



ANNUAL REPORT 2018



CENTRE FOR MARINE SOCIOECOLOGY

An underwater photograph of a coral reef. The water is clear and blue. In the foreground, there are large, yellowish-brown coral structures. In the background, there are smaller, darker coral structures. Several fish are swimming around, including a large, dark fish in the upper left and many smaller, blue and yellow fish throughout the scene.

INTRODUCTION

Australia is a coastal nation with over 80% of the population living within 50 kilometres of the coast and our coasts and oceans play an important role ecologically, socially and economically. Australia has the third largest exclusive economic zone globally and our marine regions provide valuable services through the provision of food, energy, transportation, tourism, conservation and recreation.

Further demands and pressures on coasts and oceans are expected with increasing coastal populations, food security and emerging industries, such as renewable energies and offshore marine production systems. Managing these multiple uses, some with often conflicting objectives, to ensure sustainable ecosystems, industries and social and economic benefits for communities is a major challenge globally.

The Centre for Marine Socioecology (CMS), is a collaboration between the University of Tasmania and CSIRO with support from the Australian Antarctic Division. It was established in 2014 to provide, develop and integrate the inter-disciplinary research capacity required to meet these challenges. It brings together disciplinary expertise in ocean physics, marine ecology, fisheries and aquaculture, law, economics, sociology, and governance.

We are extremely pleased to see in this annual report that the Centre has gained international recognition and is going from strength to strength and look forward to its continued success into the future.

Professor Anthony Koutoulis

Acting Deputy Vice-Chancellor (Research)
University of Tasmania

Dr Tony Worby

Director, CSIRO Oceans and Atmosphere

BACKGROUND

The centre brings together disciplinary expertise in physics, law, economics, biology, sociology, and governance from the Institute for Marine and Antarctic Studies, College of Arts, Law and Education, the Discipline of Geography and Spatial Sciences, Tasmanian School of Business and Economics, the CSIRO and the AAD.

In this report we are pleased to showcase a selection of our research and activity from 2018.

Thank you to all our students, researchers, collaborators and stakeholders, for your ongoing efforts in the Centre of Marine Socioecology. The contribution of these efforts are being realised across a broad spectrum of activity, relevant at local, regional and global scales. We are proud of the Centre's outputs and outcomes for 2018 and look forward to continuing this work with you in 2019.

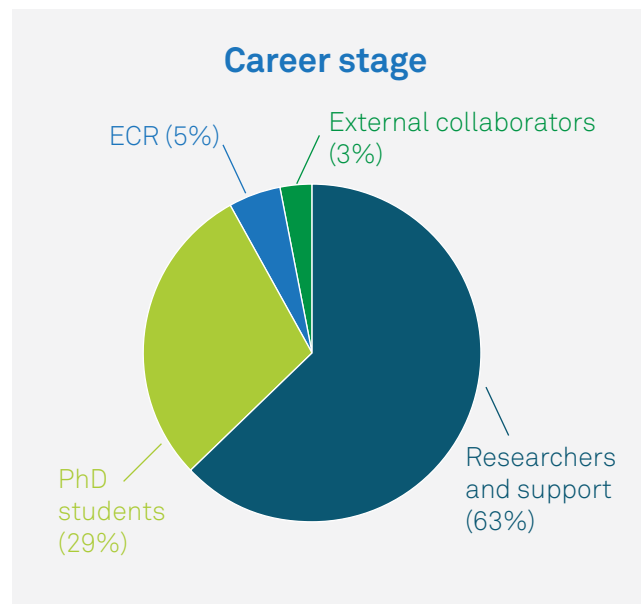
Professor Gretta Pecl

Director

VISION A WORLD-LEADING CENTRE TO SUPPORT INFORMED AND SUSTAINABLE MANAGEMENT OF MULTIPLE-USES IN MARINE AND COASTAL SYSTEMS

WHO WE ARE IN NUMBERS

The CMS has currently 25 PhD Students, 56 Researchers, 4 Postdoctoral fellows and 3 external collaborators.



MISSION TO PROVIDE EXCELLENCE IN RESEARCH AND RESEARCH TRAINING THAT UNDERPINS THE SUSTAINABLE DEVELOPMENT OF THE MARINE DOMAIN FOR ALL USERS AND BUILDS THE NECESSARY CAPACITY TO PROVIDE SKILLS AND SOLUTIONS FOR INDUSTRY, GOVERNMENT AND THE COMMUNITY



CENTRE FOR MARINE SOCIOECOLOGY

CHALLENGES

- Indigenous & local knowledge
- Integrated Ecosystem management
- Marine Law & policy
- Human behaviour
- Coastal conflict

RESEARCH APPROACH

- Interdisciplinary & transdisciplinary research approaches
- Participatory approaches to knowledge production



KNOWLEDGE PRODUCTION

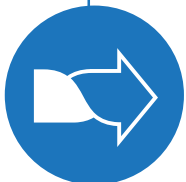
Coastal & Marine Governance

SUPPORTING SUSTAINABLE MARINE SYSTEMS

Environmental Change & Adaptation

Sustainable Blue Futures & Planetary Health

SCIENCE ENGAGEMENT & IMPACT



- Climate change adaptation at local, regional & global scales
- Marine plastics & debris
- Cumulative impacts & multiple drivers of change

CHALLENGES

- Science communication & engagement to support ocean literacy
- Knowledge brokering and path to impact

RESEARCH APPROACH

- Food production and food security
- Renewable Energy & the Blue Economy
- Marine systems & the Sustainable Development Goals

CHALLENGES



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2018 HIGHLIGHTS



Beth Fulton (CSIRO) and Reg Watson (IMAS) made it to the 'Clarivate Analytics Highly Cited List' for a second year in a row. Highly Cited Researchers are selected for their exceptional research performance, determined by production of multiple highly cited papers that rank in the top 1% by citations for field and year in Web of Science.

Alistair Hobday (CSIRO) was a recipient of the Australian Society for Fish Biology K. Radway Allen Award. Pictured here (left), next to Stephen (Harry) Balcombe.



CMS PhD candidate Richard Cottrell, and researchers Julia Blanchard and Kirsty Nash were part of the National Centre for Ecological Analysis and Synthesis (NCEAS) working group 'Comparing The Environmental Impacts of Global Food Systems' led by Ben Halpern, and spent some time in Santa Barbara, California working on the project.

Dr Chris Cvitanovic, after finishing his postdoctoral fellowship in CMS in July, was first appointed as an Interdisciplinary researcher at CSIRO and has recently accepted a permanent new position as one of the inaugural CMS Lecturers at the Australian National Centre for the Public Awareness of Science, at the Australian National University in Canberra. We're pleased that Chris is continuing as a affiliated researcher with CMS.

2018 SNAPSHOT



VISITING SCIENTISTS



SCIENTIFIC PUBLICATIONS



BOOK CHAPTERS



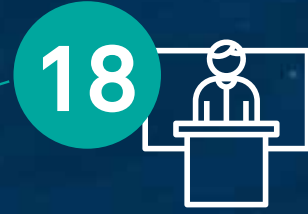
REPORTS



BLOGS



CONFERENCES



Plenary and keynote speakers



General presentations



GRANTS



AWARDS AND PRIZES



TRAINING SESSIONS



CMS SPONSORED EVENTS

SUMMARY OF SCIENTIFIC OUTPUTS

Out of 67 CMS publications for 2018, we could include 59 in the SciVal analysis (performed using SciVal metrics, Elsevier, 2019, exported March 13, 2019). Our staff and students have collectively published with hundreds of international co-authors, with citation metrics more than triple the world average for similar publications (Field-Weighted Citation Impact of 3.45). Field-Weighted Citation Impact takes into account the differences in research behaviour across disciplines, revealing how the number of citations received compares with the average number of citations received by all other similar publications indexed in the Scopus database. A Field-Weighted Citation Impact value of 1 indicates world average.

Overall research performance

Scholarly Output

59

Citation Count

633

Authors

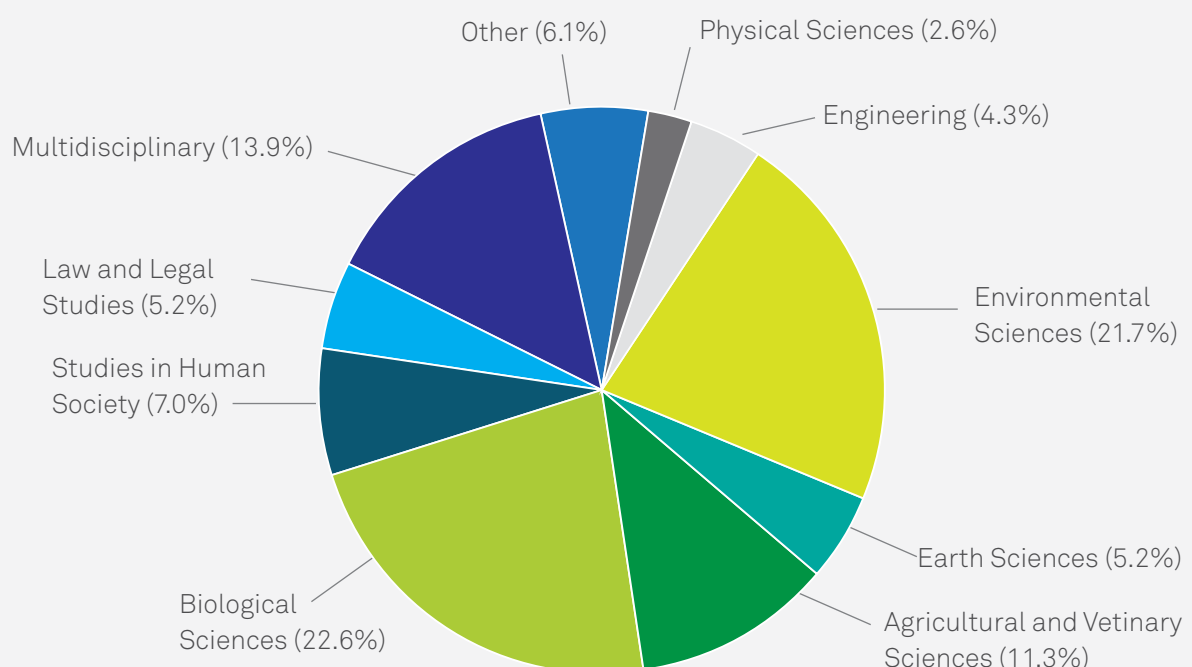
405

Citations per Publication

10.7

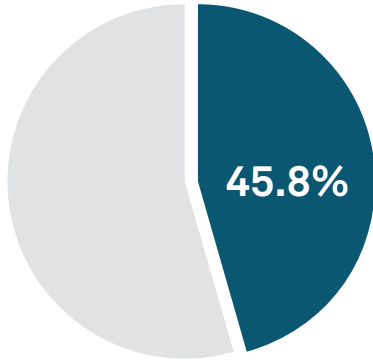
Field-Weighted Citation Impact

3.45



Outputs in Top Citation Percentiles

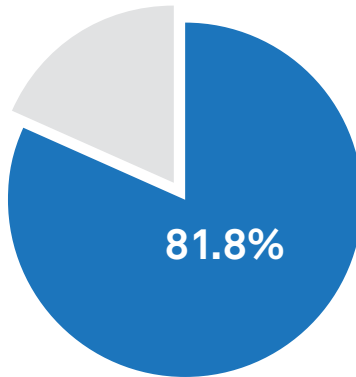
Publications in top 10% most cited worldwide



