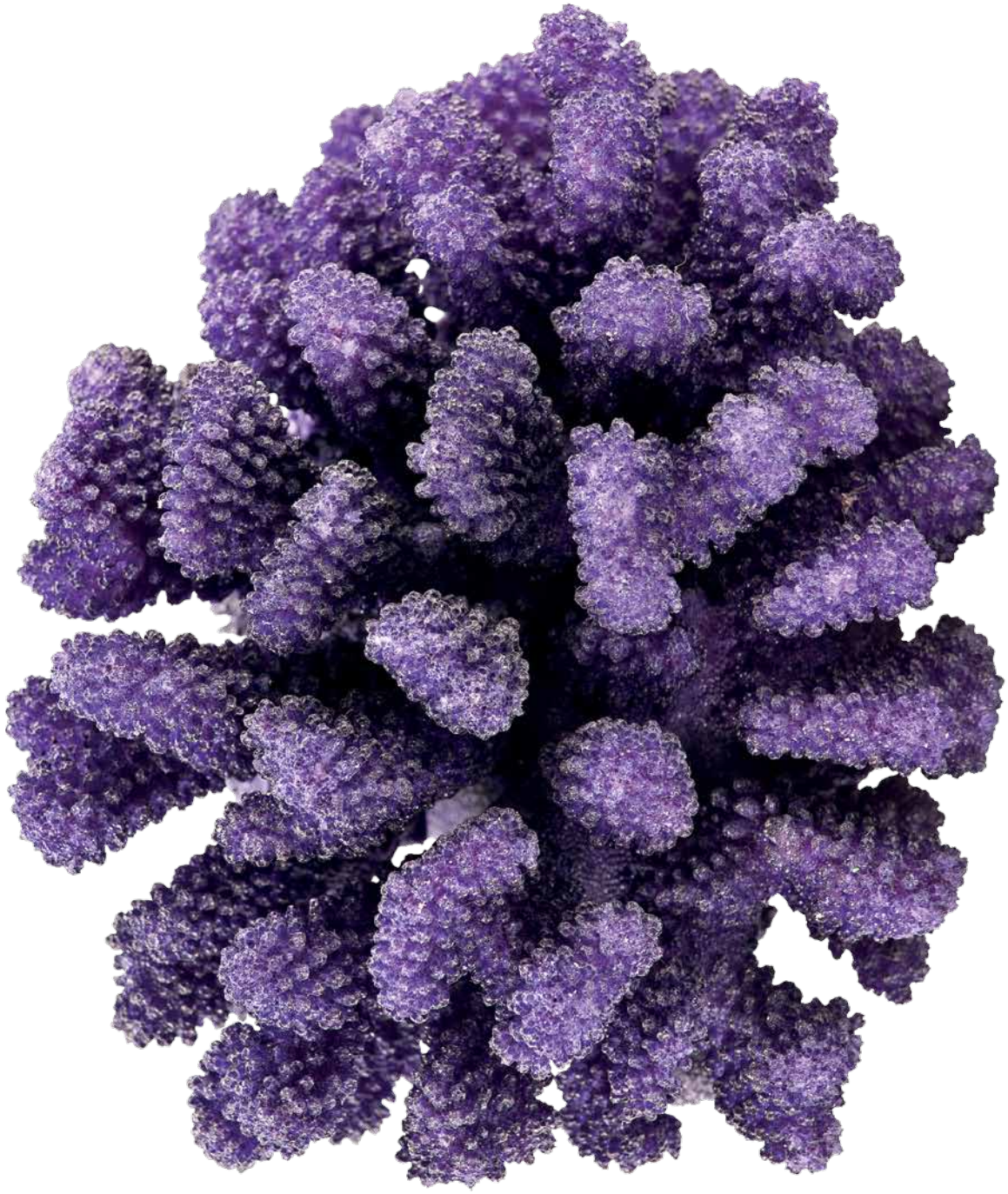
Great Barrier Reef Foundation

Research for a resilient Reef



Annual Review 2015

highlights | achievements | research | partnerships

“It is one of the greatest and most splendid natural treasures that the world possesses. Evolved over hundreds of thousands of years, it’s one of nature’s most impressive creations.”

Sir David Attenborough’s thoughts on the Great Barrier Reef, 2015

From our Chairman and Managing Director

The Great Barrier Reef Foundation is fostering a resilient Reef for all generations by catalysing and funding science that informs, encourages and inspires.

