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Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change

Edited by Johann D Bell, Johanna E Johnson and Alistair J Hobday



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Foreword

The bonds between the people of the Pacific and their fisheries are extraordinary. Fish and shellfish are common in Pacific folklore and nowhere else do so many countries and territories depend as heavily on fisheries for economic development, food security and livelihoods. These unique relationships underpin the directive of Pacific Island Forum Leaders to ‘develop and implement national and regional conservation and management measures for the sustainable utilisation of fisheries resources’ – a priority of the Pacific Plan.

Rapid population growth in many Pacific Island countries and territories demands new approaches to the sustainable use of natural resources for economic, human and social development. A recent study entitled ‘The Future of Pacific Island Fisheries’ by the Forum Fisheries Agency and Secretariat of the Pacific Community is a valuable guide to optimising the benefits from fisheries and aquaculture. However, achieving these benefits over the long term will depend on our ability to recognise and respond to the many drivers affecting the production and use of fish and shellfish.

There is now little doubt that the impact of climate – already an important driver of fisheries and aquaculture production – is likely to increase in the years ahead. To respond effectively, we need to know the vulnerability of the sector to the changing climate and how best to adapt. This book, written with generous support from the Australian Agency for International Development (AusAID), brings together valuable contributions from scientists and fisheries managers from 36 institutions around the world to provide this vital information.

The fact that the main findings are mixed – there are likely to be winners and losers – underscores the importance of this vulnerability assessment. Practical adaptations, policies and investments are now needed to reduce the threats of climate change to the many fisheries and aquaculture activities that are part of the economic and social fabric of the region. Adaptations, policies and investments are also needed to capitalise on the opportunities. These essential planning tools are described in the last chapter – I recommend them to all stakeholders and their development partners.

This book is much more than a comprehensive assessment of the vulnerability of tropical Pacific fisheries and aquaculture to climate change. It is also a valuable resource for anyone wanting to learn about the diverse oceanic, coastal and freshwater fisheries and aquaculture activities of the Pacific Islands region, and the environmental conditions and habitats that support them.



Dr Jimmie Rodgers

Director-General

Secretariat of the Pacific Community

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Preface

It is now clear that the global community must do more than plan how to reduce global warming – we must also learn to adapt to the inevitable increases in the temperature and acidification of the oceans while we rein in emissions of greenhouse gases. Adaptation has been a focus of recent international climate change negotiations and strong pledges have been made to help developing countries respond to the climate-related changes ahead.

Australia is well aware of the potential effects of climate change on yields from agriculture and fisheries and we are deeply committed to helping our Pacific Island neighbours understand the vulnerability of their resources to these changes, and how best to respond. Together we must find ways to maintain the quality of life for all people in the region as the impacts of climate change intensify.

The onus is on everyone involved to make the best use of the technical and financial support available for adaptation. The process should begin with thorough assessments of the vulnerability of the resources that underpin national economies, food security and livelihoods. Only then can sensible adaptation initiatives be identified and implemented in a timely and cost-effective way.

Australia is proud to be a partner in this comprehensive analysis of the vulnerability of Pacific Island fisheries and aquaculture to climate change – the result of impressive teamwork coordinated by the Secretariat of the Pacific Community with support from our International Climate Change Adaptation Initiative. This rigorous assessment by almost 90 scientists from the region and around the world is both authoritative and practical. It is a prime example of how to use the latest scientific knowledge to inform effective adaptation. I am confident that the peer-reviewed analyses presented here will be of great value to the Intergovernmental Panel on Climate Change during the preparation of its 5th Assessment Report.

Pacific Island countries now have the information they need to understand the potential effects of climate change on the many economic and social benefits they derive from fisheries and aquaculture. Australia looks forward to assisting the region to apply the priority actions described in this book, many of which address other pressing issues for the environment, such as rapid population growth.

For many people, particularly Australians, this book will usher in a new understanding of the significance of fisheries and aquaculture to the people of the Pacific. It will also heighten awareness of our responsibility to help Pacific Island countries maintain the benefits they receive from well-managed coastal ecosystems, and stocks of fish and shellfish – benefits that extend to everyone who visits their shores.



The Hon Kevin Rudd MP

*Minister for Foreign Affairs
Australia*

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The Secretariat of the Pacific Community and the editors are grateful to the many authors who accepted the invitation to contribute their expertise to this assessment. We also thank the members of the technical working group, and the advisory committee, comprising representatives from French Polynesia, Solomon Islands and Vanuatu, who provided guidance throughout the project. Special thanks are due to the institutions that made the time of their senior staff available to lead the writing of several chapters (Australian Institute of Marine Science, Collecte Localisation Satellites, Institut de Recherche pour le Développement, James Cook University and Snowy Mountains Engineering Corporation). We also appreciate the valuable contribution made by the internationally recognised scientists and managers (listed at the end of the book) who provided the peer reviews of each chapter.

Many other people helped turn the text from the expert authors into a book. Catherine Collier and Aroon Edgar found effective ways to illustrate key points with attractive conceptual diagrams based on symbols from The Integration and Application Network. Carla Appel and Boris Colas did a masterful job with the layout to make the large volume of technical information easy to digest. Angela Templeton provided valuable editorial advice from the earliest stages and Astrid Baker carried out copy editing assisted by Julian Heinz. Céline Barré helped finesse the layout of all chapters, checked the references and meticulously corrected page proofs. Nathalie Wiegandt, Christophe Boe, Julie Vasello and Patricia Demmke helped with the great variety of tasks involved with the project, including organising meetings of the technical working group, corresponding with authors and word processing draft manuscripts. Trevor Viney and Ange Marelli Ballou made arrangements to acquire the many photographs and Fiona Paladini helped publicise the photo competition to select the cover image. Jeff Maynard did the final checking of the entire book, Sherrey Quinn compiled the index, Robert Le Borgne assisted with the glossary of terms and Lindsay Chapman reviewed the final wording of several chapters.

The people who kindly helped authors to produce or improve their contributions are listed here by book chapter. Chapter 1: Tim Lawson, Peter Terawasi, Apolosi Turaganiva and Peter Williams. Chapter 2: Julie Arblaster, Kevin Hennessy, Felicity McAllister, Alex Sen Gupta and Tim Simmonds. Chapter 3: Jérôme Lefèvre. Chapter 4: Christophe Menkes and Martine Rodier. Chapter 5: Sophie Dove. Chapter 6: Michael Batty, Tim Adams, Claire Garrigue, Jeff Kinch, Kelvin Passfield, Chris Roelfsema and Satja Sauni. Chapter 7: Patricia Demmke, Frank Pezold, Scott Pontifex and Jodie Thomas. Chapter 8: Don Bromhead, Jesus Jurado-Molina and Shelton Harley. Chapter 9: Aymeric Desurmont, Jeff Leis, Lyndon Llewellyn, Shilpa Kumar Roine and Colin Wen. Chapter 10: Frank Pezold and Jodie Thomas. Chapter 11: Robert Jimmy. Chapter 12: James Hemphill, Nicola Kingston, Tim Lawson, Colin Millar, Warwick Nash, Peter Terawasi, Nathalie Wiegandt and Peter Williams. Chapter 13: Sandra Bernklau, Michel Blanc, Tea Braun, Eric Clua, Patricia Demmke, Bob Gillett, Elise Huffer, Robert Jimmy, Brigitte Leduc, Seema Naidu, Jason Rubani, Hugh Walton, Arthur Webb, Meryl Williams and Stephen Yen Kai Sun.

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