Outputs in Top Citation Percentiles for the University of Tasmania from 2015-2018 is 18.8%, and for Australia 18.4%

Publications in Top Journal Percentiles

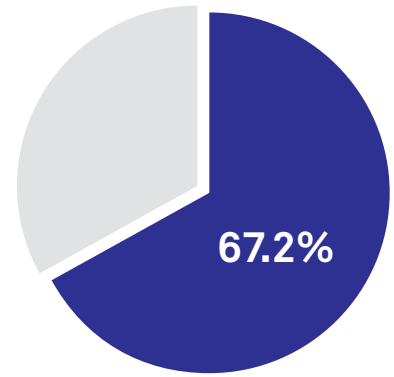
Publications in top 10% journals by CiteScore Percentile



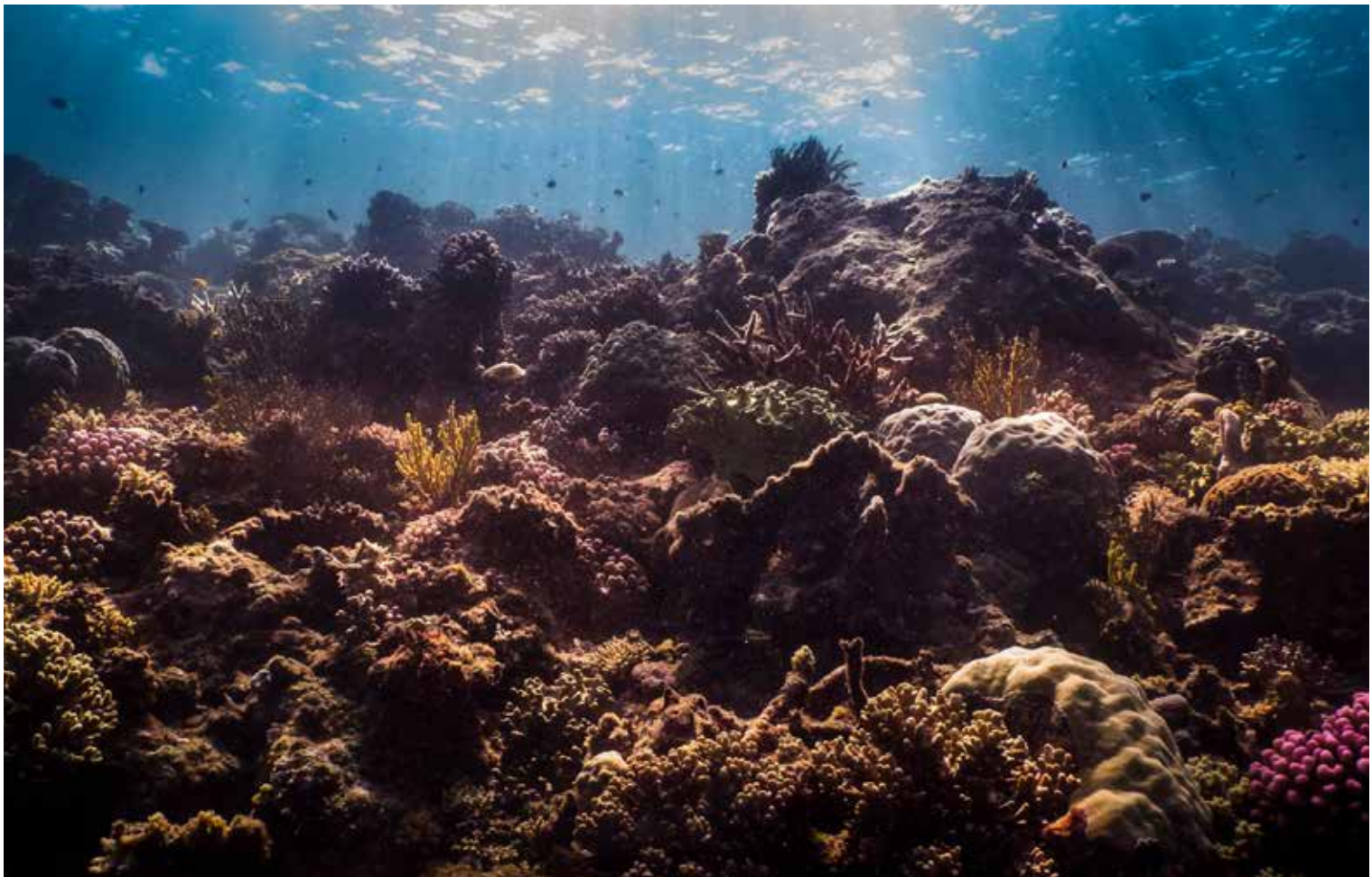
Publications in Top Journal Percentiles for the University of Tasmania from 2015-2018 is 39.7%, and for Australia 37.7%

International Collaboration

Publications co-authored with Institutions in other countries



International collaborations for the University of Tasmania from 2015-2018 is 50.1%, and for Australia 52%




CSIRO PUBLISHING

Marine and Freshwater Research
<https://doi.org/10.1071/MF17248>

SPECIAL ISSUE

Perspective

Progress in integrating natural and social science in marine ecosystem-based management research

K. A. Alexander¹ ^{A,E,F}, A. J. Hobday^{A,B}, C. Cvitanovic^A, E. Ogier^{A,E},
K. L. Nash^{A,E}, R. S. Cottrell^A, A. Fleming^{A,C}, M. Fudge^A, E. A. Fulton^{A,B},
S. Frusher^{A,E}, R. Kelly^A, C. K. MacLeod^{A,E}, G. T. Pecl^{A,E}, I. van Putten^{A,B},
J. Vince^{A,D} and R. A. Watson^{A,E}

PAPERS

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Cvitanovic & Hobday 2018



Fig. 1 Key principles underpinning success across science-policy-practice bright spots. These guidelines are based on the experiences of the two bright spots described in Table 1 (Shy Albatross and Southern Bluefin Tuna)

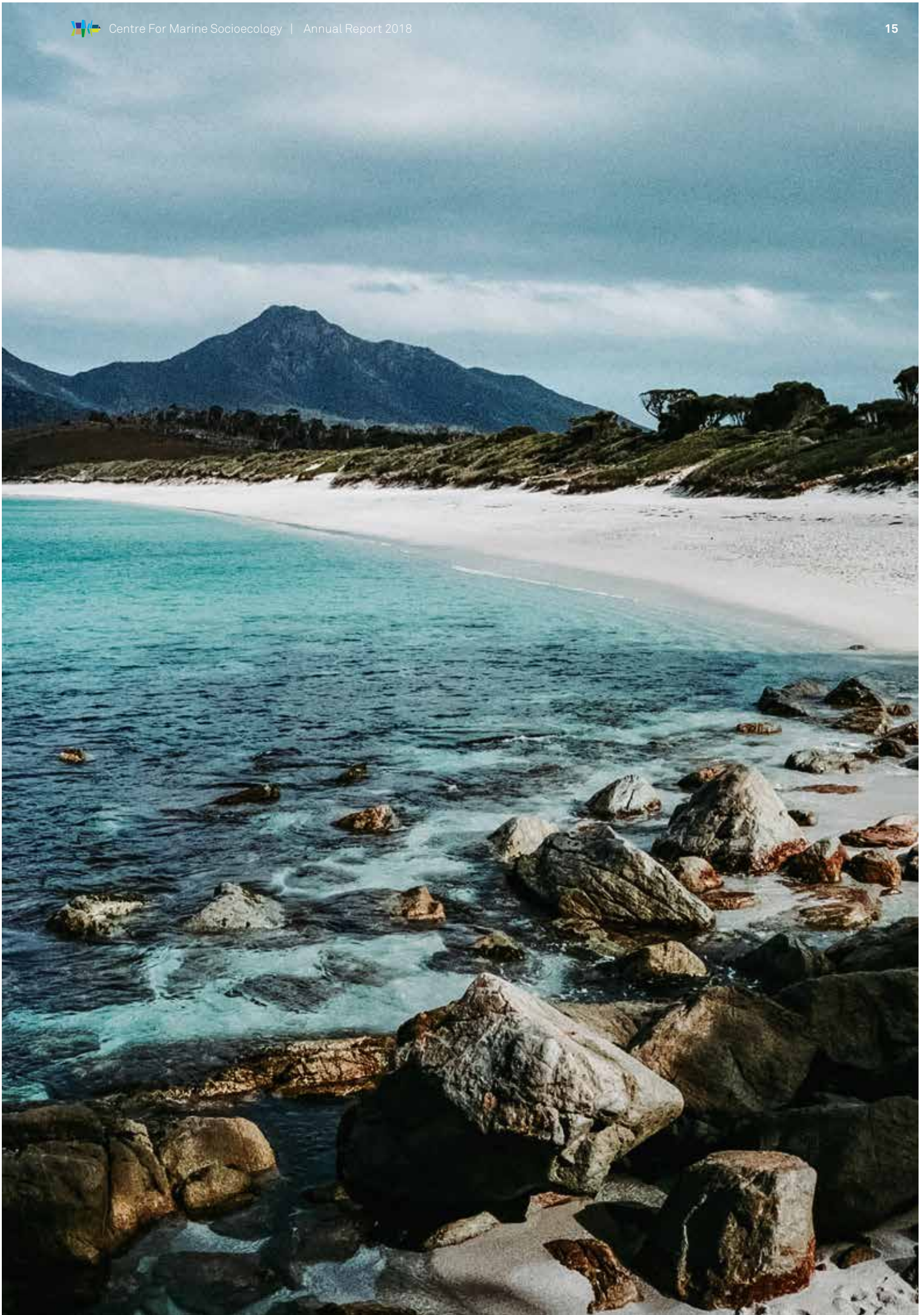
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Fig. 1. Examples of nudges used in Tasmanian recreational fishing and inland fisheries; a) an example of persuasive messaging regarding the minimum size of trout (text in red under the measurements); b) an example of simplification and framing nudge as part of the FishCare core messages to not retain juvenile or under-sized fish; c) an example of changes to the physical environment nudge with a spray-painted reminder to measure catch that is the same size as the minimum legal size of the commonly caught flathead.