2015 was a landmark year for the Great Barrier Reef. Australia's natural wonder garnered world interest like never before, with the UNESCO World Heritage Committee debating, and ultimately deciding against, inscribing the Great Barrier Reef on the List of World Heritage in Danger.

Leading up to this important decision, the Australian and Queensland Governments jointly published the Reef 2050 Long Term Sustainability Plan – a comprehensive roadmap of actions, targets and outcomes for effectively managing the Reef. The Foundation's role in helping to deliver the Plan is key. As the only not-for-profit organisation dedicated solely to raising funds for scientific research into protecting and preserving the Great Barrier Reef, we are 100% committed to working alongside all stakeholders to enable its implementation.

The Foundation marked its 15th year in 2015 with significant achievements and milestones including:

- $50 million of funding raised for research for a resilient Reef
- Our largest single investment from longstanding Foundation corporate partner, BHP Billiton – a $7 million commitment to the Raine Island Recovery Project and the development of a Reef Resilience Framework
- 10 years of our Chairman's Panel
- Queensland Reef Champions initiative commenced for Queensland individuals and companies who support our research
- Striking new Foundation brand look designed by our pro bono partner Leo Burnett

As always, science remains at the heart of what we do. In 2015 the Foundation oversaw the delivery of 24 research projects. Major research developments included:

- A world first achieved in unlocking the genetic code of nine Great Barrier Reef coral species, two coral-associated algae and five microbial genomes through our Sea-quence project. This is important because it could enhance the world's understanding of how corals will respond to climate change and what we can do to assist.
- Second phase of the eReefs project launched, with a focus on putting powerful information, visualisation, communication and reporting products into the hands of Reef managers, policy-makers and other key stakeholders such as tourist operators and the general public.
- University of Melbourne researchers found that surface films have the potential to reduce heat and light by up to 30%, providing an initial proof-of-concept for the idea of shading thermally stressed reefs.

The Foundation continued to share our amazing science with our network. The third annual Science Forum in August brought together representatives from business, government, science and philanthropy to hear scientists talk about their latest Reef research findings. It was also an opportunity for the scientists to collaborate and workshop common themes.

Townsville played host to the second annual ReefBlitz event in October. Over two days, more than 1,400 people enjoyed a hands-on opportunity to contribute to Reef science. ReefBlitz's new Corporate Team Challenge element provided a meaningful way for our corporate partners to get involved in the science being undertaken on the Reef.

We harnessed the expertise of our corporate network to establish the Innovations in Monitoring Working Group. Experts from Boeing, Qantas, GE and Worley Parsons are exploring innovative technologies to monitor and automate analysis of data into meaningful information for Reef scientists and managers.

All of these achievements were only made possible by the generous and sustained commitment of the Foundation's partners. Such commitment to the Reef and support of science-based solutions enables the Foundation to invest in science that Reef managers, users and policy-makers need to protect and preserve our greatest natural wonder. The Foundation thanks its supporters and looks forward to their continued support in 2016.

The Foundation's Managing Director for the last four years, Ms Claire Hanratty, resigned and Ms Anna Marsden assumed the role in early 2016. We thank Claire for her dedication and wish her the best in her future endeavours.

John Schubert AO, Chairman

Anna Marsden, Managing Director

Dr John Schubert AO, Chairman

Anna Marsden, Managing Director

Science Leadership

The Foundation managed 24 research projects in 2015, including four new initiatives.

Here's a snapshot of what scientists from Australia and overseas are researching with our support to benefit the Great Barrier Reef.

Using a ship of opportunity and a dedicated research vessel to monitor the changing ocean chemistry along the length and breadth of entire Great Barrier Reef, then integrating this information to create visual maps of the Reef's carbon chemistry to highlight any areas requiring management

Piloting a method to develop a single baseline map for the whole Great Barrier Reef

Investigating whether seagrass and seaweed can be used to reduce carbon levels in the water and mitigate the damaging effects of ocean acidification on coral reefs

Developing a stress test for corals to provide an early warning system for those at risk before any physical signs are visible

Testing micro-thin, biodegradable surface films that prevent heat and light from entering the water and impacting coral reefs below – effectively like a sunscreen for the reef

Testing the effectiveness of different surfaces for potential use in restoring and regenerating damaged coral reefs

