab, University of Queensland, St Lucia Brisbane.

Alex Petrie, BVMS(Hons) PostGradDip Conservation Medicine, 9/2 Davies Street Northbridge 6003.

Alex Wyatt, Fulbright Scholar, Scripps Institute of Oceanography, University of California, San Diego, USA.

Alexander Gillespie, Pro-Vice-Chancellor of Research and Professor of Law, University of Waikato, NZ.

Alicia Sutton, BScHons, Centre for Marine Futures, Oceans Institute, University of Western Australia.

Alvin van Niekerk, PhD, ARC Centre of Excellence for Environmental Decisions, University of Queensland.

Andrew Baker, Assoc Professor, Pew Fellow in Marine Conservation, University of Miami, Florida USA.

Andy Davis, Assoc Prof, marine conservation biology, University of Wollongong, NSW.

Anna Scott, PhD, Lecturer, National Marine Science Centre, Southern Cross University, Coffs Harbour NSW .

Anthony Cheshire, PhD, Professor, Principal Scientist, Science to Manage Uncertainty, Belair, South Australia.

Anthony Richardson, Associate Professor, Centre for Applications in Natural Resource Mathematics, UQ, Qld.

Ayesha Tulloch, PhD candidate, The Ecology Centre, Biological Sciences, University of Queensland, Brisbane.

Barry Baker, Director, Latitude 42 Environmental Consultants, Kettering Tasmania 7155.

Belinda Cannell, PhD, Biological Sciences and Biotechnology, Murdoch University, Murdoch, WA 6150

Benjamin Fitzpatrick, Grad Res Assist, Centre for Marine Futures, University of Western Australia, WA.

Benjamin Halpern, Director, Center for Marine Assessment and Planning; Research Scientist, UC Santa Barbara

Beverley Clarke, PhD, Director of Studies, Master of Environmental Management, Flinders University, Adelaide.

Bill Gladstone, Professor, Head, School of the Environment, University of Technology, Sydney New South Wales.

Boris Worm, Associate Professor, Department of Biology, Dalhousie University Halifax, NS, Canada.

Brian Finlayson, Professor, aquatic environments & conservation planning, Melbourne University, Victoria.

Brigitte Sommer, PhD candidate, ARC Centre of Excellence for Coral Reef Studies, University of Queensland.

Bruce Kendall, PhD, Professor of Environmental Science and Management, Univ of California, Santa Barbara.

Carissa Klein, PhD, ARC Postdoctoral Fellow, conservation science, University of Queensland, Brisbane Qld.

Carmen Primo, PhD, Associate Lecturer, NCMCRS, University of Tasmania.

Chandra Salgado Kent, PhD, Research Fellow, Centre for Marine Science and Technology, Curtin University. WA.

Charles Sheppard, Professor, School of Life Sciences, University of Warwick, United Kingdom.

Christopher Brown, PhD candidate, Marine Ecology & Fisheries. School of Biological Sciences, UQ, Brisbane.

Christopher Burton, Director, Western Whale Research, Dunsborough, Western Australia.

Clive Wilkinson, PhD, Coordinator of the Global Coral Reef Monitoring Network, Townsville

Corey Bradshaw, Professor, Ecological Modeling, University of Adelaide, South Australia.

Craig Johnson, Professor of Zoology, Director of Marine & Antarctic Futures Centre, IMAS, University of Tasmania

Curt Jenner, Managing Director, Centre for Whale Research (WA) Inc, Fremantle, Western Australia.

Dan Laffoley, Professor, Marine Vice Chair, IUCN World Commission on Protected Areas.

Daniel Pauly, Professor of Fisheries, Fisheries Centre, The University of British Columbia, Canada.

Daniel Smale, PhD, Research Fellow, Oceans Institute, University of Western Australia, Perth Western Australia.

Daniela Ceccarelli, PhD, Marine Ecology Consultant, PO Box 215, Magnetic Island QLD 4819.

David Booth, Professor, Marine Ecology, University of Technology, Sydney New South Wales.

David Sutton, Assoc Prof, Microbiology and Immunology, Oceans Institute, University of Western Australia.