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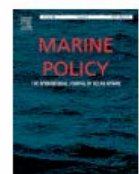
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Marine Policy

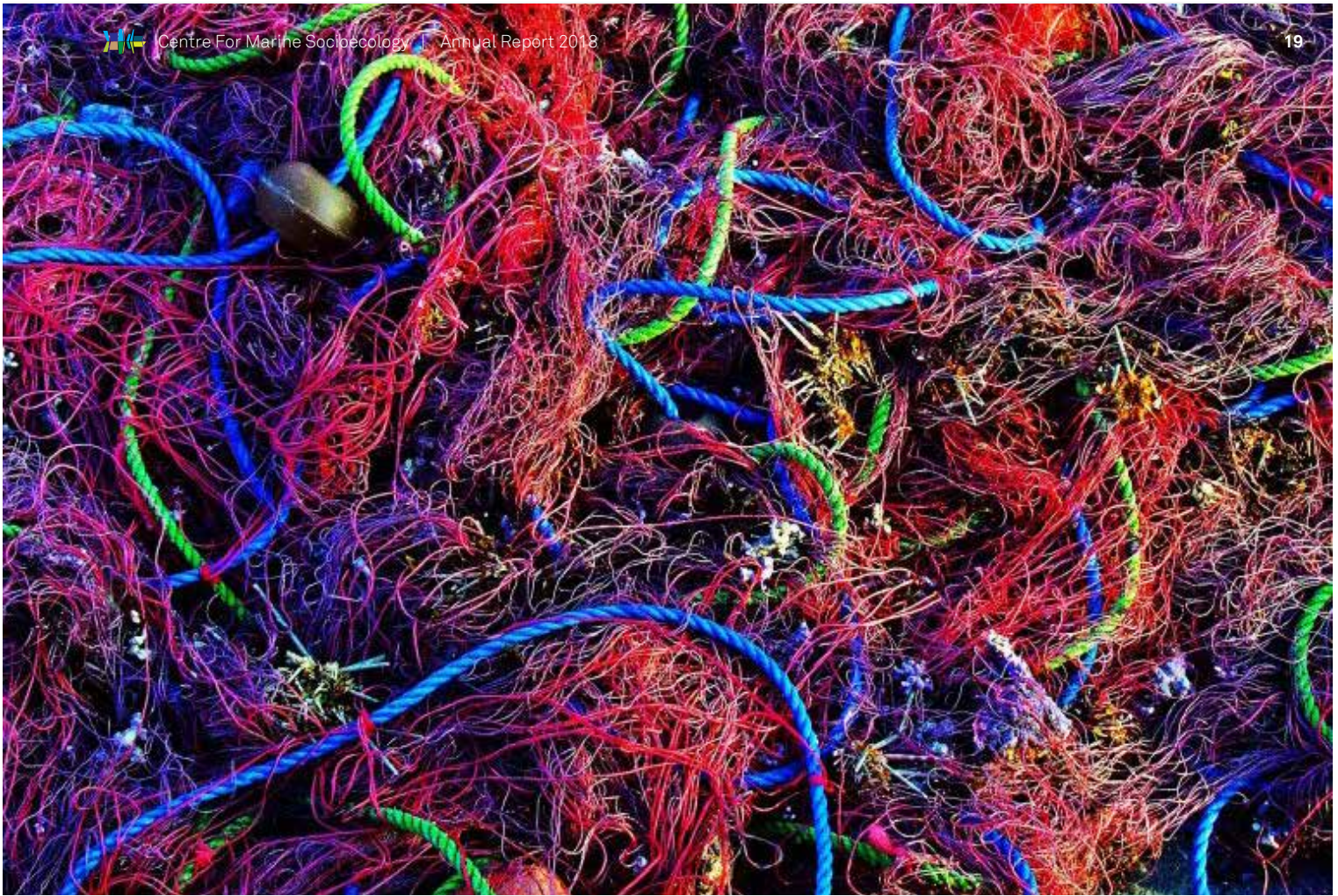
Volume 96, October 2018, Pages 200–203



From problem to crisis to interdisciplinary solutions: Plastic marine debris

Joanna Vince ^{a, b}  , Peter Stoett ^c 

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BOOK CHAPTERS

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5. **Hobday, AJ, Pecl, GT, Fulton, B**, Pethybridge, H, Bulman, C & **Villanueva, C** 2018, 'Chapter 16: Climate change impacts, vulnerabilities and adaptations: Australian marine fisheries', in M Barange, T Bahri, MCM Beveridge, KL Cochrane, S Funge-Smith, & F Poulain (eds), *Impacts of climate change on fisheries and aquaculture. Synthesis of current knowledge, adaptation and mitigation options*, FAO Fisheries and Aquaculture Technical Paper 627, Rome, pp. 347–362, accessed from <<http://www.fao.org/3/I9705EN/i9705en.pdf>>
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BLOGS

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2. **Cvitanovic, C**, Blog 'Four personality traits of people who have impact on policy and practice', Research to Action, 23 July 2018, <http://www.researchtoaction.org/2018/07/four-personality-traits-of-people-who-have-impact-on-policy-and-practice/>

3. Evans, M & **Cvitanovic, C**, Blog 'So you want to make an impact? Some practical suggestions for early-career researchers', London School of Economics and Political Science, 6 August 2018, <http://blogs.lse.ac.uk/impactofsocialsciences/2018/08/06/so-you-want-to-make-an-impact-some-practical-suggestions-for-early-career-researchers/>
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Australian
Environment
Review

The Senate investigates: climate change, marine fisheries and biodiversity

Hannah **Fogarty** UNIVERSITY OF TASMANIA

OTHER PUBLICATIONS

1. **Hobday, A, Pecl, Gretta, Fulton, B**, 'Warming oceans are changing Australia's fishing industry', The Conversation, published 11 July 2018, <https://theconversation.com/warming-oceans-are-changing-australias-fishing-industry-98301>
2. **Fogarty, H** 2018, 'The Senate investigates: climate change, marine fisheries and biodiversity', Australian Environment Review, 33 (7-8): 149-151.

CONFERENCES AND PUBLIC PRESENTATIONS



UNESCO Ocean Science Conference, Paris, 10-12 September

PLENARY, KEYNOTE AND INVITED SPEAKERS

- ▶ **McDonald J**, Better Laws for a better planet symposium, March 2018
- ▶ **Richardson, BJ** "Aligning Social Investment with Nature's Timescales" Cambridge Handbook Symposium, University of Oslo, 13-14 March 2018.
- ▶ **Pecl, G**, 'Species on the move under climate change', Coast to Coast 2018 Conference, Hobart, 16-20 April 2018
- ▶ **Richardson, BJ** "Timing", Time and Sustainability symposium, University of Oslo, 28-29 June 2018.
- ▶ **Pecl, G** "Addressing key questions for climate-driven species redistribution requires integration of ecology, conservation and social science", Australian Marine Science Association, Adelaide, 1-5 July 2018
- ▶ 4th International Symposium on the Effects of Climate Change on the World's Oceans, Washington DC, USA, 4-6 July 2018
 - **Hobday, A** 'Ocean extremes and their impact on marine ecosystems'
 - **Pecl, G** 'Management and Conservation of Species on the Move'
 - **Fulton B** 'Vulnerability and adaptation of marine socio-ecological systems to climate change' and 'Living in a world of change: Juggling cumulative impacts and path dependency'
- ▶ **Richardson, BJ** "Fossil Free Future", public forum, University of Tasmania, 22 August 2018.
- ▶ **Pecl, G** "Interdisciplinary research to address climate-driven changes in marine systems", ECSA 57: Changing estuaries, coasts and shelf systems, Perth, 3-6 September 2018
- ▶ **Pecl, G** "Climate change, citizen science & equity", UNESCO Ocean Science Conference, Paris, 10-12 September



LEFT TO RIGHT Dr Beth Fulton, Professor Gretta Pecl and Dr Alistair Hobday; Cartoon created by Bas Köhler during Gretta's plenary talk at the 4th International Symposium on the Effects of Climate Change on the World's Oceans, Washington DC, USA

- ▶ **van Putten I**, 'Unexpected outcomes and unpredictable managers, fishers, and scientists', ICES Annual Science Conference, Hamburg, 24-27 September 2018
- ▶ **Vince, J** "Governance solutions to the 'tragedy' of marine plastics", Marine Debris Forum, National Cheng Kung University, Tainan, Taiwan, 27th September 2018.
- ▶ **Vince, J** "Governance solutions to the 'tragedy' of marine plastics", the International Marine Debris Symposium, Penghu, Taiwan, 28th September 2018.
- ▶ **Pecl, G** 'Climate-driven species redistribution in marine systems', Australian Society of Fish Biology Conference, Melbourne, 7-11 October 2018
- ▶ **Pecl, G**, "Impacts and adaptation in marine systems", International Workshop on Climate Change, University of Aberdeen, Scotland, 26-30 November 2018
- ▶ **Richardson, BJ** "Time, Nature and Sustainability", Law, Time and Futures Symposium, Institute for Advanced Sustainability Studies, Potsdam, Germany, 15-17 November 2018.