Monitoring how the 'cement' holding coral reefs together, the crustose coralline algae, is affected by rising sea temperatures and ocean acidification

Using genetics to discover what makes some corals more, or less, resilient to environmental change

Creating near real-time, online reef reporting tools that integrate vast amounts of research data so reef managers can make timely and effective decisions in managing the health of the Great Barrier Reef

Developing a world-leading Reef Resilience Framework that will provide a broad roadmap for monitoring and managing reef resilience in a format able to be used for reefs globally

Testing the effectiveness of different surfaces for potential use in restoring and regenerating damaged coral reefs

Protecting and preserving the largest green turtle rookery in the world

Combining robotics and stereo-imaging systems to create 3D reef structure maps, enabling changes to be measured over larger scales than previously possible

Research with impact

Protecting an endangered species and reef ecosystem – a unique collaboration

It's the site of the world's largest green turtle rookery and focus of one of the greatest animal migrations on Earth. Remote Raine Island, 620 km north west of Cairns, is globally recognised for its environmental significance. Without it, the largest remaining green turtle population on Earth is at risk.

The Raine Island Recovery project is a five year, $7.95M collaboration between the Queensland Government, BHP Billiton, the Traditional Owners and the Foundation to protect and restore the island's critical habitat to ensure the future of key marine species including green turtles and a major seabird population.

In securing our single largest corporate partnership with BHP Billiton, we're enabling Queensland scientists to use a combination of hands-on adaptive management and traditional and high-tech research to help overcome the challenges facing this important green turtle population and the entire Raine Island reef ecosystem. The Raine Island Recovery Project's five-year program of research, capacity-building and on-ground works commenced, aimed at improving outcomes for critical marine species. Project activities include beach re-profiling, sand replenishment, fencing, turtle tagging, remote sensing, monitoring, modelling and Indigenous ranger training.

The project also encompasses developing an overarching reef-wide Reef Resilience Framework, a broad roadmap for monitoring and managing reef resilience. This will provide a mechanism to drive action towards building reef resilience and support resilience planning in a format that can be shared and used for reefs globally.

eReefs launches next phase

Scientists are working to develop the next wave of innovative tools to observe and predict water quality across the Great Barrier Reef, with additional funding secured from the Australian and Queensland Governments for the second phase of the six year eReefs project.

Technologies such as satellite sensing and sophisticated modelling platforms are being used to help create these new eReefs tools. This will add to the successful Marine Water Quality Dashboard which provides real-time information about water quality, sea temperature and the effects of floods and storms on the Reef and is accessible publicly on the Bureau of Meteorology website.

eReefs is a collaboration between the Foundation, Bureau of Meteorology, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australian Institute of Marine Science and the Queensland Government, supported by funding from the Australian and Queensland Governments, BHP Billiton Mitsubishi Alliance and the Science Industry Endowment Fund.

Image: Gary Cranitch, Queensland Museum.

Genetic secrets unlock coral survival clues

The genetic secrets of five more corals were revealed to science in 2015. Through the world-first Sea-quence project, the genomes of nine Great Barrier Reef corals, two coral-associated algae and five associated microbes (bacteria and viruses) have now been sequenced, bridging a vast gap in scientific knowledge about corals.

Through this genetic research, scientists are investigating why corals in the Red Sea naturally survive at higher temperatures than those same coral species on the Great Barrier Reef. The results could provide valuable insights into understanding how and why some corals adapt and survive in the face of changing environments and what can be done to help them adapt.

Image: Dr Andy Lewis

Mapping the Great Barrier Reef

This ambitious new pilot project is the first step towards creating one single baseline map for the whole Great Barrier Reef. Because it's so vast, diverse and complex, as well as up to two kilometres underwater, the Great Barrier Reef's coral habitats have never been mapped. Using the shallow offshore reefs of the Capricorn Bunker Group as a test site, scientists are trialling a novel mapping technique that combines satellite images, field data and spatial modelling to develop a detailed map of the region. The map will include important characteristics such as water depth of the ocean floor, geomorphological zones (reef slope, reef crest, reef flat, lagoon, and island) and dominant coral type, for example plating, branching or massive.

With a truly accurate picture of what is there, reef managers will be better equipped to assess the impacts of climate change and disturbances like storms and crown-of-thorns starfish outbreaks, and then respond with appropriate and timely management resources.