Debora De Freitas, PhD, Research Fellow, Aust. National Centre for Ocean Resources & Security, UniWollongong.

Deborah Milham-Scott, PhD, Faculty of Science, Health & Education, University of the Sunshine Coast, Qld.

Dirk Zeller, Senior Research Fellow & Project Manager, *Sea Around Us* Project, University of British Columbia.

Eleanor Bruce, PhD, Senior Lecturer, coastal management, School of Geosciences, University of Sydney, NSW.
Elliott Norse, PhD, President, Marine Conservation Institute, Bellevue Washington USA.
Emily Shaw, PhD candidate, Climate Change Research Centre, University of New South Wales, Sydney.
Eric Trembl, PhD, marine ecology and conservation, University of Queensland, Brisbane, Queensland.
Erich Hoyt, Research Fellow, Whale & Dolphin Conservation Society, IUCN SSC WCPA & CSG, United Kingdom.
Fiona Scott, PhD candidate, marine algae, University of Tasmania, Hobart Tasmania.
Fiorenza Micheli, PhD, Hopkins Marine Station, Stanford University, California, USA.
Francis Pantus, PhD, Assoc Prof, Australian Rivers Institute, Griffith University, Nathan, Queensland.
Gabriel Vianna, PhD candidate, Centre for Marine Futures, University of Western Australia, Crawley WA.
Gabrielle Cummins, BSc(Hons), Graduate Research Assistant, Centre for Marine Futures, Univ of WA.
Gary Davis, US National Park Service Chief Ocean Scientist, Westlake Village, California, USA.
Gary Luck, Assoc Prof, Environmental Sciences, Charles Sturt University, Albury NSW.
Geoffrey Wescott, Assoc Prof, marine ecology and conservation, Deakin University, Geelong Victoria.
George Shillinger, PhD, Stanford University, Marine Biologist, Monterey, California.
Giuseppe Notarbartolo di Sciara, PhD, President, Tethys Research Institute, Milano, Italy.
Graeme Kelleher, AO, FTSE, FIEAust, FEIANZ, former director Great Barrier Reef Marine Park Authority, Canberra.
Graham Edgar, Assoc Prof, marine ecology, University of Tasmania, Hobart Tasmania.
Greg Skilleter, PhD, Marine and Estuarine Ecology Unit, University of Queensland, Brisbane, Australia.
Hedley Grantham, PhD, Science and Knowledge, Conservation International, NSW, Australia.
Hugh Finn, PhD, School of Biological Sciences and Biotechnology, Murdoch University, Western Australia.
Hugh Possingham, Professor, spatial ecology, Ecology Centre, University of Queensland, Queensland.
Ian Dutton PhD, President and CEO, Alaska SeaLife Center, Seward, Alaska USA.
Jacquie Sheils, MAppSc, benthic ecologist, Fantasea Cruises Whitsunday Islands, Queensland.
James Brook, BSc (Ma), M.Env.St, marine ecologist, Normanville, South Australia 5204.
James Watson, DPhil, Climate Adaptation, Wildlife Conservation Society, Bronx, New York, USA.
Jamie Kirkpatrick, Professor, conservation ecology and planning, University of Tasmania, Hobart Tasmania.
Janine Baker, PhD, marine ecologist, Hove, South Australia 5048.
Jeff Wright, PhD, marine ecology, NCMCRS, University of Tasmania, Hobart Tasmania.
Jens Zinke, Assistant Professor, Oceans Institute, University of Western Australia, Perth, Western Australia.
Jessica Meeuwig, Professor, marine ecology, University of Western Australia, Perth Western Australia.
Jessica Melbourne-Thomas, PhD, ecological statistician, Antarctic Climate & Ecosystems Coop. Res. Centre, UTAS.
Jill StJohn, PhD, Marine Coordinator, The Wilderness Society, West Perth, Western Australia.
Jim Underwood, PhD, Adjunct Fellow, University of Western Australia, Perth Western Australia.
Jochen Kaempf, Associate Professor, Physical Oceanography, Flinders University, Adelaide South Australia.
John Beardall, Professor, phytoplankton ecophysiology, Monash University, Victoria, Australia.
John Hooper, PhD, Head Biodiversity & Geosciences Programs, Queensland Museum, Brisbane, Queensland.
John Ogden, Emeritus Professor of Integrative Biology, University of South Florida, St. Petersburg, FL USA.
John Pandolfi, Professor, coral reef paleoecology, ARC Centre of Excellence for Coral Reef Studies, UQ, Brisbane.
John Sherwood, Hon. Associate Professor, Life and Environmental Sciences, Deakin University, Warrnambool.
Jon Nevill, PhD, Director, OnlyOnePlanet Consulting, PO Box 106 Hampton Victoria 3188.
Jonathan Gardner, PhD, Professor of Marine Biology, Victoria University of Wellington, New Zealand.
Judit Szabo, PhD, conservation biologist, Research Fellow, Charles Darwin University, Darwin, Northern Territory.
Judy Clarke, PhD, Wildlife Biologist, Department of Primary Industries, Parks, Water & Environment, Tasmania.
Karen Edyvane, Professor, Marine Conservation & Management, Charles Darwin University, Northern Territory.
Kate Sprogis, PhD, Centre for Fish and Aquatic Ecosystems Research, Murdoch University, Murdoch WA.
Keren Raiter, PhD candidate, Ecological Restoration and Intervention Ecology, University of Western Australia.
Kerstin Bilgmann, PhD, Postdoctoral Research Fellow, School of Biological Sciences, Flinders University, Adelaide.