LEFT TO RIGHT Professor Gretta Pecl and Professor William Cheung, from University of British Columbia's Changing Ocean Research Unit, at the UNESCO Ocean Science Conference, Paris; Alistair Hobday on stage as part of a panel session at the 4th International Symposium on the Effects of Climate Change on the World's Oceans, Washington DC, USA


GENERAL PRESENTATIONS


- Richardson, BJ** “The APEEL Blueprint for the Next Generation of Australian Environmental Law”, Environmental Frontiers IV Colloquium, Hobart, 6-7 February 2018.
- Haward, M** “Community, State and Market: Opportunities for hybrid coastal and Ocean Governance” SNP Symposium University of Tokyo Graduate School of Agricultural and Life Sciences. Wednesday 14th February 2018
- Haward, M** “Development and implementation of marine spatial planning in Australia: 20 years from the release of Australia’s Oceans Policy in 1998.” International Symposium on Science Behind Decision-Making Process for Conservation and Sustainable Use of the Oceans. University of Tokyo and Nippon Foundation Thursday 15 February 2018 University of Tokyo Yayoi Campus Nakashima Hall.
- Haward, M** Participant Global Transdisciplinary Ocean research Partnership workshop Friday 16 February 2018. University of Tokyo Graduate School of Agricultural and Life Sciences.
- Haward, M** “Coastal Governance” presentation at Casting an indigenous Hook -Removing barriers and providing opportunities for increased Indigenous engagement in fisheries and marine research Wednesday, 21 February 2018 Lufra Hotel, Eaglehawk Neck, Tasmania.
- 6th International Marine Debris Conference, San Diego, USA, 12-16 March 2018


 - Joanna **Vince**
 - Denise **Hardesty**
 - Chris **Wilcox**
 - Kathy **Willis**
 - Kelsey **Richardson**
- 59th International Studies Association Convention, San Francisco, USA, 4-7 April 2018


 - **Haward, M** Panel Convenor and session chair
 - **Haward, M** and **McGee, J** “Antarctic Governance in a Climate Changed World” paper
- McGee, J** and **Haward, M** “Antarctic Governance in a Climate Changed World” paper presented at MEASO Conference Policy Forum Hobart 11 April 2018.
- Coast to Coast 2018 Conference, Hobart, 16-20 April 2018


 - **Kelly, R**, ‘Social licence and citizen science: Potential and progress’
 - **Uffman-Kirsch, L**, ‘From Marine Policy to Law: A case for coastal zone decision-making with community participation by right’
 - **Willis, K**, ‘the success of waste campaigns and policies at reducing plastic waste into the marine environment’
 - **Mackay, M**, ‘The influence of nudges on compliance behaviour in recreational fisheries: a laboratory experiment’
 - **Alexander, K**, ‘Australasian differences in the perceptions of stakeholders to ecological engineering of coastal infrastructure’
 - **Haward, M**, session chair of Community Science, Planning & Policy, Politics, Planning & Policy; presenting: Twenty-five years on: Where to with Australian Coastal Policy
 - **Vince, J**, ‘Twenty years later: lessons for governance from Australia’s Oceans Policy process’
 - **Ogier, E**, ‘Sustaining more than fish stocks: advances in holistic assessments of the human dimensions of Australian fisheries’
 - **MacLeod, C**, ‘Planning for a Blue Future’
 - **Fudge, M**, ‘If it wasn’t for the politics we’d be fine” Why is ICZM so difficult?’


-  International Marine Conservation Congress 5, Sarawak, Indonesia, 25-29 June 2018


 - **Kelly, R,**
 - **Mackay, M,** ‘Social norm nudge enhances compliance behaviour in a recreational fisheries experiment’
-  Australian Marine Science Association, Adelaide, 1-5 July 2018


 - **Audzyjonyte A, Pecl G,** leading symposium “Linking disciplines to advance mechanistic insights of species responses to climate change”
 - **Willis K,** ‘the success of waste campaigns and policies at reducing plastic waste into the marine environment’
 - **Hamilton, S.** “Technical mitigation to reduce marine mammal bycatch in commercial trawl fisheries: lessons learnt and future directions”
-  The International Institute of Fisheries Economics & Trade, Seattle, 16-20 July 2018


 - **Mackay, M,** ‘Social norm nudge enhances compliance behaviour in a recreational fisheries experiment’
 - Yamazaki, S
-  North American Congress for Conservation Biology Conference, Toronto, Canada, 21-16 July 2018



 - **Uffman-Kirsch L,** “Defining and Empowering Affected Stakeholders in Environmental Commons Management: An Inquiry”
-  25th IPSA World Political Science Congress, Brisbane, 21-25 July 2018

 - Joanna **Vince** chaired a panel on Oceans Governance and presented: **Vince, J** and **Wilcox, C** and **Hardesty, B** and **Lugten, G,** “Progress and challenges in eliminating Illegal, Unreported and Unregulated (IUU) fishing in Australian waters”
 - Marcus **Haward,** ‘Twenty years on: Where to with Australia’ Oceans Policy?”
 - Emily **Ogier**
 - Jan **Shaw**
 - Pedro **Fidelman**
-  Public Communication of Science and Technology Conference, Dunedin, New Zealand - 3-6th April 2018

 - **Kelly, R.** ‘Social licence and citizen science: Potential and progress’
-  World Social Science Forum, Fukuoka, Japan, 25-28 Sep 2018

 - **Karen Alexander** ‘Oceans and Coasts, Resource Conflicts, and Big Ideas’
-  ICES Annual Science Conference, Hamburg, 24-27 September 2018

 - **Novaglio C,** presented at the theme ‘Sustainability thresholds and ecosystem functioning: the selection, calculation, and use of reference points in fishery management’
-  Australian Society of Fish Biology Conference, Melbourne, 7-11 October 2018

 - Sumbly J, **Haward M, Pecl G,** ‘How regional fishery bodies have responded to climate change’
 - **Kelly R, Pecl G, Fleming A,** ‘Social licence and citizen science: Potential and progress’
-  **Wenta, Jo,** ‘Enhancing ‘Just Resilience’ through Australian Climate Adaptation Laws: A Case Study of Changing Flood Conditions in Lake Macquarie, New South Wales’, S (24 October 2018, Hobart, Tasmania, Australia)
-  2018 Utrecht Conference on Earth System Governance: Governing Global Sustainability in a Complex World, Utrecht, Netherlands, 5-8 Nov

 - **Uffman-Kirsch Lisa**

GRANTS AND SCHOLARSHIPS

GRANTED

Frusher S and Penesis I successfully submitted the CRC Blue economy proposal to stage 2. The Blue Economy CRC partners will contribute \$94.5 M cash, \$89.9 M in-kind and \$58.5m in salaries over 10 years. \$80 m were requested from the CRC program to deliver a \$322m overall. Winning bids were announced in April 2019 and the Blue Economy CRC was successful!

Pecl G, MAM funds, Future Seas special issue workshop, \$10,000

Alexander KA, MAM funds, Antarctic Ambassadors: Fact or Fiction workshop \$10,500

Kelly R, Pecl GT & Fleming A. Department of Primary Industries NSW Grant from the Recreational Fishing Trust Fund “Can citizen science help build social license for the recreational fishing sector?” \$9,930

Lee, E. Dept of Prime Minister & Cabinet: Indigenous Advancement Strategy “Aboriginal Tasmanian cultural fisheries: testing and tasting the market at Dark MoFo Winter Feast” \$5,000

Burns W, McGee JS & Brent KA. Centre for International Governance Innovation: Research Grant; American University Washington. “Developing International Governance of Marine-Based Geoengineering” \$26,118

Jabour JA, Chin JU, McMinn A, **Haward MG, McGee JS.** Department of Foreign Affairs and Trade, Grant-Australia-Korea Foundation. “Australia and Korea in the Antarctic” \$38,000

Haward MG, McGee JS, Stephens TD, Kaye S, Scott SV. Australian Research Council: Grant-Linkage Infrastructure, with University of New South Wales, University of Sydney & University of Wollongong. “Creating a Unique Open Access Database on Antarctic Law and Governance” \$251,340

AWARDS & PRIZES

1. University of Tasmania Foundation Graduate Award, Emma **Lee**

2. Coast to Coast conference 2018, CMS award for best interdisciplinary oral presentation by a student, Kathy **Willis**

3. CSIRO 2018 Highly cited research award for Beth **Fulton**

4. PhD student Sheryl **Hamilton** made it into the UTas final of the 3MT (3 minute thesis) representing IMAS and CMS. The 10 finalists presented on the last afternoon of the UTas Grad Research conference on Friday 7th September. <http://www.utas.edu.au/research-admin/graduate-research/research-training-opportunities/three-minute-thesis-3mt>

5. Outstanding Research Performance award (Level A/B) from the UTAS College of Sciences and Engineering for Kirsty **Nash**

6. ASFB ECR Award for Kirsty **Nash**

7. ASFB K. Radway Allen Award for Alistair **Hobday**

8. CSIRO Land & Water Student Recognition Award for Excellence for Rachel **Kelly**

OTHER OUTPUTS

- ▶ Karen **Alexander** participated in the Homeward Bound Women in STEM Leadership Program expedition to Antarctica from 18 February to 11 March, visiting two Argentinian research bases, one Chinese research base, one U.S. research base and one U.K research base
- ▶ Ingrid **van Putten** and Alistair **Hobday** hosted the “IMBeR Mini-symposium on local and global ocean science”, CSIRO, 17-19 April
- ▶ IMBeR ClimEco6 Summer School - Interdisciplinary approaches for sustainable oceans, Yogyakarta, Indonesia, 1-8 August, convened by Chris **Cvitanovic**, lectured by Chris Cvitanovic, Beth **Fulton** and Ingrid **van Putten**, <http://www.imber.info/en/events/climeco-imber-summer-schools/interdisciplinary-approaches-for-sustainable-oceans>
- ▶ Rachel **Kelly** attended the IMBeR ClimEco6 Summer School, Yogyakarta, Indonesia, 1-8 August
- ▶ **Cvitanovic** C, convened the IMBeR ECR Science-Policy-Society capacity building workshop in Croatia (which CMS also co-funded), <http://www.imber.info/events/early-career-network/building-the-capacity-of-eu-early-career-marine-researchers-to-operate-effectively-at-the-science-policy-society-interface>
- ▶ Bianca **Haas** attended the Sao Paulo School of Advanced Science on Ocean Interdisciplinary research and governance, Brazil, 13-26 August
- ▶ Ingrid **van Putten**, convenor and rapporteur for the workshop ‘Preparing for change; challenges for fisheries governance’. ICES Annual Science Conference, Hamburg, 24-27 September