Innovations in monitoring

The Foundation's unique ability to bring experts from different disciplines and industries together was the catalyst for forming a new working group to explore how technology innovations can be applied to achieve more effective monitoring of the Great Barrier Reef. Contributors hailed from business and science and include representatives from GE, Boeing, Qantas, Worley Parsons and the Foundation with a reference group of leading scientists from institutions across Australia including CSIRO, the Australian Institute of Marine Science, University of Queensland and Queensland's Department of Science, Information Technology and Innovation.

The group helped bring into focus the value of, and need for, a cost-benefit analysis to help determine where it's appropriate to use novel technologies, including remote sensing, to complement or replace more traditional Reef research methods.

People power blitzes Reef discovery

Schools, communities and business converged to engage in hands-on reef science for the ReefBlitz 2015 event in Townsville.

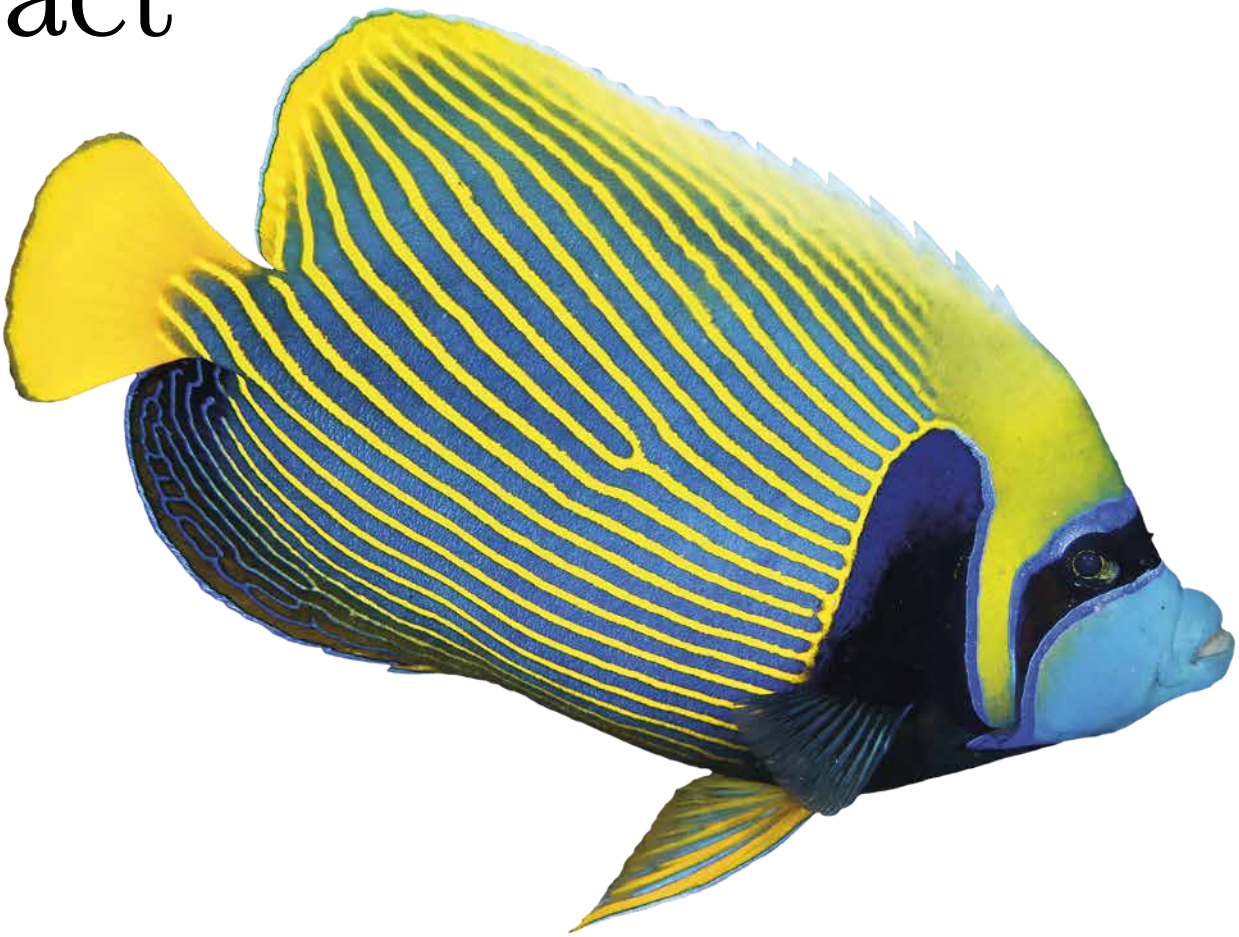
More than 1,400 people took part in reef education and discovery activities as citizen scientists, contributing 616 scientific observations across the two day event. With a corporate team challenge event added to the program in 2015, the total number of marine and terrestrial species recorded was 226, up from 179 in 2014. A sighting of the rare *Peasiella roepstorffiana* snail on Magnetic Island was a highlight as it had not been observed in the last 10 years.