Kimberley Millers, PhD candidate, School of Botany, University of Melbourne, Victoria.

Kris Waddington, PhD, Senior Research Fellow, Centre for Marine Futures, University of Western Australia.

Larry Crowder Professor of Biology, Hopkins Marine Station, Stanford University, Pacific Grove, California.

Lars Bejder, PhD, Head, Cetacean Research Unit, Murdoch University, Murdoch WA 6150.

Laurie Laurenson, Assoc Prof, Life and Environmental Sciences, Deakin University, Warnambool Victoria.

Leslie Cornick, Associate Professor, Alaska Pacific University, Anchorage, AK, USA

Lindy Weilgart, PhD, Research Associate, Dept. of Biology, Dalhousie University, Halifax, NS Canada.

Lissa Bar, PhD candidate, marine conservation, The Ecology Centre, University of Queensland, Brisbane Qld.

Lorena Machado, MappSc, Estuary and Tidal Wetland Ecosystems Research Group, JCU, Townsville, Qld.

Louise Duxbury, PhD, Green Skills Inc, Adjunct Fellow, University of Western Australia, Perth Western Australia.

Luciana Moller, PhD, Senior Lecturer in Marine Biology, Flinders University, Adelaide South Australia.

Luciano Beheregaray, Professor, Molecular Ecology, Flinders University, South Australia.

Malcolm McCulloch, Professor, Centre of Excellence in Coral Reef Studies, University of Western Australia.

Marc Hockings, Professor of Environmental Management, University of Queensland, Brisbane Queensland.

Marcus Sheaves, Assoc. Prof, Estuary and Tidal Wetland Ecosystems Research Group, James Cook University.

Margi Prideaux, PhD, Policy and Negotiations Director, Migratory Wildlife Network, Australia.

Maria Beger, PhD, Postdoc Research Fellow, Marine Conservation Planning, University of Queensland, Brisbane.

Mark Carey, PhD, marine ornithologist, Department of Environmental Management and Ecology, La Trobe Univ.

Mark Hixon, Professor, Dept Zoology, Oregon State Uni, Oregon, USA & past chair US MPA Federal Advisory Com

Megan Barnes, PhD candidate, Conservation Science, University of Queensland, St Lucia, Queensland.

Megan Evans, BScHons, Research Assistant, Conservation Planning, Ecology Centre, University of Queensland.

Megan Saunders, PhD, Postdoc Research Fellow, Global Change Institute, University of Queensland, Brisbane.