- ▶ **Pecl G**, Webinar: Climate-driven species redistribution in marine systems, co-sponsored by the NOAA National MPA Center, MPA News, and the EBM Tools Network (co-coordinated by OCTO and NatureServe).
- ▶ Kathy **Willis**: One of twenty participants, selected from over 500 applicants to attend the Global Environments Network (GEN) Global Environments Summer Academy (GESA) at the Environmental Change Institute at Oxford University, 26th July - 18th August.
- ▶ Julia **Blanchard**, Rich **Cottrell** and Kirsty **Nash** are part of an ongoing NCEAS working group exploring the environmental footprint of global food systems. Two workshops in 2018 (May and October) in Santa Barbara, California
- ▶ Bianca **Haas** attended the symposium for 'Integration across the SDGs and the Role of Research', Melbourne, 17-18 October
- ▶ Marcus **Haward** Invited Reviewer United Nations Environment Program The Sixth Global Environment Outlook, *Healthy Planet, Healthy People* –Oceans Chapter Environmental Policy: Theory and Practice chapters May 2018
- ▶ Marcus **Haward** Invited Expert Review Intergovernmental Panel on Climate Change IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, Expert Review of First Order Draft June 2018.
- ▶ **Richardson**, B.J. served on the Australian Research Council ERA 2018 Humanities and Creative Arts Committee.
- ▶ **Richardson**, B.J. co-organised:

 - Engaging Tasmanian in Nature Conservation through Aesthetics and Art, workshop, Tarraleah and Five Rivers Reserve, 21-22 September (25 participants).*
 - Time and Sustainability, University of Oslo, 28-29 June 2018 (65 participants).*
- ▶ Sheryl **Hamilton** was one of 23 invited expert attendees at Food and Agriculture Organization (FAO) of the United Nations “Expert Workshop on Means and Methods for Reducing Marine Mammal Mortality” in Rome, Italy, 20-23 March 2018. Sheryl gave one of 13 presentations to workshop on “Mitigation to reduce marine mammal bycatch in commercial trawl fisheries”. Workshop report available at <http://www.fao.org/3/I9993EN/i9993en.pdf>
- ▶ Gretta **Pecl** and Beth **Fulton** served on Steering committee for the 4th Ocean Climate Conference (ECCOWO 2018)



PUBLIC OUTREACH



Prof Gretta Pecl presenting at the public forum on Climate Change, University of Aberdeen, Scotland

PRESENTATIONS

- ▶ **McGee J** and **Haward M**, “Antarctic Governance in a Climate Changed World” paper presented at IMAS MASS seminar 16 April 2018
- ▶ **Pecl G**, “Addressing climate-driven changes in marine systems requires integration of ecology, conservation and social science”, UNSW’s Evolution & Ecology Research Centre seminar and Workshop - Citizen Science, Wollongong, 11 May 2018
- ▶ **Vince J, Willis K, Richardson K, Walsh P**, “Tackling marine debris through research”, Marine, Antarctic and Maritime Theme Forum, Stanley Burbury Lecture Theatre, University of Tasmania, 29 May 2018
- ▶ **Willis K**, keynote speaker at City of Greater Geelong World Environment Day “Putting Geelong in perspective: From global patterns to local solutions to plastic pollution”, 5 June 2018
- ▶ **Alexander K, Hemmer M, Walker J**, “Marine renewable energy: what’s holding back the tide?”, Marine & Antarctic Seminar Series, 12 June 2018
- ▶ **Alexander K**, “Participatory mapping”, GeoTable TAS, Republic Bar, 28 June 2018
- ▶ **Willis K**, speaker at Taroona High School “Local Solutions to Plastic Pollution”, 29 June 2018
- ▶ **Cloe Cummings** and **Sheryl Hamilton** ran a workshop on marine predators (“Where the Wild Things Roam”) at 2018 ‘Beaker St @ TMAG’ event for National Science Week <https://www.beakerstreet.com.au/2018program?i=34>, 11 August 2018
- ▶ **Alexander K**, ‘Between the Devil and the Deep Blue Sea: why do we fight over ocean and coastal resources?’ Science in the Pub, Republic Bar 6 September 2018
- ▶ **Pecl G**, webinar: Climate-driven species redistribution in marine systems, co-sponsored by the NOAA National MPA Center, MPA News, and the EBM Tools Network (co-coordinated by OCTO and NatureServe), 12 September 2018
- ▶ **Pecl G**, “Planetary health, climate change and human well-being?”, the Medical Sciences precinct, Hobart, 26 October 2018
- ▶ **Pecl G**, and **Hobday A** Australian Society for Fish Biology Conference Public Forum, Melbourne, October 2018
- ▶ **Pecl G**, public forum on Climate Change, University of Aberdeen, Scotland, December 2018
- ▶ Tasmanian Climate Change Office workshop, presentation by **Gretta Pecl**

MEDIA

- ▶ Chris **Cvitanovic** research paper featured in Nature Career, 'Help to shape policy with your science', 28 August 2018, https://www.nature.com/articles/d41586-018-06038-4?utm_source=tw_t_nnc&utm_medium=social&utm_campaign=naturenews&sf196404669=1
- ▶ Chris **Cvitanovic** research paper featured in Particle magazine, <https://particle.scitech.org.au/people/early-career-researchers-so-you-want-to-make-a-difference/>
- ▶ Rachel **Kelly** interview at the EU Joint Research Centre, 13 November 2018, <https://www.facebook.com/notes/eu-science-hub-joint-research-centre/i-was-amazed-at-the-breadth-and-diversity-of-research-being-conducted-on-one-sit/2081765502134452/>
- ▶ Mary **Mackay** research highlighted in fishthinkers, "When push comes to shove in recreational fisheries compliance, think 'nudge'", <https://fishthinkers.wordpress.com/2018/09/06/when-push-comes-to-shove-in-recreational-fisheries-compliance-think-nudge/amp/>

The Skimmer: How weather and climate extremes are impacting the ocean

Posted on June 13, 2018 - 10:07am, by Sarah Carr - Ed.



Editor's note: The Skimmer is a MEAM feature where we briefly review the latest news and research on a topic. Last week, I had the opportunity to attend the 4th International Symposium on Effects of Climate Change on the World's Oceans (ECCWO)¹⁹, held in Washington, DC. This symposium gathered scientists and managers from more than 50 nations to discuss the latest science on climate change impacts on ocean ecosystems, identify climate risks and knowledge gaps, and determine best ways to respond to sustain ocean resources and communities. Here is a quick summary of some recent and brand new research findings presented at the symposium on how weather and climate extremes are impacting marine ecosystems, as well as insights shared by speakers. (Learn about climate change tools and resources presented at the symposium in this month's EBM Toolbox). Part 2 of the Skimmer, coming out next month, will feature more research and insights from ECCWO on how we can manage and conserve ocean ecosystems in a rapidly changing climate.

We know that extreme weather events (such as marine heatwaves) and other climate change-associated effects (including ocean warming, ocean deoxygenation, and ocean acidification) are dramatically altering marine ecosystems. But we are still figuring out the how, how much, and why of these changes. Some perspectives on what we know and what we still need to know.

- ▶ Gretta **Pecl** and Alistair **Hobday** highlighted in MEAM June issue, 'The Skimmer: How weather and climate extremes are impacting the ocean', <https://meam.openchannels.org/news/meam/skimmer-how-weather-and-climate-extremes-are-impacting-ocean>
- ▶ Lisa **Uffman-Kirsch** PhD research project highlighted in The Examiner, 'US attorney examines management of Tasmania's marine space', 10 June 2018, <https://www.examiner.com.au/story/5458275/us-attorney-examines-management-of-tasmanias-marine-space/>
- ▶ Gretta **Pecl** highlighted in MEAM July-August issue, 'Takeaway Message #2: Even when governments are not adapting to climate change impacts, stakeholders are – we need to understand and plan for this', <https://meam.openchannels.org/news/meam/skimmer-managing-and-conserving-ocean-ecosystems-rapidly-changing-climate>
- ▶ Lisa **Uffman-Kirsch** interviewed by ABC Country Hour regarding her case study research in Tasmania on marine aquaculture approval processes, 6 June 2018, <https://www.abc.net.au/radio/programs/tas-country-hour/tas-country-hour/9818078>
- ▶ Coco **Cullen-Knox** PhD project highlight in UTAS News, 'Bringing seafood governance to the surface', 3 May 2018, <http://www.utas.edu.au/news/2018/5/3/602-bringing-seafood-governance-to-the-surface/>
- ▶ Gretta **Pecl** participation in the international Climate Change workshop hosted by the University of Aberdeen was highlighted in article 'What climate change could mean for Scottish fisheries', by FiskerForum, <http://www.fiskerforum.dk/en/news/b/what-climate-change-could-mean-for-scottish-fisheries>



Joanna **Vince** was interviewed by Fairfax Media about her research on marine plastic pollution and governance issues. The story appeared in the Examiner paper on Tuesday 19th June 2018, <https://www.examiner.com.au/story/5475604/cut-plasticpollution-plea/?cs=95>. The interview was mentioned in additional published pieces on the 21st June in the Examiner <https://www.examiner.com.au/story/5480424/support-grows-forcontainer-deposit-scheme-in-tasmania/>, and in the Advocate's editorial piece <https://www.theadvocate.com.au/story/5480223/whats-the-bestsolution-to-plastic-pollution/>

OTHER EVENTS

Emma Lee, Dark Mofo Winter Feast, Palawa Fire Pit, Tasmania's Indigenous-caught seafood and indigenous stories, 15-17, 21-23 June 2018.



- Karen **Alexander** Antarctic photography and talk presented at "Indelible Antarctica" exhibition
- Kathy **Willis**, presenter at Bonorong Wildlife Sanctuary schools program, Lansdowne Crescent Primary, Sacred Heart College and Mt Stuart Memorial Hall.