The Queensland Government, Qantas, Boeing, Orica, Earthwatch and local citizen science groups supported the Foundation to stage the second annual ReefBlitz which was also held in conjunction with the 40th anniversary of the Great Barrier Reef Marine Park Authority.

360 degree view

The Foundation dived into 360-degree video technology in 2015 to accurately document the biodiversity on the southern Great Barrier Reef. Through a partnership with Underwater Earth and the University of Queensland, a series of videos recorded details of the Lady Elliot Island and Heron Island ecosystems for scientists. The videos were also shared to a wider audience via YouTube and Facebook, attracting more than 750,000 views since their release. By engaging new audiences in an immersive reef experience, we're growing greater public awareness of, and support for, Reef research and our work.

Making an impact



For every dollar the Foundation raised in 2015, we leveraged a further dollar in co-contributions from research institutions – doubling the value of the Foundation's research investment.

Our research funding recipients in 2015:

Australian Government | Australian Institute of Marine Science | Australian National University | Australian Government Bureau of Meteorology | Charles Darwin University Australia | CSIRO | Griffith University | James Cook University Australia | Queensland Government | Reef Ecologic For a better planet | Tangaroa Blue | The University of Sydney | The University Of Queensland Australia | Wildlife Queensland Coastal Citizen Science

We're one of a kind

The Great Barrier Reef Foundation exists to be the champion of real solutions to the major threats that face Australia's great natural wonder.

We're the only independent, not-for-profit organisation in Australia dedicated solely to raising funds for scientific research into preserving the Great Barrier Reef.

Board of Directors

Representing Australian business, science and philanthropy, the Foundation's directors during 2015 and to the date of this review were:

John Schubert AO
Chairman

Ian Buchanan (resigned 12/05/2015)

Michael Cameron

Maureen Dougherty (appointed 4/11/15)

Stephen Fitzgerald

Paul Greenfield AO
Chair, International Scientific Advisory Committee

Claire Hanratty

Amanda McCluskey

Anna Marsden

Peter Mason (appointed 25/3/2015)

John Mulcahy

Russell Reichelt

Stephen Roberts (appointed 24/11/2015)

Steven Sargent (appointed 18/2/2015)

Phillip Strachan
Chair, Audit and Compliance Committee

David Turner

Keith Tuffley

Peter Young AM (resigned 18/05/2015)

International Science Advisory Committee

Leaders in reef research and management provide expert advice and governance for the Foundation's research program.

Professor Paul Greenfield AO
Chair

Professor Chris Cocklin
Senior Deputy Vice-Chancellor, James Cook University

John Gunn Chief Executive, Australian Institute of Marine Science

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

Dr Andrew Johnson Group Executive Environment, Commonwealth Scientific and Industrial Research Organisation (resigned Sept 2015)

Professor Max Lu Provost & Senior Vice President, University of Queensland

Dr Russell Reichelt Chairman & CEO, Great Barrier Reef Marine Park Authority

Chairman's Panel

Fifty of Australia's leading companies, through their Chief Executives and Chairs, connect with and financially support the Great Barrier Reef through membership of the Foundation's Chairman's Panel. This unique forum brings together business and science in a tangible way to create ambassadors in the corporate sector for the Reef and the science that preserves the Reef.