Melanie Bishop, PhD, coastal ecology, Macquarie University, Sydney New South Wales.

Melissa Nursey-Bray, PhD, University of Adelaide

Michael McCarthy, Assoc Professor, environmental modelling, School of Botany, The University of Melbourne.

Mike Bossley, PhD AM, Regional Managing Director, WDCS Australasia, Adelaide, Australia.

Mike van Keulen, PhD, Director Coral Bay Research Station, Murdoch University, Western Australia.

Nathan Hart, Research Associate Professor, Neuroecology Group, Oceans Institute, Univ of Western Australia.

Neville Barrett, PhD, Institute for Marine and Antarctic Studies, University of Tasmania.

Nicholas Dulvy, Professor, Canada Research Chair in Marine Biodiversity & Conservation, Simon Fraser Univ CAN

Oscar Venter, PhD, Postdoctoral Research Fellow, School of Marine & Tropical Biology, James Cook University.

Ove Hoegh-Guldberg, Professor & Director, Global Change Institute, University of Queensland.

Pat Hutchings, DSc, Senior Principal Research Scientist, Australian Museum, Sydney, New South Wales.

Patricia Sutcliffe, PhD candidate, Centre of Excellence for Environmental Decisions, University of Queensland.

Patrick Christie, PhD, Assoc Prof, School of Marine & Environmental Affairs, University of Washington, Seattle.

Patrick O'Connor, PhD, Visiting Research Fellow, School of Earth & Environmental Science, University of Adelaide.

Paul Sattler, OAM, conservation biology, Mount Cotton, Queensland.

Peri Coleman, MappSc, Principal Consultant, Delta Environmental Consulting, St Kilda South Australia.

Peter Auster, Research Professor, Department of Marine Sciences, University of Connecticut, USA.

Peter Fairweather, Professor of Marine Biology, School of Biological Sciences, Flinders University, Adelaide, SA.

Peter Gill, PhD, Director, Blue Whale Study Inc, Narrawong, Victoria, 3285.

Phil Bouchet, PhD candidate, Centre for Marine Futures, Oceans Institute, University of Western Australia.

Philip Dearden, Professor & Chair, Dept of Geography, University of Victoria, PO Box 3060, Victoria, BC, Canada.

Philip Molloy, Postdoctoral Research Fellow, Fisheries Centre, University of British Columbia, Vancouver, Canada.

Philip Munday, Professor, marine ecology, James Cook University, Townsville, Queensland.

Philippa Brakes, MSc, Senior Biologist, Whale and Dolphin Conservation Society, United Kingdom.

Rachael Dudaniec, PhD, Postdoc Research Fellow, Geography, Planning & Environmental Management, UQ.

Rachel Binks, PhD, Centre for Evolutionary Biology, University of Western Australia, Perth Western Australia.

Rashid Sumaila, Professor and Director of the University of British Columbia Fisheries Centre, Canada.

Renata Ferrari Legorreta, PhD candidate, Marine Spatial Ecology Lab, University of Queensland, Brisbane.

Richard Appeldoorn, Professor of Marine Sciences, University of Puerto Rico, Mayaguez, Puerto Rico.

Richard Fuller, PhD, lecturer, Biodiversity and Conservation, Biological Sciences, University of Queensland.

Richard Kingsford, Professor, Australian Wetlands and Rivers Centre, Uni NSW, Sydney New South Wales.

Rob Harcourt, Professor of Marine Ecology, Macquarie University, Sydney, New South Wales.

Robert Sutherst, PhD, Honorary Professor, Ecology Centre, Biological Sciences, University of Queensland.

Rod Connolly, Professor, marine ecology, Griffith University, Gold Coast, Queensland, Australia.

Romola Stewart, PhD, Marine Conservation Planner, Western Australia.

Russell McWilliam, PhD candidate, Conservation Biology & Environmental Management, Univ of Wollongong.

Sam Lake, Professor, aquatic ecosystems and management, Monash University, Melbourne Victoria.

Sam Nicol, PhD, Postdoctoral Research Scholar, mathematical ecology, University of Alaska, Fairbanks Alaska.