CMS SPONSORED EVENTS

Cloe Cummings speaking at CMS Showcase 2018

CMS Seminar by Rob Stephenson, “Reshaping Fisheries Research in Canada: Overview of the Canadian Fisheries Research Network seminar”, February 2018

Asia-Pacific Workshop on International Law, Climate Change, Oceans and Coasts, hosted by Jan McDonald and Jeff McGee, Hobart, February 2018

CMS seminar by Susanne Hecke (Helmholtz Centre for Environmental Research, German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Germany), “Deconstructing citizen science – towards a renewed understanding of interactions”, April 2018

CMS showcase 2018, May 2018

CMS Seminar by Dr Karen Fisher (University of Auckland, NZ), “Navigating trust in collaborative transdisciplinary research Examining New Zealand’s Sustainable Seas National Science Challenge”, 18 June 2018

CMS seminar by Dr Mariana Paludi (Universidad Catolica de Chile), “Gender studies”, 24 July 2018

CMS Seminar by Dr Prue Addison (University of Oxford, UK), “Advancing corporate biodiversity accountability with conservation science”, 15 August 2018

CMS seminar by João Vitor Campos-Silva (Federal University of Alagoas, Brazil), “Integrating sustainable-use protected areas and community-based management of aquatic resources: Insights from the Amazon”, September 2018

CMS seminar by Angela Dean (University of Queensland), “Fostering community support

for marine and coastal conservation – how community characteristics influence responsiveness to the issue and our messages”, 28 September 2018

CMS seminar by Professor Andrew Balmford (University of Cambridge) on land sharing vs land sparing for conservation outcomes, October 2018

CMS Seminar by Dr Steven Cooke (Carleton University, Canada) “Seminar: For Good or For Bad? Techno-Science and Wildlife Conservation”, 15 October 2018

CMS retreat, Steele’s Island, 17-18 October, attended by 35 CMS researchers and students

CMS Seminar by visiting scientist Prof Jennifer Bailey (NTNU, Norway) “Salmon Aquaculture in Norway: The politics of the new management system”, 6 November 2018

CMS Seminar by Prof Anna Gardmark (Swedish University of Agriculture), “Individual variation & Interactions resolve Community Responses to Climate Change”, 21 November 2018

CMS sponsored the Future Seas workshop, held at the Hobart Function and Conference Centre, 7-8 Nov 2018, attended by 50 people.

Antarctic Ambassadors: Fact or Fiction? Workshop, organised by Karen Alexander, November 2018

CMS Coast to Coast Conference best student presentation award

CMS Chilean Conference best student presentation award

VISITORS



CLOCKWISE FROM TOP LEFT

DR ROBERT STEPHENSON (Feb–Apr), St. Andrews Biological Station, Canada

DR SARA HORNBERG (Jan–June), Research Institutes of Sweden, at the section Sustainable Food Systems.

DR KIM SCHERRER (Feb–Mar), Institut de Ciències i Tecnologia Ambientals, Universitat Autònoma de Barcelona, Spain

PhD Candidate **MAITE ERAUSKIN** (February), Azti Tecnalia, Spain

DR JONATHAN REUM, Alaska Fisheries Science, NOAA

MS SUSANNE HECKER (April), Helmholtz Centre for Environmental Research, German Centre for integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, Germany

DR AOI SUGIMOTO (August), Keio Research Institute at the University of Tokyo, Japan

DR KAREN FISHER (April), University of Auckland, NZ

DR ANGELA DEAN, The University of Queensland

PROF ANDREW BALMFORD (October), University of Cambridge, UK







PROF STEVEN COOKE (October), Carleton University, Canada

PROF JENNIFER BAILEY (Nov–Dec), NTNU, Norway

PhD candidate **HELOISA DANTAS** (Dec–Feb), from Universidade Estadual de Campinas, Brazil

PROF CHRISTINA HICKS (August), Lancaster University, UK

CAREER DEVELOPMENT FOR CMS STUDENTS AND RESEARCHERS

-  Science communication, by Susanne Hecker
-  4MAT learning method, by Dr Karen Alexander
-  Inkscape and graphical outputs, by Stacey McCormack
-  Indigenous Cultural training, by Clair Anderson from Riawanna Centre
-  Environmental and risk communication workshop, by Dr Jason Major
-  On a tortuous path towards evidence-informed conservation workshop, by Steven Cooke



Indigenous Cultural Training



Karen Alexander delivering the 4MAT learning method workshop

NEW PHD STUDENTS

CANDIDATE	SUPERVISORS	PROJECT	SCHOOL/ FACULTY
Sierra Ison	Gretta Pecl Chris Cvitanovic Ingrid van Putten Alistair Hobday	Linking marine science to action: the role and utility of Outcome Mapping	IMAS/CSIRO
Eavan Brennan	Joanna Vince Britta Denise Hardesty Chris Wilcox	Mitigation of plastic consumption and pollution	Collage of Arts, Law and Education / CSIRO
Sheryl Hamilton	Marcus Haward Mary-Anne Lea Barry Baker Aleks Terauds	Mitigation of marine mammal bycatch in commercial fishing gear, with a focus on reducing the impact of trawl fisheries bycatch on pinniped populations	IMAS
Larelle Bossi	Julia Jabour Leila Toiviainen Jeff Malpas	A First Cast at a Philosophy of Fishing	IMAS
Lynda Goldsworthy	Marcus Haward Dirk Welford Julia Jabour Ian Fry	The Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) as a Case Study for precautionary resource Management in a climate adapting world	IMAS



SELECTED UPDATES FROM THE FIRST CMS FUNDED PhD AND RESEARCH FELLOWS

CMS has currently 25 PhD students and 4 postdoctoral fellows. Here, we provide some brief updates on the group of students and researchers that have been with CMS since we commenced in 2015.

PHD CANDIDATES



LISA
UFFMAN-KIRSCH

PROJECT TITLE/
RESEARCH AREA:

**Stakeholder participation
in marine project decision-
making as a path to social
license**

START & END/ANTICIPATED
END DATE:

May 2016 – November 2019

PROJECT TEAM:

Benjamin Richardson (Law);
Ingrid van Putten (CSIRO);
Kate Booth (Geography).

SUMMARY OF PROJECT AIMS & GOALS

The aim of my thesis research project is examination of the hypothesis that legally supported stakeholder participation in marine project decision-making will reduce marine space conflict, support related socially-licensed relationships and increase marine environmental sustainability. My goal is creation of an implementation framework for participatory marine space decision-making based on a fiduciary model that is customizable to various governance regimes.

OUTCOMES & OUTPUTS

This upcoming year's focus is on empirical data processing, analysis and thesis writing. My most significant output to date has been my conference presentations which allowed me to share, get feedback on and refine my research ideas, as well as gauge knowledge and understanding of key concepts utilized in my work.

OTHER ORGANISATIONS/INSTITUTES/ STAKEHOLDERS INVOLVED

Faculty of Law. Other stakeholders in my research are my interview and survey participants.



RICHARD COTTRELL

PROJECT TITLE/ RESEARCH AREA:

**Bridging the land-sea divide:
links, interactions, and trade-
offs for food security and
sustainability**

START & END/ANTICIPATED END DATE:

16 March 2016 – June 2019

PROJECT TEAM:

Supervisors: Julia Blanchard (Primary, IMAS), Reg Watson (IMAS), Beth Fulton (CSIRO), Aysha Fleming (CSIRO), Kirsty Nash (IMAS). Other researchers on published or in prep chapters: Ben Halpern (NCES), Tom Remenyi (ACE CRC), Sara Hornborg, Alexandra Johne, Stuart Corney, Halley Froehlich, Marc Metian.

SUMMARY OF PROJECT AIMS & GOALS

Integrating data and models on terrestrial and aquatic food production to identify the spectrum of links between food systems on land and sea and understand how these interactions can create trade-offs or synergies for food security and sustainability at a global level.

OUTCOMES & OUTPUTS

To date I have published my first and second chapters of my PhD:

Cottrell RS, KL Nash, BS Halpern, TA Remenyi, SP Corney, A Fleming, EA Fulton, S Hornborg, A Johne, RA Watson, JL Blanchard (2019). Food production shocks across land and sea. Nature Sustainability. doi: 10.1038/s41893-018-0210-1.

Cottrell RS, A Fleming, EA Fulton, KL Nash, RA Watson, JL Blanchard (2018). Considering land-sea interactions and trade-offs for food and biodiversity. Global Change Biology. 24(2), pp.580-596.

My final two chapters are currently in preparation. My third chapter is a collaborative effort with other members of the 'Food Systems Impacts and Sustainability' working group at NCEAS, University of California Santa Barbara. As a member of this group, I am also involved in multiple research projects that are anticipated to culminate in several peer-reviewed articles in high-impact journals. I am also collaborating with researchers from the Inter-Sectoral Impact Model Inter-comparison Project (ISIMIP) on other works concerning the UN Sustainable Development Goals (currently in prep and review).

By the end of my second year I completed my Graduate Diploma in Marine and Antarctic Studies with High Distinction as part of the CSIRO-UTAS Quantitative Marine Science Program.

OTHER ORGANISATIONS/INSTITUTES/ STAKEHOLDERS INVOLVED

Centre for Marine Socioecology and the Institute for Marine and Antarctic Studies, University of Tasmania; CSIRO; National Center for Ecological Analysis and Synthesis (NCEAS), University of California Santa Barbara.



RACHEL KELLY

PROJECT TITLE/ RESEARCH AREA:

Social licence in the marine realm: Improving community knowledge and engagement

START & END/ANTICIPATED END DATE:

6 March 2016 – 6 July 2019

PROJECT TEAM:

Supervisors: Prof Gretta Pecl (IMAS) and Dr Aysha Fleming (CSIRO). Other researchers: Prof Aletta Bonn (iDiv, Germany), Dr Anett Richter (iDiv, Germany), Dr Carolina Garcia (UTAS) and Mary Mackay (CMS).

SUMMARY OF PROJECT AIMS & GOALS

This thesis aimed to document and evaluate the current status of social licence in the marine realm, and to improve understanding about the concept of social licence and contribute to the literature on social licence in the marine space. Further, it explored linkages between the concept of social licence and the theory and practice of citizen science, and sought to determine whether marine citizen science can be a useful means to promote social licence in the marine space.