Members of the Chairman's Panel at 29 February 2016:

John Schubert AO
Chairman

Julieanne Alroe
CEO & Managing Director, Brisbane Airport Corporation

Alberto Calderon
Managing Director & CEO, Orica

Maile Carnegie
Managing Director, Google Australia & New Zealand Pty Ltd

Peter Crowley
Managing Director, GWA Group Limited

Geoff Culbert
President & CEO, GE Australia, New Zealand and Papua New Guinea

Ron Delia
Managing Director & CEO, Amcor Limited

Geoff Dixon

Maureen Dougherty

President – Australia & South Pacific, Boeing Australia Holdings Pty Ltd

Grant Fenn
Managing Director & CEO, Downer Group

Stephen Fitzgerald
Chairman, Wilmington Group

Richard Freudenstein
Director & CEO, Foxtel

Kevin Gallagher
CEO & Managing Director, Santos

Melinda Geertz
CEO, Leo Burnett Melbourne

Richard Goyder AO
Managing Director, Wesfarmers Limited

Paul Greenfield AO
Chair, Great Barrier Reef Foundation International Scientific Advisory Committee

John Grill
Chairman, WorleyParsons

Matthew Grounds
CEO, UBS Australasia

John Gunn
CEO, Australian Institute of Marine Science

Sandra Harding
Vice Chancellor & President, James Cook University

Lance Hockridge
Managing Director & CEO, Aurizon

Peter Høj
Vice Chancellor, University of Queensland

Greg Hywood
Chief Executive and Managing Director, Fairfax Media Limited

Tim Jackson
Managing Director Asia Pacific, PwC Strategy& (Australia) Pty Ltd

Alan Joyce
CEO, Qantas Airways Limited

Grant King
Managing Director, Origin Energy Limited

Katie Lahey
Executive Chairman, Australasia, Korn Ferry

Seng-Huang Lee
Executive Chairman, Mulpha Australia Ltd

Alan Leibman
Chief Executive Officer, Kerzner International

Andrew Liveris
President, Chairman & CEO, The Dow Chemical Company

Andrew Mackenzie
CEO, BHP Billiton Limited

Steve McCann
Group CEO & Managing Director, Lend Lease

Anna Marsden
Managing Director, Great Barrier Reef Foundation

Dr Larry Marshall
Chief Executive, CSIRO

Peter Mason AM
Director, Great Barrier Reef Foundation

Charles Meintjes
President - Australia, Peabody Energy

Zimi Meka
CEO, Ausenco

Nicholas Moore
Managing Director & CEO, Macquarie Group Limited

Ian Narev
CEO, Commonwealth Bank of Australia

Grant O'Brien
CEO & Managing Director, Woolworths Limited

Simon Rothery
CEO, Goldman Sachs

Luke Sayers
CEO, PwC

Brian Sheahan
Managing Director, Morgans Financial Ltd

Michael Smith OBE
CEO, ANZ Banking Group Limited

Phillip Strachan
Director, Great Barrier Reef Foundation

Jon Sutton
Managing Director & CEO, Bank of Queensland

David Turner
Chairman, Commonwealth Bank of Australia

Gary Wingrove
CEO, KPMG

Andrew Wood
CEO, WorleyParsons

Peter Young AM
Chairman, Barclays, Australia and New Zealand

Chairman's Panel members in 2015 also included:

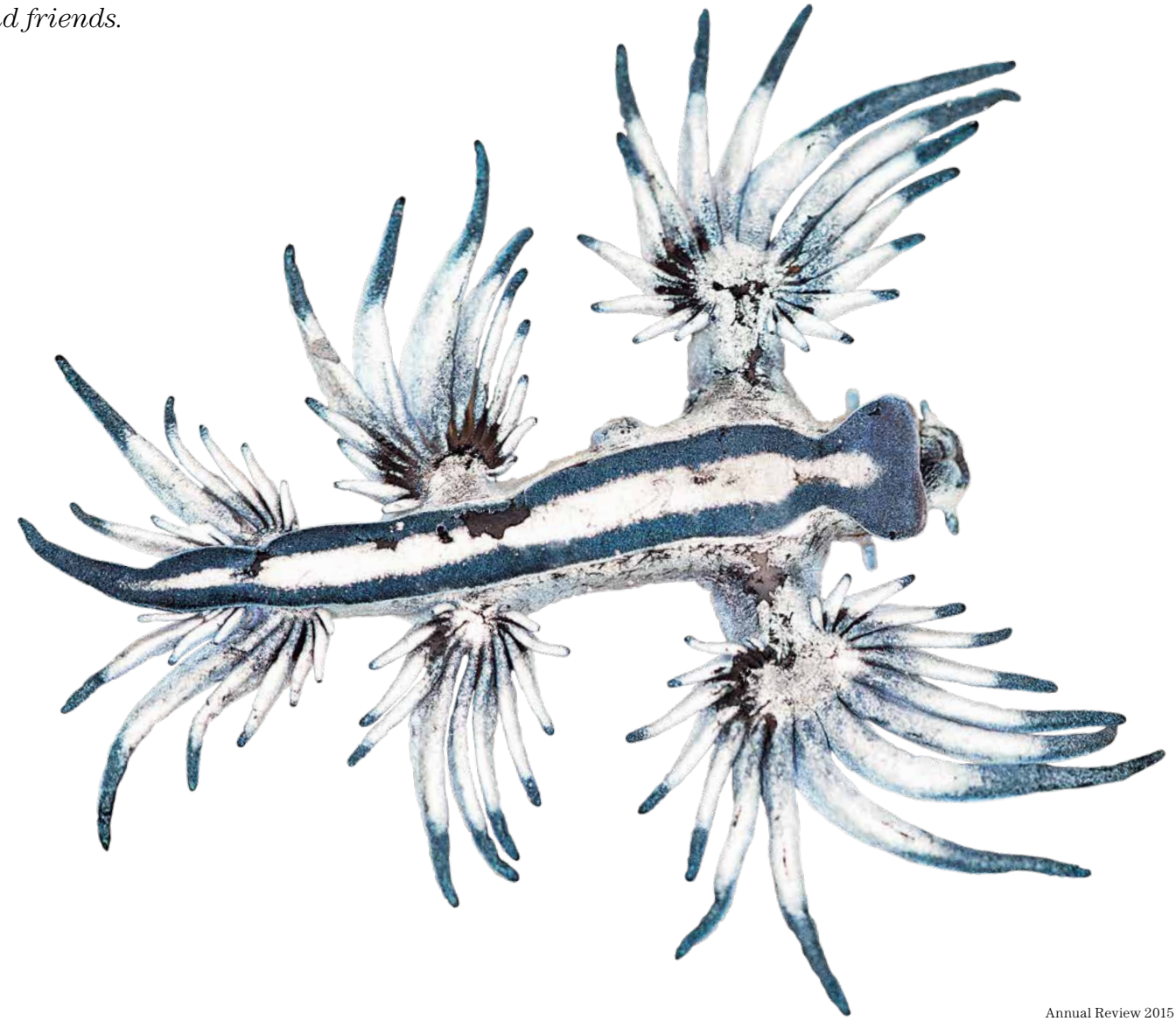
Mike Smith
Former CEO, ANZ

David Knox
Former CEO, Santos

Queensland Reef Champions

Meet the Queenslanders who are the champions for science on the Great Barrier Reef. Our Champions contribute to vital Reef research priorities and are actively involved in our science. They attend Reef Talks and Foundation events and share their knowledge and passion with colleagues and friends.

Aurizon
Ausenco
Australian Institute of Marine Science
Bank of Queensland
Brisbane Airport Corporation
Troy Collings
Paul Greenfield AO
GWA Group Limited
James Cook University
Morgans Financial Limited
News Corp
North Queensland Bulk Ports Corporation
NuGrow
Origin Energy Limited
Peabody Energy
John Reid AO
Doug & Janine Ritchie
Phillip Strachan
University of Queensland



We couldn't do it without you

The Foundation is privileged to work with an outstanding network of partners in science, business, government and philanthropy who share our commitment to protecting and preserving the Great Barrier Reef. Thank you.

Australian Government

Australian Government
Great Barrier Reef Marine Park Authority

Queensland Government

bhpbilliton

BIOPLATFORMS AUSTRALIA

BMA
BHP Billiton Mitsubishi Alliance

BOEING

BRISBANE AIRPORT AUSTRALIA

Google

QANTAS
Spirit of Australia

RioTinto

ORICA

bhpbilliton
Matched Giving Program

CommonwealthBank
Awards Program

Bluesands Foundation

PACIFIC COAST ECO BANANAS
farming with nature

Queensland Tissue Products

townsville enterprise

Allens › ‹ Linklaters

ANZ

Baker & McKenzie

Deloitte.

ens international | get more.

Goldman Sachs

JSA
JSAcreative.com.au

KPMG

Leo Burnett

NICK

PricewaterhouseCoopers

TechPath™

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