Sandra Brooke, PhD, Director of Coral Conservation, Marine Conservation Institute, Bellevue WA 98004 USA.

Sara Maxwell, PhD, Marine Conservation Institute & University of California Santa Cruz, California USA.

Sarah Dolman, BEng, MRes, Whale and Dolphin Conservation Society, United Kingdom.

Sarah Pausina, PhD candidate, marine ecology, School of Biological Sciences, University of Queensland, Brisbane.

Scoresby Shepherd, PhD, AO, Research Associate, Museum of South Australia, Adelaide South Australia

Scott Burgess, PhD, marine ecologist, University of Queensland, Brisbane, Queensland.

Sean Connell, Assoc. Professor, marine ecology and conservation, University of Adelaide, South Australia.

Sean Connolly, PhD, ARC Australian Professorial Fellow, School of Marine & Tropical Biology, JCU, Townsville.

Shannon Donahoe, DVM, Associate Veterinary Pathologist, Australian Registry of Wildlife Health, NSW.

Sian Prior, PhD, Marine Science and Policy Specialist, Emsworth, PO10 8HA, United Kingdom.

Sidney Holt, DSc, marine policy and science expert, Italy.

Sophie Petit, PhD, wildlife ecologist, University of South Australia, Adelaide, South Australia.

Steve Gaines, Dean, Bren School of Environmental Science and Management, UCSB, Santa Barbara, CA 93106

Sue Murray-Jones, PhD, 9 Cudmore Terrace, Henley Beach, South Australia

Tara Martin, Adjunct Lecturer, conservation planning, University of Queensland, Queensland.

Terry Hughes, Professor, coral reef studies, ARC Centre of Excellence for Coral Reef Studies, JCU Queensland.

Tim Flannery, Professor, Macquarie University, North Ryde, New South Wales.

Tom Trnski, PhD, Research Manager, Auckland Museum, Auckland New Zealand.

Trish Franklin, Director, The Oceania Project. PhD candidate, Southern Cross University, Coffs Harbour NSW.

Viv Tulloch, marine conservation, Centre of Excellence for Environmental Decisions, University of Queensland.

Wally Franklin, Director, The Oceania Project. PhD Candidate, Southern Cross University, Coffs Harbour NSW.

William Cheung, Lecturer, School of Environmental Sciences, University of East Anglia, Norwich, U.K.

William Figueira, PhD, Centre for Research on Ecological Impacts of Coastal Cities, University of Sydney, NSW.

Winston Ponder DSc, Senior Research Fellow, Australian Museum, Sydney New South Wales.

Endnotes:

¹ Effective biodiversity conservation involves high levels of protection within reserve networks, complemented by general strategies across the entire seascape – as set out in the UN FAO *Code of Conduct for Responsible Fisheries 1995*. Although all Australian Governments endorse this approach, in some cases implementation of these general strategies needs considerable improvement : Nevill, J, 2009 *Overfishing, uncertainty and ocean governance*. PhD Thesis, University of Tasmania.

² ANZECC TFMPA (Australian and New Zealand Environment and Conservation Council Task Force on Marine Protected Areas).1998. *Guidelines for Establishing the National Representative System of Marine Protected Areas*. Australian and New Zealand Environment and Conservation Council, Task Force on Marine Protected Areas. Environment Australia, Canberra.

- ³ IMCRA. 2006. A Guide to the Integrated Marine and Coastal Regionalisation of Australia Version 4.0. Department of the Environment and Heritage, Commonwealth of Australia, Canberra, Australia.
- ⁴ GBRMPA. 2001. Biophysical operating principles as recommended by the scientific steering committee, Great Barrier Reef Marine Park Authority, Townsville, Australia.
- ⁵ Halpern, B S, Regan, H M, Possingham, H P and M A McCarthy. 2006. Accounting for uncertainty in marine reserve design. *Ecology Letters* 9: 2-11.
- ⁶ The Ecology Centre, University of Queensland. 2009. Scientific Principles for Design of Marine Protected Areas in Australia: A Guidance Statement, University of Queensland, Brisbane, Australia.