OUTCOMES & OUTPUTS

The thesis determined that social licence is an emergent concept in the marine sector and highlighted its potential for application in the marine context, particularly towards exploring communication and stakeholder engagement. As this thesis is by publication, most of the results have been published or are in submission. As such, the research outcomes are already having a tangible impact in the literature and beyond. For example, the outcomes of the EU case-study (*Social licence and citizen science: A tool for marine conservation*) are valuable for the development of marine citizen science globally and have already been taken up in, for example, the CitSciNZ2018 event in Wellington, New Zealand in April 2018. Further, the results of the Redmap case-study (*Citizen science can enhance social licence: A case-study of the marine citizen science project Redmap*) provided insight into how citizen science can promote marine citizenship and communication between diverse stakeholder groups. Rachel's final case-study (*Social licence in practice: A case-study of Tasmanian marine protected areas*) which is currently underway will provide information and advice for marine managers in the pursuit of social licence for marine conservation activities, including marine protected areas.

OTHER ORGANISATIONS/INSTITUTES/ STAKEHOLDERS INVOLVED

CSIRO. Green Talents Award for Young Potentials in Sustainable Development, Germany. German Centre for Integrative Biodiversity Research (iDiv), Germany. Redmap Australia. Sapphire Marine Discovery Centre, NSW. DPI Port Stephens, NSW. NSW Recreational Fisheries Trust (funder)



ELISAVET SPANOU

PROJECT TITLE/ RESEARCH AREA:

Mapping coastal and marine ecosystem services to the Total Economic Value framework. A project in Marine resource economics.

START & END/ANTICIPATED END DATE:

9 February 2016 – 9 August 2019

PROJECT TEAM:

Supervisors: Dugald Tinch (TSBE), Darla Hatton MacDonald (TSBE), Emily Ogjer (IMAS), Rich Little (CSIRO).

OTHER ORGANISATIONS/ INSTITUTES/STAKEHOLDERS INVOLVED

Tasmanian School of Business and Economics.

¹ Ogjer, E. and Macleod, C. K. (2013) Your Marine Values: Public Report, IMAS Technical Report. Available at: <http://www.tarfish.org/documents/Your-Marine-Values-Report-2013.pdf>

SUMMARY OF PROJECT AIMS & GOALS

Through three distinct methods and drawing upon local Tasmanian participants, the project looks into the value of ecosystem services in southern Tasmania. These methods were a mapping experiment, deliberative monetary valuation, and a choice experiment.

OUTCOMES & OUTPUTS

The first method was a participatory mapping experiment (a recall experiment), wherein participants were asked to map the locations of their coastal and marine recreational activities in and around Storm Bay, and report on their perceptions of the presence of ecosystem services in these locations. They were also asked to map any conflicts between users of Storm Bay, be they conflicts between recreational users (including themselves), or between recreational users and industry. Nearly 300 respondents mapped just under 2000 locations. An important question in the mapping survey was the level of importance each participant ascribed to a set of marine and coastal ecosystem services drawn from Ogier and Macleod's 2013 study, *Your Marine Values*¹. Through this study, we determined the ecosystem services of interest in southern Tasmania, as well as the main types of recreation and sources of conflicts.

The second method was a series of deliberative workshops that saw groups of participants discussing and coming to a consensus on the value of coastal and marine ecosystem services using a choice experiment as the tool for discussion. The choice experiment designed for this method (also used in the third method) was devised using the information on conflicts and ecosystem services uncovered in the mapping survey. In this experiment, a novel methodology was tested: asking participants to familiarise themselves with the choice experiment, then think of how heavily they weight each attribute and level relative to the other attributes and levels. The weightings each participant proposed were aggregated, and a 60-task choice experiment was automatically filled in with the group's weighting for each attribute and level. The choices made were the support for a group discussion, where the group weightings could be adjusted to more accurately reflect the group's preferences, if the choice automatically made by the aggregated weightings was not the group's ideal choice. The choice experiment was then completed once more individually. With this data, once analysis is complete, we will be able to analyse the difference made by deliberation to individual preferences, identify the community preferences for our 10 workshop groups (100 people total), as well as the community values for the ecosystem services in the experiment.

The third method is the running of the choice experiment from the second method with an online panel of Tasmanians. We used the estimates from the deliberated group choice experiment as priors for the design of the online choice experiment. This will both allow us to test how representative our sample of 100 deliberative participants were and have a more robust set of results for the monetary value of the ecosystem services used in the choice experiment.

Each method was novel in some way. Ecosystem services have been mapped using participatory mapping services before but asking participants to map activities and report on the ecosystem services present at the sites they have visited is a new approach. It is thought that this will aid participants in the recollection of specific services and their locations. Deliberative monetary valuation is a well-established field, but the use of a choice experiment as the support for discussion has only been done once before, and without using weightings to elucidate group preferences. Finally, the online choice experiment has been informed by the results of the deliberative choice experiment, allowing for confidence in the priors used for the design.

RESEARCH FELLOWS



DR KIRSTY
NASH

PROJECT TITLE/ RESEARCH AREA:

Modelling socioecological thresholds: predicting a safe and just operating space for humanity in the global ocean

START & END/ANTICIPATED END DATE:

February 2016 – February 2021

PROJECT TEAM:

Julia Blanchard (IMAS), Beth Fulton (CSIRO), Reg Watson (IMAS), Ben Halpern (NCES), E.J. Milner-Gulland (University of Oxford).

OTHER ORGANISATIONS/ INSTITUTES/STAKEHOLDERS INVOLVED

Gretta Pecl @ CMS; Christopher Cvitanovic @CMS & ANU, Australia; Jess Blythe @ Brock University, Canada; Prue Addison @ University of Oxford, UK; Christina Hicks @ Lancaster University, UK; Pip Cohen @ WorldFish, Malaysia.

SUMMARY OF PROJECT AIMS & GOALS

I am exploring the health of marine social-ecological systems from a global perspective. I have a particular interest in understanding trade-offs and synergies among environmental and social objectives.

OUTCOMES & OUTPUTS

Nash KL, Cvitanovic C, Fulton EA, Halpern BS, Milner-Gulland EJ, Watson RA, Blanchard JL. 2017. Planetary Boundaries for a blue planet. *Nature Ecology & Evolution* 1: 1625-1-1634.

- This paper is one of the core pieces of research arising from my CMS project to date. It was extremely well received – recommended by the faculty of 1000 (*F1000 Review) and listed as one of the top 20 most influential conservation papers of 2017 (Conservation Bytes Review).

Nash KL, Watson RA, Halpern BS, Fulton EA, Blanchard JL. 2017. Improving understanding of the functional diversity of fisheries by exploring the influence of global catch reconstruction. *Scientific Reports* 7: 10746.

- This paper provides the initial step in my research exploring the potential for large-scale fisheries datasets to be used to identify planetary boundaries in the marine environment – in this case, in regards to functional diversity. This paper will provide a springboard for further investigations in this area.

Blythe J, Nash KL, Yates J, Cumming G. 2017. Feedbacks as a bridging concept for advancing transdisciplinary sustainability research. *Current Opinion in Environmental Sustainability* 26-27: 114-119.

- This paper is part of an ongoing collaboration with Jess Blythe @ Brock University, Canada exploring how we can facilitate interdisciplinary research and most effectively harness the different perspectives of a range of disciplines when addressing complex social-ecological questions.

Sundstrom S, Angeler DG, Barichiev C, Eason T, Garmestani AS, Gunderson L, Knutson M, Nash KL, Spanbauer T, Stow CA, Allen, CR. 2018. The distribution and role of functional abundance in cross-scale resilience. *Ecology DOI: 10.1002/ecy.2508*.

Sundstrom SM, Eason T, Nelson RJ, Angeler DG, Barichiev C, Garmestani AS, Graham NAJ, Granholm D, Gunderson L, Knutson M, Nash KL, Spanbauer T, Stow CA, Allen CR. 2017. Detecting spatial regimes in ecosystems. *Ecology Letters* 20: 19-32.

- These two papers are part of an ongoing international collaboration (since 2012) with a group of resilience scientists and managers (terrestrial and marine), that was initially funded by a USGS Powell Centre grant, of which I was one of the 3 PIs.



DR
CHRISTOPHER
CVITANOVIC

PROJECT TITLE/
RESEARCH AREA:

Linking science to action to support sustainable marine governance

START & END DATE:

August 2015 – July 2018

PROJECT TEAM:

Jan McDonald and Jeffrey McGee (Faculty of Law), Ingrid van Putten and Alistair Hobday (CSIRO)

Other researchers on published or in prep chapters: Beth Fulton (CSIRO), Aysha Fleming (CSIRO), Kirsty Nash (IMAS).

SUMMARY OF PROJECT AIMS & GOALS

Successfully navigating modern day environmental challenges requires the integration of new and evolving knowledge into decision-making processes. Science is one form of knowledge that is critical in this regard, however, the uptake and integration of scientific research into decision-making processes remains a significant challenge. Rather, it has been shown that decision-makers continue to rely solely on secondary sources of knowledge when formulating management actions, potentially compromising the effectiveness of management decisions with subsequent impacts on societal well-being and prosperity. In response, scientists, policy-makers and practitioners alike have called for new and improved ways of knowledge sharing to underpin evidence-informed decision-making. This project sought to fill this gap, by developing empirically grounded guidance for how to improve knowledge exchange among marine scientists, policy-makers and practitioners.

OUTCOMES & OUTPUTS

- Cvitanovic et al (2019) Maximising the benefits of participatory climate adaptation research by understanding and managing the associated challenges and risks. *Environmental Science and Policy*.
- Posner and Cvitanovic (2019) Evaluating the impacts of boundary-spanning activities at the interface of environmental science and policy: A review of progress and future research needs. *Environmental Science and Policy*.
- McDonald et al (2019) Proactive, reactive and inactive pathways for scientists in a changing world. *Earth's Future*.
- Cvitanovic et al (2018) Building university-based boundary organisations that facilitate impacts on environmental policy and practice. *PLoS One*.
- Cvitanovic and Hobday (2018) Building optimism at the environmental science-policy-practice interface through the study of bright spots. *Nature Communications*.
- Cvitanovic et al (2018) Building trust among marine protected area managers and community members through scientific research: Insights from the Ningaloo Marine Park, Australia. *Marine Policy*.
- Evans and Cvitanovic (2018) An introduction to achieving policy impact for early career researchers. *Palgrave Communications*.
- Bednarek et al (2018) Boundary spanning at the science-policy interface: the practitioners' perspectives. *Sustainability Science*.
- Cvitanovic et al (2018) Governing fisheries through the critical decade: the role and utility of polycentric systems. *Reviews in Fish Biology and Fisheries*.
- Hobday et al. (2018) Adapting to climate change: the role of organisational personalities in natural resource management. *Regional Environmental Change*.

- Lacey et al (2018) Understanding and managing trust at the climate science–policy interface. *Nature Climate Change*.
- van Putten, Cvitanovic et al (2018) The emergence of social licence necessitates reforms in environmental, *Ecology and Society*
- van Putten et al (2018) A framework for incorporating sense of place into the management of marine systems. *Ecology and Society*
- Hobday and Cvitanovic (2017) Preparing Australian fisheries for the critical decade: insights from the past 25 years. *Marine and Freshwater Research*.
- Marshall et al. (2017) Empirically derived guidance for social scientists to influence environmental policy. *PLoS One*.
- Cvitanovic et al (2017) Using social network analysis to monitor and assess the effectiveness of knowledge brokers at connecting scientists and decision-makers: an Australian case study. *Environmental Policy and Governance*
- Cvitanovic et al (2017) Governing fisheries through the critical decade: the role and utility of polycentric systems. *Reviews in Fish Biology and Fisheries*.
- Hobday et al (2017) Adapting to climate change: the role of organisational personalities in natural resource management. *Regional Environmental Change*.
- Nash, Cvitanovic, et al (2017) Planetary boundaries for a blue planet. *Nature Ecology & Evolution*.
- van Putten, Villanueva and Cvitanovic (2017) The Influence of Community Size and Location on Different Dimensions of Vulnerability: a case study of Australian coastal communities. *Australian Geographer*.
- Cvitanovic et al (2016) From science to action: principles for undertaking environmental research that enables knowledge exchange and evidence-based decision-making. *Journal of Environmental Management*.

APPOINTMENTS:

- Member of the Scientific Steering Committee of the Future Earth Integrated Marine Biosphere Research (IMBeR) project.
- Chair of The Interdisciplinary Marine Early Career Network.
- Advisory Board Member or MarXiv.
- Editorial board member, Socio-ecological Practice Research.

OTHER ORGANISATIONS/ INSTITUTES/STAKEHOLDERS INVOLVED

- Stockholm Resilience Centre
- Baltic Sea Centre, Stockholm University
- Western Australian Department of Biodiversity, Conservation and Attractions
- CSIRO
- PEW Charitable Trusts
- COMPASS
- Newcastle University, UK
- University of Queensland
- Australian National University
- University, UK; Pip Cohen @ WorldFish, Malaysia.





DR KAREN ALEXANDER

PROJECT TITLE/ RESEARCH AREA:

**Regional ecosystem-based
coastal management**

START & END/ANTICIPATED END DATE:

February 2016 – February 2020

PROJECT TEAM:

Marcus Haward (IMAS), Catriona MacLeod (IMAS), Emily Ogier (IMAS), Jeff Dambacher (CSIRO).

SUMMARY OF PROJECT AIMS & GOALS

The project aims to understand if the slow progression of ecosystem-based management is because of 'sectoral interplay' (the challenges and tensions which prevent 'whole of government' cooperation and political consensus among conflicting user and interest groups) and what this means for Tasmania.

OUTCOMES & OUTPUTS

As this project has become part-time, to date there has been one output: Alexander, K.A. and Haward, M., 2018. The human side of marine ecosystem-based management (EBM): 'Sectoral interplay' as a challenge to implementing EBM. *Marine Policy*. This paper established that the failure to implement EBM is not solely due to our lack of understanding the complexities of the marine ecological system, but that there are also human-relational aspects involved. This highlights the importance of understanding the ecological AND social components of managing the marine environment. This output provides the analytical framework for the remainder of the project, of which all data has been collected but has yet to be analysed.

I am also working in a book on Conflicts over Marine and Coastal Common Resources, which should be published in 2019.

OTHER PAPERS

Alexander, KA, Hobday, AJ, Cvitanovic, C, Ogier, E, Nash, KL, Cottrell, RS, Fleming, A, Fudge, M, Fulton, EA, Frusher, S, Kelly, R, MacLeod, CK, Pecl, GT, Putten, I van, Vince, J & Watson, RA 2018, 'Progress in integrating natural and social science in marine ecosystem-based management research', *Marine and Freshwater Research*, accessed from <<http://www.publish.csiro.au/mf/pdf/MF17248>>.

A photograph of two divers in black wetsuits and yellow goggles swimming underwater. The water is clear blue, and sunlight filters through from above, creating a shimmering effect on the surface. The divers are positioned in the upper half of the frame, looking towards the camera.

FUTURE EVENTS FOR 2019

- Facilitation workshop, 14-15 January by Kimberly Willing Groundswell
- Gretta Pecl will be travelling to Durban & Kathmandu to attend to the IPCC Working II meetings in January & July
- Workshops for 'Future Seas', a large collaborative CMS led project, will be held every two months from February through to October. Future Seas is an exciting project involving over 100+ academics from across Tasmania, mentoring mostly ECR's to lead papers envisaging what our future could look like by 2030 if we implemented the existing knowledge we have. Each paper addresses a key challenge for oceans, like food security, ocean literacy, or climate change.
- Dr Heather Hunt, a Professor in the Department of Biological Sciences at the University of New Brunswick in Canada, will be spending 3 months of her sabbatical in Hobart collaborating with Prof Gretta Pecl in the citizen science project Redmap, February-April
- Gretta Pecl will be a keynote speaker at the Pan-pacific Anthropocene Conference to be held in Taiwan on 14-16 May
- Tatiana van Steveninck is a Master student from the University of Utrecht and will start a 5-month business research project in Hobart describing competitive aspects of the Centre for Marine Socioecology within an Australian context, February-June
- Julia Blanchard, Rich Cottrell and Kirsty Nash will be participating in two more workshops for the NCEAS working group in San Diego, the first in May, second to be confirmed.
- CMS students and researchers are convening a panel session at the MARE People and the Sea Conference in Amsterdam, the Netherlands, 24-28th June
- Gretta Pecl will be an invited keynote speaker at the ICES Science Conference to be held in Gothenburg on 9-12 September
- Karen Alexander will be publishing the book: 'Conflict over marine and coastal commons: causes, governance and prevention'.

ANNEX

STEERING COMMITTEE

Prof Gretta Pecl (CMS Director)
 Dr David Smith, Dr Beth Fulton (CSIRO)
 Prof Jan McDonald, Assoc Prof Jeff McGee (Faculty of law, Utas)
 Prof Chris Carter (Director of IMAS)
 Prof Richard Coleman, Prof Marcus Haward (IMAS)
 Assoc Prof Dugald Tinch, Satoshi Yamazaki (Tasmanian School of Business and Economics, Utas)
 Dr Dirk Welford Welsford, Bill de la Mare (Australian Antarctic Division)
 Prof Joanna Vince, Prof Richard Eccleston (School of Arts, UTAS)

CMS MEMBERS

Alistair Hobday (CSIRO)	Emily Ogier (UTAS)	Marcus Haward (UTAS)
Andrew Constable (AAD)	Eva Plaganyi (CSIRO)	Neil Holbrook (UTAS)
Andrew Harwood (UTAS)	Fred Gale (UTAS)	Peat Leith (UTAS)
Andy Steven (CSIRO)	Gail Lugten (UTAS)	Pedro Fidelman (University of Queensland)
Aysha Fleming (CSIRO)	Geoff Syme (UTAS)	Phillipa McCormack (UTAS)
Benjamin Richardson	Gretta Pecl (UTAS)	Piers Dunstan (CSIRO)
Beth Fulton (CSIRO)	Heidi Auman (UTAS)	Reginald Watson (UTAS)
Bill de la Mare (AAD)	Ingrid van Putten (CSIRO)	Rich Little (CSIRO)
Brock Bergseth (CSIRO)	Jan McDonald (UTAS)	Richard Coleman (UTAS)
Cara Stitzlein (CSIRO)	Jan Shaw (UTAS)	Sarah Jennings (UTAS)
Catriona MacLeod (UTAS)	Jason Major (UTAS)	Satoshi Yamazaki (UTAS)
Cecilia Villanueva (UTAS)	Jeffrey Dambacher (CSIRO)	Scott Condie (CSIRO)
Chris Cvitanovic (CSIRO)	Jeffrey McGee (UTAS)	Sean Pascoe (CSIRO)
Chris Wilcox (CSIRO)	Joanna Vince (UTAS)	Sean Tracey (UTAS)
Darla Hatton Macdonald (UTAS)	Julia Blanchard (UTAS)	Stewart Frusher (UTAS)
David Smith (CSIRO)	Julie Davidson (UTAS)	Tony Smith (CSIRO/UTAS)
Denise Hardesty (CSIRO)	Justin Rizzari (UTAS)	
Dirk Welsford (AAD)	Keith Sainsbury (UTAS)	
Dugald Tinch (UTAS)	Kerryn Brent (UTAS)	
Elisabeth Lester (UTAS)	Leo Dutra (CSIRO)	

RESEARCH FELLOWS & STUDENTS

Research Fellows	CMS PhD students		
Kirsty Nash	Mary MacKay	Lisa Uffman-Kirsch	Bianca Haas
Karen Alexander	Yannick Rousseau	Coco Cullen-Knox	Cloe Cummings
Camilla Novaglio	Maree Fudge	Hannah Fogarty	Niyomi Ayesha Pethiyagoda
Asta Audzijonyte	Elisavet Spanou	Dannielle Smith	Lynna Cortes Rueda
	Rachel Kelly	Carla Sbrocchi	Sheryl Hamilton
	Angela Abolhassani	Mohammad	Lynda Goldsworthy
	Joseph Wenta	Khodajouei	Larelle Bossi
	Richard Cottrell	Kelsey Richardson	Sierra Ison
		Kathryn Willis	Eavan Brennan

CMS COLLABORATORS

Anna Farmery (University of Wollongong)
 Emma Lee (Swinburne University)
 Sara Hornborg (Research Institutes of Sweden)
 Robert Stephenson (St Andrews Biological Station, Canada)



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Australian Antarctic Division